ANALYZING THE EFFECT OF CORPORATE VENTURE CAPITAL INVESTMENTS ON A CORPORATION'S INNOVATIVE PERFORMANCE

A quantitative study

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Abstract

Academic research emphasizes the importance of innovation management in companies, stressing that it is needed in order to sustain a competitive advantage. Especially mature companies may rely on external sources of knowledge in trying to fulfil their innovation needs. This thesis investigates one particular external source of knowledge acquisition, namely Corporate Venture Capital (CVC). It analyses the effect of CVC investments on the innovative performance of incumbent firms.

All firms within the European Union, excluding banks, bank affiliates and other financial institutions, which invested in CVC during the years 2002-2008 were identified using the ThomsonOne database. This resulted in a sample of 43 firms.

Several key findings can be derived from the underlying analysis. First of all, this research shows that firms investing in CVC are significantly more innovative than their comparable firms. Furthermore, it finds that in the five year period before their CVC investments, they were – in contrast – not more innovative than their peers. Lastly, it finds that CVC investments are mainly initiated by firms in knowledge intensive industries.

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1. Introduction

In the past years, the competitive landscape has rapidly changed. Among others, ever increasing globalization, technological revolution, innovative new business models and shortened product life cycles have created new managerial challenges (Prahalad, 1990) (Hitt et al., 1998). In order to survive, companies must be able to adapt and evolve (Trott, 2005).

Innovation is becoming increasingly important in gaining a competitive advantage, as is shown by a research of the Boston Consulting Group and BusinessWeek in 2010. They found that despite the stagnating economy after the financial crisis, companies are concentrated on increasing spending on innovation in the upcoming years.

Innovation can be achieved in many ways, one of which is Corporate Venture Capital (CVC). Hereby, corporations invest equity shares in external, entrepreneurial, new ventures (Maula, 2001). Corporate investors are thereby able to absorb specific external new knowledge. Moreover, they provide essential access to, for instance, technologies and markets.

On February 21st 2012, the United States' National Venture Capital Association and PWC announced in their MoneyTree Report that Corporate Venture Capitalists had steadily increased investment activity over the last three years. CVCs accounted for 15 per cent of all venture capital investment deals in 2011, while in the years 2009 and 2010 it was respectively 12.7 and 13.6 per cent. Also the dollar amount of deals increased in these years, with CVCs investing $2.3 billion into 551 deals in 2011 compared to $2.0 billion into 481 deals in 2010. "Corporations bring a unique and specialized perspective to venture investing and are increasingly becoming more active in supporting the growth of emerging technologies. In turn, the venture capital industry has embraced the CVCs' depth of resources - including R&D, access to broad marketing channels and operating experience – as invaluable contributions to the success of the startup economy," said Mark Heesen, president of the National Venture Capital Association (NVCA).

1.1 Research Question and Problem Statement

Corporate Venture Capital is widely discussed in present literature as a mean of gaining access to unfamiliar markets or to new insights into technological knowledge (i.e. Maula, 2001). This thesis serves as empirical research and will explore and investigate the relationship between CVC activity and a corporation's innovativeness. The main research question can be formulated as this:

- ***What is the effect of Corporate Venture Capital activity on a corporate investor's innovative performance?***

This thesis will try to answer the following questions:

1. *In what way can CVC programs increase the innovative performance of incumbent firms?*
2. *What kinds of firms are typically using CVC programs?*
3. *What are the most important strategic motives for CVC investments, from both a corporation's and a venture's perspective?*

1.2 Theoretical Contribution

Research in the field of CVC has been growing in the past years, but it is still relatively unexplored compared to other areas, such as Venture Capital (VC). A variety of studies conducted deals with an investigation of financial and strategic motives of CVC firms, while there is little research addressing CVC as a potential source of knowledge acquisition.

Therefore, this research will attempt to examine and investigate CVC investments as vehicles to foster knowledge creation, having a positive effect on an incumbent's innovativeness. It will complement the existing CVC literature in a number of ways.

First of all, this research will use a sample of European (EU) firms, while most of the empirical studies have focused on the USA, taking a US sample instead (e.g. Dushnitsky and Lenox, 2005). This thesis will explore whether the same relation between CVC investments and innovative performance exists in the EU as well.

Secondly, this research focuses on one particular potential benefit (i.e. innovative performance), while most previous studies (e.g. Siegel et al., 1998) have had a much broader look at the potential strategic benefits of CVC investments.

1.3 Thesis Structure

This research paper consists of six chapters. The first chapter introduces the topic broadly and presents the problem statement. The second chapter will define the major terms of this thesis, being Venture Capital (VC), Corporate Venture Capital (CVC) and innovation and will discuss them. Furthermore, this chapter will discuss the motivation of CVC investments from both the corporation´s perspective and the venture´s perspective. The underlying hypothesis will also be developed in chapter two, after which the research design will be explained in detail in chapter three. In chapter four, descriptive statistics and results, as well as limitations of the study will be elaborated on. Chapter five concludes this thesis with the discussion and conclusion of the main findings, its implications for managers and possibilities for future research.

2. Literature Review

The following part of this research is dedicated to define the key terms used in this thesis. These are: Venture Capital (VC), Corporate Venture Capital (CVC) and innovation. Furthermore, this part will elaborate on the motives for CVC investments from both the corporation's and venture's perspectives. Finally, it will present the relationships between the different concepts and it will develop the hypothesis for this thesis.

2.1 Definitions

Since CVC is a special type of VC, this thesis will firstly discuss the terminology of VC, after which CVC will be clarified and distinguished from Corporate Venturing (CV). Finally, the broad term innovation – also playing a key role in this thesis - will be portrayed.

2.1.1 Venture Capital

The National Venture Capital Association (NVCA) classifies VC firms as "professional, institutional managers of risk capital that enable and support the most innovative and promising companies. This money funds new ideas that could not be financed with traditional bank financing, that threaten established products and services in a corporation, and that typically require five to eight years to be launched." (NVCA Yearbook, 2011). The European Private Equity and Venture Capital Association (EVCA) adds to that: "Venture capital is, strictly speaking, a subset of private equity and refers to equity investments made for the launch, early development, or expansion of a business. It has a particular emphasis on entrepreneurial undertakings rather than on mature businesses.". There is, however, no widely accepted definition of VC. Kortum and Lerner (2000, p. 676) describe VC as "equity or equity-linked investments in young, privately held companies, where the investor is a financial intermediary who is typically active as a director, an advisor, or even a manager of the firm.". The variety of aforementioned definitions together contribute to a general understanding of VC (Poser, 2003).

There is also a geographic difference in terminology: the definition of VC in the EU is not the same as the one in the United States. In the US, the definition of venture capital is rather narrow, being only one type of private equity investing. It comprises three types of investments (while excluding buyouts): seed, start-up and expansion. In the EU, as can also be seen in Figure 2.1, venture capital can be seen as a quasi-synonym of private equity [PE] - "a more general concept that includes any commitment to unquoted companies, at any stage, from seed investments to replacements, buyouts and turn-around operations" (Balboa & Marti, 2000, p.3).

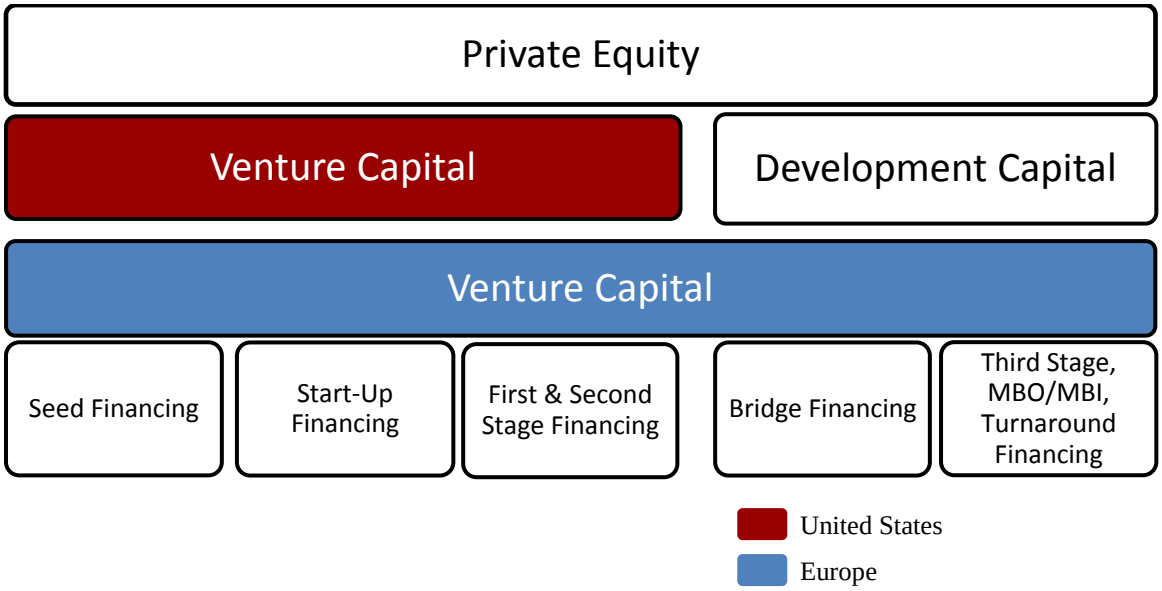

Figure 2.1: *Classifications of Private Equity (PE) and VC in U.S. and Europe (Adopted from: Röper, 2004)*

The EVCA acknowledges this clear distinction, but they use the second definition in practice, thus including buyouts in its statistics. This thesis will deal with the European venture capital market, therefore this definition will be adopted.

In general, one can differentiate three main VC (and CVC) investment stages: early stage, expansion stage and later stage (see Figure 2.1 and Figure 2.2). Each of the three main stages consist of multiple phases.

Early stage financing consists of seed, start-up and first stage financing. According to the EVCA, seed financing is "designed to research, assess and develop an idea or initial concept before a company has reached the start-up phase (EVCA, 2007, p. 13). The seed financing phase is directly followed up by the start-up financing phase, in which further product development takes place, as well as marketing activities (without the commercialization of these products). Then, in the first stage of financing, investments are used to build up production capacities and to develop distribution networks. During the whole process, the risk of investment diminishes, while financing needs increase over time.

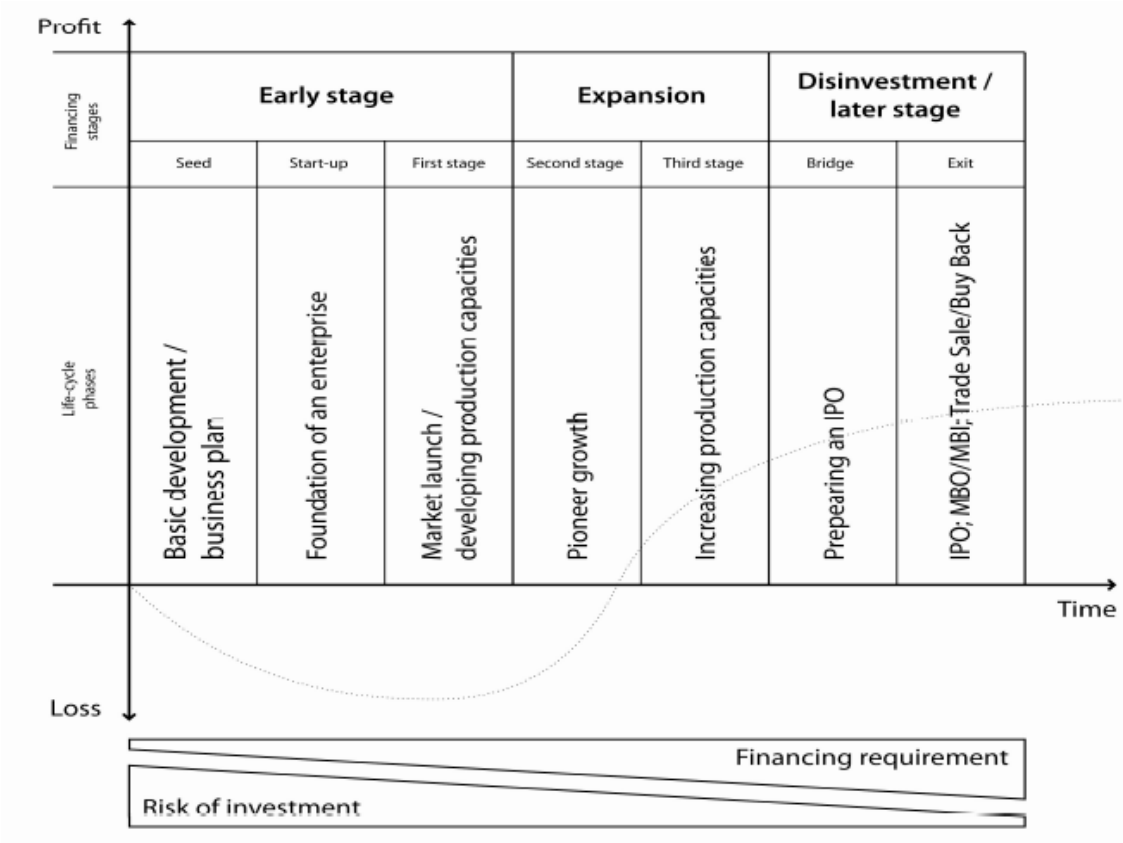

Figure 2.2: *VC and CVC Financing Stages (Merkele, 1984; Brinkrolf, 2003)*

In the expansion stage, divided into two phases, the company establishes itself and its product in the market. The second stage of financing is meant for business growth and further product development. Third stage investments consist of further growth, finance acquisitions and/or increase in working capital. Within this stage, there are usually many rounds of financing, "during which the company has to ensure that its growth is balanced" (EVCA, 2007, p. 14).

In the final stage, the venture capitalist wants to regain its capital in order to make a positive return on his investment. The stage is divided into two phases: bridge investments and the exit. Bridge investments are used to prepare an Initial Public Offering (IPO). These investments are mainly been done to strengthen the equity ratio of the firm. Finally, in the exit stage, the venture capitalist hopes to make its positive return, using one of the channels available. The most common one is an IPO, which is especially used when there are favourable stock market conditions. Other possibilities include selling the VC shares to another firm (Trade Sale), to entrepreneurs (Buy back), to the managers of the VC who were leading the project (Management Buy-Out) or to a group of external managers (Management Buy-In).

2.1.2 Corporate Venturing, Corporate Venture Capital and Innovation

The umbrella term for internal and external venturing activities of incumbent firms is Corporate Venturing (CV). Various activities of equity investments and cooperative strategies are covered (Chrisman & Sharma, 1999).

Even though the two terminologies - CVC and corporate venturing - are often interchangeably used (McNally, 1997), the two expressions should be clearly distinguished. One can categorize CV as either internal or external (see Figure 2.3).

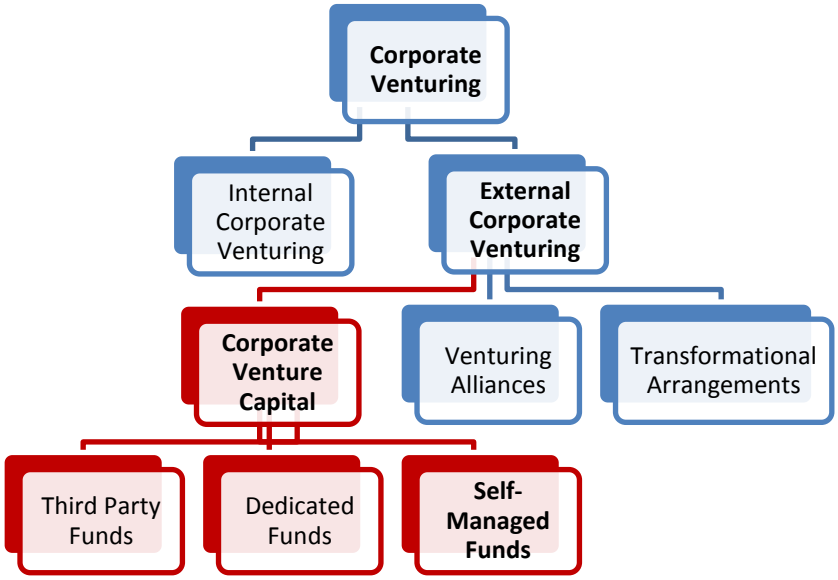

Figure 2.3: *Corporate Venturing and External Corporate Venturing modes (Adopted from: Maula, 2001)*

Internal CV are investments in internal divisions of a corporation residing inside the company's boundaries (Dushnitsky, 2006). Internal venturing activities are used for supporting the innovative development within an organisation, to increase innovativeness in order to become more competitive (Burgelman & Syles, 1998; Maula, 2001)

External CV activities, however, result in the creation of autonomous or semi-autonomous organizations that reside outside the organizational domain (Chrisman & Sharma, 1999). Figure 2.3 shows that external CV can be divided into three categories: (1) venturing alliances, (2) transformational arrangements and finally (3) corporate venture capital. Within this framework, CVC is the primary focus of this thesis, which is in turn divided into three categories as well: (i) third party funds, (ii) dedicated funds and (iii) self-managed funds (indicated in red in Figure 2.3).

There is not a unanimous agreed definition of CVC in academic literature. Gompers & Lerner (1998) define CVC as equity investments by incumbent firms in independent entrepreneurial ventures. Dushnitsky (2006) describes CVC as corporations investing minority equity capital in entrepreneurial

start-ups which are privately-held. Maula (2001, p. 9) makes a remark by stating that the investor is a "financial intermediary of a non-financial corporation", generally excluding financial institutions in the definition of CVC.

Corporate Venture Capitalists (CVCs) have some shared characteristics with the more common Independent Venture Capitalists (IVCs), but also differ in many dimensions. First of all, CVCs are organized as subsidiaries of corporations, while IVCs are generally structured as limited partnerships. Secondly, managers of CVC funds are mostly compensated by a fixed salary and corporate bonuses, while IVC managers enjoy a performance-based compensation. Due to this, CVCs are less likely than IVCs to be concerned with the immediate financial returns coming from the firms in their portfolios. Thirdly, CVCs may benefit from being positioned in the presence of a corporate parent, with a unique knowledge of the industry and technology utilized by the entrepreneurial firm (Chemmanur et al., 2010).

As mentioned before, one of the categories of CVC include investments made by incumbent firms into traditional VC funds (third party funds). The third party fund in turn invests money into start-ups. In this category, the incumbent firm has no direct link to the portfolio company (see Figure 2.4). In this relative passive form of CVC investments, it will be difficult for the incumbent firm to acquire and exploit the technological knowhow and knowledge of the portfolio company, as the corporate investor is not in direct contact with the portfolio company. Therefore, this kind of CVC investment is mainly used for financial motives.

Another category of CVC investments is the creation of a dedicated fund, where the fund is managed by the venture capitalist and where there is only one limited partner in the form of the incumbent firm. Compared to the CVC investment in the form of a third party fund, the corporate investor is able to exert more control over the investments made by the fund. This allows the corporate investor to better monitor the technological developments in the portfolio firm and in the market, thus having a chance to benefit from external R&D. Consequently, the incumbent firm can pursue both financial and strategic objectives.

The third category is the self-managed fund. The incumbent firm invests directly into start-ups and other young firms without any form of an intermediary. Both the administration and the investments are managed by the incumbent firm. This form of CVC investment is best suited for pursuing strategic objectives. In this thesis, the self-managed fund serves as the definition of CVC and indicates the focus of the research (see Figure 2.3). Only direct investments made by incumbent firms, through a CVC unit, will thus be investigated (see Figure 2.4). This thesis will make an attempt to make clear the relationship between the use of self-managed funds and the innovativeness of the parent company.

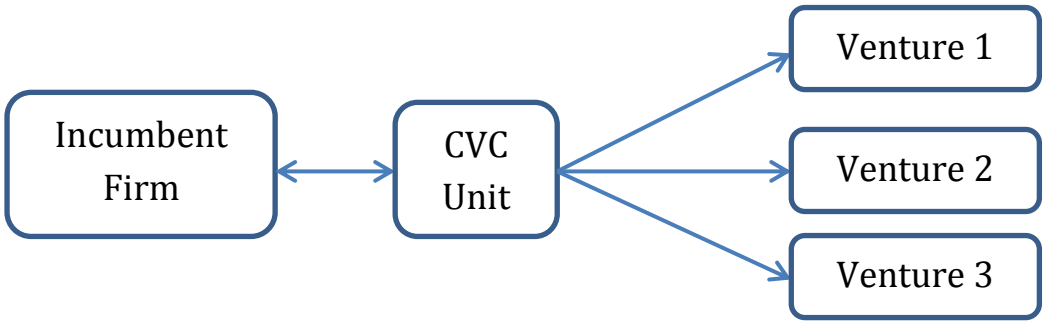

Figure 2.4: *The CVC unit visualized (own illustration)*

Poser (2003) discussed the process of CVC activity in great detail. As displayed in Figure 2.5, the procedure consists of five stages: (1) deal flow generation, (2) assessment, (3) investment, (4) interaction and finally (5) exit.

Figure 2.5: *The CVC Investment Procedure (Adopted from: Poser, 2003)*

The first stage of deal flow generation is necessary for exploiting possible investment opportunities. To receive access to new entrepreneurial ventures, networking with parties in the corporation's supply chain or at conferences has to be done. Also employees are a good alternative. (Siegel, Siegel & MacMillan, 1988). Sykes mentions that, however, no effect of the source of deal flow generation on the success of a CVC collaboration is evident (Sykes, 1990). After the deal flow generation stage, the assessment stage is the phase where a thorough assessment of investment opportunities takes place, in order to evaluate all the strengths, weaknesses, opportunities and risks involved. Also, one will concentrate on strategic fit and the potentials for value creation. After the venture's fit to the corporation is approved, the investment phase leads to the actual funding. Because many potential benefits are very hard to specifically quantify, this phase could be challenging. After having signed the contract, the two parties go into the interaction stage. This is a vital stage, because it is the main source of strategic benefits. Interaction is hereby necessary for absorbing external knowledge. Whereas in the preceding stages, the potential of the start-up could solely be estimated, in this stage, a realistic judgment of the collaboration can be done. This is mainly caused by the intense interaction, as well as the extensive monitoring of the venture's progress. In the last stage, there are several options involved in exiting the CVC deal. The venture could go public in an Initial Public Offering (IPO), the incumbent firm investing in the venture may retain its equity stake, stop funding or completely acquire the venture business (Poser, 2003).

The term innovation is hard to define in a short manner, as there is no universally approved definition in the academic literature. Hahn and Koch (2007) use a very basic description of innovation, namely "the act of introducing something new". Schumpeter (1982) conceptualizes innovation "as the commercial or industrial application of something new – a new product, process, or method of production; a new market or source of supply; a new form of commercial, business, or financial organization". Porter (1990, p. 780) points out that innovation is basically an interaction between invention and commercialization: "A new way of doing things that is commercialized. The process of innovation cannot be separated from a firm´s strategic and competitive context". Myers and Marquis (1969) use a quite comprehensive definition: "Innovation is not a single action but a total process of interrelated sub processes. It is not just the conception of a new idea, nor the invention of a new device, nor the development of new market. The process is all these things acting in an integrated fashion.".

In general, the literature distinguishes between two types of innovations, namely incremental and radical or continuous and discontinuous innovations (Kock, 2007). Incremental innovations are simply an improvement of an existing product or service and rely on a company's existing capabilities, while radical innovations – in contrast – use dissimilar technological knowledge distant to existing proficiencies (Afuah, 1998). Radical innovation is of great importance for long-term survival and growth of mature companies (Leifer et al., 2000).

2.2 Motives for CVC Investments

One can classify the motives for CVC investments in two categories: motives from the corporation's perspective and motives from the venture's perspective. First of all, the reasons for interest in CVC engagement from the corporation's standpoint will be discussed. After that, the motives from the venture's perspective will be elaborated on.

Besides financial motives, strategic goals play an essential role, as CVC is also classified as an element of the corporation's innovation strategy, mentioned earlier in this thesis (Siegel et al., 1988; Sykes, 1990; Winters & Murfin, 1988). First of all, attractive technological developments are more likely to be discovered by small ventures (Sykes, 1990). Foster (1986) points out that ground-breaking innovations are mostly generated by relatively new firms entering the market. Thus, these young ventures could be used by the corporation for monitoring and scanning technological developments in the market, for which its internal research & development is not sufficiently available due to a lack of capacity (Hendersen, 1993; Gentry et al., 2005). Secondly, potential for new product development is enhanced and the identification of potential new markets is enabled. CVC activity can be seen as a supplement of a corporation's research & development facility. A company's growth is herewith

potentially encouraged (Rind, 1981; Ernst et al., 2005). Thirdly, engagement in CVC means supporting employees in their entrepreneurial spirits (Bower & Christensen, 1995; Maula, 2007).

Furthermore, ventures itself have several motives for engaging in CVC fundraising. First of all, young and small ventures are mostly not able to get sufficient and adequate financing. Williamson (1975) stated that this mostly applies to successful start-ups which have insufficient internal resources. Ventures could also obtain capital from independent VC funds. However, VC and CVC complement each other in the sense that they address much different goals. Most independent VC's contribute only to the financing part and the recruitment of a certain board member, while incumbent firms (with CVC activity) invest in important capital resources. Ventures are hereby able to benefit from reputation spill-over from the corporation's brand, which result in an improved credibility toward banks and customers (Niederkofler, 1989). Next to this, several other potential investors are allured, raising the amount of new money. Ventures are also enabled to profit from existing research & development competences, helping the development of the start-up (Maula, 2001; Maula & Murray, 2002). In addition, due to the strategic partnership with the more established corporation, the venture gains access to distinct distribution channels. There is also a risk in attracting CVC investment from the venture's perspective. That is, moral hazard might occur, because the parent company might absorb the venture's know-how without sharing the benefits and providing access to their resources (Knyphausen-Aufseß, 2005).

2.3 Relationships and Development of the Hypothesis

In this part of the thesis, the hypothesis will be developed. In doing this, the major theoretical concepts underlying the hypothesis will also be discussed.

2.3.1 CVC and Innovation

Cohen & Levinthal (1990) and Cockburn & Henderson (1994) state that the ability to exploit external knowledge is critical to a firm's innovation. Research from Sykes (1986) shows that internal business development activities are less successful than external ones. This follows from a detailed analysis of 19 internally developed ventures and 18 collaborations with external start-ups by Exxon. It showed that of the 19 internally initiated ventures, none achieved profitability during the eleven year time span of the research. In practice, large companies seem to realize that they cannot compete in world markets by solely relying on internal corporate venturing. This is shown in the increase in CVC activity in recent years, with many firms engaging in CVC programs. CVC seems to become a vital component of innovation strategy.

In order to be innovative as an organization, it must be able to learn. The ability to learn is needed for both absorbing and creating new knowledge, which in turn is essential for innovation.

According to Dushnitsky & Lenox (2005), there are three ways in which CVC investments stimulates organizational learning. First of all, the incumbent firm gets the opportunity to learn about inventions of entrepreneurial ventures in the due-diligence process, prior to investing. . The due diligence process enables the incumbent firm to learn about emerging market opportunities. Secondly, the corporate investor is able to get access to external research & development and to learn about new technologies applied by the portfolio company. In this post investment phase, the incumbent firm tries to establish a close link with the portfolio company. Often, corporate investors will sit in the boards of ventures, allowing them to learn about their activities and technologies. Related to this, the incumbent firm also can make use of its voting rights, steering the operations in the desired direction. Thirdly, the corporate investor might even learn if the venture fails, because that might show the unattractiveness of the market. These learning structures created by CVC investments enable corporate investors to increase their levels of knowledge. A greater variety of possible knowledge configurations is the result, which in turn has a positive effect on innovation, since innovation is a combination of both existing and new external knowledge (Kogut & Zander, 1992).

According to a National Venture Capital Association's survey (NVCA, 2011), a strategic focus is core to >95% of the corporate venture groups. CVCs indicated that "strategic impact metrics, both qualitative and quantitative, were more often of "high" importance than traditional financial measures (IRR, CoC return)." (NVCA, 2011).

However, there is also research which questions the usage of CVC as a strategic tool to enhance innovation. An example can be found in the work of Hardymon, DeNino and Salter (1983, p. 115), in which they critically question the reliability of CVC, indicating that "the unsystematic nature of new business formation, the difficulty in acquiring venture capital investments, the problems of obtaining technology from portfolio companies, and the organizational independence" hamper the realization of corporate business diversification. Moreover, CVC programs are said to be sub optimally managed, such that long-term strategic objectives (i.e. innovations) will not succeed (Ernst et al., 2005). Furthermore, explorative knowledge creation via CVC investments is not as efficient as mergers & acquisitions or joint ventures (Schildt et al., 2005). Empirical evidence provided by Maula et al. (2003), however, contradicts this, stating that innovative knowledge is in fact supplied by ventures.

Literature has not yet reached consensus regarding whether CVC investments can be used as an instrument to enhance innovation. This subject will thus be empirically investigated in this thesis. The hypothesis, which deals with this relationship, will be given from a corporation's perspective and is the following:

> ***Hypothesis: Firms investing in CVC are subsequently more innovative than peer firms that do not invest in CVC.***

3. Methodology and Data

This chapter will illustrate how the hypothesis is tested. It will also describe how the different variables are operationalized. Lastly, it will illustrate the data collection process.

3.1 Research Design

This thesis has both a descriptive and an explanatory research design. Descriptive studies are conducted to describe phenomena associated with a certain subject population or to estimate proportions of the population that have certain characteristics (Saunders, Lewis & Thornhill, 2000). They are concerned with what, when, where and who questions (Clark, Wilkie & Szvias, 2000). Also, the formulation of specific research questions beforehand is a characteristic of descriptive research. Since the major research questions, related to the hypotheses, are already stated in chapter 1 and this thesis also looks at what kind of firms typically use CVC programs (the 'what-question'), it can be seen as a descriptive study. Explanatory studies try to obtain evidence of cause and effect relationships. Hence, they are concerned with investigating relationships between two or more variables. These studies are conducted to answer how and why questions. They attempt to explain the reasons of certain phenomena (Blumberg, Cooper & Schindler, 2005). This thesis also follows an explanatory research design, because it studies the relationship between certain variables. To be precise, it investigates how CVC investments might lead to a better innovative performance.

In this thesis, quantitative research will be used to obtain results and conclusions. According to Blumberg et al. (2005), quantitative methods are more useful for descriptive and explanatory studies. Conducting quantitative research has several advantages. First of all, by formulating hypotheses and verifying them empirically, they are value free in the sense that the researchers' own biases or subjective preferences play no role. Quantitative research involves the counting and measuring of events and performing a statistical analysis on numerical data (Smith, 1998), which results in more objective conclusions. Secondly, quantitative research is better suited to generalize, since it is aimed at reducing phenomena to simple elements. However, a major weakness of using this type of research is the fact that it cannot provide the researcher really detailed and rich descriptions of the investigated phenomena (Blumberg et al., 2005).

3.2 Data

The research is focused on the period 2002-2008 in Europe (including Switzerland), right after the big boom in CVC deals of the late 90's, thus in a more stable period. Data on CVC deals is collected from the ThomsonOne database provided by Thomson Reuters. This database provides ample information on, among others, the investment year, the dollar amount of the investment, the status of the venture and the industry focus. The sample used in this research is constructed in four stages (see Figure 3.1).

Stage	Selection criteria	# of firms in sample post stage
1	'Corporate Private Equity or Venture Capital'; 'Venture Capital deals'; in period 2002-2008; in Europe	141
2	Details of investments made by CVC unit are available	112
3	Without traditional venture capital and private equity firms, bank affiliates and other financial institutions	74
4	Suitable pairs of comparable firms	43

Figure 3.1: *Data collection stages*

Important to notice is the fact that traditional venture capital and private equity firms, bank affiliates and other financial institutions are excluded from the search and are thus not in the final sample. This ensures that only the firms that directly invest CVC into ventures are included in the search. CVC investments through third party funds are hereby excluded. This is most suitable for this research, as this thesis focuses mainly on the strategic benefits of CVC investments.

Comparable companies which do not engage in CVC activities were added to the data set found after stage three. A comparable company is a company that:

- Does not have a CVC program
- Is of similar size as the parent company that is investing in CVC
- Operates in the same markets as the parent company
- Is preferably also located in Europe

Comparable companies are in most cases direct competitors of the parent company. If no European competitor could be found, competitors outside of Europe would be used in the dataset. As long as these companies operate and compete on a global level, the research will not be less reliable. The Standard & Poor's Compustat database, the Amadeus database and annual reports were used to extract more information about corporations, namely accounting and financial data of the firms in the sample. As a result, 43 pairs of companies were found (see Figure 3.2).

CVC Unit(s)	Parent Company	Location	Comparable Firm	Location
Air Liquide Partners	Air Liquide	France	Linde	Germany
Axel Springer Venture	Axel Springer AG	Germany	Bauer Media Group	Germany
BASF Venture Capital	BASF	Germany	Bayer	Germany
British Telecom	British Telecom	United Kingdom	Telefonica	Spain
BTG International	BTG	United Kingdom	Cambridge Laboratories	United States
Carlsberg	Carlsberg	Denmark	Heineken	The Netherlands
DaimlerChrysler Venture	Daimler	Germany	BMW	Germany
Danfoss Ventures	Danfoss	Denmark	Vaillant Group	Germany
Danisco Venture	Danisco	Denmark	CSM	The Netherlands
DSM Venturing	DSM	The Netherlands	Merck KGaA	Germany
Dynamics Venture Management	RWE	Germany	EnBW AG	Germany
Enel Capital	Enel	Italy	Endesa	Spain
Ericsson Business Innovation	Ericsson	Sweden	Alcatel-Lucent	France
F. Hoffmann-La Roche AG	Roche	Switzerland	Sanofi	France
Gemplus SCA	Gemplus	France	Wincor Nixdorf	Germany
Holtzbrinck Digital	Holtzbrinck	Germany	Burda Media	Germany
Merck Serono Ventures	Merck Serono	Switzerland	UCB	Belgium
Nokia Growth Partners	Nokia	Finland	Motorola	United States
Novabase Capital	Novabase	Portugal	Asseco	Poland
Novartis Venture Funds	Novartis	Switzerland	AstraZeneca	United Kingdom
Novax	Axel Johnson	Sweden	ICA	Sweden
Novo	Novo Nordisk	Denmark	Solvay	Belgium
Orange Ventures	Orange	United Kingdom	Bouygues	France
Philips Venture Capital Fund	Royal Philips Electronics	The Netherlands	Panasonic	Japan
Radiometer Innovation	Radiometer Medical	Denmark	Nova Biomedical	United States

Reed Elsevier Ventures	Reed Elsevier	United Kingdom	Pearson	United Kingdom
Saab Ventures	Saab AB	Sweden	Cobham	United Kingdom
Schott AG	Schott	Germany	Corning	United States
Shell Internet Ventures / Shell Technology Investments Partnership	Royal Dutch Shell	The Netherlands	Total	France
Shire Pharmaceuticals	Shire	Ireland	Nycomed	Switzerland
Siemens Business Accelerator / Siemens Technology Accelerator / Siemens Venture Capital	Siemens	Germany	Hitachi	Japan
Sonera Venture Partners	TeliaSonera	Finland	Telenor	Norway
Statoil Innovation AS	Statoil ASA	Norway	Total	France
Swisscom Ventures	Swisscom	Switzerland	Sunrise Communications	Switzerland
Tate & Lyle	Tate & Lyle	United Kingdom	Südzucker	Germany
Thales Corporate Ventures	Thales Group	France	BAE Systems	United Kingdom
Thomson SA	Technicolor SA	France	LG Electronics	South Korea
T-Venture Holding	Deutsche Telekom	Germany	Verizon Communications	United States
Unilever Ventures	Unilever	United Kingdom	Nestlé	Switzerland
Vivendi SA	Vivendi	France	Bertelsmann	Germany
Vodafone Ventures	Vodafone	United Kingdom	Sprint Nextel	United States
Volvo Technology Transfer	AB Volvo Group	Sweden	MAN AG	Germany
Z-Cube	Zambon Company	Italy	Sigma-Tau	Italy

Figure 3.2: *The matched pairs*

Both the European Patent Register of the European Patent Office (EPO) and Espacenet were used to derive patenting data. The databases of EPO contain records on over 70 million patent documents as

they pass through the grant procedure. European patents are patents granted under the European Patent Convention (EPC), which provides a legal framework for granting the patents. It allows firms to file a single patent application in only one language, instead of having to file multiple different applications for each of the European Union member countries. European firms protect their innovations with these patents, thus it is a good proxy to compare the innovative performance of the firms within the sample. In paragraph 3.3.2, this thesis will elaborate more on the proxy used for innovation.

3.3 Measures

The hypothesis will be tested by conducting a paired t-test (matched pair approach), to allow comparing the means of two groups of comparable companies: one group with firms investing in CVC and the other with firms not investing in CVC. T-tests are used throughout this research, since these are appropriate for small sample sizes. It will be tested whether the patenting output will be higher for the first group (with CVC), compared to the second (without CVC).

3.3.1 Independent Variable

The main independent variable is annual CVC investments in millions of Euros. It is calculated by summing up the total CVC investments made by a firm in a given year. This thesis makes use of a minimum time lag of 3 years between CVC investments and measuring innovative performance, thus the latest year of CVC investments measured in the analysis is 2008.

3.3.2 Dependent Variable

The dependent variable, the innovative output, is measured by the number of successful patent applications by a firm in a given year. "A patent is a legal right to exclude, in an industry where the pace of technology is rapid and firms advance quickly (even simultaneously) upon innovations made by others" (Hall & Ziedonis, 2001, p. 125). Hagedoorn & Cloodt (2003) conclude, after studying a sample of 1200 firms in high tech industries, that "the overlap between each of the four indicators (i.e. patent citations, patents, R&D expenditure and new product announcements) is that great […] that in high tech sectors any of these four indicators could be taken as a measure of innovative performance in the broad sense." Recent studies have also used granted patent applications as a measurement of knowledge creation and innovation (Ahuja, 2000; Ahuja & Lampert, 2001). Using patents as a measure of innovative performance has both its strengths and its weaknesses. First of all, it is a good indicator for the inventiveness of a firm, because the patents are only granted for 'non obvious' improvements or solutions with discernible utility (Walker, 1995). Secondly, patents are validated and granted by an external organization, such as the EPO (Griliches, 1990). Thirdly, since patents confer property rights to patent holders, it has economic significance (Scherer & Ross, 1990). Using patents as an indicator of innovative output also has its limitations. Some inventions are not patented, while

others are not patentable. Furthermore, patented inventions might differ greatly in economic value (Cohen & Levin, 1989; Trajtenberg, 1990), resulting in situations where firms with more patents do not necessarily extract more economic value out of the patents than do firms with fewer patents. Despite the limitations of using patents as an indicator for innovative performance, it has proven to be a robust measure of innovative output in previous research. Therefore, this thesis adopts patents as a proxy for innovative performance.

Patents are measured by the number of patent applications of the firm i in year j. The application date is used to assign the patent to a certain year. This gives a consistency in treating all patenting data, while it also controls for differences in delays that may occur in granting patents after the application is filed (Trajtenberg, 1990). A firm investing in CVC will not be able to capture the potential benefits in the same or next year, thus (also according to previous academic literature) this thesis will introduce a time lag. In practice, this means that when a firm has invested in CVC in year i, patent data will be collected from the years i+3 and i+4. This also ensures that the potential cause (the independent variable) precedes the effect (in the dependent variable).

4. Empirical Testing and Analysis

This chapter will first of all present some descriptive statistics, to assist in gaining an overview of the underlying investigated sample, after which it will explain the data analysis techniques used in the study. Furthermore, it will present the results of the empirical investigation. Finally, it will elaborate on the limitations of the study.

4.1 Descriptive Statistics and Results

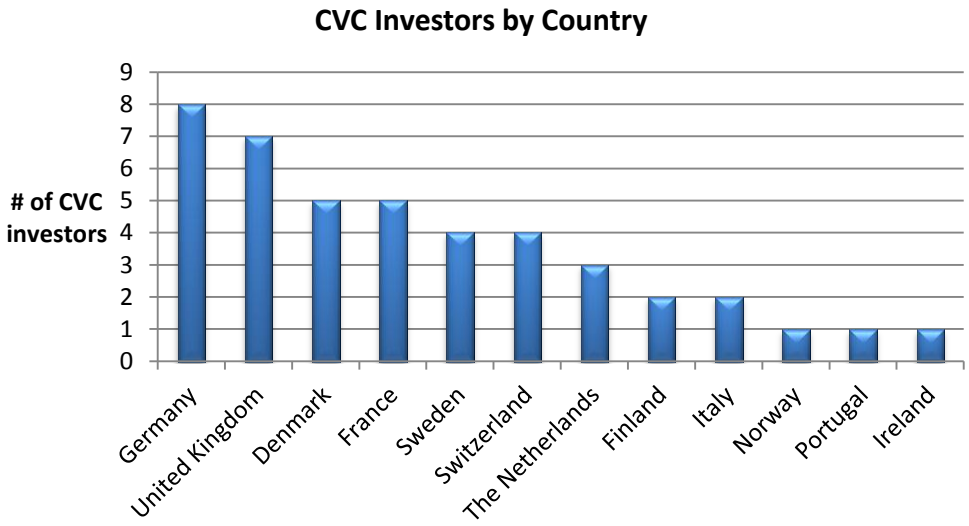

Figure 4.1: *CVC investors by country (source: ThomsonOne)*

Figure 4.1 illustrates the distribution of CVC investors by country. It shows that most of the CVC investors within the sample are located either in Germany or in the United Kingdom. In table 4.2, a comparison is made between the investors per region statistics of the data sample and market statistics from the European Venture Capital Association (EVCA, 2012).

Region	% of total investors (sample)	% of total investors (market)
Nordics	28	21
DACH	28	36
UK & Ireland	19	14
France & Benelux	19	19
Southern Europe	7	7
CEE	0	3

Nordics: Denmark, Finland, Norway, Sweden

DACH: Austria, Germany, Switzerland

Southern Europe: Greece, Italy, Portugal, Spain

CEE: Central Eastern Europe

Table 4.2: *CVC investors by region, comparison between sample and market (source: EVCA, 2012)*

The geographic pattern found in the sample approximately corresponds to the one found in the total market.

The sample of this research is sub-divided in the following main industries (see Figure 4.3).

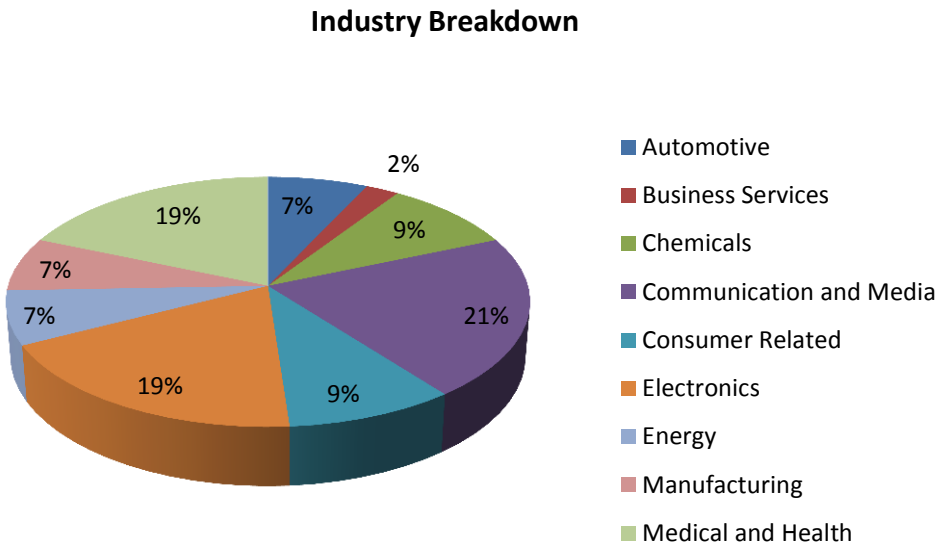

Figure 4.3: *Industry Breakdown (own illustration)*

The majority of CVC investors within the sample come from the communication and media (21%), medical and health (19%) and electronics (19%) industries. The European Venture Capital Association has investigated the 2011 European Venture Capital market and has allocated the investments to different sectors (see the Appendix). The four largest sectors in Europe in terms of the number of investing companies are: life sciences (23,56%), computer & consumer electronics (20,99%), communications (16,65%) and energy & environment (8,41%; 9% in sample). Thus, the data sample used in this thesis seems to be a good representation of the industries involved.

Table 4.4 presents an overview of the pairs of companies included in the sample, accompanied by financial and accounting data. It shows the industry the companies are in, their total asset bases, their revenues, operating incomes and pretax incomes and finally, their (average) number of employees. Some information was not available, indicated by 'N/A' in the table.

Company Pair	Industry Classification	Total Assets (in mln. Euro)	Revenues (in mln. Euro)	Operating income (in mln. Euro)	Pretax income (Loss) (in mln. Euro)	Number of Employees
Air Liquide	Chemicals	22.540	13.490	2.254	1.971	43.600
Linde		26.890	12.868	396	1.399	48.430
Axel Springer AG	Communication	3.603	2.894	429	378	11.560
Bauer Media Group	and Media	1.202	2.129	N/A	N/A	6.400
BASF	Chemicals	59.393	63.873	7.761	7.373	109.104
Bayer		51.506	35.088	2.730	1.721	91.500
British Telecom	Communication	35.910	20.911	1.652	1.290	101.700
Telefonica	and Media	129.775	60.737	16.474	13.901	128.011
BTG	Medical and	389	99	17	9	292
Cambridge Laboratories	Health	N/A	N/A	N/A	N/A	130
Carlsberg	Consumer	19.400	8.080	1.380	1.055	41.400
Heineken	Related	26.550	16.133	2.476	1.967	65.730
Daimler	Automotive	135.830	97.761	7.274	6.628	260.100
BMW		108.870	60.477	5.094	4.836	95.453
Danfoss	Manufacturing	4.018	4.244	439	185	25.181
Vaillant Group		20.147	2.314	163	N/A	12.423
Danisco	Chemicals	2.774	1.844	120	91	6.880
CSM		2.627	2.990	194	131	9.664
DSM	Chemicals	10.480	8.176	1.296	628	21.911
Merck KGaA		22.388	9.291	1.118	861	34.003
RWE	Energy	93.080	50.941	7.681	4.978	70.860
EnBW AG		35.821	17.574	2.125	1.531	20.450
Enel	Electronics	168.052	71.943	11.260	8.074	78.310
Endesa		62.588	29.558	5.031	6.516	25.580
Ericsson	Electronics	31.202	22.474	380	1.741	90.261
Alcatel-Lucent		24.876	15.996	(377)	(243)	79.796
Roche	Medical and	61.020	40.940	13.814	9.334	80.653
Sanofi	Health	85.264	30.384	5.961	6.963	101.575
Gemplus	Electronics	2.287	1.906	277	218	10.000
Wincor Nixdorf		1.271	2.328	162	156	9.171

Company Pair	Industry Classification	Total Assets (in mln. Euro)	Revenues (in mln. Euro)	Operating income (Loss) (in mln. Euro)	Pretax income (Loss) (in mln. Euro)	Number of Employees
Holtzbrinck	Communication	2.516	2.255	230	168	1.854
Burda Media	and Media	1.136	1.721	N/A	N/A	7.637
Merck Serono	Medical and	22.388	8.929	1.114	861	40.562
UCB	Health	8.969	3.218	204	103	8.900
Nokia	Electronics	39.123	42.446	2070	1.786	132.427
Motorola		19.919	18.100	789	633	60.000
Novabase	Business	189	236	17	14	1.929
Asseco	Services	110	127	7	9	1.672
Novartis	Medical and	123.318	50.624	9.017	9.155	119.418
AstraZeneca	Health	56.127	25.886	11.494	8.588	61.700
Axel Johnson	Consumer	1.228	2.310	107	111	1.946
ICA	Related	4.396	10.373	323	287	20.373
Novo Nordisk	Medical and	61.402	8.176	2.540	2.460	30.480
Solvay	Health	14.014	6.796	305	93	16.785
Orange	Communication	94.276	46.700	7.562	5.562	168.694
Bouygues	and Media	35.586	31.225	1.791	1.745	133.460
Philips Electronics	Electronics	32.269	25.419	2.065	1.961	117.500
Panasonic		81.550	72.233	1.863	-287	384.586
Radiometer	Medical and	N/A	386	N/A	N/A	1.900
Medical	Health					
Nova Biomedical		N/A	N/A	N/A	N/A	800
Reed Elsevier	Consumer	13.990	7.566	1.366	963	30.200
Pearson	Related	13.372	7.076	1.074	840	37.000
Saab AB	Automotive	3.240	2.700	108	86	12.536
Cobham		2.775	2.378	288	237	10.903
Schott	Manufacturing	2.832	2.881	139	82	17.183
Corning		20.120	5.163	1.410	3.008	26.200
Royal Dutch Shell	Energy	251.181	286.490	27.846	27.651	97.000
Total		143.718	140.476	19.381	21.035	92.855
Shire	Medical and	5.388	2.690	621	603	5.251
Nycomed	Health	7.477	3.171	(44)	(202)	12.506
Siemens	Electronics	102.827	75.978	7.958	5.811	405.000
Hitachi		87.454	87.348	4.350	622	359.746

Company Pair	Industry Classification	Total Assets (in mln. Euro)	Revenues (in mln. Euro)	Operating income (Loss) (in mln. Euro)	Pretax income (Loss) (in mln. Euro)	Number of Employees
TeliaSonera	Communication	27.730	11.779	3.540	3.303	28.945
Telenor	and Media	22.700	12.447	1.640	2.651	33.220
Statoil ASA	Energy	84.570	69.125	18.000	17.949	30.340
Total		143.718	140.476	19.381	21.035	92.855
Swisscom	Communication	17.540	9.981	2.190	1.905	19.550
Sunrise Communications	and Media	3.403	2.900	1	(31)	1.800
Tate & Lyle	Manufacturing	4.126	4.380	(55)	(145)	5.616
Südzucker		7.260	6.161	511	441	17.660
Thales Group	Electronics	19.020	13.125	(173)	(328)	63.730
BAE Systems		24.030	26.358	2.007	1.810	107.000
Technicolor SA	Electronics	3.934	3.574	505	154	17.000
LG Electronics		16.329	37.621	120	295	90.578
Deutsche Telekom	Communication	127.812	62.421	(2.147)	2.695	252.000
Verizon Communications	and Media	171.262	82.976	11.457	5.999	194.400
Unilever	Consumer	41.167	44.262	6.339	6.132	165.000
Nestlé	Related	92.950	87.101	13.483	31.695	281.000
Vivendi	Communication	58.993	28.878	4.871	4.564	54.461
Bertelsmann	and Media	18.779	16.016	1.852	958	103.000
Vodafone	Communication	197.002	55.562	11.844	10.874	85.000
Sprint Nextel	and Media	40.211	25.353	(463)	(2.581)	40.000
AB Volvo Group	Automotive	35.210	29.257	1.999	1.712	105.260
MAN AG		17.431	14.675	1.283	1.125	47.670
Zambon Company	Medical and	515	545	62	69	2.415
Sigma-Tau	Health	1553	N/A	N/A	N/A	2.441

** Balance sheet items measured at end of fiscal year.*

Table 4.4: *Accounting and financial information of the tested pairs of companies of the year 2010**

To access whether the pairs of companies are good matches, both a paired sample t-test and a Mann-Whitney U test will be conducted. Table 4.5 contains the descriptive statistics of the variable 'Total Assets' of the pairs of companies involved.

	Total Assets (Parent Company)	Total Assets (Comparable Firm)
Valid N	42	41
Minimum	189	110
Maximum	251181	171262
Mean	48184,857	40393,268
Std. Deviation	59146,259	45530.570
Skewness	1,713	1,440
Std. Error of Skewness	0,365	0,369

Table 4.5: *Descriptive statistics on total assets*

A t-test assumes that the variables are normally distributed. To evaluate this normality assumption, a Kolmogorov-Smirnov test is conducted before performing the t-test. Since the p-values (0.043 and 0.012) are below 0.05, it can be assumed that the data are non-normal (see Table 4.6). Therefore, a natural logarithm transformation is employed to align the variables to a normal distribution. This stabilizes the variance of the sample (Bland, 2000). Hereby, the accuracy of the conducted paired t-test is increased.

Table 4.6: One-Sample Kolmogorov-Smirnov Test

		TotalAssetsParent	TotalAssetsComparable
N		42	41
Normal Parameters[a,,b]	Mean	48184,8571	40393,2683
	Std. Deviation	59146,25855	45530,57049
Most Extreme Differences	Absolute	,214	,251
	Positive	,214	,251
	Negative	-,209	-,188
Kolmogorov-Smirnov Z		1,386	1,606
Asymp. Sig. (2-tailed)		,043	,012

a. Test distribution is Normal.

b. Calculated from data.

Table 4.7 shows the output of the paired sample t-test. Although the mean difference between the total assets of parent companies and those of comparable companies is slightly positive (0,0659), the results are not significant, applying the 95% confidence interval (p-value < 0,05). This indicates that total assets of parent companies are not larger than total assets of comparable companies, or vice versa. This increases the reliability of the paired sample of the to be tested hypothesis.

Table 4.7: Paired Samples Test (Total Assets)

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	lnTotalAssetsParent - lnTotalAssetsComparable	,06585	,90732	,14170	-,22054	,35223	,465	40	,645

Furthermore, to test whether the medians of the test variables differ significantly between the two groups, a Mann-Whitney U test is conducted. The results show that group 1 (total assets of the parent companies) has a higher mean rank than group 2 (total assets of the comparable companies) (see Table 4.8). Since the p-value = 0.852 > 0.05, it can be concluded that the two samples are not significantly different. (see Table 4.9). Thus, there is enough evidence to conclude that there is no difference in the median total assets of the two groups. This also increases the reliability of the paired sample t-test conducted hereafter.

Table 4.8: Ranks

	Group	N	Mean Rank	Sum of Ranks
TotalAssets	1,00	42	42,49	1784,50
	2,00	41	41,50	1701,50
	Total	83		

Table 4.9: Test Statistics[a]

	TotalAssets
Mann-Whitney U	840,500
Wilcoxon W	1701,500
Z	-,187
Asymp. Sig. (2-tailed)	,852

	Patents (firms with CVC)	Patents (firms without CVC)
Valid N	43	43
Minimum	0	0
Maximum	8953	4732
Mean	806,42	506,05
Std. Deviation	1877,3	1049,399
Skewness	3,552	2,995
Std. Error of Skewness	0,361	0,361

Table 4.10: *Descriptive statistics on patents*

As can be seen in table 4.10, the patent variables exhibit a high skewness level. This suggests that the variables are not normally distributed. Since the level of skewness is significantly positive, a natural logarithm transformation is again employed to align the variables to a normal distribution.

Table 4.11: Paired Samples Test (Patenting)

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 lnPatentsCVC - lnPatents	,60403	1,35799	,24793	,09695	1,11111	2,436	29	,021

Table 4.11 shows the output of the conducted paired sample t-test. The mean difference between the scores of the two groups is positive (0,604). This indicates that firms investing in CVC have a higher mean of patents than firms not investing in CVC. The results are significant applying the 95% confidence interval (p-value < 0,05). Therefore, the hypothesis is supported.

This result indicates that firms investing in CVC have better access to external knowledge. As is shown in figure 4.3, the biggest portion of CVC investments into ventures was done by firms within the communication and media, medical and health and electronics industries. CVC investments play an important role in industries like these, with fast paced environments and where innovation plays a pivotal role. It is essential for these companies to have a window on new technology and to keep up to date with the latest technological developments. New technological opportunities provided by the internet in general and emerging channels within social media specifically have a big impact on the

communication and media industry. The second generation of internet based services, web 2.0, give challenges, as well as opportunities. To capture the benefits and to gain from these developments, it is – however - necessary to acquire a thorough industry understanding. CVC investments can be used to generate these insights.

To add to the previous test, another t-test is conducted, which analyses whether parent companies have more patenting output than their peers before they began their direct CVC investments. This thesis took five years of patenting data of the parent company right before the first CVC investment was made. The same was done with the comparable firms. A logarithm transformation is again employed to align the variables to a normal distribution.

Table 4.12: Paired Samples Test (Patenting before CVC investments)

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	lnPatentsParent - lnPatentsComparable	,40882	1,67972	,31192	-,23011	1,04775	1,311	28	,201

The mean differences of the two groups is positive (0,409), however, the results are not significant applying the 95% confidence interval (p-value < 0,05). It can be concluded that the parent companies within the sample are in general not more innovative than comparable firms in the period before their CVC investments. This reinforces the results gathered before.

4.2 Limitations of the Research

First of all, the causal relationship between CVC investments and a company's innovative performance as before hypothesized in this thesis and later significantly, empirically proven may be reciprocal. A reversed relationship might also be a possibility. In other words, companies which are more innovative than their rivals tend to pursue the usage of CVC as a strategy for stimulation innovations. Secondly, a limitation concerning the dependent variable, successful patent applications, in this thesis could be present. Patel and Pavitt (1995) state that innovation output is immediately transformed into patenting output, which takes part early in the innovation process. There is doubt about the quality of the developed activities, which in turn leads to the questioning of using patenting as a measure of innovativeness. Thirdly, the sample size is relatively small. T-tests were used throughout this research, since these are appropriate for small sample sizes. However, a drawback of

using t-tests is the limited information you can derive and extract from the results. Also, the matched pair approach has its shortcomings. The matched pairs cannot be perfect matches. As a result, the higher innovative performance of the firms investing in CVC does not necessarily have to result from the fact that these firms invest in young ventures. Fourthly, one has to consider that smaller companies are more likely to register patents than larger companies. This is due to the fact that young ventures see patent registration mechanisms as inevitable to protect their inventions, while large corporations do exploit divergent measures. Looking at it in this way shows us that start-ups might have registered patents prior to their engagement with the CVC firm. Corporations actively pursuing a CVC strategy will therefore have an increased level of patent prosensity (Levin, Klevorick, Nelson & Sidney, 1987). Lastly, in a tense competitive market environment, patent registration of mature companies might be highly enhanced (Ueda & Hirukawa, 2006). The protection of a company's intellectual property as well as blocking (potential) market participants is most important, while the intent to commercialize the idea might be ranked subordinate. Ueda & Hirukawa (2006) state that any modification in the patent policy might have an effect on the relation between CVC investments and the patent count, which cannot be controlled for.

5. Discussion and Conclusion

Overall, one can summarize that a company's innovative capabilities play a key role in determining a firm's competitive market position. Innovation is essential for differentiating themselves from their competitors, since innovation can create unique resources and assets for the company. CVC investments, through knowledge acquisition, are regarded as a promising opportunity to positively influence their level of innovativeness. Direct CVC investments, without involving a third party fund, are mainly motivated by strategic reasons. In this, innovation is built on reconfiguring existing knowledge by combining it with new external knowledge (Cohen & Levinthal, 1990).

Consistent with the hypothesis posed, this thesis finds strong evidence that firms investing in CVC are more innovative than their peers in the industry, which do not invest in CVC. Furthermore, this research has found that in het five year period before their first CVC investments, they were – in contrast - not more innovative than their peers.

This research also found that direct CVC investments are mainly initiated by firms in knowledge intensive industries, i.e. in the communication and media, electronic or medical and health industries. New developments spur the need for acquiring a thorough industry understanding. By investing in CVC, firms can generate these insights.

To recapitulate, the statements made in the beginning of this thesis by the BostonConsultingGroup and BusinessWeek (2010) about innovation becoming increasingly important in gaining a competitive advantage, make sense. They found that companies are concentrated on increasing spending on innovation in the upcoming years, despite a stagnating economy. From a corporation's perspective, the emphasis should be put on innovation management, in order to continuously outperform its competitors. CVC can be regarded as a serious source of knowledge creation. It can be considered as a sub-component of a company's innovation management. This thesis shows that CVC is a very useful instrument to explore and exploit such (innovation) opportunities.

5.1 Future Research and Implications for Managers

Future research could try to determine the exact cause and effect relation related to the hypothesis of this thesis, as this is not totally clear yet. Furthermore, it could investigate how unique knowledge is transferred from the CVC unit across the rest of the organization. It could question how CVC units are linked with the rest of the organizations. An interesting research topic would be to investigate whether a stronger link between the CVC unit and the rest of the organization has a bigger effect on the relation between CVC and innovation or not, also trying to quantify it as much as possible.

This thesis delivers several relevant implications for managers. First of all, when the major motives are strategic and not financial, direct CVC investments are more appropriate than investments into traditional venture capital funds (or third party funds). Secondly, direct CVC investments should more be done in technology driven industries, where innovation plays a pivotal role and which are subject to change quickly and in many ways. CVC investments can be used to generate insights and give firms a window on new technology to keep up to date with recent developments. Thirdly, close links with the venture are necessary to benefit from the venture's knowledge; simply investing CVC into firms will not be sufficient. Fourthly, CVC investments should not be seen as a substitute of internal research & development. Finally, CVC investments give access to new capabilities lying far outside the domain of the organization. Thus, they are particularly useful for firms which have to move in a whole different direction – outside of their regular domains - in order to survive or keep their position in the market.

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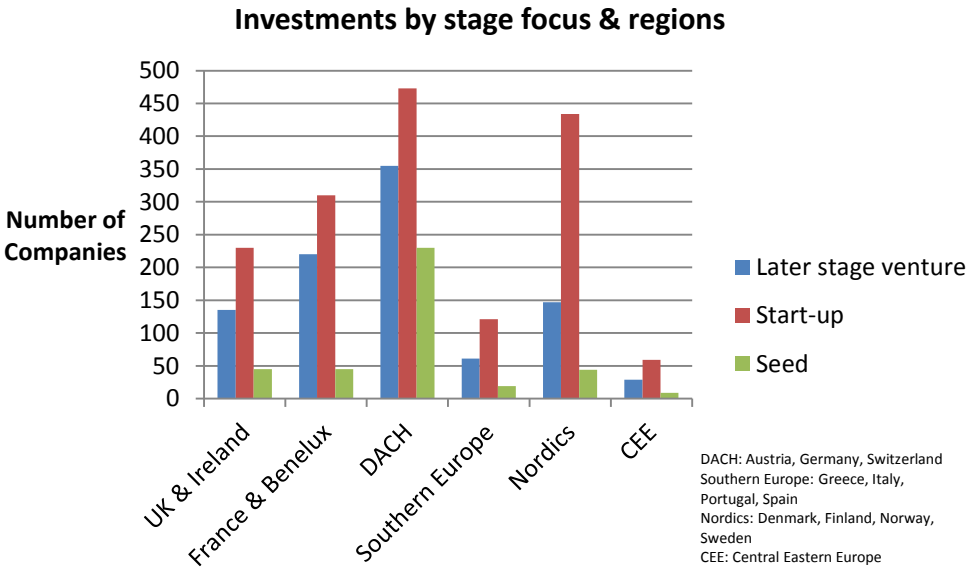
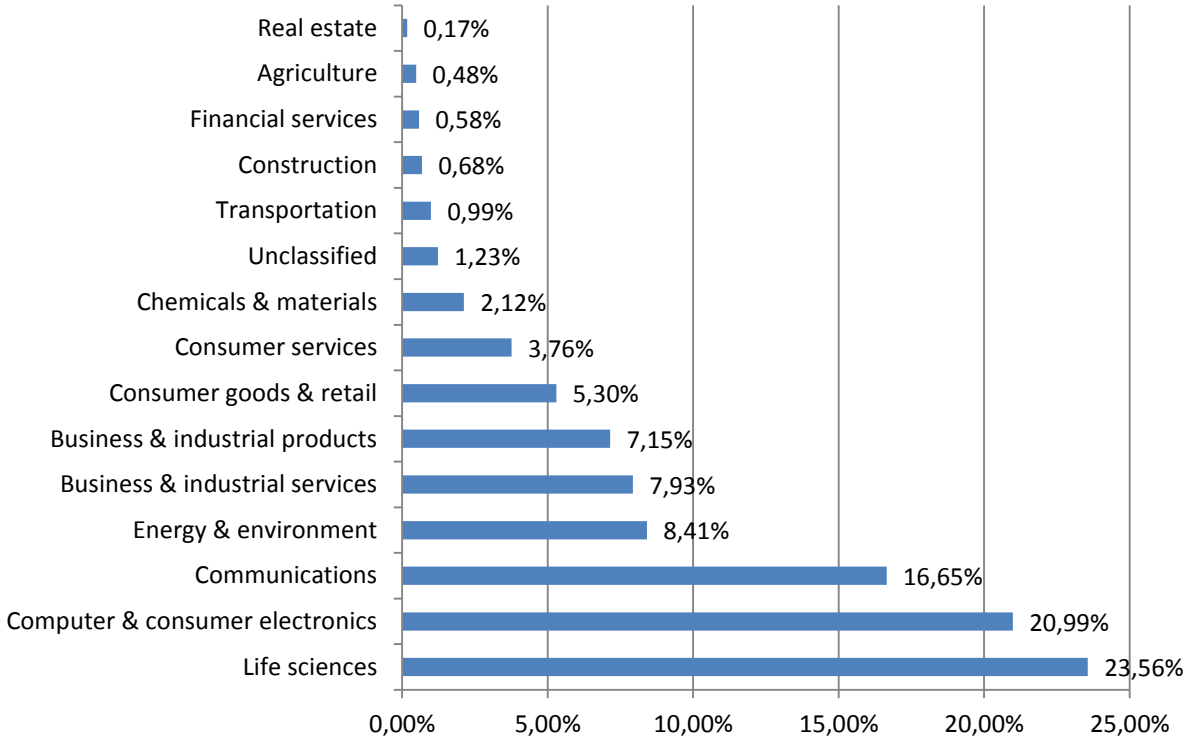
7. Appendix



Appendix 1: *Market statistics of European Venture Capital market - regions (Adopted from: EVCA, 2012)*



Appendix 2: *Market statistics of European Venture Capital market - industries (Adopted from: EVCA, 2012)*