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Corporate venture capital and financing innovation

Abstract

Corporate venture capital (CVC) is a real driving force behind the development of technology-based innovation. It is an entrepreneurial strategy used by big corporations that go outside the company because they can no longer depend solely on creating innovations in-house. CVC enables them to reduce the risk of innovation whilst keeping some control over the target firm or a purchase option on the innovation once it has passed the early stage. This type of operation offers technology-based start-ups both an input of equity capital and technical and strategic expertise and experience. In spite of economic downturns, CVC continues to develop in the high-tech sectors which have been least affected; in particular in biotechnologies. The advantages which it brings to each stage of the project (launching, refinancing and exiting) compared to financing by traditional venture capital funds make its future development secure.

Keywords: venture capital, financing innovation, capital structure, risk, entrepreneurship.

JEL Classification: G24, G32.

Introduction

Technology-based innovation has today become the spearhead of company development. At the advent of electronics and data processing, only a few major stakeholders had the critical size to allow them to ensure continuity of innovation. However, with the rapid development of information and communication technologies (ICTs) since the eighties and the rise of Internet, many small-sized dynamic enterprises have become the driving force of innovation in various high-tech sectors. This has led corporations to reconsider the wisdom of investing in costly R&D programs considering the astonishing breakthroughs made by these flexible and highly reactive structures. This reality has prompted industry giants such as *Intel* to invest heavily in this type of company. Indeed, investment in innovating firms is not only a means of achieving financial returns, but is, above all, a strategic way to keep a control on innovation by acquiring the most recent innovations in the early stages of their development. The attraction of this type of investment has give rise to a vast movement of corporate venture capital (CVC), which is in fact simply an entrepreneurial strategy used by corporations who face outward to source innovation because they can no longer depend solely on creating innovations in-house. Following the bursting of the dot.com bubble, the proportion of CVC compared to overall venture capital fell from 16% to 8% but over the period of 2002-2006 it nevertheless represented an investment of approximately 2 billion dollars a year (MacMillan et al., 2008).

In order to gain a better understanding the role of CVCs in the financing of innovating firms, we propose in this article to analyze the various types of CVC on the basis of former studies as well as concrete examples, to explain their investment and fol-

low on support processes, then to assess what boosts value creation for CVC projects.

1. Characteristics of CVC

1.1. Definition of CVC. In strategy, two types of technological alliances exist: cooperation agreements and capital participation. If the first type is based on a short or medium-term partnership, aiming at sharing certain strategic resources in particular in terms of R&D, the second type of strategic alliance leads to an exchange of capital and thus to strong commitments from each partner.

Along with *joint-ventures* and partial mergers, CVC today has became one of the most widespread forms of financing for new innovating firms. In fact, CVC is only another form of *venture capital*. The concept is not recent and first made an appearance at the end of the thirties in the United States. It developed gradually to become a branch of finance specialized in funding innovative SMEs with strong growth potential.

The role of "corporate venture capital" funds, also named "industrial venture capital funds", is for a parent company to contribute capital equity complemented by industrial input to an innovative startup through an investment fund dedicated to industrial innovation.

This type of fund excludes any entity with a purely financial company as lead investor. The main difference between corporate venture capital and venture capital is the nature of the utility of fund partners.

Contrary to a traditional venture capital firm which seldom intervenes in the day-to-day running or decision-making process of the firm it finances, CVC goes much further than simple leveraging.

The incentive for industrial groups to get involved in CVC can be summarized according to the five following points:

1. Technological interest: by investing in highly innovative firms in the same line of business, in-

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dustrial groups can track innovations closely while keeping a lid on its R&D expenditure. In this way corporations can guard against these firms making technological breakthroughs by signing agreements for developing joint projects, license transfer or the acquisition of the firm at a later date (integrating the target company into the group) as from the first input of funds.

- 2. Adding value to in-house R&D: by supporting the creation of a start-up by spin-off, corporations develop their patent portfolio, the majority of which are often unexploited, via licensing agreements.
- 3. Market tracking and the experience effect: financing start-ups in new markets provides investors with information on customer behavior visavis new products/services which could be used to develop new products/services inside the group.
- 4. Implementing new practice: the start-ups in which the groups invest can be used as a laboratory to test new practices of external management (vis-a-vis customers or suppliers) or internal (between employees, between management and staff) which could be adopted by the group if successful.
- 5. Financial interest: last but not least there is the financial aspect. As for other venture capital investments, the corporations hope to have made a capital gain on their investment at the time of exit or a return through dividend payments.

In this context, there are two ways of viewing the concept of CVC: as external risk taking for the firm or as an alternative source of financing innovative start-ups (Gompers & Lerner, 1998). These two conceptions of CVC are not contradictory. Quite the reverse is true. They show common interests shared through an organisational mode which ensures the outsourcing of risk while enabling the financing and control of innovative projects. This is why CVC is often initially defined (Muzyka and Al, 1996) as an input of capital equity and technical or strategic expertise to start-up entrepreneurs. This highlights the relationship of dependence that the start-up has from the parent company.

This relationship of dependence is conditional on the control exerted by the parent company on the investment fund and one can, thus, distinguish two categories of CVC:

1. Semi-captive funds are created and capitalized by a large company which keeps control of it. The funds may be open to other industrial partners. The strategic objective of these funds is to invest primarily in projects close to the core activity of the original investors. This is the case for Innovacom, Emertec, Chrysalead, etc.

2. Captive funds are wholly owned by the parent company and their goal is to serve the strategic and financial interests of the latter. This is the case for Unilever Technology Venture, France Telecom Technologies Investments (FTTI), Intel Capital, etc.

Thus, contrary to management firms specialized in venture capital, CVC has a strategic approach which is primarily industrial. These funds seek to invest in projects which have synergies with the corporation's own businesses.

However, the organizational changes resulting from the implementation of CVC programs are not always positive, hence the many detractors. The drawbacks include:

- 1. Preserving integrity towards projects which are in competition with those of the parent company.
- 2. Yielding to the economic climate and the strategic choices of their chief executives. The capital often comes from the surplus liquidity of the parent company. Their existence is, therefore, called into question during an economic downturn. There is no lack of examples: Innovacom (France Telecom) and Viventures (Vivendi) are today independent; Valéo Venture was closed down by the new CEO who considered that the program was of "little strategic interest"; whereas Air Liquide Ventures was taken over by Alto Invest for the same reasons, etc.

To be successful, the financial intermediation in CVC should restore the dominant role of financial activism by including the processual dimension of investment and investment withdrawal. By investing in projects, the CVC acquires information whose value is maximized if the transaction costs of project identification, selection, investment, follow-on support and withdrawal are lower than those which would be generated by direct investments. Consequently, the intermediation in CVC is only relevant to new ventures whose specificity is not only to be innovating, but also to offer something outside the firm's expertise. In other words, the CVC justifies its role if:

- financial undertakings are targeted at innovative start-ups whose information is not transparent (firms with asymmetric information);
- the need for a device to indicate the quality of targeted projects is vital to avoid multiplying direct investments in innovative projects a large proportion of which could turn out to be unsuccessful or not strategic.
- **1.2.** The international emergence of CVC funds. Over the last few years, innovation has shown itself

to be a determining vector of growth for large firms encouraging employment and rebuilding the industrial fabric of SMEs

Table 1. Firms with a CVC fund structure per sector

Sector	Proportion of companies with a CVC fund	
Telecommunications	80%	
Semiconductors	75%	
Technological equipment suppliers	71%	
Software	67%	
Biotechnology	62%	
Aerospace	56%	
Chemistry	50%	
Construction	50%	
Oil	40%	
Communication	40%	
Materials	40%	
Automobile	38%	
Personal products	33%	
Health services	33%	
Agronomy	31%	
Energy	29%	
Equipment	25%	

Our studies carried out in 2008 (see Table 1), on a sample of the 142 largest market capitalizations of American and European technology-based companies, show that 40% of the European groups have funds dedicated to CVC against 60% for the American groups. The size of the CVC funds ranges from 21 million dollars for SBC communication to 4 billion dollars for Intel. The median size of the funds is largely equivalent in the United States (140 million dollars) and in Europe (120 million euros). The CVC funds are notably present in high-tech sectors since more than three quarters of industry groups in the sample have CVC funds. However, traditional business sectors characterized by a high proportion of tangible assets, tangible products and long business cycles have far fewer CVC funds.

1.3. Typology of CVC. Concerning CVC, several typologies have been put forward in academic literature (Ben Haj Youssef, 2001) which we summarize in Table 2. This typology is based on concrete examples of CVC programs set up by multinational firms or large corporations recognized in their respective sectors as being leading stakeholders in innovating activities and in R&D.

Table 2. Typology of corporate venture capital

Type of CVC	Type of commitment	Level of commitment	Objectives of the investment			
1. Direct CVC						
1.1. Internal division of venture capital investments	Financial & organizational	High	To create a structure dedicated to venture capital investments to try out peripheral technologies outside the firm.			
1.2. Internal investment fund	Financial & organizational	Medium or high	To invest, with other public and/or private funds to generate both financial returns and have a window on new technology.			
1.3. Spinoff venture	Financial & organizational	Medium or high	To promote – externally – the development of by-products using the company's internal expertise.			
1.4. Venture co-operation	Financial & organizational	Medium	Association of a corporation and an innovative SME to develop a joint project.			
1.5. With "step-by-step" investment	Financial	Low	Occasional investment with weak decisional and technological control in collaboration with other investors.			
2. Indirect CVC						
External investment fund	Financial	Medium or high	Make financial returns from investments in various innovative SME portfolios via a venture capital firm.			

Source: Adapted from Ben Haj Youssef (2001).

The creation of an internal division which deals exclusively with investment in innovating firms first appeared in the seventies (1.1). During this period, 25% of the 500 biggest firms listed by Fortune in the United States created such divisions. For example, GE Business Development Services was for a long time the body which tracked high-tech and investments for General Electric. However, other firms preferred to invest in internal funds (1.2). This is the case of Texas Instruments, Apple and AT&T in the United States and Nokia in Sweden. In France, several large groups followed this trend such as the Innovacom fund (198 million euros, France Telecom). Compared to the first type, internal investment funds spare the firm any shortcomings of the internal division concerning problems of coordination and organizational control (reticence by executives, company culture, administrative complexity, etc). In other words, operationally, the firm recruits a team of venture capital specialists which is put in charge of managing the funds and keeps a level of autonomy.

Other forms of direct CVC now exist. For example, the executives of the parent company may successfully develop new products which result in the creation of a new firm. The parent company gives support by creating a spin-off fund (1.3) such as *technocom ventures* created by France Telecom in partnership with *Newbridge Networks*. Other partnerships between a large and a small company focus on financing a specific project whose development will

benefits both parties. This is the case of the venture-cooperation (1.4) between *Johnson & Johnson*, the American chemicals and pharmaceutical giant, and *Damon*, an innovating firm, to develop hospital equipment. The last type of direct CVC is "step-by-step" investment (1.5). The examples of this type of investment are marginal because it enables a corporation to participate in projects which neither bring in high returns, because the firm has a minority investment stake, nor does it allow the control of innovations from the target firm, but simply affirms its presence and its brand image in its business sector.

Lastly, it should be noted that the mode of financing through external investment funds, managed by venture capital firms, remains highly attractive. Indeed, direct CVC only represents about a sixth of the overall annual sum invested in innovating firms in the United States. The success of the indirect method is due to the low commitment required and the flexibility in the choice of a portfolio of companies to be financed. This makes it possible to spread risk while increasing the amount of particiaption. It is true that indirect CVC does not allow for tracking technological advances but this monitoring is very costly: out of ten projects financed by a direct CVC, only one or two projects are successful and nearly half are failures (Lachmann, 2001).

2. Process of investment and follow-on support of CVC funds

According to work by *Babson College*¹, the choice of projects targeted by CVC as well as their support is a five-stage process (see Table 3).

Stage 1: Setting out the idea.

The first stage — spotting opportunity, exploring, sourcing innovating ideas — concentrates on the wide analysis of the nature and goals of the project. This first stage must show the project idea to be credible, by describing and organizing a range of technology and expertise leading to an initial product or service that would present real value for which the customers would be ready to pay. This first project idea is used to lay the groundwork for a more complete strategy in the future.

Stages 2 and 3: Drawing up a business plan.

Most of the work needed to draw up the venture project takes place at stages 2 and 3. The project managers start to transform the opportunities offered by the technology and market capture into a detailed plan to access the market. As from the first two stages the project is confronted by reality; the first negotiations with the internal partners at the com-

¹ http://www.babson.edu/entrep/fer/2008FER/chapter_19/summary_xix_8.html.

pany as well as with external partners take place but things pick up speed at stage 3. It is at this time that the first agreements or contracts are concluded to confirm the support of the hierarchy, of the customers, suppliers, distribution networks and regulation organizations. Often, this effort of securing the project involves negotiations with other divisions within the firm which control resources essential to the success of the venture project (e.g., the sales force, component supplies, etc.). These various agreements can entail serious modifications in the configuration of the venture project.

Stages 2 and 3 are also the time to make various choices and come up with a precise definition of the project and its financial model as well as the extent to which it will be adapted for changing conditions. These highly strategic choices in the development of the venture project include: the precise product features, the target market, positioning, the selection of distribution channels, the dimensioning of production capacity, scheduling the project's implementation, technology choices, balancing between outsourcing and insourcing throughout the value creation chain.

During the development stage, the choices to be made are numerous and the analysis is very thorough. But in general, only five or six of these choices are crucial in the financial success or failure of a venture project. These choices arise at various points in time as new technical aspects and new factors appear on the market. For this reason a financial analysis and a risk analysis must be carried out simultaneously with the development of the project and not only at specific stages.

Stage 4: Authorising and financing the project.

The executive authorization is given and the project starts to take its definitive shape. It means that the management considers that the potential revenue justifies the underlying financial risk. Thus, they implicitly bet on the ability of the venture team to bring the project to fruition and to actively manage it despite changing conditions and unknown factors. Studies by Gitman and Forrester (1982), and Shao & Shao (1996) show that 80% of the projects which get to this stage are approved.

On the one hand, the venture project managers tend to propose only the projects which are highly likely to be accepted. In other words, they tend to avoid the riskiest ideas. It is explained by the fact that failure sticks with the employee throughout his career and can have dire consequences on his promotion prospects.

Moreover, it shows that the management's degree of freedom to influence the characteristics of the project at level 4 is limited. The project's profile of risk

and return on investment has already been decided during the preceding stages. Even if the management can always send the project back to stage 2, it would risk delaying the launch of the new product and see the costs go up.

Lastly, it would tend to prove that the management influences the venture projects upstream by direct involvement in the first phases of project development or indirectly by giving directives to the project managers.

Stage 5: Implementation.

Arthur Rock, a well-known venture capitalist, once said: "Ideas by themselves are worth next to nothing, it is what you do with them that counts".

The adaptation of the initial plan is generally much easier (and less expensive) if the project has been drawn up with financial and operational flexibility in mind. Risk analysis plays a vital part in the active management of the project. It concerns the parts of the project which are most sensitive to modifications to the initial plan and to strategic adaptations. It must be updated each time new data is available during the implementation of the project.

Venture capital follows an organized operating process whose goal is to turn an opportunity into a concrete plan. This process utilizes the expertise of the various stakeholders in the firm, from the engineers to sales staff and of course the management. In practice, it is clear that venture projects sometimes suffer from a lack of visibility and financial analysis.

Table 3. Stages of managing a CVC project

	Model of development and management of a venture project within a corporation	
1	Identifying the opportunity, exploration, innovating ideas.	
2	Definition of the project, its boundaries, structuring, business plan, etc.	
3	Drawing up the project, looking for internal and external support, streamlining business plan.	
4	Justification of project, authorization, financing.	
5	Implementation, follow-up support, adaptation to changing conditions.	

3. Drivers of value creation for CVC projects

One of the key aspects of the success of corporate venture projects depends on risk management. This dimension of CVC makes it possible to understand the overcautiousness of some firms to invest in inhouse venture projects or in start-ups. This part presents the various risk factors in CVC projects and gives a model for assessing risks.

Table 4. Risk factors and factors of the success of CVC projects

Potential risk factors	Potential factors of success	
High commitment of resources in one block.	Sequential commitment of resources: investments in blocks according to progress and attaining intermediate objectives.	
Size and stages of the project difficult to define.	Controlling the window on the market for commercial exploitation.	
Frequently going over budget: ◆ going into large scale production; ◆ adoption of state-of-the-art technology; ◆ setting up in countries which are not well-known.	Cost containment. Variable costs dominating fixed costs.	
Unknown new competitors.	New environment = new opportunities.	
New product features.	Competitive advantages.	
New processes.	New market = new customers.	
Unknown revenue drivers. Strong variance of comparables, or distant comparables.	New revenue drivers which will potentially generate more income than cost reduction projects or expanding sales.	
Need to understand the complex interaction between different new markets and different technology factors which change over time	Market sufficiently educated for the adoption of the service or product offered.	
'Spillover' effects ♦ leverage on existing company resources; • cannibalization of old products.	'Spillover' effects ◆ opening towards new opportunities which had previously been unsuspected; ◆ possibility of developing other new projects by chain reaction.	

The main factors taken into account in risk assessment are the following:

Exposure: this factor corresponds to the expenditure used to bring the project to fruition taking into account previous commitments to expenditure on R&D, sales and infrastructure. In practice, we notice that the team managing the project has several possibilities. The exposure will often be determined by the overall amount of expenditure before reaching the break-even point of operational cash-flows.

- ◆ Uncertainties: this relates to all the developmental stages of the project, from the early stages until the stabilization of operational incomes. It must reflect the evolutionary character of the market, its penetrability, the possible reactions of competitors and the effectiveness of management (uncertainty can indeed be alleviated by good management). The firm can also wait until this uncertainty is resolved by other stakeholders (suppliers, partners or competitors).
- ◆ Time: exposure and uncertainty both depend on time. Nevertheless, it appears that firms are reticent

to regard time as an important variable (by varying discount rates of financial flows, for example).

3.1. CVC and performances of start-ups. In their model of growth per start-up stage, Kazanjian & Drazin (1989) explain how a network of entrepreneurial relationships develops.

At its creation, the network is limited to the private bonds maintained by the director with other people. They are mainly family members and friends of the entrepreneurs who provide the first essential resources to the early stage of the start-up.

Then, when the firm enters a phase of expansion, it is the need for finance, expertise, market knowledge and know-how which guide the search for partners. The start-up then examines the cost and the benefits of any commitment to a relation with a partner. One can summarize these factors of finding partners under three categories:

- ♦ Access to resources: these resources can be financial (one, therefore, contacts a venture capitalist) or may be the access to distribution networks, production infrastructures or any other resources which are necessary to create, produce and distribute ones products in a competitive way.
- ◆ Access to knowledge: the start-up needs to optimize its resources in order to obtain the best result. Developing its expertise and its organization, present a challenge which needs to be overcome. In the search for an investor, being able to benefit from strategic advice can prove decisive. This knowledge can be more practical such as the acquisition of a technology.
- ◆ The advantage of image: legitimacy is an important factor and association with one of the main players in the sector improves the company's image with customers. The choice of partner also affects the choice of the venture capitalist: it is preferable to find a reputed one who will be able to give a stamp of quality to the firm in which he invests.

Among the studies dealing with CVC from the side of start-ups, the empirical study of Maula & Murray (2000) associates the high probability of an IPO with the intervention of a CVC. Moreover, of the 325 public offerings carried out in 1998-1999 concerning CVC and venture capital investments, it appears that start-ups backed by firms in the *Fortune* 500 list had higher valuations than those financed by venture capital funds. The association of a reputed investor specialized in corporate venture and of a venture capital investor brings with it significant value. These authors mention the contribution of image and operational synergies as being the criteria supporting the increase in value.

These observations are also confirmed in the study by Gompers and Lerner (1998). These authors show that the name of a firm in *Global Fortune* 500 backing a start-up has a significant effect on the valuation of the firm when it goes public.

3.2. Mechanisms of value creation and CVC. The study by McNally (1997) is one of the only ones covering the benefits CVC has brought to different "ventures" created in the United Kingdom. In the firms studied there are 23 start-ups. It shows that CVC funds played a more important role than the other funds involved. According to McNally, the most significant advantages are an increased credibility, help with short-term problems and access to organizational management know-how. This study also suggests that the contact between a start-up and its CVC are more frequent than with an investor in venture capital. More generally, the advantages of CVC in the eyes of the entrepreneurs are detailed in the table below.

Table 5. Benefits of a "corporate venture capitalist" to the start-up

Benefits from a CVC investment	Mentioned	
Help for short-term problems	19	83%
Access to expertise in company management	16	70%
Giving credibility to the start-up	16	70%
Access to technical expertise	11	48%
Price advantages on some resources	10	43%
Performance goals which are less restricting than a venture capital fund	9	39%
Access to the company's marketing/distribution networks	9	39%
R&D and production support	8	35%
Starting point for other relationships with the company	1	4%
Access to more sophisticated means of financial control	1	4%
Supply of space, offices	1	4%
Access to more openings for the start-up	1	4%
Synergies	1	4%
Added attractiveness vis-a-vis other investors	1	4%
Stability	1	4%
Access to the company's operational expertise	1	4%

Hellman's analysis (2001) on CVC investments highlights the complementarities between the start-up and the parent company as being the key factor of success. This author stresses that start-ups which maintain the business relationship (in addition to strictly financial relations) with the corporation statistically form more alliances with other firms.

As an example, one can quote the case of Fon.Com, a company from Madrid having raised 18 million euros in the first pool at the beginning of February, 2006. This start-up gets its strength from its prestigious industrial shareholders such as Google and Skype, and from big venture capitalists like Sequoia Capital (US) and Index Venture (Swiss) who backed the project.

Conclusion

In this article, we studied the advantages of financing innovation through CVC. Corporations benefit from the chance to invest in a diversified portfolio which enables them to reduce the risk of innovation whilst keeping some control over the target firm or a purchase option on the innovation, once it has passed the early stage.

Thus the CVC seems to be a more efficient method of financing external innovation. Its current setbacks are due more to the economic situation and do not call into question the model of financing itself. Moreover, it continues to develop in the high-tech sectors such as biotechnology which have been least affected. The advantages which it brings to each stage of the project (launching, refinancing and exiting), when compared to financing by venture capital funds, will be determining factors for a future development.

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