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**ICT start-ups venture capital and funding**

**Abstract**

ICT (information and communication technology) start-ups generally have substantial financial requirements to get launched. Venture capital provides a good source of funding. Equity financing via venture capital encompasses a context of information asymmetry and moral hazard, explaining investor selectivity. The negotiations between company owners and investors involve both financial issues (evaluation of the firm, type of shareholding and legal aspects (shareholders’ agreement). The fundraising process lasts several months before the funds are finally granted.

**Keywords:** start-up, innovation, IT, venture capital, entrepreneurship, entrepreneurial finance, agency theory.

**JEL Classification:** G24, G32.

**Introduction**

The characteristics specific to start-ups limit their access to traditional sources of financing. Their youth and the degree of risk represented by such firms makes it difficult for them to gain access to banking credit, and they generally have neither the maturity nor the size to access the financial markets.

Financing via venture capital provides a good solution for these high growth potential firms. During the first half of 2009, for instance, venture capital investments in France amounted to 503 million Euros, a 7% rise compared to the first half of 2008. In total, 294 French firms received venture capital backing during this semester. The average amount invested per company remained stable at around 1.7 million euros. The ICT sector (software, telecoms, Internet and e-commerce) accounted for 44.4% of the venture capital invested in France during this period, totalling over 223 million euros.

However, it is widely believed to be difficult for start-ups to have access to venture capital funding, partly because of the high rate of selectivity by investors and partly because of the supposed complexity of the fundraising process. The issue is of interest from both a theoretical and an empirical perspective, falling within the field of entrepreneurial finance, an emerging discipline situated at the confluence of finance and entrepreneurship. In this respect, Denis (2004) notes that finance scholars have long considered entrepreneurship as a field that is quite distinct from corporate finance, an assertion based on the notion that the difference in the problems encountered in entrepreneurial finance from those encountered in listed firms limits the application of traditional financial theory. More recently, however, finance scholars have acknowledged that entrepreneurial situations feature the same two fundamental issues at the basis of financial theory (i.e. agency theory and information asymmetry). “Entrepreneurial finance” differs from traditional corporate finance only in the sense that these issues are more exacerbated in the case of financing for young compa-

Section 1 of the paper considers the specific nature of ICT start-ups and their equity needs, and to what extent venture capital constitutes a well-adapted financing solution. Section 2 looks at the selection process of potential investments by investors. After examining the theoretical issues involved in the selection process and the criteria used by investors, it analyses the different selection stages. Section 3 turns to the negotiation stage between the entrepreneur and the investor. It begins by examining the potential risks involved in providing venture capital from a theoretical perspective (linked to information asymmetry and moral hazard), and then moves on to the legal and financial aspects of the negotiations, involving the evaluation of the business, the choice of financial instruments and the drawing up of the shareholders’ agreement which binds the start-up founders and the investors.

**1. Venture capital, a finance solution for ICT start-ups**

We begin by examining the funding needs of ICT start-ups, and then look at average sums typically invested in this type of firm, based on the results of an empirical study. Lastly, we look at why venture capital offers a well-adapted solution for typical start-up equity capital needs.

**1.1. The financial needs of ICT start-ups.** Start-ups need funding to cover the cost of premises, materials and other initial expenses, including basic running costs such as payroll and various operating expenses. However, the amount of money needed also depends on the new company’s strategy: a software firm may need more initial capital if it decides to adopt an aggressive sales policy. This is especially true if the firm wants to rapidly become a leader in a potentially lucrative market.

As Tidd et al. (2006) explains, a company’s cash-flow profile is determined by several factors: development timeframes and costs, sales volumes, profit margins, etc. (see Figure 1).
Compared to the longer product development timeframes, companies with the onus on development generally require more seed capital than production firms (Tidd et al., 2006).

1.2. Funding requirements according to the start-up activity. In order to assess the effective contribution of venture capital to the financing of ICT start-ups, we summarised the findings of an exploratory study conducted on an original population of 141 French information and communication technology start-ups (ICT) created between 1998 and 2001 (Rédis, 2007). The study aimed to gain better insights into the way these firms were financed and their development patterns by analysing their business profile after their first five years. The reference population consisted of French ICT start-ups. The present study is based on the following population: French ICT start-ups (information and communication technologies) that had received at least one funding contribution from a venture capital investor. Our study includes firms set up between January, 1998 and December, 2001. The firms were selected using a range of information sources. In all, we identified 262 firms in the ICT sector created between January, 1998 and December, 2001 that had received at least one venture capital contribution. The data relative to the sample firms’ activities was obtained from a combination of different sources of information: the French business register, the websites of the firms concerned, and specialised media (such as Capital Finance and the Journal du Net). The data collected covered turnover, operating profit and annual staffing. The data relative to the financing of the sample population were obtained from various sources: corporate websites, venture capital investors’ corporate factsheets, press releases published by the firms and/or investors during each financing round, and the specialised media. The amounts raised from venture capital funds were calculated for each firm in the sample. When the information was available, the funds from public subsidies and private individuals (business angels) were also added. Figure 2 shows the average amounts invested per company during their first five years of existence, broken down into the sectors of activity identified.


Fig 2. Average amount raised in 5 years per ICT start-up (1998-2005, M€)

1 The websites of venture capital members belonging to the AFIC, the specialised media (Capital Finance, Journal du Net, etc.), as well as website spin-off units from the main science laboratories involved in ICT (i.e., the CEA, the CNRS, and INRIA).

2 In particular, specialised media such as Capital Finance and the Journal du Net.
The sectors that obtained the largest average funding per business organisation were in mobile phone software and the electronics/optics/hardware sector. With regard to the electronics/optics/hardware sector, these finding correlate with the structure of these activities which generally require higher investment than the software or e-commerce sector (construction of production plants/purchases of equipment) as product development timeframes are generally relatively long.

In the mobile solutions sector, the amount invested appears to reflect the hopes of investors regarding the size of the markets targeted and their determination to rapidly promote the firms financed to leader positions.

We will now attempt to characterize the role of venture capital and its value for such firms.

1.3. Role and value of venture capital. Venture capital refers to money invested in mainly non-listed companies to finance initial start-up or expansion costs, or costs associated with survival or change of owner\(^1\). Different stages of investor involvement can be identified. Seed capital refers to the earliest stage of financing and is typically used for preliminary operations such as project development or research to validate a technology, in other words, the expenditure needed prior to launching a company. Investment made after the company has completed the first stage of its development is generally considered as venture capital. This encompasses start-up or post-start-up financing (e.g., once the product development stage has been completed, and production and marketing begins). It mainly concerns the first years of business for firms with a technological or innovative profile. Growth capital, transmission capital and leveraged buyout come at a later stage in the firm’s development.

Thus, the venture capital concept is reserved for funding the early stages of a company’s development (feasibility, creation and growth stages). It is a specific form of financial intermediation (Bascha and Waltz, 2001) based on the following criteria:

- a minority interest in a non-listed SME with high growth potential;
- a defined presence in the firm’s capital, generally limited to the period anticipated for the success of the project (between 3 and 7 years);
- active monitoring of the investment stake with a view to value creation;
- controls founded on an implicit and/or explicit contract;
- remuneration for the investor generally obtained following the sale of the interest.

The characteristics of VCs (venture capital organisations) may differ both in terms of their degree of independence (we can differentiate between so-called captive, semi-captive and independent funds) and their areas of intervention (regional, national or international)\(^2\). We should also distinguish between venture capital funds that are purely financial, looking for capital gains only, and so-called corporate venture funds, developed by industrial groups which envisage, in addition to financial gain, potential industrial synergies between the young firms in question and the industrial shareholder group (Ben Haj Youssef and Ouziel, 2002; Garel and Jumel, 2005).

We will now examine the different stages involved in fundraising, starting with the project selection process by investors.

2. The project selection process by venture capital investors

Selecting the right projects is a key challenge for investors. Specific criteria are used to evaluate start-up projects, and there are a number of stages involved in the selection process.

2.1. Project selection: a key challenge for investors. Selection is a key challenge for VCs as it forms the basis of their investment portfolio. In the medium term, it impacts on the portfolio’s financial performance and in the long term and future fundraising. Investors’ ability to select and finance successful projects positions them within the profession, enabling them to build their reputation. The ability to choose wisely is vital as investment in a start-up has a virtually irreversible nature for two reasons. Firstly, because the securities held by the investor cannot be sold in an anonymous market, and secondly, because even if the firm shows signs of weakness, it is not necessarily in the investor’s interest to withdraw as they have a risk to lose everything they have invested, or else may have to sell off their investment to other investors at a substantial loss.

Deciding to invest in a start-up’s capital involves the development of a collaborative relationship between the VCs and the business founder (Falconer et al., 1994). This collaboration is mainly analyzed within an agency theory framework, given the more or less generalized nature of agency problems (Jensen and Meckling, 1976), and includes concepts regarding confidence and reputation (Stéphany, 2003). When an investor decides to invest in an entrepreneur, a relation-
ship of agency develops between the two protagonists; the entrepreneur becomes the agent of the investor who is the principal (Chérif, 1999). The divergence of interests between the investor and the owner is intensified by an asymmetric distribution of information, which affects the market and its equilibrium, and underpins adverse selection. The business founder is assumed to have privileged information about the firm’s quality and its viability. This information asymmetry is particularly developed in the case of firms that are backed by venture capital in view of the innovative nature of their activity (Moore and Garnsey, 1992; Storey and Tether, 1996).

Linked to the information asymmetry in favour of the entrepreneur, a divergence of interests may lead the latter to adopt opportunistic behavior. Thus, an entrepreneur may hold back some information, keeping certain information secret to serve their own interests (Sheperd and Zacharakis, 2001). The impact of agency relationships and information asymmetry led Dubocage (2003) to identify two types of venture capital selection errors:

- Error number 1: to select a poor quality firm.
- Error number 2: not to select a good quality firm.

### 2.2. Project selection criteria used by investors.

Investors select the firms they wish to invest in on the basis of stringent business criteria. While each OCR has its own specific selection processes, Stéphany (2003) sums up the main factors as: people, philosophy, process, performance. The weighting of these different selection criteria may vary slightly depending on the investors’ nationality (Tidd et al., 2006). The project founder needs to adapt to the investor’s requirements: i.e. importance given to the business plan, care given to formal presentations (visual presentations, meetings), timing, key questions, etc.

The AFIC put the selection criteria used by venture capitalists into four categories: quality of the (management) team, the market targeted, competitive advantages of the future company, and lastly the financial projects. The main criteria are set out in the table below:

<table>
<thead>
<tr>
<th>Management</th>
<th>Marketing</th>
<th>Competitive advantages</th>
<th>Financial projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience of the team</td>
<td>Marketing levers</td>
<td>Entry barriers: who owns the intellectual property? Is it protected?</td>
<td>Coherent promotion</td>
</tr>
<tr>
<td>Expertise of the team</td>
<td>Recurrence of sales</td>
<td>Time-to-market</td>
<td>Break-even</td>
</tr>
<tr>
<td>Ability to work as a team</td>
<td>Accessibility of customers</td>
<td>Contract: preferably priority or exclusive</td>
<td>Expected, stable cashflow</td>
</tr>
<tr>
<td>Attitude to technology</td>
<td>Customers’ buying power</td>
<td>Production and communication costs</td>
<td>Free cashflow</td>
</tr>
<tr>
<td>Flexibility of business founders</td>
<td>Added value</td>
<td>Price control</td>
<td>Gross margin</td>
</tr>
<tr>
<td>Ability to seize opportunities</td>
<td>Size of potential market (&gt; 100 M€)</td>
<td>Distribution control</td>
<td>Net earnings</td>
</tr>
<tr>
<td>Ability to question oneself</td>
<td>Growth (&gt; 30%/year)</td>
<td></td>
<td>Coherence of financial needs</td>
</tr>
</tbody>
</table>
<pre><code>                                                             | Market share (&gt; 20%) or leadership                  | Low capitalistic intensity          |
                                                                                 |                                                      | Borrowing capacity                   |
                                                                                 |                                                      | Few R&amp;D requirements                 |
                                                                                 |                                                      | Potential subsidies                  |
</code></pre>

Table 1. Project selection criteria used by venture capital investors

Source: Mascalé et al., 2005.

The project selection process is conducted in several stages.

### 2.3. Project selection stages.

The project selection process is relatively long (several months) and complex. Projects are filtered in different stages. The investor begins the selection process by identifying projects which may be worth studying in more depth, in other words, those which could be eligible for the second stage of selection. This initial selection is based on the executive summary in the business plan, or a memo if the project presents a degree of confidentiality which prevents the investor from having direct access to the full business plan. This enables the investor to assess the interest of the project. If the investor finds the concept worthy of interest, then the project goes through to the second selection stage.

During the second stage, the investor meets the business founder(s). This is a key aspect of the final decision. The potential investor will conduct or initiate a due diligence investigation on the different aspects of the business plan which involves checking the information held by the capital-investor (validation of technical, marketing, strategic, financial aspects, etc.).

The venture capital market is dominated by the financing offer as, in majority of cases, it is the investor who holds the trump cards as the selector of innovative projects. The selection process is extremely rigorous. Studies have put the selection rate (or the percentage of projects selected) at 1% to 3% (lin-Gagin and Delalande, 2000). However, there are some exceptions, notably Tyebjee and Bruno (1984) or Muzyka et al. (1996).
of candidate firms or company projects financed by venture capital) at between 1% and 10%.

We will now examine the negotiation stage between business founders and investors.

3. Negotiations between the founder and the investors

The negotiation stage takes place once the nascent project has managed to gain the interest of the investors. The negotiations have both a financial and a legal dimension, and these are partially linked. We will begin by theoretically examining the potential sources of conflict between the entrepreneur and the investor and the ways these conflicts can be prevented. We will then look at the main methods used to assess a new company and the different financial instruments that are available to ensure the transfer of funds. Finally, we will discuss the shareholders’ agreement and the stakes involved.

3.1. The theoretical approach to sources of conflict between entrepreneurs and investors. Start-up funding is marked by two characteristics: information asymmetry and moral hazard (Denis, 2004). Firstly, there is generally a wide gap between the information held by the entrepreneurs and the investors. It is particularly difficult for outside investors to gain a clear idea of the quality and potential value of technological innovations, while the entrepreneurs, on the other hand, understand the quality of the innovations as they are often behind their development. A second, potentially serious problem is that of moral hazard. As the entrepreneurs have raised funds from outside investors, they may be tempted to use the money unwisely, spending more on themselves than on the company. An academic business founder, for instance, may choose to invest the money in research activities that will enhance his or her personal renown but will add little value to the company and consequently to the investor.

As Hart (2001) pointed out, corporate finance now takes such issues as information asymmetry and moral hazard risks into account when making its funding decisions. A vast body of literature has been published from an entrepreneurial perspective that analyses the contractual solutions designed to manage these issues via contracts drawn up between the investors and entrepreneurs that define cashflow rights, voting rights and decision-making rights (Kaplan and Stromberg, 2001a; 2001b). These financial contracts vary widely depending on the case in hand, and shift a large part of the risk inherent in creating new companies from the entrepreneur to the business owner.

The literature on financial contracts puts forward two solutions: first, incentive clauses may be included in the contracts so as to make the entrepreneurs’ wealth dependent on observable signals that reflect their efforts (e.g., production or profits); second, control rights may be allocated to determine who makes the corporate management decisions.

According to Denis (2004), the clauses contained in financing contracts for new companies are designed to deal with information asymmetry and moral hazard issues by organising investments in such a way that the investors are able to retain control (Hellmann, 1998a; Kirilenko, 2001), ensuring that there are appropriate incentives in place to incite the entrepreneur to maximise the value of the company and that the investors are actively involved in the firm’s management, and including clear exit options for the investors.

3.2. Evaluation of the firm. The evaluation of the start-up’s value provides a basis for negotiation on how to distribute the capital in line with the amount of equity the investor puts into the entrepreneur’s company. Expected discounted cash-flow analysis models provide an initial solution that can then be measured against the multiples method (Mascre et al., 2005).

The method of valuing by comparables involves determining the expected value of the firm by applying a valuation multiple to the income generated. The valuation multiple depends on the sector of activity and is calculated from a representative sample of comparable firms listed on the stock market. The income indicators most often used are turnover, EBITDA (earnings before interest, taxes, depreciation and amortization) and the EBIT (earnings before interest and taxes). The disadvantage of this method is its sensitivity to “speculative bubble” effects.

Once the firm has been valued, the way the post-money capital is shared out between the entrepreneur(s) (who provide the project, the know-how and possibly a little money), and investors (who supply most of the funds) has to be decided. We will now turn to the negotiation stage between the entrepreneur and investors.

3.3. The choice of financial instruments. Different types of financial instruments may be used by venture capitalists to serve as supports in financing new businesses2. We can differentiate between the tools that give immediate access to a firm’s capital and those that only give access in the long term.

3.3.1. Instruments that give immediate access to a firm’s capital. The securities commonly used in-

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1 This refers to division of the capital in question after the investor has transferred the funds.

2 In NB two other financial instruments are used: the shareholders’ current accounts and participating loans. Three types of instrument are used for employee and corporate shareholdings in France: stock options, share subscription warrants and BSPC (entrepreneurs share subscription warrants).
include cash shares, capital contribution shares, common shares, priority or preference shares with financial advantages (such as dividends guarantees) or non-financial advantages (i.e. the right to name administrators or voting rights in certain financial operations), or shares with double voting rights. Securities that do not give voting rights, such as priority shares without voting rights or investment certificates, are not used by OCRs as investors on the whole want to benefit from their voting rights.

3.3.2. Instruments that give access to a firm’s capital in the long term. Financial instruments in this category may be simple or complex. Single ones are bonds that can be converted into shares, or bonds that can be refunded as shares. Investors prefer the former as they offer more choice. The bonds will not be converted if the firm’s development deviates too far from the forecasts or when the exit prospects decrease and the investor risks getting ‘stuck’ in his/her investment.

Complex financial instruments can include share subscription warrants, which can provide for the initial division of capital to be adjusted in line with unknown factors at the time of the issuing of warrants or share cum debt warrants. Firms which issue this type of financial instrument have immediate access to the sums it needs, and the warrant holders have the possibility to convert them within a pre-arranged timeframe, which is generally around five years.

3.3.3. Choice of financial instruments in practice. Trester (1998) indicated that in information asymmetry situations, venture capitalists prefer to use shares (ordinary or preference shares) rather than debts to finance innovative or growth projects. The contract drawn up will take into account, on the one hand, moral hazard situations and, on the other hand, the nature and the quality of the projects that require financing. Numerous studies on capital risk practices have indicated that convertible shares or bonds are most frequent in formal contracts (Kaplan and Stromberg, 2001a; Bascha, 2000; Cumming, 2000a; 2000b; 2000c).

The basic principle behind this type of contract is an overreaction to the payments given to the entrepreneur with respect to the project’s controllable profits. Thus, in the case of positive profitability, entrepreneurs will be well rewarded and, in the opposite case, they will be severely penalized as the project could even be liquidated (Bascha, 2000). Bascha and Waltz (2001) argued that the inclusion of convertibles optimised the contracts, while at the same time creating an incentive framework to organise the investor’s exit.

Negotiations between the entrepreneur and the investor also cover the shareholders’ agreement.

3.4. The shareholders’ agreement. The shareholders’ agreement governs the legal framework of relations between the company founders and the investors. The agreement is the reference document that sets the terms and the nature of the relationship between the two parties (Paoli-Gagin and de Lalande, 2000). It is a “made-to-measure” document designed specifically to meet the needs and specificities of each venture capital operation. The entrepreneur needs to pay particular attention to the contents of the shareholders’ agreement as it is a highly strategic document. The legal issues involved in a shareholders’ agreement are based on the validity of the operations realised, the conditions attached to the shareholders’ commitment and the implications of the investors’ responsibility (Monod, 2001).

Numerous clauses can be included in a shareholders’ agreement. These provisions define controlling interests, the organisation of the investment monitoring processes and exit options from the capital (Battini, 2001; Stéphany, 2003).

Provisions defining control issues could include the approval clause, which is designed to prevent any of the company’s shareholders from selling their securities to non-approved third parties, preemption or preference clauses that aim to prevent the arrival of new, undesirable shareholders and guarantee a certain stability of the capital, and the antidilution clause, which aims to preserve the investor’s equity stake.

Provisions pertaining to the way the investment is organised may include the information clause, which obliges the founder to organise specific reporting sessions for the investor (presentation of budgets, financial situation, etc.) in accordance with a predefined timeframe, and prior consultation or prior authorisation clauses, by which the founders agree to consult the investors (or to ask for their agreement) before taking certain key decisions (investments, acquisition of a firm, a new product launch, etc.).

Lastly, among the clauses pertaining to exit routes from the capital, there may be, among others, a joint exit clause, designed to oblige a majority shareholder who wishes to exit the capital to organise the investor’s exit at the same time, and the priority exit clause whereby the entrepreneurs agree not to sell their securities as long as the investor remains in the capital.

At the end of the negotiations, the “closing” ratifies the agreement with respect to the mutually agreed conditions. The “term sheet” is the document which sums up all of these conditions. The investor

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1 In other words, the investor finds it impossible to sell off his/her interest in the firm.
then gives the funds to the company, marking the
beginning of the joint adventure between the entre-
preneur and the investor(s), which ends when the
investor(s) decides to exit from the firm’s capital.
This exit may come into effect when the investor
sells off his shares (to another investment fund or
to an industrial group), by an IPO or, more rarely,
by the company founders buying the investors’
shares during an LMBI (leverage management
buy-in) or an employee buy-out.

Conclusion

ICT start-ups generally need a lot of equity to
launch their business, although this varies depend-
ing on the type of activity and the strategy chosen.

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