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Raising capital for rapid growth in young technology ventures: when business angels and venture capitalists coinvest

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We investigate the relational dynamics of raising equity finance to support strong growth in a technology venture when different investor types (business angels and venture capitalists) coinvest. Our objective is to ascertain which of two theoretical frameworks, agency theory or the cognitive approach to entrepreneurial finance, is the strongest predictor of the interactions between investors and entrepreneurs. We conducted a prospective case study whose analysis yields overall support for both approaches, while it also indicates that the relevance of agency-related and cognitive concerns clearly depends on the stage of the process and on investor-type. We conclude that first-time entrepreneurs may have an interest in addressing both formal and informal venture capitalists and that the proper timing and combination of investor-profiles may help to lower the cost of capital and contribute to future growth.

Keywords: business angels; venture capital; cognitive approach; venture growth; technology ventures

Introduction

Funding the growth of young technology ventures is a major issue from a policy perspective, since it has important implications for economic development and growth. Beyond its practical significance, entrepreneurial finance has also received considerable attention from academic research. The latter puts special focus on the professional venture capital industry, partially stimulated by the technological and economic achievements of the Silicon Valley, where venture funds appear as an important ingredient of development and success (Hellman and Puri 2002). Emphasis on formal venture capital, however, obscures the central contribution of other investor categories, especially at the early stages of technology ventures. One important investor category are business angels, wealthy individuals investing their own money, who have been reported to contribute in approximately 20 times the number of new ventures in the US-market when compared to formal venture capitalists (Wiltbank et al. 2009). In fact, as early as the beginning of the 1980s some evidence showed up that angel investors filled a then perceived 'finance gap' for technology-based ventures (Harrison and Mason 1999; Freear, Sohl, and Wetzel 2002).

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Much of the early literature on business angels is rather descriptive in that it reports specific characteristics, attitudes, and behaviors. Later research examines the correlation between such characteristics and venture success (e.g. Wiltbank 2005). However, strong growth in many successful young technology ventures is not supported by angel funding alone. In the rather young field of angel investing, studies of its interaction with other investor categories are scarce. Some have reported that angel investors often play a specific role at very early venture stages to provide initial screening and ultimately prepare the field for more professional venture capitalists (Harrison and Mason 2000). To our knowledge, no research has been conducted up to date that is specifically devoted to the dynamics of the investment process when angels and venture capitalists invest simultaneously. The present contribution tries to fill this gap.

Simultaneous coinvestment is of special interest for young technology ventures, because it may impact the rhythm and speed of growth. In fact, recent theoretical work combining traditional agency theory with a cognitive approach to entrepreneurial finance suggests that, as an outcome, simultaneous coinvestment by angels and formal venture capitalists may be conducive to especially strong growth rates (Bonnet and Wirtz 2011). This outcome, it is argued, depends on the dynamic interaction between business angels (BAs), venture capitalists (VCs), and entrepreneurs. Hence, the following question: What is the specific rationale underlying the interaction between BAs, VCs, and entrepreneurs, making simultaneous coinvestment a compelling solution when raising capital to fund strong future growth?

The present study's contribution is twofold. (1) Based on Bonnet and Wirtz's (2011) intuition that simultaneous coinvestment could be an important engine of fast growth due to very special relational dynamics, we derive two sets of hypotheses concerning the specific role and behavior of BAs and VCs during the fundraising process. Each set is inspired by a discussion of one of two different theoretical approaches to entrepreneurial finance: agency theory, where financial discipline occupies center stage, and the cognitive approach which is based on knowledge dynamics. (2) We also provide empirical arguments to help appreciate the relevance of the two sets of hypotheses by means of a prospective in-depth case study. The latter involves a young technology venture whose growth is simultaneously funded by four different BAs and three professional VC firms. Our case results show that cognitive issues and potential agency conflicts are both relevant to understanding the fundraising process and that their relative weight crucially depends on the specific stage of the process.

The remainder of this article is structured as follows. The first section presents the theoretical framework based on agency theory and the cognitive entrepreneurial finance approach. Section two gives a justification of and describes the use of prospective case study design. The third section reports the case study results.

Raising funds from business angels and venture capitalists: theoretical framing

Agency theory

According to agency theory, external equity finance will necessarily raise agency costs, independently of the new external shareholders' identity. Investors contributing financial resources to growing technology ventures should hence be preoccupied with managing agency conflict through appropriate control and incentive mechanisms, and this from the very beginning of the investment process. In fact, agency

costs derive from information asymmetry and potentially conflicting interests (Jensen and Meckling 1976). Monitoring may provide a reduction in information asymmetry, which can be supposed to be particularly strong in technology entrepreneurship. Thus, we should expect potential external shareholders to allocate much of their time and effort to gathering and checking all relevant information about venture quality and future prospects. In their negotiations with entrepreneurs and co-investors, they can be expected to insist on continuous formal monitoring of objective data and on incentive alignment. Consequently, from the perspective of agency theory, the interaction between technology entrepreneurs and potential new shareholders should place strong emphasis on achieving balance among conflicting interests. The larger the number of different external shareholders, the larger the scope of potentially diverging interests should be. Under those conditions, investors will contribute funding only if the exercise of proper financial discipline can be assured through regular monitoring and the right incentive structure. The exercise of financial discipline comes at a cost. In fact, Jensen and Meckling (1976) distinguish three types of agency costs: monitoring costs, bonding costs, and the residual loss. From this perspective, entrepreneurs and potential new shareholders, when they negotiate for funding future growth, will engage in intensive monitoring and bonding to the point where the incurred marginal costs equalize the marginal reduction in residual loss.

It should be emphasized that the typical sources of agency costs do not depend on the investor type. The Jensen and Meckling model suggests that agency costs should always rise as the entrepreneur's relative ownership stake decreases (Bitler, Moskowitz, and Vissing-Jørgensen 2005). Likewise, we should always expect a rise in agency costs as the number of external investors goes up. What does differ from one investor category to another are the specific mechanisms each population has developed to tackle those agency problems. Hence, BAs' monitoring has been shown to rely on strong involvement *post-money*, whereas VCs' monitoring mechanisms appear to be more sophisticated and formalized (extensive formal due diligence, incentive contracts) (van Osnabrugge 2000).

The cognitive approach to entrepreneurial finance

Recent research in entrepreneurial finance questions the exclusive focus on financial discipline found in traditional agency theory and advocates a more cognitive approach to further our understanding of investors' and entrepreneurs' behavior (Yazdipour 2011). Such a cognitive approach to entrepreneurial finance puts knowledge dynamics in the center stage.¹ In fact, it works from the assumption that the construction and perception of growth opportunities critically depend on entrepreneurs' and investors' specific mindsets (Penrose 1959). Knowledge as defined in the cognitive approach is different from (albeit related to) information as construed in agency theory. To put it in a nutshell: information is objective data, whereas knowledge is akin to mental constructs/patterns which differ from one person to another and constantly evolve as a function of personal experience and learning. Because of path dependent learning processes, knowledge may be very different from one individual to another, and part of an individual's specific knowledge is of a tacit – that is hard-to-communicate – nature. To be sure, there is a relationship between information and knowledge, in that new information may stimulate learning and thus influences mental patterns. Its precise impact, however,

may differ significantly from one individual to another, because any given piece of information acquires a concrete meaning (in terms of opportunity, value creation, etc.) only in relation to the specific mindset applied to decode it. If we admit that information and knowledge are only loosely coupled (Fransman 1994), especially in innovative technology-driven activities, two people – say a first-time entrepreneur and a VC – may not share the same perception of growth opportunities, even if they receive identical information. Such a situation may be referred to as knowledge asymmetry, which is different in nature from information asymmetry. Knowledge asymmetry (or cognitive heterogeneity) may be a source of mutual misunderstanding, and it even occurs in circumstances where information is evenly distributed. It cannot be reduced through monitoring alone but only through time-consuming, and thus costly, learning.

It should be noted that mutual misunderstanding rooted in knowledge asymmetry may lead to conflicts which are different from traditional agency conflicts (Conner and Prahalad 1996). In fact, agency conflicts (and the related costs) have their source in conflicts of interests under conditions of information asymmetry, whereas cognitive conflict is rooted in cognitive heterogeneity and can occur even when all parties are of good faith and dispose of identical information.

Cognitive heterogeneity can be expected to be a source of cognitive cost. The latter cannot be remedied by simply aligning interests and making all information transparent through formal monitoring. Basically, cognitive costs are caused by the learning (and sometimes related teaching) efforts necessary to bridge cognitive gaps and thus reach a better mutual understanding. For example, certain investors may engage in mentoring and hence contribute in updating entrepreneurs' knowledge and skills. Experienced angel investors, for instance, could influence entrepreneurs' mindsets through mentoring in a way to enable them to better communicate and interact with professional investors (such as formal VCs). Mentoring may also take the form of serving as a 'sounding board' to test strategic ideas, or of helping entrepreneurs acquire specific managerial capabilities (e.g. in the fields of financial or HR management) which are critical to tackle the challenge of strong growth.

Mentoring by potential new shareholders can reduce knowledge asymmetry by adapting entrepreneurs' mindsets. The opposite move would be to bring investors' mindsets closer to the entrepreneurial knowledge base, which is achieved when entrepreneurs externalize their tacit knowledge (Nonaka, Toyama, and Byosièrè 2001), engaging in efforts to make it intelligible for potential investors. As a consequence, they may share a common understanding of potential growth opportunities. The overall cost of externalizing specific knowledge most likely depends on the initial cognitive gap between the entrepreneurs and the potential investors. For instance, if entrepreneurs and investors share a common background, efforts to externalize specific knowledge likely come at a relatively moderate cognitive cost.

It should be emphasized that the implications of cognitive conflict are far more complex than those of conflicting interests in agency theory. In fact, according to agency theory, it is always beneficial to reduce agency conflict as much as possible. The same does not hold for cognitive conflict, in as much as a certain degree of cognitive heterogeneity may stimulate organizational learning and broaden a venture's strategic perspective, thus reinforcing future growth potential.

Differences between business angels and venture capitalists

The cognitive approach to entrepreneurial finance appears to be especially relevant to the present research, in as much as our study of the entry of new external shareholders does not concern a stylized group of homogeneous investors, but two very specific investor categories (BAs and VCs), who have typically different backgrounds. In fact, a glance at the descriptive literature reveals that, on the mean, entrepreneurs, business angels, and venture capitalists each have specific cognitive features (Bonnet and Wirtz 2011). BAs are described as 'resembling more' to entrepreneurs than to VCs (Farrel 1998), as being 'closer' to entrepreneurs than VCs are (Kelly and Hay 2003), as having an entrepreneurial orientation (Lindsay 2004). BAs are predominantly actual or former entrepreneurs who invest their own money (Morrissette 2007), whereas VCs are finance professionals who manage investors' money. Therefore BAs' knowledge base and cognitive process are close to entrepreneurs'. Due to their experience, they generally have good knowledge of a specific technology, industrial sector or market, and they express a preference for investing in industries they know (Wright, Westhead, and Sohl 1998; van Osnabrugge 2000). VCs, although some of them may have technological or industrial experience or expertise, often have a more generalist background (MBA, consulting or financial experience). BAs' cognitive process appears to be rather intuitive² and 'effectual'³. According to van Osnabrugge and Robinson (2000, in Morrissette), BAs primarily assess the entrepreneur (vs. the business model) in their selection process and largely base their decisions on their own judgment and gut feeling rather than on extensive due diligence. VCs use a more formal, extensive and analytical approach based on the analysis of entrepreneurs' references and past experience, of venture technology, of potential market and competition, and of financial projections (Wiltbank 2005). On the mean, VCs and BAs thus feature significant differences in their respective mindsets and cognitive style.

The resulting cognitive gap between entrepreneurs and business angels, entrepreneurs and venture capitalists, and business angels and venture capitalists may be of varying width. Hence, differences in the cognitive costs theoretically implied by pairwise interactions can be supposed to influence the overall dynamics of the fundraising process, possibly making BAs and VCs play specific albeit complementary roles.

The alternative theoretical approaches sketched out above lead to different hypotheses concerning the specific role of and the nature of the interactions between the entrepreneurs and different investor categories during the fundraising process. These hypotheses are summarized in Table 1.

Methodology: a prospective case study design

Is agency theory the strongest predictor of the process of interaction between the new investors and the entrepreneurs in fast growing young technology ventures? What is the relevance of the cognitive approach to entrepreneurial finance in an effort to raise funds simultaneously from business angels and professional venture capitalists? We set out to further investigate these questions through an in-depth analysis of a relevant case example, using prospective case study (PCS) design (Bitektine 2008). In fact, case methodology appears to be particularly relevant when it comes to the study of complex processes of human interaction (Yin 1994), where

Table 1. Generic actor-specific predictions concerning the fundraising process.

	H ₀ (agency theory)	H _A (cognitive approach)
Entrepreneurs	During the fundraising process, the entrepreneurs are exclusively concerned with signaling their integrity and making credible commitments to attract funds at a low cost of capital (bonding).	Entrepreneurs undertake considerable effort to externalize their tacit knowledge to be partially shared by investors. This effort is more intense in direction of VCs than vis-à-vis BAs with past experience close to their own. (externalizing)
BA	Early on in the process, BAs are preoccupied with ascertaining the personal integrity and technical competence of the entrepreneurs as a means to reduce the risk of adverse selection. At the time of closing, they insist on the possibility of personal intervention after the deal (e.g. through board representation) in order to be able to influence risk of moral hazard. (monitoring)	When BAs' personal experience and knowledge-base is close to the entrepreneurs', they can be instrumental in helping entrepreneurs externalize part of their tacit knowledge (externalizing). BAs with significant entrepreneurial experience of their own may also engage in significant mentoring activity, starting early on in the process. Such mentoring concerns the proper communication with the professional investors, the management of the entrepreneurial process, as well as the strategic orientation (growth, internationalization ...).
VC	VCs are preoccupied with the entrepreneurs potentially hiding significant information. At an early stage of the fundraising process, significant weight will thus be put on thorough due diligence. At the conclusion of the agreement, VCs will insist on fixing a requirement for regular financial disclosure and on putting in place incentive mechanisms to motivate entrepreneurs to expand optimal effort. (monitoring)	VCs essentially place their hope concerning the value creation potential in their post-deal ability to professionalize certain managerial functions and to act as a sounding board (through active board representation for instance) (mentoring).

the concepts to be observed (such as motivations for action, cognitive maps and process, etc.) are difficult to capture through a few simple numerical measures. The present research question is complex, because it is concerned with the respective role and contribution of three different generic types of actors (entrepreneurs, BAs, VCs) during the fundraising process of young technology ventures, and case studies are well suited to cope with such complexity. Focus on a single case has the advantage of granting a look deep into the workings of the process. Events can be observed as they unfold, and an assessment can be made of the numerous protagonists' accounts of events, attitudes, motivation and mutual understanding.

It should also be noted that the population of business angels has proven to be very difficult to identify, and most large-scale studies have recourse to snowballing to

gather data, so that the application of statistical methods based on random sampling is hardly meaningful (Farrel 1998). At a still rather exploratory stage of research into the field, a case study may thus help achieve some progress by adding empirical relevance to existing knowledge. It should also be noted that in spite of the impossibility of statistical generalization from a single case, we may still achieve analytical generalizability (Yin 1994) by linking the specific case analysis to a theoretical discussion of more general outreach.

The prospective research design consists of a two-step process aimed at improving methodological rigor. In fact, one critique regularly addressed to traditional retrospective case studies (Yin 1994) concerns the risk of bias from *ex post* reasoning, where hypotheses are actually formulated when the case outcomes are already known. PCS design has been proposed as a possible remedy. Under this setting, the researcher formulates case specific hypotheses derived from alternative theoretical frames, after a first contact with the field under investigation, but prior to the unfolding of the process⁴ to be explained (step 1). The basic concern of this first step is to assure construct validity, by making an effort to confer a concrete meaning on theoretical concepts (such as agency conflict, cognitive asymmetry . . .) in applying them to a real-world case. The result of this first step – the ‘baseline case’ – consists of a series of case-specific hypotheses. Step 2 ultimately seeks to confront the case specific predictions from the baseline with the real dynamics unfolding in the case under study. It is accomplished by returning to the field at a predetermined time.⁵ This way to proceed minimizes the risk of *ex post* reasoning.

In a single-case-study design, the choice of the case should be guided by theoretical criteria (Yin 1994). Since our research aims at a better understanding of the relational dynamics characterizing the fundraising process of a fast growing technology venture addressing different investor categories, we contacted a young promising venture engaged in discussions with several BAs and several VCs. By doing so, we hoped to increase the observability of multiple interactions and possibly add nuance to the hypothesized respective roles of generic actors. Adding intragroup variation (more than one BA and more than one VC) carries the promise of helping us reach beyond general statements about characteristics and roles of the ‘typical’ business angel or the ‘typical’ venture capitalist.

The venture chosen was founded in 2006, and the founders started the process to raise funds from several VCs and BAs to finance further growth in the course of 2009. A contact was established and one interview with each of the two co-founders was conducted in December 2009, in order to write up the baseline case. Each interview lasted about one hour and a half, was tape recorded and transcribed. The press announced the successful conclusion of the financing round in early June 2010. In Step 2, interviews with the co-founders, BAs and VCs ultimately took place starting end of June 2010. Six persons were interviewed: the two founders, two BAs, and two VCs. The interviews lasted on average a bit more than one hour (ranging from 30 min to 2 h) and were fully recorded and transcribed for later content analysis.

Step one: The baseline case

The following descriptive information was gathered from the first interviews conducted with the two co-founders of the company in December 2009. The interviews were semi-structured and aimed at obtaining an account of the venture’s

overall dynamics, from the initial idea until the first contacts with the different investors. The identity of the four business angels and the three venture capital firms was disclosed by the co-founders, and detailed investor profiles were obtained for most investors from a search on the internet.

The company (EnBaVen) is a young and fast growing French venture developing software for the design of electronic components with actual and potential clients being industrialists in the high-tech sector. It was created in 2006. The two founders are first-time entrepreneurs. Their primary competency is technological with a strong engineering background. This concerns both their formal training and their work experience prior to the venture's creation. Before quitting their jobs at major high-tech firms in the computer industry and founding the venture, they had already anticipated becoming independent entrepreneurs for quite some time. Their attitude can thus be described as entrepreneurial, but their experience as entrepreneurs is still very young. The prior work experience of one of the founders has led him to develop ideas about the existence of a market for a new technological application that was still lacking but would have facilitated his own work. The founders' knowledge base can hence be characterized as primarily technology- and market-based. The venture is presently at a stage where the prototype has been developed and successfully tested. The application has been sold to the first (big) clients (during 2008) and sales grow fast (three-digit sales growth between 2008 and 2009). Potential investors have recently been contacted, the challenge currently being to intensify commercial efforts and to expand the client-base steadily for the application to become a standard of the industry at an international level. This commercial development and the necessity of sustaining a strong effort in research and development require new funding. It is with this concern in mind that the founders have recently approached financial investors. After various contacts, the encounter with an angel investor (Angel 1) has proved to be particularly conclusive. This investor is, in fact, a former entrepreneur himself, who, after working for several years in a software company, successfully founded and managed his own venture and has acquired a strong entrepreneurial experience in the process. Other investors are planned to contribute as well: three more business angels and three venture capitalists.

Actor-specific predictions concerning the fundraising process

Table 1 contains specific hypotheses for each of the three generic actors participating in EnBaVen's fundraising process. Focusing on the particular case, it is possible to be even more specific by breaking the investor categories down to reflect the potential role of individual actors. This can be illustrated through the example of two of the BAs (Angel 1 and Angel 3). Angel 1 is actually a former entrepreneur himself who successfully started, managed and, finally, sold his own business in what can be considered to be roughly the same industrial sector as EnBaVen's. So his knowledge base in terms of market dynamics, as well as his entrepreneurial approach, can be supposed to translate into a relative cognitive closeness with the two founders. Angel 3 is also a successful former entrepreneur, but from a very different industrial background (biotechnology). Consequently, though his entrepreneurial orientation may make him close to EnBaVen's founders in terms of cognitive process, the initial knowledge base is quite different. These differences between the two BAs can be supposed to make them play different roles during the fundraising process. Angel 1's role should be especially important, from an agency as well as from a cognitive

perspective. The former perspective indicates that he can play a valuable role in the certification of the venture's objective quality (reduce adverse selection risks) to VCs because of his informational advantage with respect to the industry. Having himself a strong track record in the field, VC's may appreciate his capacity to judge if the founders' capabilities and work effort correspond to industry standards, thus reducing information asymmetry. Being from a different industry, the role of Angel 3 in managing adverse selection should be less prominent.

From the cognitive perspective, the role played by Angel 1 in the fundraising process is potentially double: (1) with an intimate understanding of his industry's market dynamics, he can intuitively perceive the potential of innovative value creation opportunities and help translate this perception to other investor types (externalization of tacit knowledge); (2) he can also engage in mentoring the founders, speeding up their acquisition of the requisite capabilities in managing the entrepreneurial process. In contrast, Angel 3 may also contribute at the second level (mentoring), but not at the first (externalization), appreciating opportunities only as they are translated by Angel 1.

In terms of processual dynamics, Angel 1 can be expected to play an active role quite early in the fundraising process. From a cognitive perspective, his intuition in terms of market opportunity is immediate and may help him externalize entrepreneurial knowledge at a relatively low cognitive cost. Consequently, if cognitive aspects are crucial early in the fundraising process, he should spend most of his time on convincing other investors of the intrinsic quality of growth opportunities and on mentoring. If agency concerns are prevalent, he should, on the contrary, spend much time and effort on gathering hard information about EnBaVen's commercial and financial performance and prospects.

Being from an entirely different technological field, Angel 3's cognitive distance from the founders can be expected to be relatively important early on in the process. Interaction with the entrepreneurs may lead to mutual learning as events unfold. Consequently, from a cognitive perspective, the role of Angel 3 can be supposed to increase over time. If mentoring takes place on his behalf, the latter is likely to be restricted to matters concerning the management of the entrepreneurial process as such (fundraising, communication with professional investors . . .), independently of the perception of market opportunity. From an agency perspective, he should be concerned with assuring a proper return on his invested capital. This can be achieved through formal monitoring and contractual provisions to be negotiated in the investment protocol.

Angel 2 is very close to Angel 1, and can be supposed to play a similar role, for he was actually a co-founder of the Angel-1 venture and developed its American business.

Of all the business angels, Angel 4 is *a priori* the one with the most important cognitive gap *vis-à-vis* the entrepreneurs. He can be supposed to rely heavily on the other investors (especially Angel 1) to appreciate the intrinsic value of EnBaVen's growth opportunities (cognitive perspective). Mentoring on his behalf would be more costly than in similar efforts undertaken by Angels 1, 2 or 3. The preliminary interviews make him appear as a more passive investor.

The venture capitalists should be at a greater distance from the entrepreneurs in cognitive terms (knowledge base and cognitive process). Capitalist 1 is a small regional venture capital firm with a very long experience of early-stage financing. This long experience may have made him familiar with entrepreneurs' way of

reasoning in general (cognitive process). To learn about the intrinsic value of growth opportunities in a particular industry however, he may have to rely on experts. Coinvesting alongside ‘expert angels’ (such as Angel 1) may facilitate his learning and, thus, reduce cognitive costs. The same holds for the other venture capitalists. The latter should not be expected to make a particular cognitive contribution at the *pre*-investment stage. Later on (*post* investment), they may engage in mentoring to help professionalize managerial capabilities (concerning certain functional skills, such as financial management, etc.). From an agency perspective, having a strong interest in optimizing financial returns on their investments, the venture capitalists should insist on formal due diligence during the fundraising process to reduce information asymmetry, and on negotiating strong incentives and providing for regular formal monitoring *post* investment. Capitalist 2 is known to be one of the oldest and most professional independent venture capital firms in France. Hence, formal procedures of information checking can be supposed to be most developed in that case. Such monitoring is costly, but potentially helps reduce agency risks. This is also beneficial to other investors (Angels and VCs). Beyond a strong activity aimed at reducing information asymmetry (‘checking up on you’) at the earlier stages of the fundraising process, investors such as Capitalist 2 can be expected to insist heavily on high powered incentives with the negotiations pushing forward. As the VC branch of a regional deposit bank, Capitalist 3 is invited to the deal by Capitalist 1 and can be expected to play a ‘hands off’ role, very much relying on co-investors with respect to investment analysis and structuring.

So much for the case specific predictions gained from a first contact with the field. We now turn to the method employed to appreciate the actual validity of these predictions.

Step two: Testing the predictions

Upon completion of the financing round, we recontacted the entrepreneurs to request a follow-up interview with each and the authorization to meet with the different external shareholders (Angels and VCs). The entrepreneurs accepted. We sent out requests to all investors. Four eventually agreed to meet us (two BAs and two of the VCs). Six semi-structured interviews could be conducted with the two co-founding first-time entrepreneurs, with Angel 1, Angel 3, Capitalist 1, and Capitalist 2. All six interviews were tape recorded and transcribed. To confront their content with the alternative theoretical frames (Table 1) and the resulting case-specific predictions, the following coding scheme (Table 2) was developed allowing for a systematic content analysis of the qualitative data (Miles and Huberman 1994). In fact, to trace the attitudes and behavior predicted by agency theory (H_0), we tried to identify the (explicit or implicit) presence of such central concepts as ‘conflicts of interests’, ‘monitoring’ and ‘bonding’ in the interviewees’ discourse. On the cognitive dimension (H_A), we coded a series of six concepts akin to knowledge dynamics. Since we were interested in process, we also had to account for temporal dynamics. A close reading of the interviews suggested the occurrence of three significant stages: ‘first contacts between entrepreneurs and investors’, ‘deal structuring’, and the ‘post investment’ period as anticipated by the interviewees at the time of the interviews.

Coding was conducted with NVIVO software. Each coded reference was given at least two codes: one concerning the ‘dimension of relationship’ and one for stage of

Table 2. Coding scheme for content analysis.

Dimension of relationship	Stage of process		
	1. First contacts (sourcing, screening, evaluation)	2. Deal structuring (due diligence, negotiation)	3. Post investment (anticipated)
Discipline (H_0) (agency)	15 15.3%	51 62.2%	12 22.2%
Conflicts of interests	5	41	4
Monitoring	10	12	10
Bonding	1	3	0
Cognition (H_A)	83 84.7%	31 37.8%	42 77.8%
Specific experience/ knowledge	18	14	17
Cognitive process	23	7	0
Cognitive gap/closeness	31	8	7
Mentoring	11	8	31
Externalizing	28	0	3
Learning	6	2	8

process. Absolute figures in Table 2 indicate the number of references coded for a given item within the corpus of all six post-deal interviews by one of the co-authors. Percentages indicate the relative weight of references coded with a disciplinary content (thus confirming hypotheses derived from agency theory) vs. a cognitive content at a given stage.

The overall results on the temporal dynamics of cognitive and disciplinary challenges are robust to a change in coder identity. In fact, all interviews were double-coded independently by one of the co-authors and a research assistant. We then conducted two chi-square tests on the time-distribution (time being captured by the three stages) of the frequencies of (1) cognitive references and (2) disciplinary references and could not reject the null hypothesis of the two coders obtaining identical distributions at the 5% level. We are thus rather confident in the intercoder reliability of our overall results.

Case results: the investment process unfolding

The summary results contained in Table 2 indicate that the interactions between entrepreneurs and investors are characterized by both cognitive and disciplinary concerns at all stages of the funding process. However, the relative weight of cognition and discipline clearly changes from one stage to another, the cognitive dimension (H_A) being prevalent at the early stages of the relationship. Balancing potentially conflicting interests (H_0) then turns out to be the leading theme when it comes to structuring the deal. Nonetheless, it should be noted that cognitive dynamics remain significant during this stage also. Finally, at the time of the interviews (immediately after the completion of the deal), the various actors agree on their anticipation of the importance of transferring knowledge and experience from investors to the entrepreneurs for the venture's development over the near future

(H_A), while most investors also want to maintain control over managers' actions by setting up efficient monitoring (H₀). With respect to our theoretical predictions, the overall results thus point in the direction of a combined (cognitive and disciplinary) approach, but clearly indicate that time matters. In the case of our young fast growing technology venture, cognitive concerns (H_A) are strongest, especially during stages 1 and 3 of the funding process, whereas concerns for potential agency conflicts (H₀) dominate the deal-structuring stage. A closer look at the results reveals that distinct investor categories, and even individual investors inside one category (e.g. BAs), play very different, albeit complementary roles, at the various stages of the process. This confirms most of our case-specific predictions derived from applying the conceptual frame to first-step interviews. The corresponding results are reported in the following subsections.

Stage 1: Angel 1, the messenger of future growth

During the first stage of the technology venture's fundraising process, the cognitive dimension dominates the interaction between the various investors and the entrepreneurs, with the following themes appearing very frequently in the interviews (in decreasing order): cognitive gap/closeness, externalizing, and cognitive process. This makes them highly relevant to the actors' discourse, and thus confirms the strong relevance of the set of H_A hypotheses to an explanation of the relational dynamics at this specific stage.

Angel 1 plays a major role in the fundraising process, by quickly grasping the technology venture's value creation potential and communicating it to other investors. The actual observations made from step-two interviews thus prove to be consistent with specific predictions made at the base-line level. Angel 1's role is mainly, but not exclusively, cognitive and has the greatest impact at the first stage. During the following stages of the fundraising process, he becomes more passive.

Due to his personal experience as an entrepreneur in the software industry, there is a relative cognitive closeness with EnBaVen's entrepreneurs. He is thus able to judge the venture's potential at a low cognitive cost. *'I know the business model and the activity of such ventures well'* (A1)⁶. The fit between Angel 1 and the entrepreneurs seems however to be due to more than just the knowledge of the sector. *'In fact, the relationship worked immediately, first of all from the human side – we had good mutual understanding – and then, he was interested in the project'* (E1_2). The fact that such understanding is qualified as 'immediate' indicates a low level of cognitive cost. This low cost seems to result as much from the closeness of the initial knowledge base as it stems from the characteristics of Angel 1's cognitive process, for no extensive formal analysis is conducted on his behalf at that stage. *'We felt that a communication channel was open . . . We understood each other [. . .] Strictly speaking, no due diligence was done. He has seen . . . At that time, he had a first idea. He has seen how things evolved'* (E1_2).

This is a major difference with Capitalist 2, which confirms another prediction from the baseline-case. This VC has known the entrepreneurs for quite some time, without making the first step in providing growth capital. He joins the deal at a much later stage. *'I had met them three years ago. At that time, it didn't connect [. . .] they didn't have many proofs of their concept yet [. . .]. We have thus observed them from a certain distance'* (C2).

Angel 1, once he recognizes the venture's potential, is instrumental in convincing other potential investors of the intrinsic quality of the growth project. He thus helps the two first-time entrepreneurs to translate part of their tacit knowledge into a format that can be understood by the other investors. *'Generally, he believes in the projects he presents, otherwise he doesn't present them. In this case, he was convinced. Angel 1 showed that he saw high value in the venture' (A3). 'He went see Capitalist 1 and told him: "this business is interesting." For sure, that made the whole difference. He did the same with Capitalist 3.'* (E1_2). The relative speed with which he reacts may be seen as an indicator of the fact that Angel 1 is able to help externalize the technology venture's value at a relatively low cognitive cost. *'It wasn't necessary to go see him ten times. Everything happened very rapidly'* (E1_2).

Angel 1 influences other potential investors who are at a greater cognitive distance. This is especially true for Angel 3, as predicted from the baseline-case. *'For me, it is a slightly different approach. I want to know if I am capable of doing something outside of biotechnology. I have come to think that the risk is relatively moderate. It seems to me that people are more easy going. I wanted to verify this from inside' (A3).* Hence, a cognitive gap in terms of the knowledge base clearly exists between Angel 3 and the two first-time entrepreneurs. *'I don't know the customs. I am there to learn' (A3).* This initial gap is costly (cognitive cost), in that the necessary mutual learning stretches the negotiation process. *'Angel 3 was not from our field. He comes from the biotechnologies. He does not know our domain. It has taken some time. I also think that this has slowed down the process a bit' (E1_2).*

Interestingly, Capitalist 1's decision making process, although he is a formal VC, shares some characteristics with an entrepreneurial decision-making style. In fact, once Angel 1 has exposed his standpoint on the venture's intrinsic value, Capitalist 1 meets with the entrepreneurs, and his intuition concerning their personality and capabilities makes him adhere to the project very quickly. *'Instantaneously, this much I can tell you! When E1 and E2 had left after two and a half hours of discussion, I was absolutely convinced. Maybe this is due to my 25 years of experience in the business. [...] immediately . . . there is, as you can imagine, personal intuition' (C1).* In spite of being a professional venture capitalist, his intuitive cognitive style makes him somewhat close to the archetypical business angel, which comes as somewhat of a surprise in terms of our initial predictions.

Finally, we should note that the time span it took to persuade Capitalist 2 was the longest one, and although the entrepreneurs initially approached him directly, Capitalist 1's opinion has been important in the process of persuasion. When we consider all seven investors, it seems that sharing knowledge about EnBaVen's value creation potential implies cognitive costs of variable magnitude, the latter being highest in the case of Capitalist 2. This is highly consistent with our case-specific hypotheses.

Angel 1's persuasive impact is not exclusively attributable to his cognitive role however. His position as a participant in the future deal is also perceived as a bond of his sincerity. *'Angel 1 has made a contribution and confirmed the project's validity. Of course, when you have people who are from the same industry [as EnBaVen], understand the challenges and are ready to share the risks with you, with their own money, this is reassuring' (C2).* The fact that Angel 1 invests personally in the venture makes the signal he gives concerning the venture's value a costly one, thus acting as a bond of his truthfulness. So, there is some trace of a concern for managing potential

agency conflicts quite early in the fundraising process, although cognition seems to be the dominant concern for the different actors at that stage.

Angel 1 plays a decisive role during the first stage of the fundraising process, mainly for reasons of cognitive fit (technological and market knowledge, cognitive process). This helps in externalizing knowledge about the venture's opportunities at a low cost. Even at this stage, dimensions of agency are not completely absent however. Consequently, it is not possible to reject H_0 , whereas we find strong support for H_A .

Stage 2: Structuring the deal, the balance of mutual interest

Once the actors have reached a shared overall perception of the technology venture's basic strengths and development potential, certain external investors (especially C2) execute more formal due diligence and enter into detailed negotiations with the founders concerning share price and contracts. Disciplinary issues are especially relevant at this stage, as founders and external investors pursue (partially) antagonistic interests and seek to protect themselves (H_0). However, cognitive issues are not absent altogether. In fact, the relative degree of cognitive distance (or closeness) between actors, as well as its transformation through mutual learning, impact the pace and the outcome of the negotiation process.

As anticipated, at this stage, certain external investors engage in more extensive monitoring aimed at reducing potential agency costs. Most of the workload in terms of formal monitoring is borne by Capitalist 2, who performs due diligence in a very professional way, setting up a '*due diligence action plan*' and sending an extensive list of requests to the entrepreneurial team. By contrast, the earlier diligence process conducted by Capitalist 1 appears to be rather informal to the founders, and seems to have been less analytical than would be expected from a typical VC (Wiltbank 2005). The strong disciplinary role actually played by Capitalist 2 at this stage is very much in line with our predictions from the baseline case.

Angel 3's involvement in due diligence is initially limited, probably because he relies on the other investors' industry and investment expertise. Eventually, he becomes more strongly involved in analyzing the project and negotiating deal conditions, once he has decided to raise his stake significantly, as the need of funds is reestimated to meet with the venture's ambitious growth strategy. This 'disciplinary' move (increased monitoring coupled with high powered incentives being an answer to a greater financial risk) is costly, as Angel 3, coming from a different industry, needs to fill a rather significant cognitive gap. Entrepreneur 2 states: '*The second thing that lengthened the process, I think, was Angel 3 who, when we [increased the stakes], said: "Well, I invest more" and so, as he invested more, he was more interested. I would say he wanted to know a bit more. So he took more time. We had to do another meeting with him to explain. He asked questions. He wanted, I suppose, to know more, to be reassured, if I may say so*' (E2_2).

The potential of conflicting interests at the deal structuring stage is probably best expressed by Capitalist 2: 'As a fund, we have constraints that are not always... that are antagonistic with those of the founder, clearly, in a shareholders' agreement in particular [...]. There is an instant before we sign the check and do the negotiation, and during this instant our interests are totally divergent' (C2). In the case of EnBaVen, these conflicts culminate when Capitalist 2 refuses the pre-money valuation initially discussed between the founders and Capitalist 1. As Entrepreneur

1 relates: ‘*Capitalist 2 arrived saying : “No! [The amount you propose]⁷ is not possible. We are ready to invest, but our committee says not more than [half of the proposed amount]”.* We told them: “Well! This is impossible. We were discussing around [a certain amount], we are not going to get down this much!” So it took some time [...] because once again we were facing a possible rupture of the relationship’ (E1_2). However, in spite of these tensions, each party remains prepared to make certain concessions by readjusting the terms of the deal. This willingness to make a step towards the others, under certain measurable conditions to be made explicit in the formal agreement, acts as a bond of good faith. Such bonding behavior is reported, both on the investors’ and the entrepreneurs’ side.

The agreement finally reached on price and contractual terms is considered as balanced and creative by both parties. It is designed to motivate the founders to expand optimal effort to make the company grow and to maximize the exit price, while protecting external investors’ interests, which is consistent with the disciplinary approach of entrepreneurial finance and governance (Kaplan and Strömberg 2004) (H₀).

Although there is compelling evidence that issues related to agency clearly dominate interactions at the deal-structuring stage (H₀), the cognitive dimension is not absent altogether. Mentoring, externalizing tacit knowledge and, thus, mutual learning, initiated during the first contacts, continue. As they consider that the technology venture’s development strategy in the USA has been improperly explained initially, although being key for future growth, the investors ask that the business plan be completed to include a detailed action plan and cost assessment for the USA (C2). Based on their own previous experience, they also strongly recommend that the US office should not be headed by a local executive but by a trustworthy manager from the inner circle of EnBaVen’s founders. Entrepreneur 2 reports how this demand contributed to the founders’ knowledge and decision process: ‘...*setting up an office in the US was a condition for the investment... , but above all [the message] was to send somebody from here. Because they said: “Creating an office and hiring people over there while managing it from here does not work in the US”.* And maybe they... I would not say we learnt it all from them, but they confirmed this point (...). I think they actually reinforced the idea that it does not work this way’ (E2_2). This observation is consistent with our earlier prediction that the professional VCs, if they play a cognitive role, should be expected to do so at later stages of the process. Their specific cognitive role should take the form of mentoring (not externalizing) to help acquire generic skills of business development, and that is precisely what we observe in the case study, starting at stage 2.

Stage 3: Mentoring efforts as a potential driver of future growth

Although the case study was conducted during the fundraising process, the interviewees frequently expressed anticipations about their future interactions at the post-investment stage. The cognitive dimension dominates these expectations, particularly with respect to the future mentoring activity from business angels towards founders, which is seen by all actors as very important for the technology venture’s success (H_A). Disciplinary issues are also present in discourse, as the venture capitalists, as well as Angel 3, mention potential risks due to conflicts of interest with the entrepreneurs and intend to use monitoring devices to reduce these risks.

Having angel investors is clearly motivated by mentoring expectations on behalf of the founders, particularly in areas in which they have no previous experience, as Entrepreneur 1 explains: *'This is why we wanted business angels who had a previous experience of divesting companies, because we did not have this experience [...] and also the fact that they had an international view. These are the great challenges that lie ahead'* (E1_2). They expect the angels will help to fill their knowledge deficit in these matters and therefore contribute to increase the pace of future growth: *'In fact all this is to save time! Anyways, time is the most expensive thing for a start-up, and if you can save some it's... huge'* (E1_1). This expected mentoring activity relates mostly to three areas: business development, particularly in the US, team building and exit.

As mentioned earlier, the US market is key for EnBaVen's future growth. Thus, when recommending potential investors to the founders, Angel 1 proposes to involve Angel 2 (the co-founder and head of the US branch of A1's previous venture), because he lives in the US and has experience and contacts there: *'I thought it was interesting to put him into the loop, for the success of the project'* (A1). This is recognized by the two entrepreneurs as a valuable input: *'It's his experience and help and network in the US. It is like having a foot in the US, and a help to create this American branch. This is a very important point for us'* (E2_2). It is important to mention that Angel 2's mentoring activity already starts shortly after the closing by providing local contacts as well as a formal report on US competitors. This observation is in line with our predictions from the baseline case.

Being able to manage the rapid growth of the team is vital for start-up companies. This is identified by EnBaVen's founders as a major challenge where angels' experience can be helpful: *'How did they make their teams grow? When? These are questions I presently ask myself. How did they organize the recruitment?'* (E2_2).

Issues related to financial discipline appear in interviewees' discourse when Capitalist 1, Capitalist 2 and Angel 3 express their views on the post-investment period (H₀). Capitalists 1 and 2 anticipate possible conflicts of interest with the founders and consider contracts as a way to reduce agency risks, although not providing an absolute protection: *'Covenants protect us, in principle, against managers' most blatant abuses'* (C2). Exit is cited by Capitalist 1 as an important potential area of conflict and is addressed through preferred liquidation rights for investors as *'we may discover after 3 to 4 years that [the managers] do not want to sell anymore. We have a liquidity clause in the contracts saying that we may sell the whole company after 5 years even if management disagrees'* (C1).

In addition to contracts, a key monitoring device for investors is the supervisory board. Capitalist 1 perceives it primarily as a means to reduce information asymmetry: *'The supervisory board is for us first of all a way to be informed. [The managers] give us their point of view and update us on the past quarter's activity, on their projects for the next quarter. We also discuss the cash position, etc...'* (C1). Angel 3 considers it to be very important that the board be in a position to exercise effective control over management.

As it already appeared at the earlier stages of the EnBaVen case, there is a division of labor between investors. High expectations are expressed as to the future mentoring of entrepreneurs by angel investors, which has already begun, while venture capitalists are mostly devoted to monitoring, as we had initially predicted. Interestingly, Angel 3 appears in this respect to be somewhat of a 'hybrid' investor. He invests his own money and brings entrepreneurial experience, but also shares some features with formal VCs (he is the largest investor in the deal, operates

through a fund, and is very much involved in contract negotiations). Overall, the actors express their view that mentoring the entrepreneurs is key to foster the technology venture's future growth, which is a strong support for H_A , but H_0 cannot be rejected, especially for the relationship between entrepreneurs and VCs.

Conclusion

This article makes a contribution to an understanding of the specific rationale governing entrepreneur–investor relations when a young technology venture wishes to attract resources from business angels and venture capitalists to fuel strong growth. Two theoretical frames – agency theory and the cognitive approach to entrepreneurial finance – are briefly reviewed as alternative explanations for the dynamics of entrepreneur–investor interaction in a multiple-investor setting. Our conceptual discussion thus adds theoretical focus to a literature which still remains dominated by many empirical contributions focused on descriptive investor characteristics, especially in the field of angel research (Freeaar, Sohl, and Wetzel 2002; Lindsay 2004; Morrissette 2007). This way to proceed helps connect investor characteristics to their anticipated effects on interaction in a complex multi-investor environment. Besides adding theoretical focus to the discussion, we also make a contribution in linking research on business angels and formal venture capitalists more closely. In spite of some notable exceptions (Harrison and Mason 2000; Madill, Haines, and Riding 2005), such an effort has rarely been undertaken. This is surprising, since the BA–VC-connection could prove to be highly relevant to especially strong growth dynamics (Bonnet and Wirtz 2011). Fieldwork conducted according to PCS-design on a young technology venture whose founders negotiate (and eventually obtain) funding from four BAs and three VCs helps ascertain the relevance of the cognitive approach to entrepreneurial finance *vs.* the disciplinary approach. The case analysis yields support for both approaches but indicates that their relevance is actor- and time-contingent. The relative weight of agency-related and cognitive concerns actually depends on one of three identified stages of the fundraising process, as well as on investor-type. This is a central finding of the present research. In contrast to earlier large-sample surveys allowing for an assessment of the average characteristics and roles of formal and informal venture capital (Farrel 1998; Harrison and Mason 2000; van Osnabrugge 2000; Kelly and Hay 2003; Lindsay 2004; Wiltbank 2005; Morrissette 2007), our in-depth case study helps capture the more complex relational dynamics implied by a fundraising process with multiple investors. Cognitive concerns are actually shown to dominate the interaction between potential investors and entrepreneurs at the earliest stage (first contacts), and business angels play an especially strong role in this context. Formal VCs then take the lead at the second stage (deal structuring), with agency theory acquiring strong predictive power. At the post-investment stage, both investor categories (BAs and VCs) are expected to play important complementary roles, either specializing on cognitive or on disciplinary missions. Interestingly, certain investors (Capitalist 1, Angel 3) may play a hybrid role and thus facilitate communication at critical moments, due to their sharing of some typical features with both informal and formal venture capitalists.

This kind of in-depth empirical work based on a single case helps approach issues of dynamic human interaction in complex settings (multiple investors and entrepreneurs interacting over time), but it is also limited in scope because it lacks

the possibility of statistical generalization. It should however be regarded as a useful first step in a still largely underresearched area. Of course, some of the findings would be strengthened by eventually successful replication (Yin 1994). We feel that there is still a need for more related case research in the field of entrepreneurial finance.

The present contribution also has practical implications. It shows that first-time entrepreneurs who look for equity finance to fund strong growth of their technology venture may have an interest in addressing both formal and informal venture capitalists. The proper combination of different investor-profiles may help to keep the overall cost of capital at low levels. BAs may be especially well suited to bring down cognitive costs, whereas formal VCs should typically be equipped to control agency costs. From a practical standpoint, such a combination may prove particularly relevant at the very early stages of technology ventures that anticipate exceptionally strong growth rates for the near future. However, beyond the individual investors' particular features and fit, the proper timing of establishing relations appears to be crucial. Our results also suggest that policy makers wishing to support the development of growth industries at early stages would be well advised to create an institutional environment which facilitates more systematic cooperation between business angels and the established formal venture capitalists.

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Notes

1. The cognitive approach to entrepreneurial finance, as it is sketched out in the present contribution, very much in line with earlier theoretical work by Charreaux (2002) and Wirtz (2011a, 2011b), puts a strong (but non exclusive) emphasis on resource- and knowledge-based theories of the firm. Our goal is to analyze entrepreneur-investor interactions in a fast growing technology venture, and resource-/knowledge-based theory has been developed to explain the dynamics of firm growth (Penrose 1959) and resource acquisition (Barney 1986, 1991).
2. Entrepreneurial intuition is defined by Mitchell, Friga, and Mitchell (2005) as 'the dynamic process by which entrepreneurial alertness cognitions interact with domain competence (e.g. culture, industry, specific circumstances, technology, etc.) to bring to consciousness an opportunity to create new value.'
3. Effectuation, or effectual logic, is a construct that aims at describing how entrepreneurs take strategic decisions in uncertain environments (Sarasvathy 2001).
4. In our case, that is the fundraising process (extending from first contacts with investors to signing the agreement) during which investors and entrepreneurs interact to reach an agreement on financial resources to be raised and on governance mechanisms to be implemented.
5. Completion of the financing round, in the present case.
6. Quotes are from interviews with the entrepreneurs (E1, who is the CEO, and E2, who is the technical manager), the business angels (A1 and A3), and the venture capitalists (C1 and C2). As two interviews were made with the entrepreneurs, E1_2 is a reference to the

second interview with Entrepreneur 1, in order to maintain the 'proof chain' advocated by Yin (1994). Quotes have been translated from French. The original quotes can be obtained from the authors upon request.

7. For reasons of confidentiality, we have taken out the precise figures.

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