Strategic Decertification in Venture Capital

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August 2014

Starting Point: Practitioners Wisdom

Chris Dixon, a prominent technology entrepreneur and "power investor" posts on his blog:

When you take any money at all from a big venture capitalist in a seed round, you are effectively giving them an option on the next round, even though that option isn't contractual.

And, somewhat counter-intuitively, the more well respected the venture capitalist is, the stronger the negative signal will be when they don't follow on.

Starting Point: Certification – Decertification

Certification hypothesis:

The participation of venture capitalists in prior financing is interpreted by outside investors as a positive signal.

- Venture-backed IPOs show smaller IPO mispricing (Meggison and Weiss (1991)),
- are charged lower underwriting fees (Li and Masulis (2004)),
- outperform non-venture-backed IPOs (Brav and Gompers (1997)).
- ► Decertification: Undesirable concomitant of the certification hypothesis.

Flip story.

The non-participation of an incumbent venture capitalist to a follow-on round of financing, is interpreted by potential investors (including alternative venture capitalists) as a negative signal.

What the Paper Does

This paper examines the extent to which incumbent venture capitalists can obtain favorable terms in a follow-on round of financing, strategically threatening not to participate in it (i.e to decertify entrepreneurs).

It then investigates the ex-ante implications, determining which venture capitalists (and offer) can make themselves most attractive to an entrepreneur, in the early round of financing.

Background: Staging of Funds in Venture Capital

- The staging of the funds is one of the most prominent aspect of venture capital financing.
 Lerner (1994), Gompers (1995).
- A common justification is that staging provides venture capitalists with a real option to abandon:

Continued financing can be made conditional on the successful completion of earlier stages.

Sahlman (1990), Cornelli Yosha (2003), Repullo Suarez (2004), Bergemann and Hege (1998), Neher (1999), Landier (2002), Fluck, Garrison and Myers (2007).

Background: Syndication in Venture Capital

- Another prominent aspect of venture capital financing is the syndication of venture capitalists. Lerner (1994), Gompers (1995).
- One rationale for syndication, is based on the selection hypothesis.
 Venture capitalists have the ability to screen projects → Benefits from more opinions before selecting a project.
- Another rationale for syndication is based on the value-added hypothesis.
 Venture capitalists have the ability to add value to projects → Benefits from the aggregation of complementary skills.

Background: Syndication in Venture Capital

- Several papers, based on the selection hypothesis, consider that some venture capitalists can have a higher ability to screen projects than others, referred to as expertise.
 Ueda (2004), Casamatta and Haritchabalet (2007), (2008), Cestone, Lerner and White (2007).
- Those who consider syndication, find that, to be most attractive to the entrepreneur, a most expert venture capitalist should syndicate with another most expert venture capitalist.

This Paper

- Our model considers a project where staging provides financiers with a real option to not continue financing.
- Venture capitalists can receive a signal about the project profitability before the follow-on round of financing.
- The precision of the signal received by a venture capitalist depends only on his ability to interpret interim information, his screening ability, again referred to as expertise.
- ► The staging option value is therefore rooted in the selection hypothesis.

This Paper

- We do not consider the value added hypothesis, i.e. venture capitalists do not add value to the project providing their managerial skills.
- Any venture capitalist can freely receive a private signal, irrespective of it's participation in the early round.
- No party incurs a cost of effort, nor derives private benefits from the realization of the project.
- Our purpose is to expose that strategic decertification is purely based on the selection hypothesis, in a repeated investment environment.

This Paper

- We consider which venture capitalist can make itself initially most attractive to the entrepreneur.
 - On the one hand, the desirability of selection ability pushes towards the standard result that projects should be financed by most expert venture capitalist.
 - On the other hand however, in a follow-on round of financing, the more expert the incumbent venture capitalist, the stronger the negative signal its non-pursued participation would send to alternative venture capitalists. That is, the larger the potential impact of decertification.
- The strategic decertification threat therefore introduces a conflicting force that operates opposite the standard force.
- Essentially, while a venture capitalist needs to have sufficient expertise to be able to increase valuations, he must not be too expert to be threatening.

A Drive Towards Mediocrity

For a given project:

- The decertification threat can exclude highest-expertise venture capitalists from being able to make competitive offers in the early-round.
- Intermediate expertise venture capitalists make more competitive offers as they are less threatening.
- Essentially, there is a drive towards *mediocrity*.

Across projects:

- We show that some projects which would find financing absent strategic decertification, cannot find financing in its presence.
- ▶ That is, strategic decertification leads to *credit rationing*.

Considering Syndicates

- Strategic decertification is not specific to syndicates.
- We also consider the possibility to form syndicates, because strategic decertification has implications for the composition of syndicates which contrast with the standard screening result that projects should be financed by syndicates of most expert venture capitalists.
- We consider that the signals of two venture capitalists are simply substitutes, i.e. the screening ability of venture capitalists do not correspond to different dimensions along which the project can be evaluated.
- ▶ We do not consider incentive problems within syndicates.

A Drive Towards Mediocrity - Again

- The decertification threat can exclude highest-expertise syndicates from being able to make competitive offers in the early-round.
- Intermediate expertise syndicates make more competitive offers as they are less threatening.
- ▶ There is here again a drive towards *mediocrity*.

Heterophily in Syndicate Composition

- However, we find that the entrepreneur is not indifferent between
 - (i) an intermediate-expertise syndicate that involves *two identical* intermediate-expertise venture capitalists and
 - (ii) an intermediate-expertise syndicate consisting of *a high*-expertise venture capitalist and a *lower*-expertise venture capitalist,

preferring the latter to the former.

- ▶ Essentially, there is *heterophily* in syndicate composition.
- With syndicates, the decertification threat pushes
 - highest-expertise venture capitalists to take on
 - lower-expertise partner venture capitalists

in order to form optimally intermediate-expertise syndicates.

Early Evidence

We provide early empirical evidence supporting the most directly testable implications:

For single venture capitalist investments:

- Prediction: In early rounds of financing by a single venture capitalist, financing by most expert venture capitalists should be abnormally infrequent.
- Evidence: In first round investments:

Top quintile most expert venture capitalists appear in only 12.8% of single venture capitalist investments.

(for deciles, the number falls to 2.6%).

Early Evidence

For pair syndicate investments:

- Prediction: In early rounds of financing by a pair syndicate, most expert venture capitalists should abnormally team up with less expert venture capitalists.
- Evidence: In first round pair-syndicate investments:

Top quintile most expert venture capitalists team up

- in 40.4% of cases with a second quintile most expert venture capitalist.

- in 23.8% of cases (only) with another top quintile most expert venture capitalist.

(for deciles, the corresponding numbers become 29.7% versus 10.2%).

Set-up of the Model

- A strictly wealth constrained entrepreneur, e ("she"), is endowed at date t = 0 with a project.
- To be undertaken the project requires:
 - \circ a first-stage investment, $\gamma \in$ (0; 1), at date t=1 and
 - \circ a second-stage investment, 1, at date t = 2
- ▶ The quality of this project can be good (G) or bad (B).
 - A good project (G) has a cash flow R > 2 at date 3 (a good project is positive NPV as - \(\gamma - 1 + R > 0\);
 - A bad project (B) is a certain failure and generates nothing.

The Project

- Let q₀ ≡ prob(G) be the "prior probability" at date 0, that the project quality is good, q₀ ∈ (0, 1).
- ► All agents in the model have the same prior, are risk neutral and the riskless interest rate is normalized to zero.

Assumption 1

Investing in the second stage of the project has a negative prior negative NPV:

$$-(1 + \gamma) + R > 0$$
 and $-1 + q_0 R < 0$.

 \blacktriangleright i.e. the entrepreneur cannot find up-front financing of the overall investment $1+\gamma$ at date 1.

Venture Capitalists

- The early round of financing delivers information on the project's potential profitability at date 2, prior to the follow-on round financing.
- Define venture capitalists as deep-pocketed investors with a screening ability, we refer to as expertise.
- A venture capitalist i ∈ V, irrespective of its' participation in the early round, can obtain, at date 2 and at no cost, a signal related to the project's true return, which can either be high, H, or low, L.
- The signal received by venture capitalist *i* depends on his expertise with the following properties

$$prob(H|G) = prob(L|B) = \alpha_i$$
,

where $\alpha_i \in (\frac{1}{2}, 1)$ is the venture capitalist's level of expertise.

Limited Expertise and Competitive Offers

- Let a ≡ sup{a_i | i ∈ V} be the level of expertise of the most expert venture capitalist available.
- In order not to give an artificial advantage to venture capitalists, we consider the least favorable situation to them:

Assumption 2

There exists a competitive supply of deep-pocketed venture capitalists with level of expertise α , for all level $\alpha \in (1/2, \overline{\alpha}]$.

- ► Under Assumption 2, venture capitalists in V make offers such that they receive the minimum positive expected profit.
- ► Among these offers, the entrepreneur *e* selects the one which delivers her the highest positive residual value.

Central Step: Follow-on Round

- ▶ Denote *i*, the venture capitalist which finances the early-round.
- Suppose this incumbent venture capitalist i makes at date 2 an offer to finance the follow-on round.
- The success of this offer depends on the entrepreneur e's reservation strategy and the relative bargaining power between them.

Central Step: Follow-on Round

- The reservation strategy of the entrepreneur at date 2 consists of seeking financing for the second stage from the best offering alternative syndicate.
- Denote x the event that, at date 2, the entrepreneur is seeking financing for the follow-on round, from a venture capitalist other than the incumbent *i*.
- ► Consider a venture capitalist k ∈ V \ {i} who did not participate to the early round.
- As any venture capitalist, he can receive a signal s_k.
 However, his updated belief that the project is good does not just depend on s_k
 It is also influenced by x, the negative signal of non-participation of i.
- The value of the entrepreneur's reservation strategy at date 2 is depressed by x.

Central Step: Follow-on Round

- ▶ For the alternative venture capitalist *k*, signal *x* has two potential origins:
 - 1. $s_i \neq H_{\alpha_i}$ hence the incumbent venture capitalist *i* simply refused to participate to the second stage investment.
 - Given that the entrepreneur *e* only stands to benefit if the project is undertaken, she will then always seek financing from another venture capitalist.
 - The probability k attaches to witnessing the entrepreneur e seeking financing from other venture capitalists if $s_i \neq H_{\alpha_i}$ therefore equals 1.
 - 2. $s_i = H_{\alpha_i}$ and the incumbent venture capitalist *i* made an offer to the entrepreneur which she rejected.
 - The likelihood the entrepreneur *e* rejects such an offer depends on the bargaining power of the incumbent venture capitalist *i* at date 2.
 - Let ξ be the probability an alternative venture capitalist k attaches to witnessing an offer by the incumbent venture capitalist i being rejected by the entrepreneur e.
- > An alternative venture capitalist k therefore concludes that

$$prob(x|G) = [1 - prob(H_{\alpha_i}|G)] \times 1 + prob(H_{\alpha_i}|G) \times \xi$$
.

Strategic Decertification

► There are two polar cases:

First Polar Case:

The entrepreneur, e, has strong bargaining power at date 2, and is in a position to reject any offer made by the incumbent venture capitalist, i.

- With a Stackelberg leader entrepreneur e at date 2, the probability ξ tends to 1.
- The entrepreneur cannot strategically decertify the entrepreneur.
- The entrepreneur selects at date 1 a most expert venture capitalist, *i* such that $\alpha_i = \overline{\alpha}$, and obtains the first-best value of the project.

Second Polar Case:

The incumbent venture capitalist, *i*, has strong bargaining power at date 2, and is in a position to make a Stackelberg leader take-it-or-leave-it offer that leaves the entrepreneur *e* slightly better-off than under her reservation strategy.

- With a Stackelberg leader venture capitalist *i* at date 2, the probability ξ tends to 0.
- There is strategic decertification.

Mediocrity of the Selected Venture Capitalist

We obtain:

Proposition 2

When incumbent venture capitalists can strategically decertify the entrepreneur in the follow-on round of financing, the venture capitalist *i* which yields the highest value to the entrepreneur, has expertise $\alpha_i = \alpha^*$,

where

$$\alpha^* = \frac{b - \sqrt{b^2 - (2\overline{\alpha} - 1)c}}{2\overline{\alpha} - 1} ,$$

with
$$b \equiv \overline{lpha} - rac{\gamma \left(1 - \overline{lpha} - q_0\right)}{2 \, q_0 \left(1 - q_0\right) R} \,, \qquad c \equiv \overline{lpha} + rac{\gamma \, \overline{lpha}}{\left(1 - q_0\right) R} \,.$$

Credit Rationing

Proposition 2 (continued)

Only projects whose return $R \in [R_{solo}^{particp}; 1/q_0)$ find financing.

$${\cal R}^{
m particp}_{
m solo} ~=~ 1 ~+~ rac{\gamma \,+\, (1-q_0)(1-lpha^*)}{q_0\,lpha^*}$$

▶ Projects whose return R ∈ [R_{solo}; R^{particp}_{solo}) would find financing absent strategic decertification, but cannot find financing because of strategic decertification.

$$egin{array}{rcl} {\it R_{solo}} & \equiv & 1 & + rac{\gamma \,+\, (1-q_0)\,(1-\overline{lpha})}{q_0\,\overline{lpha}} \end{array}$$

Mediocrity of Selected Venture Capitalist across Project Returns



Input parameters: $q_0 = 10\%$, $\gamma = 5\%$, $\overline{\alpha} = 3/4$.

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Impact of Strategic Decertification on Entrepreneur Value



Input parameters: $q_0 = 10\%$, $\gamma = 5\%$, $\overline{\alpha} = 3/4$.

Syndicates

- Allow two venture capitalists to join forces and form a syndicate.
- The project financing problem (Assumption 1)
- The set of available venture capitalists \mathcal{V} (Assumption 2) are unchanged.

- A syndicate is a pair $(i, j) \in \mathcal{V}^2$ of venture capitalists.
- At date 2, the two venture capitalists can each obtain at no cost a signal $s_i \in \{H_{\alpha_i}, L_{\alpha_i}\}$ and $s_j \in \{H_{\alpha_j}, L_{\alpha_j}\}$, irrespective of their participation in the early round.
- The signals s_i and s_j are assumed to be independent.

Syndicates

- The benefit comes solely from having two instead of one opinion along a unique project assessment dimension.
- The signals s_i and s_j play symmetrical roles and are simply substitutes.
- ► That is, venture capitalist do not have separate areas of expertise.
- ▶ The signals *s_i* and *s_j* are not complementary as they do not correspond to different dimensions along which the project can be evaluated.

Syndicates

In the absence of strategic decertification, projects whose return R ∈ [R_{synd}; 1/q₀) find financing from a syndicate of venture capitalist, where

$$egin{array}{rcl} {\sf R}_{{
m synd}} & \equiv & 1 \; + \; rac{\gamma \, + \, (1 - q_0) \, (1 - \overline{lpha})^2}{q_0 \, \overline{lpha}^2} \, . \end{array}$$

The entrepreneur's optimal choice at date 1, is a syndicate composed of two venture capitalists with the highest level of expertise available (a syndicate (i, j) such that α_i = α_j = ᾱ).

Strategic Decertification with Syndicates

We obtain:

Proposition 3

When venture capitalists can form pair-syndicates at date 1 and date 2, and an incumbent syndicate can strategically decertify the entrepreneur in the follow-on round of financing, only projects whose return $R \in [R_{synd}^{particp}; 1/q_0)$ find financing.

Here

$$R^{\it particp}_{\it synd} ~=~ 1 ~+~ rac{\gamma \,+\, (1-q_0)(1-\overline{lpha})(1-lpha^{**})}{q_0\,\overline{lpha}\,lpha^{**}} \;.$$

Strategic Decertification with Syndicates

Proposition 3 (continued)

The syndicate (i, j) which yields the highest value to the entrepreneur, has expertise $(\alpha_i, \alpha_j) = (\overline{\alpha}, \alpha^{**})$.

Here,

$$\begin{array}{lll} \alpha^{**} & = & \displaystyle \frac{b' \ - \ \sqrt{b'^{\,2} \ - \ (2\overline{\alpha} \ - \ 1) \ c'}}{2\overline{\alpha} \ - \ 1} \ , \\ \text{with} & \quad b' \ \equiv \ \overline{\alpha} \ - \ \frac{\gamma \ \left[(1 \ - \ q_0) \ (1 \ - \ \overline{\alpha})^3 \ - \ q_0 \ \overline{\alpha}^3 \right]}{2 \ q_0 \ (1 \ - \ q_0) \ \overline{\alpha} \ (1 \ - \ \overline{\alpha}) \ R} \ , \\ & \quad c' \ \equiv \ \overline{\alpha} \ + \ \frac{\gamma \ \left[\overline{\alpha} \ q_0 \ + \ (1 \ - \ \overline{\alpha})^2 (1 \ - \ q_0) \right]}{q_0 \ (1 \ - \ q_0) \ (1 \ - \ \overline{\alpha}) \ R} \ . \end{array}$$

Mediocrity of Selected Syndicate

- Proposition 3 establishes for syndicates a result similar to the one obtained for solo venture capitalists.
- Most expert syndicates are cursed in that they cannot render the strategic decertification threat immaterial.
- ► The entrepreneur selects an *intermediate expertise syndicate*.
- It further establishes that the entrepreneur selects within the set of intermediate expertise syndicates, S_{med} ≡ {(i, j) ∈ S | Φ₁^{partic}(α_i, α_j) = 0}, the most heterogeneous one:
 (i, j) ∈ S_{med}, such that α_i and α_i are as distant as possible.

Mediocrity and Heterogeneity of Selected Syndicate across Project Returns



Input parameters:
$$q_0=5\%$$
, $\gamma=2.5\%$, $\overline{lpha}=3/4$

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Impact of Strategic Decertification on Entrepreneur Value



Input parameters: $q_0 = 5\%$, $\gamma = 2.5\%$, $\overline{\alpha} = 3/4$.