Investment and Financing Decisions of an Intrinsically Motivated Entrepreneur

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Introduction

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  - differing beliefs about project payoff (Boot and Thakor, 2011)
  - optimism due to selection into becoming entrepreneur (Landier and Thesmar, 2011)
  - differing preferences.
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Intrinsic motivation: Definition and examples

- Intrinsic rewards: Any rewards beyond the financial rewards associated with accomplishing a goal
- Examples:
  - Create state-of the art technology
  - Academic research
  - Develop a cure for a gruesome disease
  - Social or ecological business

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The basic tradeoff

- On the one hand, intrinsically motivated entrepreneurs are more motivated than "normal" entrepreneurs and may therefore exert higher effort to make their project successful.
- On the other hand, when interacting with financiers who do not share this type of motivation it can come to conflicts of interest about what the best course of action for the business project is.
- In particular, the entrepreneur might want to continue a project that initially does not seem to be very promising while the financier wants to abandon it.

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Related literature

- intrinsic returns in the principal-agent setting (Murdock, 2002; Besley and Ghatak, 2005; van den Steen, 2010)
- control rights and capital structure decisions of managers who value autonomy since they have beliefs about project returns that are differing from those of (new) shareholders (Boot and Thakor, 2011)
- disagreement and corporate investment (Thakor and Whited, 2011)
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The model setup (1)

- There is an entrepreneur with a single investment project and wealth ω
- 3 dates, $t = 0, 1, 2$
- $t = 0$: investment I, $I > \omega$
- The entrepreneur keeps a share α and the equity investor $1 - \alpha$
- The project can be good or bad, measured by its gross return at $t = 2$, $\tilde{R}_2 = R_H$ or $\tilde{R}_2 = R_L$
- Both agents are risk-neutral, but the entrepreneur gets an extra payoff of b in the case of project success at $t = 2$.

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The model setup (2)

- $t = 1$: first project cash flow that gives a signal about the quality of the project
- effort choice: $e = 1$ at cost c, or $e = 0$ at zero cost
- continuation decision: continue or abandon the project, in which case the salvage value is βI
- the entrepreneur can make this decision with probability α
- no discounting.

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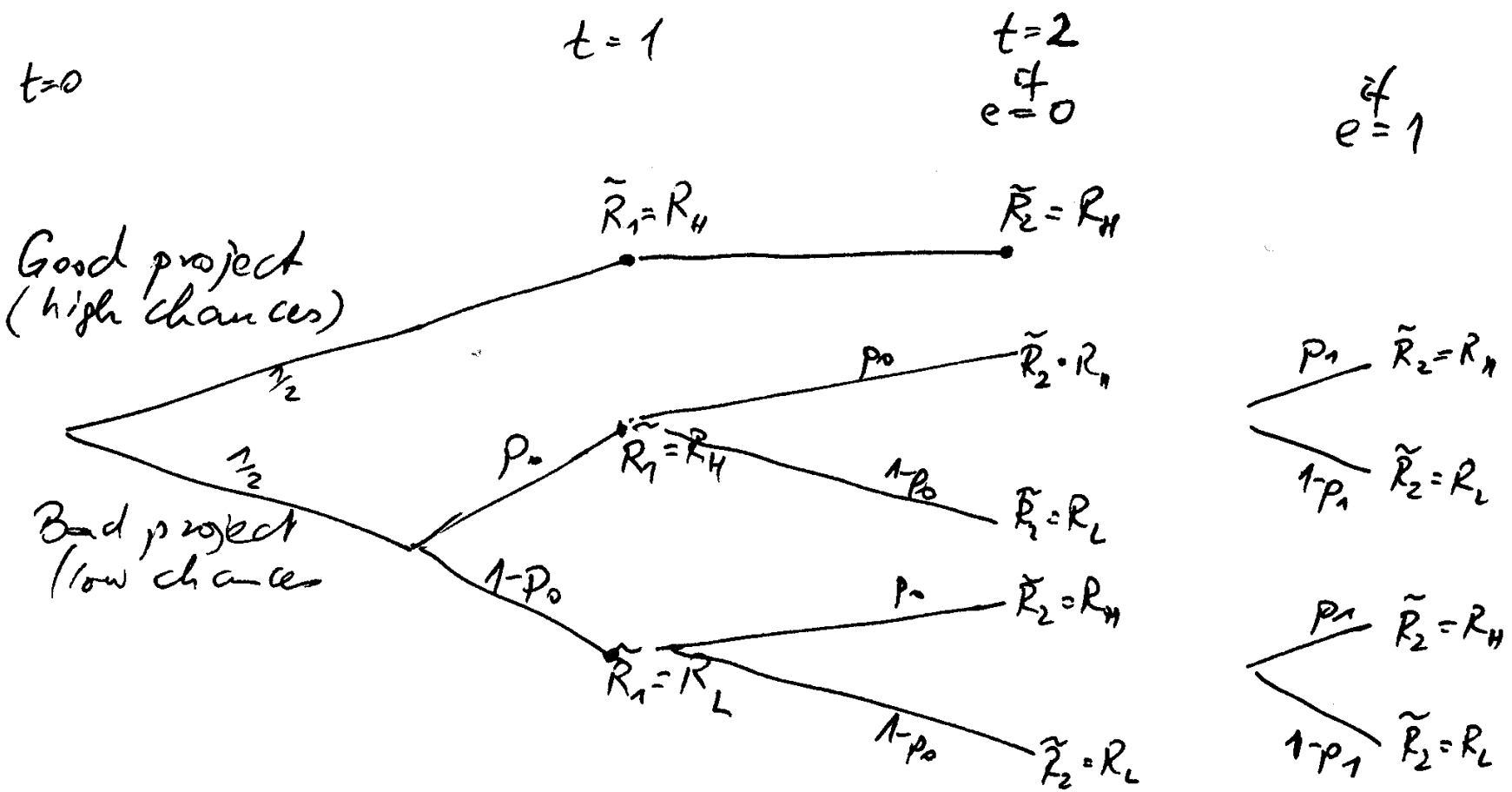
Probabilities and returns



Model solution: effort decision

- The entrepreneur exerts high effort ($e = 1$) if $\alpha(R_H - R_L)I + b - c > 0$
- Thus, the entrepreneur is more likely to choose to exert effort if
  - return difference is larger,
  - the size of the project I is larger,
  - her equity stake is larger,
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Model solution: continuation decision

Assume that the entrepreneur chooses to exert effort, i.e. $e = 1$. The entrepreneur would like to continue if

$$\frac{1 + p_0 p_1}{1 + p_0}(\alpha R_H I + b) + \frac{p_0(1 - p_1)}{1 + p_0}\alpha R_L I - c > \alpha\beta I \qquad (1)$$

The equity investor would like to continue if

$$(1 - \alpha) I \left(\frac{1 + p_0 p_1}{1 + p_0} R_H + \frac{p_0(1 - p_1)}{1 + p_0} R_L \right) > (1 - \alpha)\beta I \qquad (2)$$

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Model solution: disagreement and choice of α

- The interesting case of disagreement is when (1) is true but (2) is not.
- This will be the case if
  - expected (financial) returns are in a medium range – neither too high nor too low,
  - intrinsic returns are sufficiently high, and
  - costs of effort are sufficiently low.
- At $t = 0$, whenever the expected payoff is positive, the entrepreneur keeps the highest possible stake $\alpha = \omega / I$
- The size of the project relative to the wealth of the entrepreneur therefore determines the probability at which she can make the continuation decision at $t = 1$.

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Empirical predictions

- For given financial returns, intrinsically motivated entrepreneurs continue more often (given that their stake is high enough)
- On average, they are less profitable
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The dataset

- PSED (Panel Study of Entrepreneurial Dynamics) of the University of Michigan
- large-scale survey of nascent entrepreneurs from the year 2005-2006
- four yearly follow-up rounds of interviews in 2006-2010
- information on personal characteristics of entrepreneurs, activities during the startup process, firm foundation, co-owners of the business, investments, debts, employees, revenues and expenses.

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Outcome variables

- "everprof" – a dummy variable whether a business ever reached profitability (6 out of 12 months) during the five years of the survey study,
- "timetoprofit" – the number of years until a business becomes profitable,
- "timetoquit" – the number of years that an entrepreneur stays in business before quitting.
- leverage, share of loans from related parties, share of external loans
- performance: ROS, ROE, ROA

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Outcome variables: descriptive stats (1)

Variable	Mean	Observations
everprof	0.27	884
timetoprofit	1.84	243
timetoquit	3.16	969
leverage	0.28	1042
loans_related	0.07	1034
loans_external	0.18	1039

Outcome variables: descriptive stats (2)

Variable	Median	Observations
ROS	0.29	235
ROE	1.00	118
ROA	0.50	123

Two (preferred) proxies for intrinsic motivation

1. A dummy variable that equals one if "to fulfill a personal vision" is important to a great or very great extent and it is more important than "to earn a larger personal income", zero otherwise
2. A dummy variable that equals one if either "to develop an idea for a product" or "to fulfill a personal vision" is important to a great or very great extent and the maximum on the importance scale of these two variables is greater than the maximum of three proxies for extrinsic motivation, zero otherwise

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Intrinsic motivation and controls: descriptive stats

Variable	Mean	Obs
IMot_rel1	0.25	1213
IMot_rel2	0.18	1210
male	0.63	1214
age	43.6	1202
married	0.62	1209
edu_coll	0.28	1214
edu_uni	0.29	1214
edu_postgrad	0.13	1214
ind. experience	0.78	1209
serial entrepren.	.45	1213

Empirical results (1): ever profitable (logit)

	(1)		(2)	
IMot_rel1	-0.361**	(-1.97)		
IMot_rel2			-0.881***	(-3.86)
male	0.204	(1.26)	0.203	(1.24)
age	-0.026	(-0.72)	-0.024	(-0.67)
agesq	0.000	(0.61)	0.000	(0.60)
married	0.113	(0.69)	0.078	(0.47)
edu_coll	0.387*	(1.79)	0.425*	(1.95)
edu_uni	0.284	(1.35)	0.354*	(1.67)
edu_postgrad	0.519**	(2.01)	0.655**	(2.49)
exper1	0.399**	(2.07)	0.404**	(2.09)
entrepr_ser1	0.054	(0.33)	0.062	(0.38)
_cons	-1.041	(-1.29)	-1.088	(-1.34)
N	869		866	

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Empirical results (2): Time in business (ordered logit)

	(1)		(2)	
IMot_rel1	0.276**	(1.99)		
IMot_rel2			-0.024	(-0.16)
male	0.198	(1.61)	0.195	(1.59)
age	0.021	(0.79)	0.020	(0.74)
agesq	-0.000	(-0.29)	-0.000	(-0.24)
married	0.016	(0.13)	0.012	(0.09)
edu_coll	0.225	(1.41)	0.239	(1.49)
edu_uni	0.083	(0.53)	0.093	(0.59)
edu_postgrad	0.535**	(2.56)	0.585***	(2.77)
exper1	0.436***	(3.12)	0.450***	(3.22)
entrepr_ser1	0.105	(0.84)	0.115	(0.91)
N	955		952	

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Empirical results (3)

- no significant effects of motivation on leverage, share of loans form related parties and share of external loans
- performance effects of intrinsic motivation: negative, but not always significant
- Optimism and intrinsic motivation play independent roles; in some cases optimism has also a significantly negative effect on performance.

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Conclusion

- We have analyzed investment, continuation and financing decisions of an intrinsically motivated entrepreneur.
- We model the tradeoff between higher effort and conflict of interest arises with investors.
- There are preliminary empirical results that point to lower profitability but larger persistency in trying to get a business started.

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