



## **A look at how business angels work: decision criteria in investment evaluation**

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- We investigate the **decision-making criteria** adopted by BAs in the **subsequent assessment phases** of the investment process
- Focus on **rejection motivations & deal sources** (i.e. channels through which the business proposals have been forwarded to BAs)
- Analysis of **2,161 ventures** that sought angel investment from an Italian BAN
  
- We find that:
  - lack of business **innovativeness** drives rejections in the **pre-screening** phase, poor **entrepreneurial team** drives rejections in the **screening** phase
  - **higher growth opportunity** is associated with rejection at the **screening** phase, **lower profitability** is associated with rejection at the **due diligence** phase
  - business proposals forwarded by **VCs** are more likely to reach the **due diligence** phase



- Angel financing is a neglected segment of entrepreneurial finance and has received much less attention than VC financing so far (Hellmann et al., 2013; Gompers and Lerner, 2001)
- Prior research on BA decision making has enumerated a broad spectrum of factors that BAs consider when making a funding decision (see Maxwell et al., 2011 for a review)
- Very little effort has been made to study how decision making criteria vary in the course of the investment process → focus on the **decision stage**
  
- Papers that study how criteria vary across stages:
  - ventures' **readiness** (Brush et al., 2012)
  - “**fatal flaws**” in the initial screening phase (Maxwell et al., 2011)
  - **opportunity** vs **entrepreneur** strength moderated by BAs' experience (Mitness et al., 2012)



In the **pre-screening** (desk-rejection)

- general impression of the investment proposal and **commercialization potential** and **innovativeness** of the product (Landström, 1998; Mittness et al., 2012)
- **IP protection** and reliable **technology** are important features to move past the desk rejection (Brush et al., 2012; Haar et al., 1988)
- **less** importance to **market potential** compared to VCs (Fiet, 1995; Mason and Stark, 2004)

***H1a.** In the pre-screening stage, BAs are more likely to reject the business proposals that do not provide **any apparent innovativeness***

***H1b.** In the pre-screening stage, BAs are more likely to reject the business proposals with **poor business potential***



In the **screening** (elevator pitch)

- **agency risk**: divergent interests between entrepreneurs and investors that lead entrepreneurs not to act in the best interests of the investor (Landström, 1992; Sørheim, 2003; Van Osnabrugge and Robinson, 1999)
- judgment of the **entrepreneurial team** as a mean to reduce **agency risk** become relevant (Maxwell and Chesques, 2014)
- “**chemistry**” between BAs and the entrepreneur (Mason and Stark, 2004; Parhankangas and Ehrlich, 2014)

***H2.** In the screening stage, BAs are more likely to reject business proposals that are not convincing in terms of **characteristics** of the **entrepreneurial team***



## In the **due diligence**

- it is not as formal and sophisticated as the one conducted by VCs (Wiltbank, 2005),
- BAs are not only return-driven
- but they invest their own funds!
- thus, an assessment of the venture's **growth** perspectives and **financial status** is important

***H3.** In the due diligence stage BAs are more likely to reject the proposals with **poor financial records***

- selection of business proposals as efficiently as possible (Madill et al., 2005)
- **shortcut heuristic** decision making (Maxwell et al., 2011)
- high **information asymmetries** between start-ups and investors

***H4.** Business proposals that are **put forward by VCs** are more likely to proceed in the evaluation phases and to **reach the due diligence** stage*



- 2,161 ventures
- Italian Business Angel group, Italian Angel for Growth (IAG)
- February 2008 - April 2014

Information available:

- localization and industry of the ventures
  - motivations underlying the rejection
  - channels through which the proposal has been forwarded to the BA group
  - matched with accounting data from ORBIS
- We restricted the analysis to those ventures that completed the evaluation process by April 2014: **1,942 ventures**

Of those 21 were invested by 118 BAs in 29 rounds of financing



# Description of the sample

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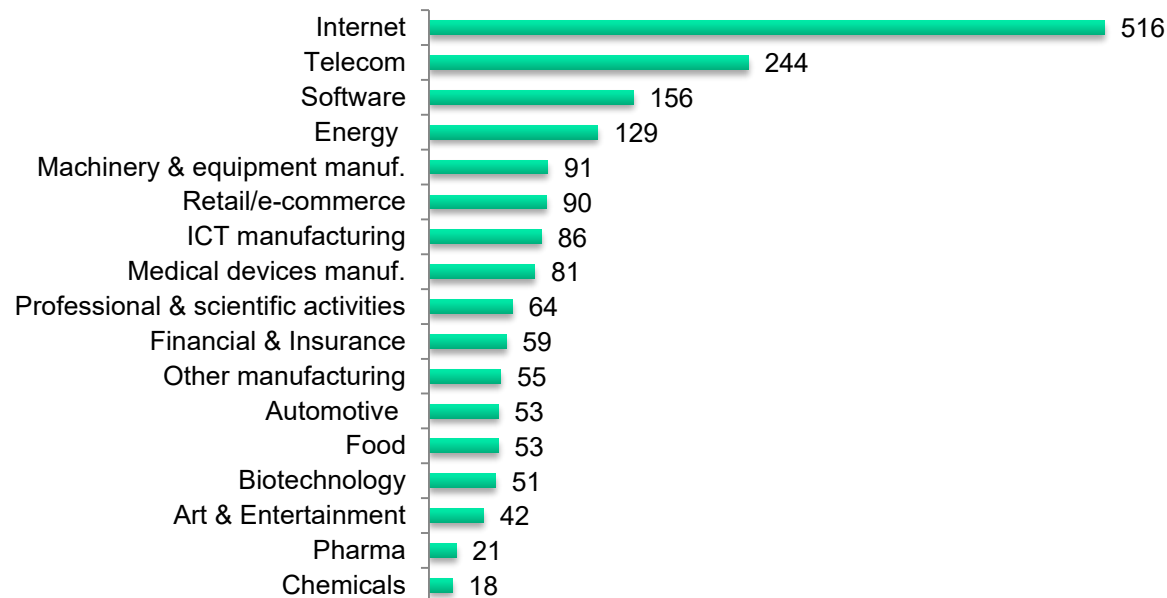
1,942 pre-screening

540(28%)screening

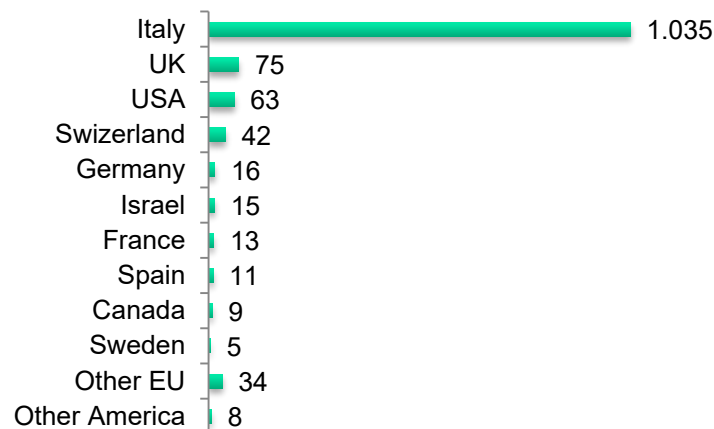
74 (3.9%) due diligence

21(1.1%) invested

## Industry distribution



## Country







## Definition of the variables employed in the empirical analysis

Variable	Description
Rejected	categorical variable equal to: 0 if the venture was rejected after the pre-screening stage; 1 if it was rejected after the screening stage; 2 if it was rejected after the due diligence
<b>Motivations for rejection (dummies)</b>	
Poor business potential	lack of completeness and/or soundness of the business plan; poor business growth prospects
Weak entrepreneur/management team	lack of trustworthiness, competence, and/or commitment
No innovativeness	little/no innovativeness; lack of proprietary technology
Poor market potential	a market that is too localized, little (niche) and/or mature; presence of high entry barriers; severe competition
Poor investor-opportunity fit	wrong investment target; lack of geographical closeness; no reasonable exit plan
<b>Contact channel</b>	
BAN; IAG; VC; Event; Incubator; Website	Dummy variable equal to 1 if the business proposal was forwarded by a BAN; a member of IAG; a VC; presented in a formal event; an incubator; forwarded through the IAG website, and 0 otherwise;
<b>Financial indicators and firm-level variables</b>	
IntangiblesK	Intangible assets/total assets
ROE	Net profit/equity
Current ratio	Current assets/current liabilities
DebtK	Long term liabilities/total assets
LogK	Logarithm of total assets
Distance	Logarithm of geographical distance in miles
Age	Logarithm of firm age in the year of the evaluation



	Rejected after pre-screening		Rejected after screening		Difference	Rejected after due diligence		Difference
	N obs	Mean (1)	N obs	Mean (2)	(2)-(1)	N obs	Mean (3)	(3)-(1)
IntangiblesK	1249	0.204	589	0.2855	0.0815***	103	0.333	0.129***
ROE	1203	-0.131	549	-0.198	-0.067	100	-0.447	-0.316*
Current ratio	1145	2.290	490	2.654	0.364*	81	2.330	0.040
DebtK	1152	0.116	496	0.115	-0.001	82	0.115	-0.001
LogK	1278	5.531	613	5.256	-0.275**	106	5.810	0.279*
Distance (miles)	832	3808.187	419	3778.667	-29.521	50	3183.70	-624.483
Age (years)	334	5.506	183	3.759	-1.746 ***	26	4.615	-0.891**

Mean values for the years prior to the evaluation, including the evaluation year. Significance at \*\*\* 1 %, \*\* 5 %, \* 10 % level.



# Results (1/3)

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	Rejected after screening	Rejected after screening	Rejected after due diligence	Rejected after due diligence
	I	II	III	IV
IntangiblesK	1.1790** (0.524)	1.3874*** (0.5106)	1.3957 (1.3513)	1.3682 (1.1219)
ROE	-0.1936 (0.1503)	-0.1258 (0.153)	-0.7066** (0.3134)	-0.7049** (0.3184)
Current ratio	0.0750** (0.035)	0.0851** (0.0381)	0.0910 (0.0789)	0.1162 (0.0907)
DebtK	-0.3840 (0.6328)	0.1645 (0.6135)	-0.2458 (1.6823)	-0.0321 (1.5997)
LogK	0.1584* (0.0936)	0.0487 (0.096)	0.0024 (0.1967)	-0.0497 (0.2205)
Distance	0.0195 (0.0577)	-0.0069 (0.0575)	-0.1060 (0.1301)	-0.1308 (0.1234)
Age	-0.4436** (0.2123)	-0.2427 (0.221)	0.6201 (0.4754)	0.8894* (0.4925)
<b>Contact channel</b>				
BAN		1.8989*** (0.5166)		1.6915 (1.2898)
IAG		1.5636*** (0.4138)		1.8151 (1.1502)
VC		2.2711*** (0.595)		3.7574*** (1.3146)
Event		1.7837*** (0.4733)		1.5701 (1.2963)
Incubator		0.9323 (0.7508)		1.7044 (1.6968)
Industry dummies	yes	yes	yes	yes
Country dummies	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes
Constant	-2.0158** (0.8829)	-3.2708*** (1.0465)	-4.0261* (2.2342)	-5.8951*** (2.2422)
N obs	427	465	427	465
Log Likelihood	-281.9	-293.9	-281.9	-293.9
Pseudo R <sup>2</sup>	0.15	0.21	0.15	0.21

Multinomial logistic regression model



# Results (1/3) – mlogit

	Rejected after screening	Rejected after screening	Rejected after due diligence	Rejected after due diligence	
	I	II	III	IV	
IntangiblesK	1.1790** (0.524)	1.3874*** (0.5106)	1.3957 (1.3513)	1.3682 (1.1219)	
ROE	-0.1936 (0.1503)	-0.1258 (0.153)	-0.7066** (0.3134)	-0.7049** (0.3184)	<b>H3 partially supported</b>
Current ratio	0.0750** (0.035)	0.0851** (0.0381)	0.0910 (0.0789)	0.1162 (0.0907)	
DebtK	-0.3840 (0.6328)	0.1645 (0.6135)	-0.2458 (1.6823)	-0.0321 (1.5997)	
LogK	0.1584* (0.0936)	0.0487 (0.096)	0.0024 (0.1967)	-0.0497 (0.2205)	
Distance	0.0195 (0.0577)	-0.0069 (0.0575)	-0.1060 (0.1301)	-0.1308 (0.1234)	
Age	-0.4436** (0.2123)	-0.2427 (0.221)	0.6201 (0.4754)	0.8894* (0.4925)	
N obs	427	465	427	465	
Log Likelihood	-281.9	-293.9	-281.9	-293.9	
Pseudo R <sup>2</sup>	0.15	0.21	0.15	0.21	



# Results (2/3) – mlogit

	Rejected after screening	Rejected after screening	Rejected after due diligence	Rejected after due diligence
	I	II	III	IV
<b>Contact channel</b>				
BAN		1.8989*** (0.5166)		1.6915 (1.2898)
IAG		1.5636*** (0.4138)		1.8151 (1.1502)
VC		2.2711*** (0.595)		3.7574*** (1.3146)
Event		1.7837*** (0.4733)		1.5701 (1.2963)
Incubator		0.9323 (0.7508)		1.7044 (1.6968)
Industry dummies	yes	yes	yes	yes
Country dummies	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes
N obs	427	465	427	465
Log Likelihood	-281.9	-293.9	-281.9	-293.9
Pseudo R <sup>2</sup>	0.15	0.21	0.15	0.21

**H4 supported**



# Robustness – seqlogit

seqlogit	Rejected after screening	Rejected after due diligence	
	II	IV	
IntangiblesK	1.1154** (0.4739)	2.5039* (1.3335)	<b>H3 partially supported</b>
ROE	0.0047 (0.1390)	-0.7498* (0.3936)	
Current ratio	0.0541* (0.0327)	0.1127 (0.0769)	
DebtK	0.2395 (0.5851)	0.0855 (1.5932)	
LogK	0.0006 (0.0903)	0.0726 (0.2179)	
Distance	0.0000 (0.0000)	0.0000 (0.0001)	
Age	-0.2578 (0.2061)	0.9350* (0.5405)	
N obs	467	467	
Log Likelihood	-315.5	-315.5	



# Robustness – seqlogit

seqlogit	Rejected after screening	Rejected after due diligence
	II	IV
<b>Contact channel</b>		
BAN	1.9225*** (0.4874)	1.0174 (1.3252)
IAG	1.5703*** (0.3987)	1.8883 (1.1854)
VC	2.0274*** (0.5499)	4.3045*** (1.4162)
Event	1.8162*** (0.4543)	2.4011* (1.3459)
Incubator	1.0417 (0.7067)	2.1910 (1.6926)
Industry dummies	yes	yes
Country dummies	yes	yes
Year dummies	yes	yes
N obs	467	467
Log Likelihood	-315.5	-315.5

**H4 supported**



# Results (3/3) – probit

<b>Rejected after screening</b>	
IntangiblesK	0.9700*** (0.3241)
ROE	-0.0596 (0.0938)
Current ratio	0.0660*** (0.0226)
DebtK	-0.3549 (0.4021)
LogK	0.0766 (0.058)
Distance	0.0226 (0.037)
Age	-0.0277 (0.1418)
<b>Contact channel</b>	
BAN	1.0935*** (0.3063)
IAG	0.8248*** (0.2409)
VC	1.5079*** (0.3611)
Event	0.8898*** (0.2759)
Incubator	1.2465*** (0.4696)

## Motivations for rejection

Poor business potential	0.0769 (0.1793)
Weak entrepreneurial team	0.5962** (0.2886)
No innovativeness	-0.5234** (0.2186)
Poor market potential	-0.3443 (0.305)
Industry dummies	yes
Country dummies	yes
Year dummies	yes
Constant	-3.0963*** (0.618)
N obs	427
Log Likelihood	-212.9
Pseudo R <sup>2</sup>	0.19

**H1b not supported**

**H1a & H2 supported**





- lack of business **innovativeness** drives rejections in the **pre-screening** phase
- poor **entrepreneurial team** characteristics drives rejections in the **screening** phase
- **higher potential growth** opportunities, i. e. high levels of intangible assets and liquidity, are positively associated with rejection in the **screening** phase
- **poor profitability** positively associated with rejection after **due diligence**
- projects put forward by **VCs** are more likely to reach the **due diligence** stage

## Limitations

- data from one angel investment group, located in Northern Italy
- the rejection decisions are not taken by single BAs, but by IAG as a group → could not control for moderating effects of BA background
- no access to information on business plans



# Q&A

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## **Innovation and export in SMEs: the role of concentrated bank borrowing**

Serena Frazzonia, Maria Luisa Mancusib, Zeno Rotondic, Maurizio Sobrerod Andrea Vezzullie

“Sowing the seeds of the future: The financing of tomorrow’s innovations”,  
Bergamo, June 26<sup>th</sup>, 2015



# Theory and contribution of the paper

3 streams of literature:

- effects credit constraints on firm internationalization
- link between innovation and exporting (causality?)
- financial constraints, the role of bank-firm relationship and innovation

How do you position according to these streams?

Contributions:

- Previous studies have not analysed the effect of the intensity of bank-firm relationship on innovation and export simultaneously
- Use of concentrated borrowing as a proxy for relationship banking/informational tightness
- Does it really capture the impact of “soft” information (shared by the firm) on credit rationing? → principal component analysis
- Disentangle the effects: a matter of trust, more monitoring, ...



# Empirical methods

The positive effect of firm-bank tight relationship on export is only marginally mediated by the SME's increased propensity to introduce product innovation:

*innoprod*: binary variable equal to 1 if the firm has introduced at least one innovative product in the 3 years before → do not know if it is successful

- 1) not capture potential innovators: firms that did not innovate because they were financially constrained (Hottenrott & Peters (2012) found that the higher the innovative capabilities, the higher the constraints, internal financial resources being equal)
- 2) other measures for innovation: definition of innovative SME for example (% graduated employee/PhD, % training/R&D expense, patents...)
- 3) average effect (small/medium, sector → high tech??, age...)

*conc\_bank* and *innoprod* are endogenous in the equation:

→ other instruments: judicial efficiency → reduce moral hazard for banks

R-quadro of models?

Controls:

- financial crisis (two surveys 2004-2006, 2007-2009 pooled together) → longitudinal analysis??
- ownership/organizational structure (family-firms)

SMEs: 7560 SMEs → final sample of 4341 SMEs → is the sample representative? + some description of the sample



## Future extensions

Findings suggest that a strong bank-firm relationship increases both export propensity and intensity and that this effect can be explained by the “bank lending channel” hypothesis, i.e. by its role in mitigating credit constraints for the firm

Alternative explanations underexplored in the paper:

- In loco services (takings management services abroad/foreign treasury activity /assistance abroad for local funding) vs advisory services
- “informational” channel → bank knowledge of the foreign market
- Diversification of exports