Business Angels and similarity – empirical findings from a German dataset

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BAE Business Angels Europe Conference on
Angel Investment Research 2019
Berlin, Germany
March 13th, 2019

What we did

- Investments in young ventures are highly determined by **information asymmetries**.

- This holds especially for **business angels**. As private investors they invest their own money mainly in young companies in seed- and start-up phases.

- **Social identity theory** states that uncertainty can be reduced through similarity aspects between two individuals (Paul, Whittam & Wyper, 2007; Balachandra, Sapienza & Kim, 2014).

- Hence, similarity between the angel investor and the CEO might be a precondition in the selection process.

- Existing empirical **evidence from the VC literature** so far suggests that collaborations based on **similarity** have a **negative influence on the performance** (Gompers et al., 2016).

- This might **not be observable for business angel** investments because of the personal relationship between the business angel and the CEO. Therefore, we build a unique sample consisting of:

  - 742 early stage investments by 241 German business angels between 2005 and 2016

Dataset – Variables

Biographic Data on Business Angels and CEOs			**Venture and Deal Data**
Personal characteristics	Education	Profession	

▪ Name	▪ University	▪ Work exp.	▪ Venture location and industry
▪ Gender	▪ Major for all degrees	▪ Company	▪ Deal date, type and size
▪ Age		▪ Venture	▪ Exit type and date
▪ Residence		▪ Industry	

Final sample covers 241 German Business Angels who have executed 742 deals

Descriptive statistics

Deal

Variable	Mean	Median	Obs	
Deal No	1	1	655	
Deal Size	3.6 mEUR	1.3 mEUR	388	
Valuation	26.9 mEUR	11.2 mEUR	83	
Venture Age	1.7 years	1 year	742	

Venture

Venture Industry	Abs	%
Technology, Media & Telecommunication	457	62%
Consumer Goods & Retail	129	17%
Financial Services	56	8%
Airlines, Travel, Transportation & Logistics	26	4%
Pharma & Health care	20	3%
Education, Social & Public Sector	13	2%
Real Estate	10	1%
Automotive	8	1%
Consulting	7	1%
Energy & Utilities	7	1%
Private Equity / Venture Capital	6	1%
Materials	2	0%
Construction & Manufacturing	1	0%
	742	**1**

Venture Country	Abs	%
Germany	463	62.4%
USA	148	19.9%
UK	32	4.3%
others	99	13.3%
	742	**1.0**

Counterfactual dataset to investigate the influence of similarity on the investment decision

Built matches between the business angels and the CEOs based on:

- **Funding year**

Venture of the CEO has to receive funding in a year when the business angel also did an investment

- **Industry**

Venture has to operate in the same industry as the venture in which the business angel invested in the respective year

- **Location**

venture has to be located in the same country as the actual portfolio company

Constructing a counterfactual dataset

Duration model to assess the influence on the success of the venture

- The underlying duration data is right-censored

- Simple regression models are inappropriate for the analysis of duration data

- We use a Cox's semi-parametric proportional hazards models (Cox, 1972)

- In our model, we have two different exit options Success or Liquidation
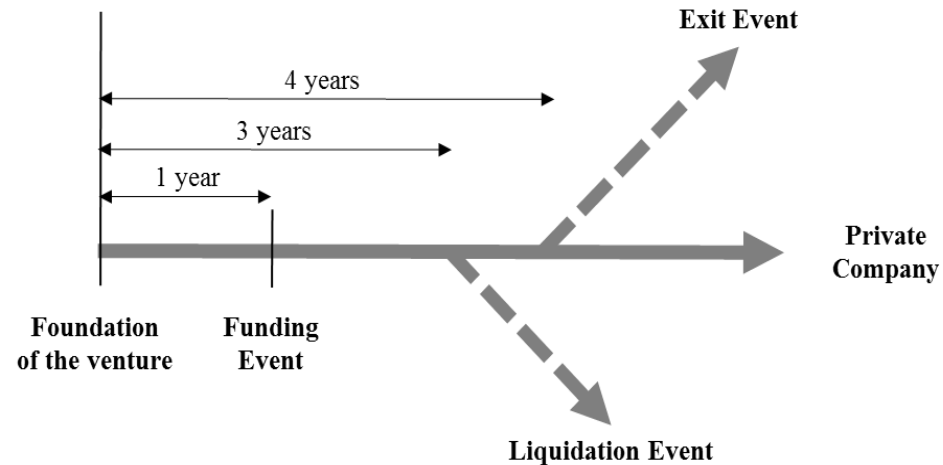
Implementing a competing risk model

Decision making – does similarity play a role? TLM

	Probit Regression (deal as dep. variable)					
	(1)	(2)	(3)	(4)	(5)	(6)
Same Institution	0.46***	0.42***	0.41***	0.70***	0.68***	0.56***
	(0.11)	(0.11)	(0.12)	(0.17)	(0.17)	(0.18)
Same Background	0.18***	0.23***	0.25***	0.15**	0.19**	0.22**
	(0.06)	(0.08)	(0.08)	(0.08)	(0.09)	(0.09)
Institution BA not CEO		-0.02	-0.08		-0.01	-0.07
		(0.07)	(0.07)		(0.07)	(0.07)
Institution CEO not BA		0.22**	0.17		0.22**	0.17
		(0.10)	(0.10)		(0.10)	(0.10)
Background CEO not BA		0.11	0.12		0.11	0.12
		(0.08)	(0.09)		(0.08)	(0.09)
Background BA not CEO		0.01	0.09		0.01	0.09
		(0.08)	(0.09)		(0.08)	(0.09)
log Age of the venture		-0.10**	-0.04		-0.10**	-0.04
		(0.05)	(0.05)		(0.05)	(0.05)
Founding Exp. CEO		-0.15**	-0.11*		-0.15**	-0.11*
		(0.06)	(0.06)		(0.06)	(0.06)
Deal Exp. BA		0.13**	0.19***	0.14**	0.13*	0.18**
		(0.06)	(0.06)	(0.07)	(0.07)	(0.07)
1.Same Institution#1.Deal Exp. BA				-0.46**	-0.45*	-0.26
				(0.23)	(0.23)	(0.23)
1.Same Background#1.Deal Exp. BA				0.08	0.09	0.08
				(0.12)	(0.12)	(0.12)
Year FE	NO	NO	YES	NO	NO	YES
Constant	-1.15***	-1.12***	4.75	-1.20***	-1.13***	4.75
	(0.03)	(0.08)	(99.58)	(0.04)	(0.08)	(99.58)
Observations	3,198	3,198	3,196	3,198	3,198	3,196
Pseudo R-squared	0.0110	0.0201	0.0758	0.0148	0.0217	0.0764

Same Institution and same background
show an effect through all specifications

Does similarity influence success?

	Competing Risk Model (success as dep. variable)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Same Institution	0.54**	0.54**	0.59**	0.57**	0.73**	0.77**	0.91***	0.93***
	(0.23)	(0.23)	(0.23)	(0.23)	(0.32)	(0.31)	(0.31)	(0.31)
Same Background	0.09	0.02	0.18	0.15	-0.04	-0.06	0.08	0.02
	(0.16)	(0.20)	(0.20)	(0.20)	(0.22)	(0.25)	(0.25)	(0.26)
Institution BA not CEO		0.18	0.14	0.08		0.17	0.12	0.06
		(0.19)	(0.19)	(0.20)		(0.19)	(0.20)	(0.20)
Institution CEO not BA		0.15	0.22	0.10		0.14	0.22	0.09
		(0.30)	(0.29)	(0.30)		(0.30)	(0.29)	(0.29)
Background CEO not BA		-0.17	-0.07	-0.08		-0.16	-0.05	-0.07
		(0.22)	(0.23)	(0.23)		(0.22)	(0.23)	(0.23)
Background BA not CEO		-0.05	0.07	0.05		-0.05	0.07	0.05
		(0.23)	(0.23)	(0.23)		(0.23)	(0.23)	(0.23)
log Age of the venture		-0.55***	-0.27**	-0.24**		-0.56***	-0.28**	-0.25**
		(0.11)	(0.12)	(0.12)		(0.11)	(0.12)	(0.12)
Syndicate		0.20	0.24	0.26		0.21	0.25	0.27
		(0.22)	(0.23)	(0.23)		(0.22)	(0.23)	(0.23)
Founding Exp. CEO		-0.11	0.11	0.16		-0.11	0.12	0.18
		(0.16)	(0.17)	(0.17)		(0.16)	(0.17)	(0.17)
Deal Exp. BA		0.17	0.21	0.24	0.01	0.16	0.21	0.23
		(0.15)	(0.15)	(0.16)	(0.18)	(0.19)	(0.19)	(0.20)
1.Same Institution#1.Deal Exp. BA					-0.39	-0.48	-0.63	-0.70
					(0.46)	(0.45)	(0.45)	(0.45)
1.Same Background#1.Deal Exp. BA					0.27	0.18	0.24	0.26
					(0.31)	(0.32)	(0.31)	(0.33)
Year FE	NO	NO	YES	YES	NO	NO	YES	YES
Country FE	NO	NO	NO	YES	NO	NO	NO	YES
Observations	742	742	742	742	742	742	742	742

Same Institution
has a positive influence on success
while same background
Doesn't show an effect through all specifications

Does similarity influence success?

|	Competing Risk Model (bankruptcy as dep. variable)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Same Institution	-0.86	-0.97	-1.04	-1.18*	-1.12	-1.19	-1.20	-1.24
	(0.72)	(0.72)	(0.72)	(0.66)	(1.02)	(1.02)	(1.02)	(0.90)
Same Background	-0.80**	-0.64*	-0.67*	-0.58	-1.00**	-0.84*	-0.88*	-0.73
	(0.32)	(0.37)	(0.40)	(0.40)	(0.41)	(0.45)	(0.49)	(0.49)
Institution BA not CEO		-0.26	-0.01	-0.11		-0.28	-0.07	-0.15
		(0.33)	(0.35)	(0.36)		(0.33)	(0.35)	(0.37)
Institution CEO not BA		-0.06	-0.05	-0.07		-0.06	-0.07	-0.08
		(0.54)	(0.58)	(0.60)		(0.54)	(0.58)	(0.60)
Background CEO not BA		0.21	0.23	0.30		0.22	0.24	0.33
		(0.32)	(0.33)	(0.34)		(0.32)	(0.33)	(0.34)
Background BA not CEO		0.37	0.22	0.11		0.37	0.23	0.12
		(0.33)	(0.35)	(0.36)		(0.33)	(0.36)	(0.37)
log Age of the venture		-0.47***	-0.48**	-0.38*		-0.47***	-0.48**	-0.38*
		(0.17)	(0.21)	(0.21)		(0.18)	(0.21)	(0.21)
Syndicate		0.18	0.16	0.37		0.17	0.11	0.34
		(0.41)	(0.44)	(0.49)		(0.41)	(0.44)	(0.49)
Founding Exp. CEO		0.53**	0.59**	0.57**		0.54**	0.58**	0.56**
		(0.24)	(0.25)	(0.26)		(0.24)	(0.25)	(0.26)
Deal Exp. BA		-0.54**	-0.58**	-0.35	-0.67**	-0.65**	-0.69**	-0.43
		(0.25)	(0.25)	(0.26)	(0.27)	(0.28)	(0.28)	(0.29)
1.Same Institution#1.Deal Exp. BA					0.57	0.46	0.29	0.11
					(1.43)	(1.43)	(1.42)	(1.31)
1.Same Background#1.Deal Exp. BA					0.45	0.59	0.61	0.42
					(0.64)	(0.64)	(0.67)	(0.70)
Year FE	NO	NO	YES	YES	NO	NO	YES	YES
Country FE	NO	NO	NO	YES	NO	NO	NO	YES
Observations	742	742	742	742	742	742	742	742

Same Institution
has no significant effect, yet
shows negative signs
while same background
Is negatively significant
associated

Discussion

Thank you for your attention!

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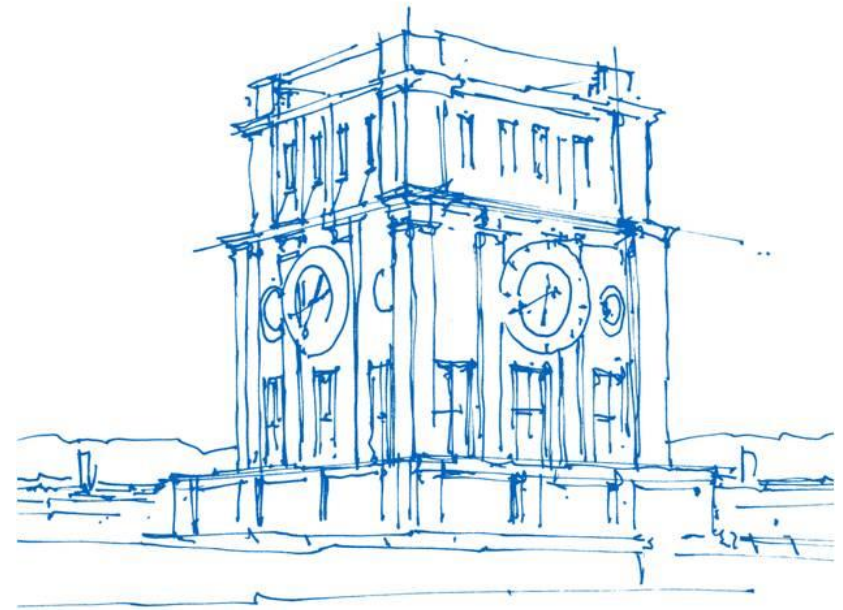
Independent variables

	Full Sample
Same Gender	91%
Same Age	18%
Same City	35%
Same Country	57%
Same Uni	7%
Same Private Uni	4%
Same State Uni	3%
Same Degree	27%
Same higher degree	20%
Both no degree	3%
Both Management	24%
Both Tech	7%
Same Company	10%
Same Industry	83%
Observations	*785*

Both
Based on binary variables indicating that business angel and CEO share a certain background

Same
Based on string variable indicating that they share exactly the same background

Independent variables

	A. Full Samlple	B. Private Ventures	C. Exited Ventures	D. Liqui-dated Ventures	t-test C vs. B t	t-test C vs. B Pr(T < t)	t-test D vs. B t	t-test D vs. B Pr(T > t)
Same Gender	91%	91%	92%	92%	-0.68	0.25	-0.33	0.63
Same Age	18%	16%	25%	16%	-2.65	0.00	0.01	0.50
Same City	35%	34%	39%	29%	-1.21	0.11	0.76	0.22
Same Country	57%	58%	60%	47%	-0.39	0.35	1.86	0.03
Same Uni	7%	7%	9%	3%	-0.87	0.19	1.35	0.09
Same Private Uni	4%	3%	5%	0%	-1.17	0.12	1.63	0.05
Same State Uni	3%	3%	3%	3%	0.01	0.50	0.27	0.40
Same Degree	27%	27%	29%	23%	-0.46	0.32	0.85	0.20
Same higher degree	20%	21%	20%	12%	0.11	0.46	1.79	0.04
Both no degree	3%	2%	5%	1%	-2.46	0.01	0.35	0.36
Both Management	24%	24%	26%	16%	-0.62	0.27	1.55	0.06
Both Tech	7%	9%	3%	1%	2.57	0.99	2.28	0.01
Same Company	10%	11%	12%	1%	-0.43	0.33	2.59	0.00
Same Industry	83%	80%	90%	87%	-3.23	0.00	-1.38	0.92
Observations	785	524	186	75	710	710	599	599