

Are Some Angels Better than Others?

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IPC Research Workshop Series
July 10, 2024

Angels are Important for Early-stage Finance

For now: Angels = pre-institutional investors in companies that hope to later get institutional equity

- United States (Source: Centre for Venture Research):
 - ▶ 64,000 angel-funded deals in 2016, compared to 8,500 by VC
 - ▶ Around 300,000 angel investors
 - ▶ 19% growth in total investments from 2016-2020
 - ▶ \$25.3bn market in 2020
- Europe (Source: European Business Angel Network):
 - ▶ 15% growth in total investments from 2016-2020
 - ▶ EUR 7.7bn market in 2020

The Problem

- We don't know much about them.
- Who even are angel investors?
 - ▶ High net worth individuals?
 - ▶ Members of angel consortia?
 - ▶ Formal vs informal investment?
- What do angel investors look like?
- What do their investments look like?
- Are some angels better than others?
- How do their other (non-angel) investments compare?

Paper in a Nutshell

This is a data-driven, descriptive paper

- Data from Norway: Equity investments made by individual investors
- First going to address a couple of empirical challenges:
 - ▶ What is an angel investor?
 - ▶ What is a high-growth potential firm? (Defined ex ante, before growth occurs)
- Then lay out some facts:
 - ▶ Massive skewness in returns; avg is about 2x, but around 35% are total losses and most lose money
 - ▶ Strong investor-level variation in performance - FE explain approximately one-third of the total variation
 - ▶ Some angels are simply better than other angels: They hit the home runs
 - ▶ Selection ability, treatment effect, network channel, or luck?
 - ★ Our data do not allow us to determine whether better angels *pick* better firms or whether they *create* better firms
 - ★ Our data do allow us to contrast better access to deal flow with better selection as potential channels
 - ★ Evidence against the network story
 - ★ Industry-specific knowledge mixed with deal-selection skill is important for explaining performance differences

Understanding Angel Investors

- Bach, Baghai, Stromberg and Warg (2023):
 - ▶ Who are angel investors?
 - ▶ Detailed Swedish administrative data on who they are, their military service, etc.
 - ▶ Much less information on how their investments perform
- This paper:
 - ▶ What do their investments look like?
 - ▶ Detailed transaction-level data
 - ▶ Much less information on individual's backgrounds

Outline of the Talk

- Key measurement issues:
 - ▶ What is a “High Innovation Potential” firm?
 - ▶ What is an angel investor?
- Key findings:
 - ▶ Distribution of angel returns
 - ▶ Determinants of the cross-sectional variation in returns
 - ▶ Why do some angels earn higher returns than others?

Sample Construction

Based on Kisseleva, Mjøs and Robinson (2023), Andrews, Fazio, Guzman, Liu and Stern (2022)

Category	Count	%
Firms (C-corps) founded in 2004–2017	321,548	
- Financial services and real estate firms	-143,496	
- Subsidiaries of established companies	-19,499	
- Holding structures	-6,275	
- Transaction data not matched	-27,930	
- Non-innovative industry	-45,152	
Population of newly established (potentially interesting) firms: (A)	79,196	100.00%
<i>of which at least one VC investment: (B)</i>	902	1.14%

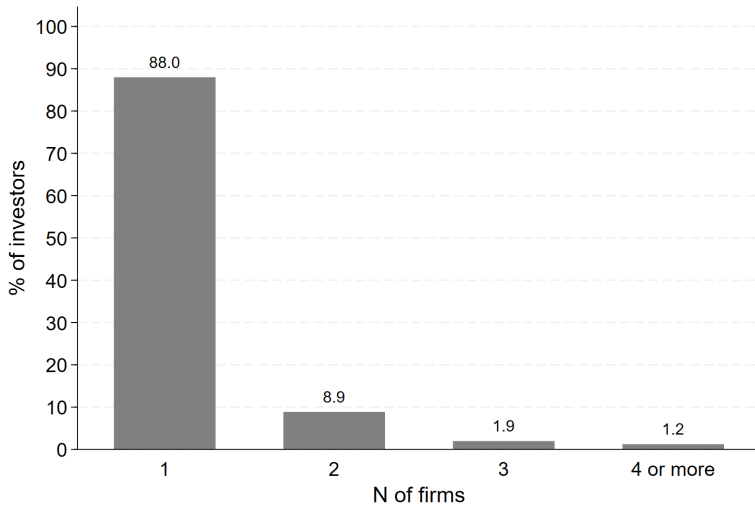
Identifying Growth-Oriented Startups

Ex ante Innovation Flags	Firms	% of (A)
English name	26,452	33.40%
Located in an innovation hub (Oslo, Bergen, Stavanger, Trondheim)	23,887	30.16%
At least one board member who lives far from the firm	14,148	17.86%
High Innovation Potential (HIP) Firms	Firms	% of Baseline
At least one ex ante innovation flag (C)	46,121	58.24% of (A)
... and received at least one VC investment	810	89.80% of (B)
of which one ex ante innovation flag	30,166	65.41% of (C)
of which two ex ante innovation flags	13,544	29.37% of (C)
of which three ex ante innovation flags	2,411	5.23% of (C)

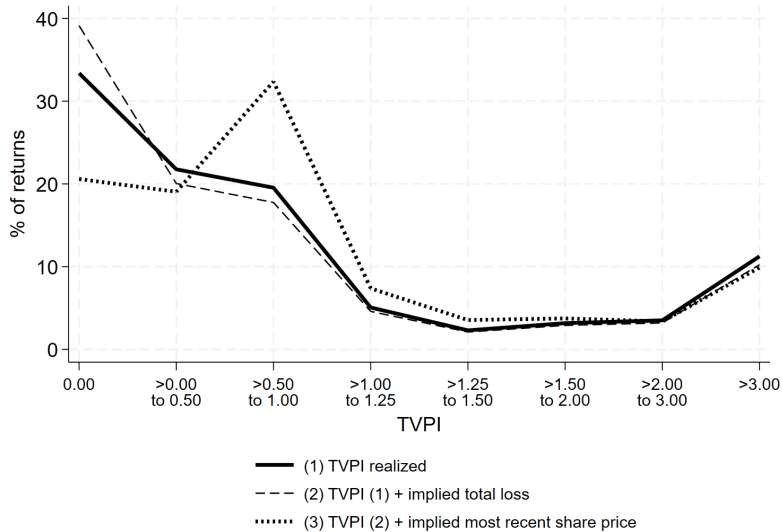
Define Angel Investors

- Non-founder individual investors in growth-oriented startups
- 36,749 individuals: 6.1% of all direct equityholders and 0.8% (1.3%) of the entire (working) population
- They make around 66,000 investments in financing rounds and 9,400 secondary trades
- We can observe and differentiate:
 - ▶ Family – exclude (Baik, Karlsen, Kisseleva (2023))
 - ▶ Repeat angels (Bach, Baghai, Stromberg and Warg (2023))
 - ▶ Wealthy angels (Lindsey and Stein (2020))
 - ▶ (Board) Experienced angels

In How Many Firms Do Angels Invest?



Distribution of Angel Investment Returns



Cross-Sectional Variation in Angel Returns

Angel's total N of investments	>=1	>=2	>=2	>=3	>=4	>=1
	(1)	(2)	(3)	(4)	(5)	(6)
Repeat angel (1/0)	0.061*** (0.023)					0.017* (0.010)
Board experienced angel (1/0)	0.006 (0.013)	-0.001 (0.020)				0.034*** (0.007)
<i>Investor Characteristics</i>						
Ln (Investor age)	-0.128*** (0.027)	-0.205*** (0.039)				0.013 (0.015)
Male (1/0)	0.033* (0.019)	0.027 (0.028)				0.021*** (0.007)
High wealth (1/0)	-0.026 (0.020)	-0.008 (0.022)				0.025** (0.011)
<i>Investment Characteristics</i>						
Ln (Investment amount)	-0.047*** (0.008)	-0.066*** (0.008)	-0.110*** (0.008)	-0.107*** (0.009)	-0.102*** (0.009)	-0.108*** (0.007)
Secondary purchase (1/0)	0.023 (0.038)	-0.013 (0.035)	-0.018 (0.023)	-0.027 (0.025)	-0.037 (0.027)	0.013 (0.020)
Ln (Holding period)	-0.098*** (0.020)	-0.079*** (0.025)	0.027 (0.029)	0.026 (0.031)	0.026 (0.034)	0.060*** (0.023)
Board seat (1/0)	0.057** (0.024)	0.107*** (0.026)	0.110*** (0.028)	0.130*** (0.029)	0.130*** (0.031)	0.140*** (0.013)
% of investment realized	-0.263*** (0.059)	-0.300*** (0.075)	-0.182*** (0.058)	-0.197*** (0.061)	-0.205*** (0.066)	-0.139*** (0.044)
Public market return	-0.118** (0.056)	-0.078 (0.048)	-0.028 (0.040)	-0.039 (0.043)	-0.038 (0.046)	-0.015 (0.029)
Observations	66,575	42,096	42,096	29,120	22,073	59,149
Adjusted R-squared	5.4%	6.9%	43.6%	43.1%	40.4%	59.3%
Investor FE	No	No	Yes	Yes	Yes	No
Firm FE	No	No	No	No	No	Yes

Endogeneity of Repeat Investments

<i>Angel Investors</i>	All	All	All	Early-Stage	Late-Stage	Small	Large
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
First investment realized (1/0)	0.208*** (0.038)						
Ln (1 + first investment (1) TVPI)		0.197*** (0.021)		0.197*** (0.023)	0.531*** (0.152)	0.260*** (0.028)	-0.033 (0.086)
Ln (1 + first investment (3) TVPI)			0.139*** (0.017)				
Ln (First investment amount)	0.230*** (0.012)	0.250*** (0.016)	0.239*** (0.012)	0.250*** (0.018)	0.110 (0.082)	0.631*** (0.081)	0.159*** (0.058)
Board experienced angel (1/0)	0.586*** (0.040)	0.571*** (0.050)	0.597*** (0.040)	0.598*** (0.057)	0.714*** (0.244)	0.603*** (0.078)	0.903*** (0.199)
Ln (Investor age)	-0.542*** (0.064)	-0.553*** (0.082)	-0.534*** (0.065)	-0.590*** (0.093)	-0.035 (0.397)	-0.519*** (0.128)	-1.104*** (0.259)
Male (1/0)	0.563*** (0.055)	0.578*** (0.070)	0.559*** (0.055)	0.602*** (0.079)	0.050 (0.260)	0.701*** (0.117)	0.447** (0.200)
High wealth (1/0)	0.934*** (0.046)	0.900*** (0.059)	0.928*** (0.046)	0.984*** (0.066)	1.082*** (0.308)	1.075*** (0.118)	0.936*** (0.130)
Observations	36,749	19,545	36,749	15,971	959	9,383	1,628
Pseudo R-squared	9.7%	8.3%	9.8%	8.8%	11.8%	7.8%	10.6%
First investment calendar year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

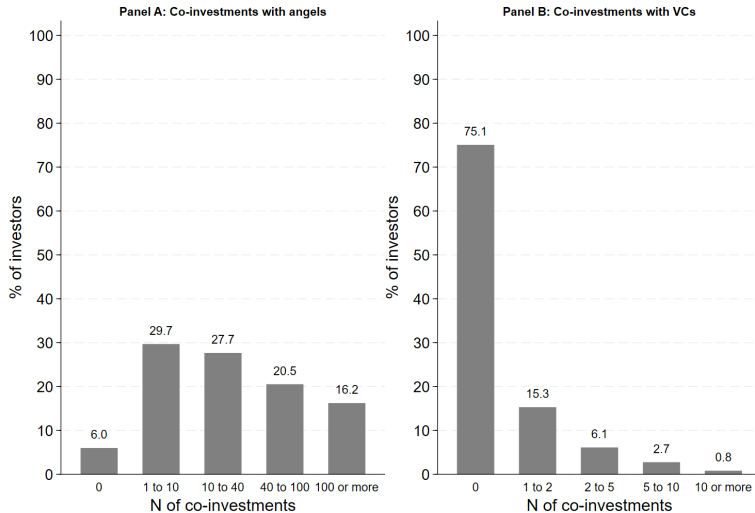
Better Angels and the Tails of Returns

(3) TVPI Percentile (1/0)	50 th =<p <75 th		75 th =<p <90 th		90 th =<p <95 th		p>= 95 th	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Angel fixed effect								
2nd quintile	1.171*** (0.139)	1.317*** (0.105)	1.348*** (0.202)	1.417*** (0.194)	2.685*** (0.685)	2.998*** (0.686)	0.484 (1.229)	0.992 (1.230)
3rd quintile	1.872*** (0.112)	1.863*** (0.128)	2.812*** (0.242)	2.816*** (0.236)	4.068*** (0.714)	4.497*** (0.716)	3.285*** (1.018)	4.094*** (1.022)
4th quintile	1.889*** (0.111)	1.866*** (0.127)	3.672*** (0.222)	3.699*** (0.220)	5.163*** (0.718)	5.718*** (0.720)	4.923*** (1.011)	6.002*** (1.013)
5th quintile	1.009*** (0.121)	0.956*** (0.138)	3.717*** (0.223)	3.748*** (0.221)	6.627*** (0.714)	6.986*** (0.716)	7.628*** (1.004)	8.550*** (1.008)
Observations	42,096	42,096	42,096	42,096	42,096	41,938	42,096	41,912
Pseudo R-squared	5.6%	19.6%	13.3%	16.7%	20.2%	24.5%	33.1%	45.7%
Controls	No	Yes	No	Yes	No	Yes	No	Yes
Calendar year FE	No	Yes	No	Yes	No	Yes	No	Yes
Investment firm age FE	No	Yes	No	Yes	No	Yes	No	Yes
Industry FE	No	Yes	No	Yes	No	Yes	No	Yes

Better Angels and VC Financing

	VC Financing (1/0)	Ln (VC Equity)	Follow-on VC Financing (1/0)	Follow-on Ln (VC Equity)
	(1)	(2)	(3)	(4)
Ln (Angel equity amount)	0.250*** (0.032)	0.265*** (0.047)	0.292*** (0.035)	0.137*** (0.045)
Angel fixed effect				
<i>2nd quintile</i>	-0.223* (0.135)	-0.219 (0.212)	-0.303** (0.141)	-0.005 (0.210)
<i>3rd quintile</i>	-0.019 (0.176)	-0.370 (0.290)	-0.166 (0.191)	-0.218 (0.274)
<i>4th quintile</i>	0.276 (0.200)	-0.258 (0.318)	0.101 (0.218)	-0.134 (0.298)
<i>5th quintile</i>	0.570*** (0.212)	-0.044 (0.320)	0.451** (0.227)	-0.069 (0.325)
Observations	18,815	3,721	18,617	2,740
Pseudo/Adjusted R-squared	11.9%	21.3%	10.5%	18.2%
Fixed effects	Yes	Yes	Yes	Yes

Co-investments of Repeat Angels



Do Better Angels Have the Same Co-investors?

	(1)	(2)	(3)	(4)	(5)	(6)
Angel Investors	All	All	Early-stage	Late-stage	Small	Large
Angel fixed effect						
<i>2nd quintile</i>	-0.066*** (0.010)	-0.003 (0.005)	-0.010 (0.009)	0.008 (0.015)	-0.011 (0.009)	-0.042* (0.023)
<i>3rd quintile</i>	-0.102*** (0.009)	-0.011** (0.005)	-0.015* (0.009)	-0.003 (0.016)	-0.024** (0.010)	-0.042* (0.023)
<i>4th quintile</i>	-0.121*** (0.009)	-0.022*** (0.005)	-0.027*** (0.009)	-0.026* (0.015)	-0.023** (0.009)	-0.028 (0.023)
<i>5th quintile</i>	-0.084*** (0.009)	-0.043*** (0.005)	-0.052*** (0.008)	-0.045*** (0.016)	-0.040*** (0.009)	-0.062*** (0.023)
Ln (Average investment amount)		0.001 (0.001)				
Ln ($\sum$ Co-investments)		-0.162*** (0.001)	-0.178*** (0.002)	-0.124*** (0.004)	-0.189*** (0.002)	-0.137*** (0.004)
Ln (Portfolio size)		0.022*** (0.004)	0.027*** (0.008)	0.013 (0.012)	-0.005 (0.010)	0.023*** (0.009)
Industry concentration		-0.003 (0.012)	0.000 (0.019)	-0.047 (0.031)	-0.005 (0.026)	0.036 (0.024)
Observations	11,187	11,187	4,259	1,561	3,071	1,563
Adjusted R-squared	2.0%	69.4%	71.1%	62.0%	75.1%	63.6%
First angel investment year FE	No	Yes	Yes	Yes	Yes	Yes

Are Better Angels Better at Other Things Too? Public Markets

	All investments			Pre-Angel Investments			Pre-Angel Investments Angel's Industry		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Angel fixed effect	0.005 (0.008)	0.006 (0.009)	-0.003 (0.013)	0.002 (0.010)	-0.001 (0.011)	0.027 (0.020)	0.077** (0.031)	0.037 (0.026)	0.048 (0.042)
Repeat angel (1/0)		0.061*** (0.009)			0.063*** (0.009)			0.107*** (0.028)	
Angel fixed effect × Repeat		-0.003 (0.014)			0.013 (0.023)			0.136* (0.070)	
Board-experienced angel (1/0)			0.016* (0.009)			0.000 (0.011)			-0.019 (0.030)
Angel fixed effect × Board-experienced			0.010 (0.013)			-0.030 (0.019)			0.033 (0.051)
Angel's industry (1/0)	0.033*** (0.011)	0.034*** (0.011)	0.034*** (0.011)	0.029* (0.017)	0.033** (0.016)	0.028* (0.017)			
Observations	896,234	896,234	896,234	425,754	425,754	425,754	61,596	61,596	61,596
Adjusted R-squared	1.9%	1.9%	1.9%	1.8%	1.8%	1.8%	2.9%	3.0%	2.9%
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Public Market Sharpe Ratios for Better Angels

	All investments			Pre-Angel Investments			Pre-Angel Investments Angel's Industry		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Angel fixed effect	0.008** (0.003)	0.016*** (0.004)	0.013** (0.006)	0.002 (0.004)	0.010* (0.005)	0.018** (0.009)	0.020** (0.009)	0.014 (0.009)	0.028 (0.017)
Repeat angel (1/0)		0.020*** (0.004)			0.023*** (0.004)			0.026** (0.011)	
Angel fixed effect × Repeat		-0.022*** (0.006)			-0.026** (0.011)			0.022 (0.024)	
Board-experienced angel (1/0)			-0.017*** (0.004)			-0.022*** (0.006)			-0.036*** (0.011)
Angel fixed effect × Board-experienced			-0.007 (0.007)			-0.020** (0.009)			-0.012 (0.019)
Angel's industry (1/0)	0.019*** (0.004)	0.019*** (0.004)	0.018*** (0.004)	0.027*** (0.007)	0.027*** (0.007)	0.025*** (0.007)			
Observations	754,717	754,717	754,717	355,075	355,075	355,075	52,596	52,596	52,596
Adjusted R-squared	2.3%	2.3%	2.3%	2.7%	2.7%	2.7%	3.6%	3.6%	3.6%
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Conclusion

- There are indeed better angels among us
 - ▶ Investor fixed effects explain far more than any collection of observable factors.
 - ▶ The success or failure of angel's last firm strongly predicts the current success or failure of the current firm in investments clustered close in time or in the same industry.
- Better angels do not earn higher returns by avoiding left-tail realizations as much as they do by achieving extreme right-tail outcomes.
- Better angels are much likelier to invest in firms that raise follow-on VC funding. Selection or treatment? Hard to say.
- Better angels prefer a dispersion of angel co-investors. Speaks against the network channel.
- Better angels have higher returns and higher Sharpe ratios in their public market investments.
 - ▶ Purely differential access to deal flow cannot be a factor in publicly traded stock selection.
 - ▶ Performance differentials in public markets are highest for investments in the same industries as those of the angel investments.