

Behavioral Economics and Venture Capital: The Impact of Investor Characteristics on Relative Financial Performance

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Venture Capital Background

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- Highly speculative, returns realized in 6 to 12 years
- Hits-driven model, best firms generate all returns from $\sim 1/3$ of investments
- Typically a small group of partners investing in a small group of startups

How do the backgrounds and behavioral characteristics of individual venture capitalists affect their financial success?

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- Question is particularly interesting in venture for two reasons:
 - (1) Individual investors have notably high impact
 - (2) Returns vary greatly across firms

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 - Level of involvement is affected by an investor's industry of prior work experience (e.g. Rajan et al., 2000)

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 - Higher levels of VC involvement and strategic advice (e.g. Bottazzi et al., 2008)
 - Level of involvement is affected by an investor's industry of prior work experience (e.g. Rajan et al., 2000)
 - Implies other investor characteristics will likewise have a meaningful impact on returns

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 - VCs broadly disagree about the cause of performance differences (e.g. Smart et al., 2000)

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Key Contributions

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- Challenge venture industry belief in benefit of operating experience
- Identify the relative impact of personality traits and economic preferences on financial performance

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- Firm-level controls combined from private market databases Pitchbook and Preqin
 - Industry investment preferences, geographic focus, median fund size

Descriptive Statistics | Background

	Prevelige Survey (2023)			Smart et al. Survey (1999)			Difference in Means/Proportions
	# Obs	%	Count	# Obs	%	Mean	
Position	104			115			
Partner		93%	97		91%	105	-0.02
Other		7%	7		9%	10	0.02
Degrees	104			115			
MA/MS		24%	25		17%	20	-0.07
MBA		55%	57		69%	79	0.14
PhD/MD		7%	7		13%	15	0.06
Prior Work Experience	104			110			
Entrepreneur/Operator		80%	83		75%	82	-0.05
Banking/Finance		32%	33		33%	36	0.01
Consulting		27%	28		25%	28	-0.01
Corporate Management		25%	26		35%	38	0.10
Technology		24%	25		16%	18	-0.08
Marketing		14%	15		21%	23	0.06
Sales		12%	12		12%	13	0.00
Stage of Investments	104			108			
Mostly early stage		87%	90		63%	68	-0.24
Equal or mostly late stage		13%	14		37%	40	0.24

Descriptive Statistics | Background Continued

	Prevelige Survey (2023)				Smart et al. Survey (1999)				Difference in Means/Proportions
	# Obs	%	Mean	Sd	# Obs	%	Mean	Sd	
Preferred Industries of Investment	88				83				
Business Products & Services		38%	NA	NA		48%	NA	NA	0.11
Consumer Products & Services		41%	NA	NA		37%	NA	NA	-0.04
Energy		15%	NA	NA		6%	NA	NA	-0.09
Financial Services		26%	NA	NA		12%	NA	NA	-0.14
Healthcare		52%	NA	NA		66%	NA	NA	0.14
Information Technology		80%	NA	NA		89%	NA	NA	0.10
Materials and Resources		17%	NA	NA		1%	NA	NA	-0.16
Quartile of Returns	104	NA	3.37	0.71	115	NA	3.78	0.48	0.41
Multiple on Invested Capital	104	NA	4.37	3.19	0	NA	NA	NA	NA
Years of Venture Experience	104	NA	13.34	6.68	110	NA	11.25	6.65	-2.09
Years of Prior Work Experience	104	NA	11.5	7.24	110	NA	10.73	7.16	-0.77
Median Fund Size (Millions USD)	86	NA	151.4	194.5	80	NA	203.97	181.76	52.57

Descriptive Statistics | Behavioral

Group	Instrument	Construct	Full Sample			Reliable		
			# Obs	Mean	Sd	# Obs	Mean	Sd
Personality	BFI-2	Extraversion [3-15]	104	12.64	2.34	45	13.33	1.87
		Agreeableness [3-15]	104	12.63	1.73	45	13.04	1.43
		Conscientiousness [3-15]	104	12.44	2.28	45	12.98	2.12
		Neuroticism [3-15]	104	7.07	1.88	45	6.11	1.91
		Openness to Experience [3-15]	104	11.86	2.29	45	12.02	2.33
Economic Preference	Global Preferences Survey	Patience [1-5]	104	3.39	1.38	45	3.67	1.37
		Pain Tolerance [1-5]	104	3.84	1.15	45	4.20	1.01
		Risk Tolerance [1-10]	104	8.49	1.25	45	8.76	1.23
		Present Bias [1-10]	104	2.06	1.24	45	1.98	1.03
		Altruism [1-10]	104	8.82	1.34	45	9.00	1.17
		Positive Reciprocity [1-10]	104	9.20	1.17	45	9.31	1.16
		Negative Reciprocity [1-10]	104	4.34	2.06	45	4.22	2.15

Notes: The reliable sample consists of respondents who selected the highest measure of self-reported reliability on a 1-5 scale.

$$R_{t,i} - R_{t,\mu} = \phi_t(C_{t,i} - C_{t,\mu}, P_{t,i} - P_{t,\mu}, K_{t,i} - K_{t,\mu}, e_{T_{t,i}} - e_{T_{t,\mu}}) + \lambda_t(F_{t,i})$$

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 - Control for MOIC lag using years of venture experience

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 - X_i : Vector of controls

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- The background and behavioral characteristics of venture capitalists are not influenced by their returns
- The relationship between characteristics and returns are generally stable over time
- Measurement error may attenuate estimates, but coefficient directions are accurate

Results | Educational Attainment

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Top Quartile					
MA/MS	-0.0214 (0.0940)	-0.0309 (0.0936)	-0.0395 (0.0875)	-0.0876 (0.138)	0.0367 (0.123)	-0.0660 (0.0960)
MBA		-0.0605 (0.0807)	0.0275 (0.0706)	-0.0125 (0.141)	-0.0674 (0.114)	-0.0266 (0.0835)
PhD/MD			0.118 (0.113)	0.319 (0.267)	0.0612 (0.125)	0.200* (0.119)
Constant	0.513*** (0.191)	0.545*** (0.199)	0.613*** (0.0618)	0.205 (0.332)	0.814*** (0.277)	0.520*** (0.198)
Controls	✓	✓		✓	✓	✓
Prevelige Only				✓		
Smart Only					✓	
Observations	162	162	215	86	76	162
R-squared	0.224	0.227	0.005	0.181	0.129	0.236

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: Controls include years of venture experience, years of VC experience*smart, median fund size, and dummies for firm characteristics: whether investments are mostly early stage, global, and preferences for each of the 7 industries.

Results | Prior Experience

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Top Quartile									
Entrepreneur/Operator	-0.0707 (0.0852)	-0.0563 (0.0888)	-0.0620 (0.0897)	-0.0716 (0.0947)	-0.0694 (0.0957)	-0.0853 (0.0968)	-0.0657 (0.0850)	-0.0486 (0.189)	-0.0545 (0.133)	-0.0859 (0.0968)
Banking/Finance		0.0380 (0.0827)	0.0310 (0.0852)	0.0363 (0.0863)	0.0358 (0.0867)	0.0477 (0.0883)	0.0870 (0.0746)	0.0283 (0.134)	0.129 (0.123)	0.0480 (0.0888)
Consulting			-0.0478 (0.0826)	-0.0489 (0.0831)	-0.0486 (0.0836)	-0.0469 (0.0843)	-0.00580 (0.0766)	-0.125 (0.142)	-0.0346 (0.113)	-0.0464 (0.0846)
Corporate Management				0.0400 (0.0878)	0.0411 (0.0898)	0.0333 (0.0906)	0.0263 (0.0784)	-0.000873 (0.140)	-0.00541 (0.143)	0.0302 (0.0933)
Sales					-0.0153 (0.115)	-0.0346 (0.117)	-0.0916 (0.110)	0.106 (0.177)	-0.161 (0.192)	-0.0437 (0.127)
Technology						0.0900 (0.0898)	0.0409 (0.0887)	-0.0684 (0.152)	0.312*** (0.109)	0.0878 (0.0922)
Marketing							0.142 (0.0934)	0.0181 (0.165)	-0.0178 (0.161)	0.0204 (0.112)
Constant	0.574*** (0.210)	0.554** (0.222)	0.593*** (0.219)	0.581*** (0.222)	0.577** (0.223)	0.568** (0.225)	0.624*** (0.0833)	0.286 (0.396)	0.785** (0.297)	0.571** (0.226)
Controls	✓	✓	✓	✓	✓	✓		✓	✓	✓
Prevelige Only								✓		
Smart Only									✓	
Observations	162	161	161	161	161	161	214	86	75	161
R-squared	0.226	0.225	0.227	0.228	0.228	0.233	0.020	0.178	0.217	0.233

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: Controls include years of venture experience, years of VC experience*smart, median fund size, and dummies for firm characteristics: whether investments are mostly early stage, global, and preferences for each of the 7 industries.

Results | Big Five Personality Domains

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
				Top Quartile			
Extraversion	-0.207* (0.106)					-0.131 (0.0897)	-0.317*** (0.100)
Agreeableness		-0.148 (0.122)				-0.0737 (0.0790)	-0.0970 (0.0885)
Conscientiousness			-0.284*** (0.0863)			-0.0659 (0.0749)	-0.334*** (0.0913)
Neuroticism				-0.0257 (0.120)		-0.0138 (0.0855)	0.0412 (0.0812)
Open-Mindedness					0.0889 (0.104)	0.0798 (0.0765)	0.142* (0.0778)
Constant	-0.240 (0.550)	0.0513 (0.592)	-0.455 (0.495)	-0.183 (0.554)	-0.317 (0.540)	0.463*** (0.0812)	-0.742 (0.601)
Controls	✓	✓	✓	✓	✓		✓
Observations	38	38	38	38	38	45	38
R-squared	0.331	0.283	0.369	0.242	0.260	0.097	0.589

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Notes: Controls include years of venture experience, median fund size, and dummies for firm characteristics: whether investments are mostly early stage, global, and preferences for each of the 7 industries. Responses are restricted to the highest value of self-reported reliability.

Results | Economic Preferences

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
					Top Quartile				
Patience	-0.0888 (0.103)							-0.0370 (0.0844)	-0.0651 (0.0854)
Pain Tolerance		0.169** (0.0810)						0.119 (0.0812)	0.227** (0.0946)
Risk Tolerance			0.0820 (0.114)					0.0662 (0.108)	0.0119 (0.169)
Present Bias				-0.178 (0.134)				-0.0672 (0.101)	-0.201 (0.156)
Altruism					-0.111 (0.102)			-0.142 (0.0948)	-0.150 (0.138)
Positive Reciprocity						-0.0600 (0.0993)		-0.0538 (0.104)	-0.150 (0.141)
Negative Reciprocity							0.0932 (0.0771)	0.0363 (0.0830)	0.0702 (0.0867)
Constant	-0.198 (0.529)	-0.185 (0.552)	-0.00339 (0.554)	-0.113 (0.564)	-0.244 (0.529)	-0.210 (0.532)	-0.227 (0.560)	0.378*** (0.0776)	-0.543 (0.571)
Controls	✓	✓	✓	✓	✓	✓	✓		✓
Observations	38	38	38	38	38	38	38	45	38
R-squared	0.265	0.303	0.254	0.299	0.271	0.249	0.269	0.149	0.504

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Notes: Controls include years of venture experience, median fund size, and dummies for firm characteristics: whether investments are mostly early stage, global, and preferences for each of the 7 industries. Responses are restricted to the highest value of self-reported reliability.

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- Factor analysis to identify archetypes of investors and their relative performance

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THANK YOU!