SERIAL ENTREPRENEURS: ARE THEY BETTER?

A VIEW FROM STANFORD UNIVERSITY ALUMNI

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Motivation

Are serial entrepreneurs a special species, are they better?

- General public and high-tech community believes so
- Some publications support it

Performance persistence in entrepreneurship ☆

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ABSTRACT

This paper presents evidence of performance persistence in entrepreneurship. We show that entrepreneurs with a track record of success are much more likely to succeed than first-time entrepreneurs and those who have previously failed. In particular, they exhibit persistence in selecting the right industry and time to start new ventures. Entrepreneurs with demonstrated market timing skill are also more likely to outperform industry peers in their subsequent ventures. This is consistent with the view that if suppliers and customers perceive the entrepreneur to have market timing skill, and is therefore more likely to succeed, they will be more willing to commit resources to the firm. In this way, success breeds success and strengthens performance persistence.

Background

STANFORD UNIVERSITY AND HIGH-TECH ENTREPRENEURSHIP: AN EMPIRICAL STUDY

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STANFORD UNIVERSITY AND HIGH-TECH ENTREPRENEURSHIP: AN EMPIRICAL STUDY

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ABSTRACT

This study examines more than 2'700 companies founded by alumni of Stanford University or having licensed a technology from this university. Stanford University is with MIT one of the most entrepreneurial university in the world, and surprisingly not much data is available on its spin-offs and start-ups. Some important features are described such as the use of venture capital, the dynamics of growth and exits through acquisition or initial public offering. Some characteristics of the founders are also considered such as the time lag between their academic activity and the start-up creation as well as the characteristics of serial entrepreneurs.

INTRODUCTION

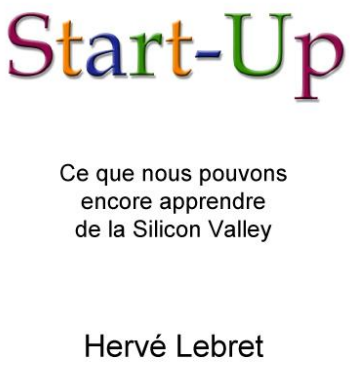
Academic entrepreneurship as well as the role of universities in high-tech entrepreneurship through their alumni has been a much-studied topic in the recent past. Two extensive studies (Shane, 2004 and Djokovic & Souitaris, 2008) illustrate the amount of work done recently. Many of these analyses (Shane, 2004; Roberts, 1991; Hsu et al. 2007; Roberts & Eesley, 2009) were focused on the Massachusetts Institute of Technology (MIT). Other authors (Saxenian, 1994; Zhang, 2003, 2009) have compared the Boston Area and Silicon Valley in particular through the angle of venture capital funding and have shown the critical role of both MIT and Stanford University in academic entrepreneurship. It would be impossible to make here a list of all papers published on the topic and Djokovic has done a very interesting compilation of papers studying spinouts from academic institutions. Another synthesis summarizing lessons learnt on universities and start-ups (Lerner, 2005) was also published after many articles on the topics related to spin-offs and venture capital.

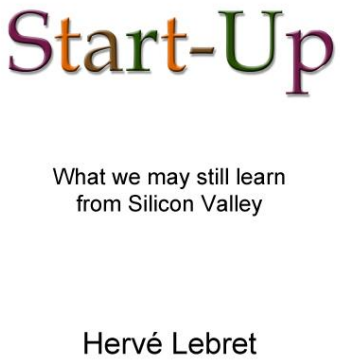
Whereas Silicon Valley has been extensively studied (Saxenian 1994, 1999; Kenney, 2000; Lee et al., 2000), it appears that Stanford University has not been studied as much as MIT or many other universities, which have been much less entrepreneurial than Stanford. Here can be mentioned the cases of UT-Austin (Smilor, 1990), the University of Cambridge in the UK (Garnsey & Heffernan, 2005), Oxford University (Lawton Smith & Ho, 2006), ETH Zurich (Oskarsson & Schläpfer, 2008) or the broader subject of universities and venture capital (Zhang,

More background

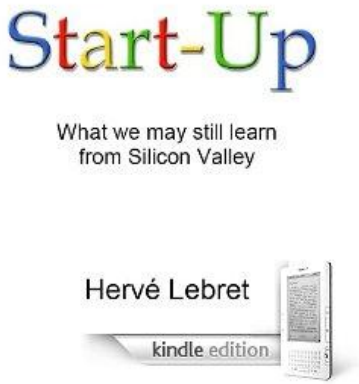
www.startup-book.com

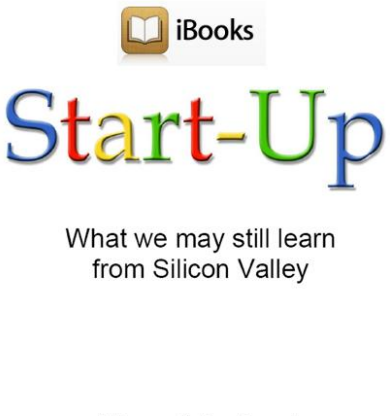
2007





2010





Serial and non-serial **founders**

Dave Hewlett and Bill Packard

(Marc Andreessen and) Professor James Clark, Netscape

Jerry Yang and David Filo

Professor John Hennessy

Sergey Brin and Larry Page

Mike Farmwald

FTL (1986)
Rambus (1990)
Chromatic Research(1993)
Epigram (1996)
Matrix Semiconductor(1997)

Serial data

Founders

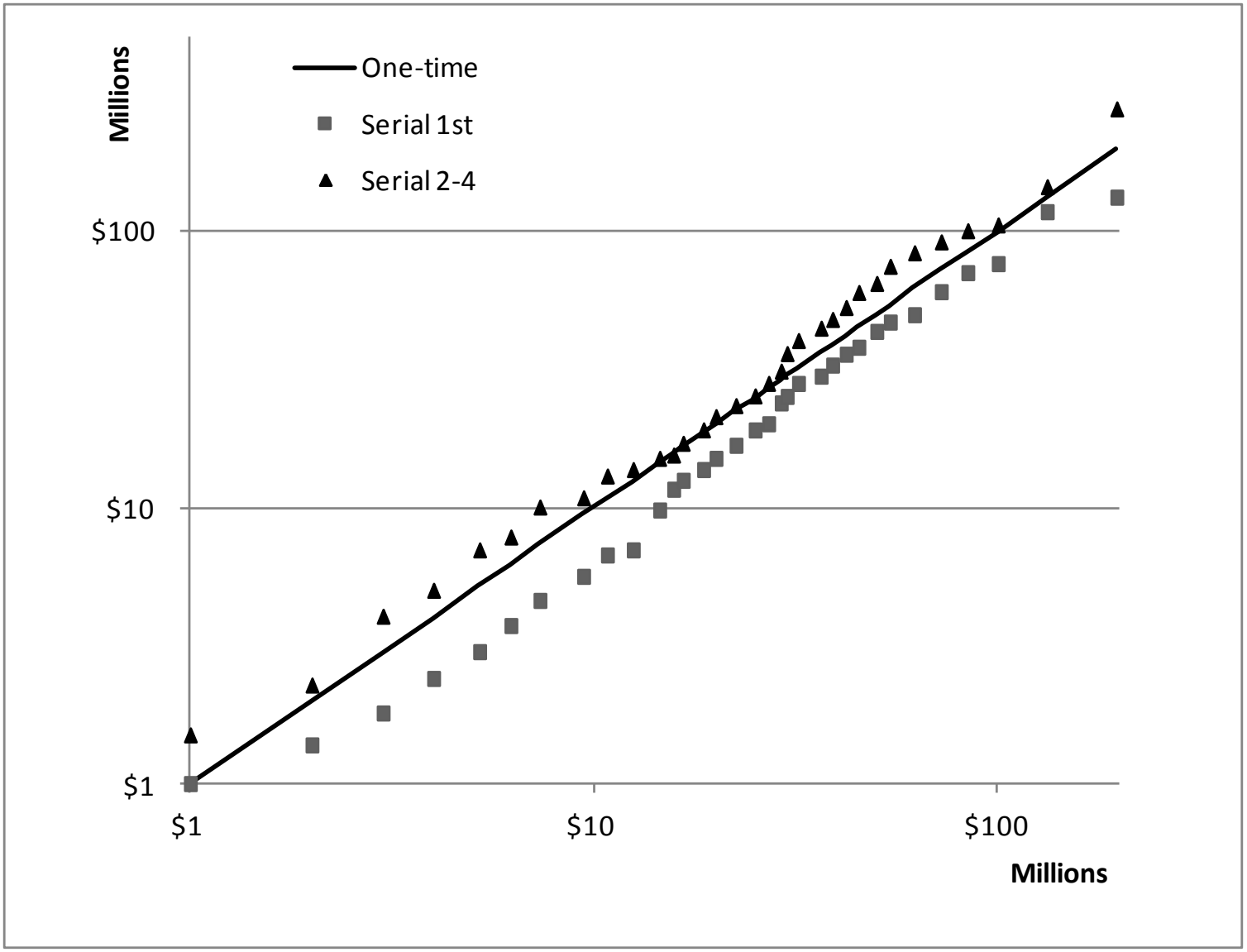
Nb of companies founded	Nb of founders	Nb of professor founders
1	2'266	123
2	317	24
3	82	11
4	27	3
5	10	4
6	6	
8	2	1
16	1	1
Total	2'711	167
% serial	16%	26%

Companies having		
No serial founder	1'739	63.8%
1 serial founder	890	32.6%
2 serial founders	83	3.0%
3 serial founders	10	0.4%
4 serial founders	5	0.2%
Total	2'727	

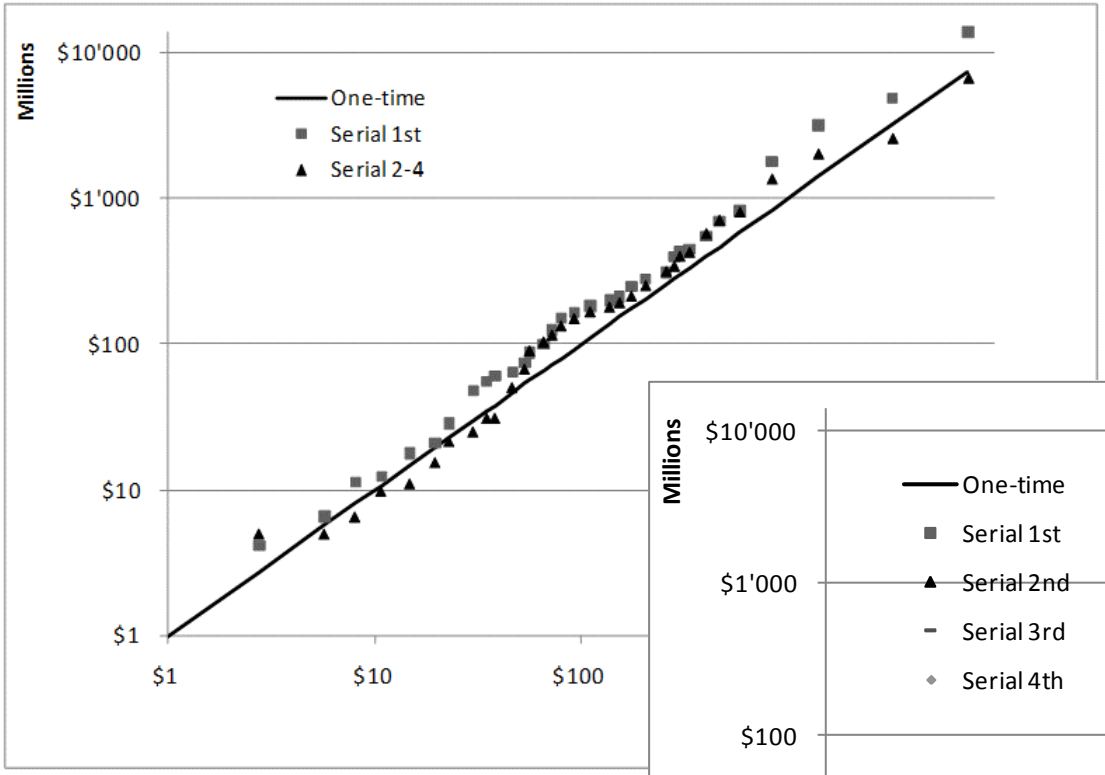
Basic results

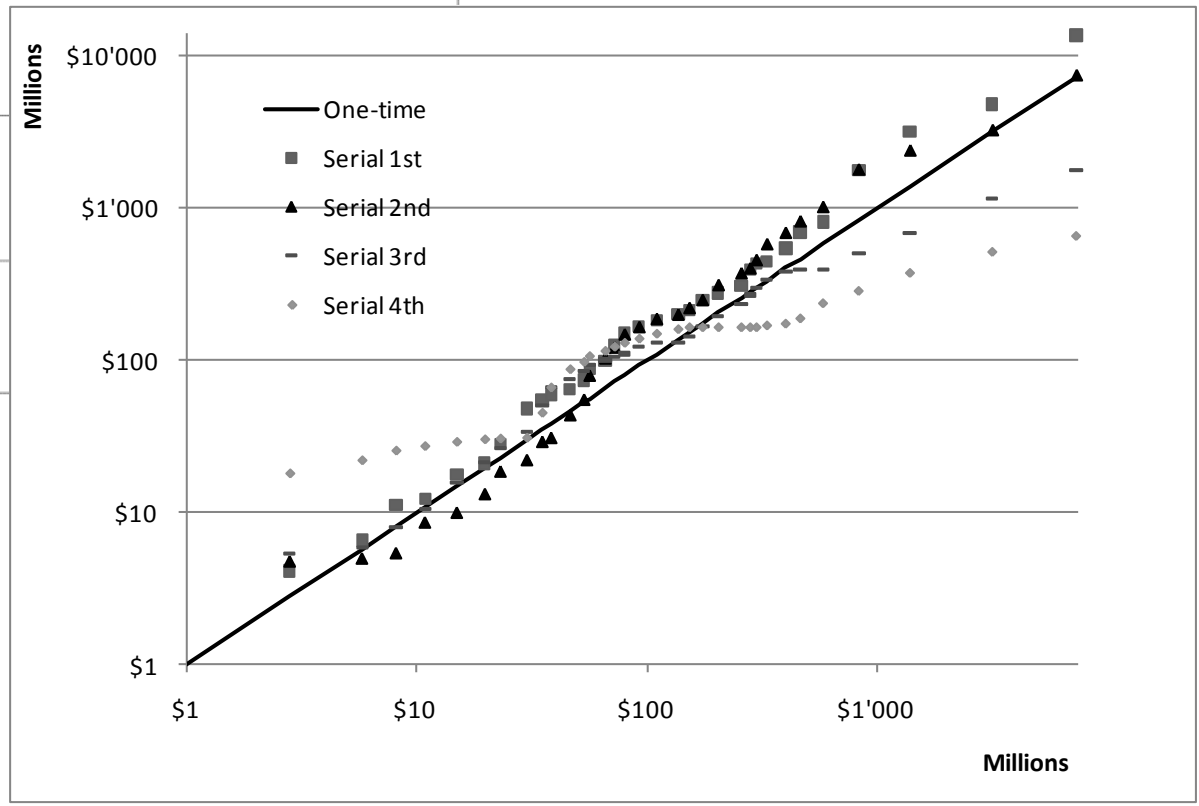
Data on non-serial	VC-backed		M&A		Public value in 2009		Public value at IPO		Public value 12 m. after IPO		Ceased
1739	Number	Average	Number	Average	Number	Average	Number	Average	Number	Average	
	530	$33'707'000	265	$497'000'000	101	$5'145'000'000	175	$833'000'000	174	$906'000'000	371
Data on serial	VC-backed		M&A		Public		Public value at IPO		Public value 12 m. after IPO		
988	Number	Average	Number	Average	Number	Average	Number	Average	Number	Average	
	441	$35'690'000	225	$639'000'000	56	$5'858'000'000	151	$522'000'000	151	$635'000'000	232
1st comp	VC-backed		M&A		Public		Public value at IPO		Public value 12 m. after IPO		
378	Number	Average	Number	Average	Number	Average	Number	Average	Number	Average	
	149	$23'319'000	98	$865'000'000	24	$9'417'000'000	68	$480'000'000	68	$592'000'000	83
2nd comp	VC-backed		M&A		Public		Public value at IPO		Public value 12 m. after IPO		
399	Number	Average	Number	Average	Number	Average	Number	Average	Number	Average	
	185	$39'589'000	81	$642'000'000	21	$4'032'000'000	56	$495'000'000	56	$686'000'000	90
3rd comp	VC-backed		M&A		Public		Public value at IPO		Public value 12 m. after IPO		
124	Number	Average	Number	Average	Number	Average	Number	Average	Number	Average	
	59	$51'776'000	21	$149'000'000	6	$2'324'000'000	13	$1'104'000'000	13	$1'141'000'000	39
wo 99-00	45	$48'717'000	19	$82'250'000	6	$2'324'000'000	7	$350'000'000	7	$370'000'000	
4th+ comp	VC-backed		M&A		Public		Public value at IPO		Public value 12 m. after IPO		
87	Number	Average	Number	Average	Number	Average	Number	Average	Number	Average	
	48	$39'289'000	25	$152'000'000	5	$681'000'000	14	$293'000'000	14	$165'000'000	20
2+ serial	VC-backed		M&A		Public		Public value at IPO		Public value 12 m. after IPO		
610	Number	Average	Number	Average	Number	Average	Number	Average	Number	Average	
	292	$42'002'000	127	$464'513'000	32	$3'188'000'000	83	$557'000'000	83	$669'000'000	149

Non-parametric analysis: VC amounts



Non-parametric analysis: M&A values





Logistic regressions

	beta	se	t	p		DFE	Dev
Success (0/1) vs.	-1.708	0.105	-16.333	0.000		1516	1694
vc exists (0/1)	**1.274**	0.127	10.044	**0.000**	***		
Success (0/1) vs.	-0.210	0.105	-1.997	0.046		698	932
vc size ($M)	**0.000**	0.000	-2.698	**0.007**	***		
Success (0/1) vs.	0.255	0.163	1.566	0.117		1522	1767
period (1-8)	**-0.237**	0.032	-7.471	**0.000**	***		
Success (0/1) vs.	78.132	11.472	6.811	0.000		1522	1776
Year of foundation	**-0.040**	0.006	-6.889	**0.000**	***		
Success (0/1) vs.	0.000	0.177	0.002	0.999		1499	1563
vc exists (0/1)	**1.805**	0.150	12.003	**0.000**	***		
period (1-8)	**-0.412**	0.039	-10.623	**0.000**	***		
Success (0/1) vs.	1.698	0.337	5.036	0.000		697	895
vc size ($M)	**0.000**	0.000	-1.682	**0.093**	*		
period (1-8)	**-0.359**	0.060	-5.958	**0.000**	***		
Success (0/1) vs.	-0.909	0.066	-13.757	0.000		1538	1835
Serial (0/1)	-0.073	0.128	-0.568	**0.570**			
Success (0/1) vs.	0.016	0.179	0.089	0.929		1498	1563
vc exists (0/1)	**1.807**	0.151	12.010	**0.000**	***		
period (1-8)	**-0.410**	0.039	-10.566	**0.000**	***		
Serial (0/1)	-0.091	0.140	-0.650	**0.516**			
Success (0/1) vs.	1.661	0.339	4.901	0.000		696	894
vc size ($M)	**0.000**	0.000	-1.749	**0.080**	*		
period (1-8)	**-0.360**	0.060	-5.980	**0.000**	***		
Serial (0/1)	**0.158**	0.173	0.917	**0.359**			

One-to-one comparison

Student tests	N	Mean	99% conf. interval		t-value	p-value	Table
Quality from 1st to 2nd	291	2.9	2.7	3.1	36.2	<0.01%	4
VC amount from 1st to 2nd	223	3.8	3.6	4.1	37.8	<0.01%	4
Quality from 1st to 2nd and 2nd to 3rd	351	2.9	2.7	3.1	39.9	<0.01%	4
VC amount 1st to 2nd and 2nd to 3rd	267	3.8	3.6	4.1	42.7	<0.01%	4
Quality when no VC in common	90	2.8	2.4	3.2	19.6	<0.01%	5
Quality when one VC in common	64	3.5	3.0	3.9	19.4	<0.01%	5
Quality if founder out after exit	159	2.7	2.4	3.0	25.1	<0.01%	5
Quality if founder out before exit	133	2.8	2.5	3.1	25.5	<0.01%	5

Quality measure:
5: much better
4: better
3: equivalent
2: worse
1: much worse

Value of new (all data) success when prior is known

Prior	N	Mean New	90% conf. interval	
1	71	2.15	1.88	2.43
2	42	2.35	1.91	2.80
3	102	2.41	2.18	2.64
4	24	2.66	2.10	3.22
5	133	2.91	2.68	3.14

Value of new (VC-backed) success when prior is known

Prior	N	Mean New	90% conf. interval	
1	32	2.71	2.27	3.16
2	26	2.73	2.12	3.34
3	42	2.85	2.42	3.28
4	15	3.26	2.54	3.98
5	99	3.07	2.80	3.33

More logistic regressions (prior success)

	beta	se	t	p		DFE	Dev
Success (0/1) vs.	-1.917	0.313	-6.134	0.000		370	427
Priorsuc (1/5)	**0.283**	0.081	3.491	**0.001**	***		
Success (0/1) vs.	-2.950	0.398	-7.408	0.000		361	373
Priorsuc (1/5)	**0.220**	0.087	2.536	**0.011**	**		
vc exists (0/1)	**1.733**	0.318	5.453	**0.000**	***		
Success (0/1) vs.	-1.107	0.523	-2.118	0.034		357	349
Priorsuc (1/5)	**0.261**	0.092	2.836	**0.005**	***		
vc exists (0/1)	**2.291**	0.372	6.163	**0.000**	***		
Period	**-0.453**	0.097	-4.649	**0.000**	***		

	beta	-2.1151	-2.3813	-2.2	-1.13
	se	0.286	0.2897	0.301	0.18
	t	-7.3966	-8.2202	-7.31	-6.29
	p	0	0	0	0
Vcexists	beta	**1.819** ***	**1.75** ***	**1.76** ***	
	se	0.3152	0.3191	0.321	
	t	5.7709	5.4841	5.489	
	p	**0**	**0**	0	
prior1	beta	**-0.909** **		**-0.78** *	-0.46
	se	0.3955		0.418	0.364
	t	-2.2981		-1.87	-1.27
	p	**0.0216**		**0.061**	0.204
prior5	beta		**0.4517** *	0.258	**0.656** ***
	se		0.257	0.273	0.253
	t		1.758	0.943	2.591
	p		**0.0787**	0.346	**0.01**
	DFE	361	361	360	369
	Dev	374	377	373	428

Criteria		
	if Exit/VC > 5 with exit > 50	5
	if Exit/VC > 2	4
	else	3
	if Exit / VC <1	2
	if Exit near zero	1
	No info	NR

Comments and future work

- Difficult to claim that serial entrepreneurs are any better, certainly not after 3rd venture

- If experience matters, motivation and external components are at play (team, product, market)

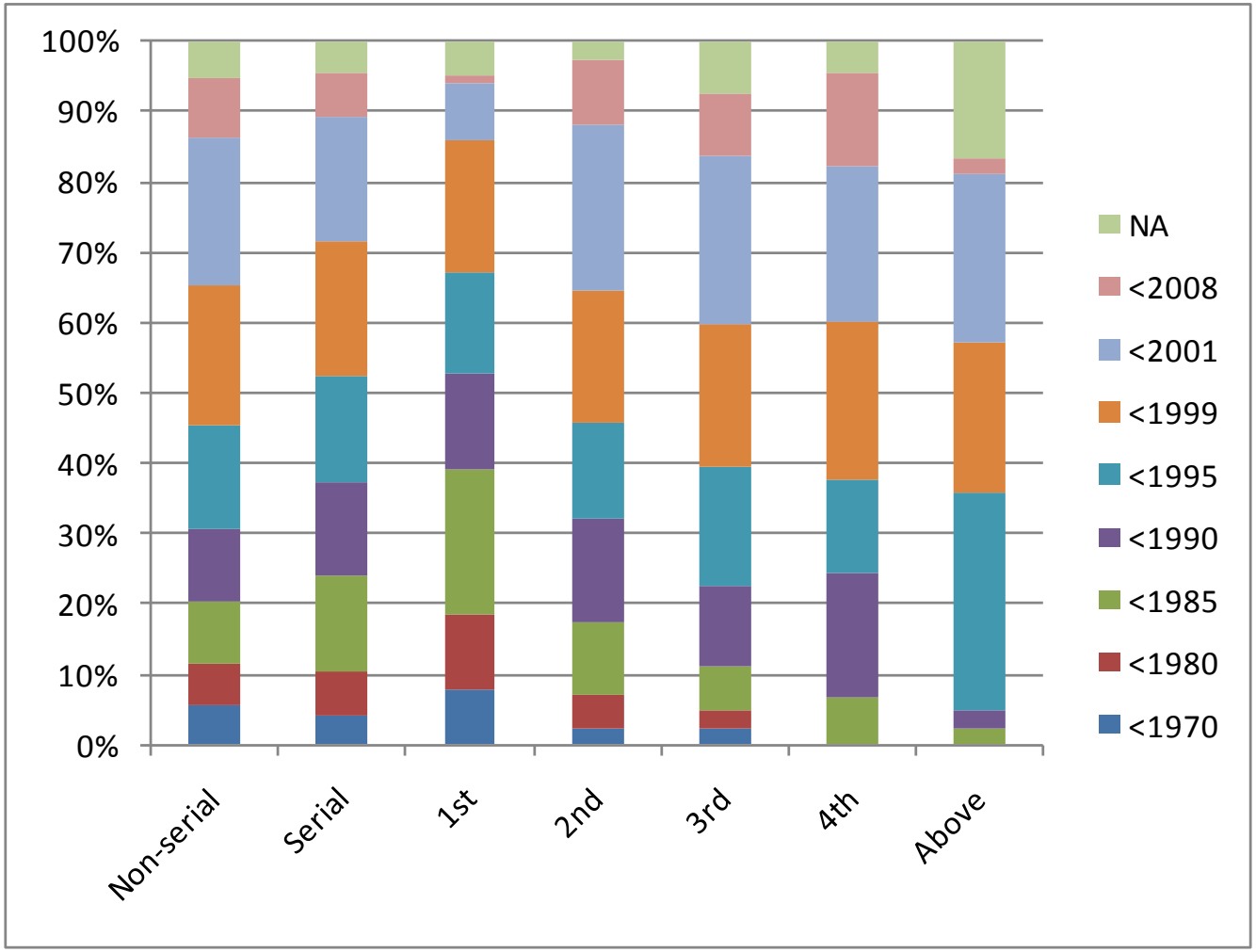
- However they do attract more VC money

- It is a work in progress!

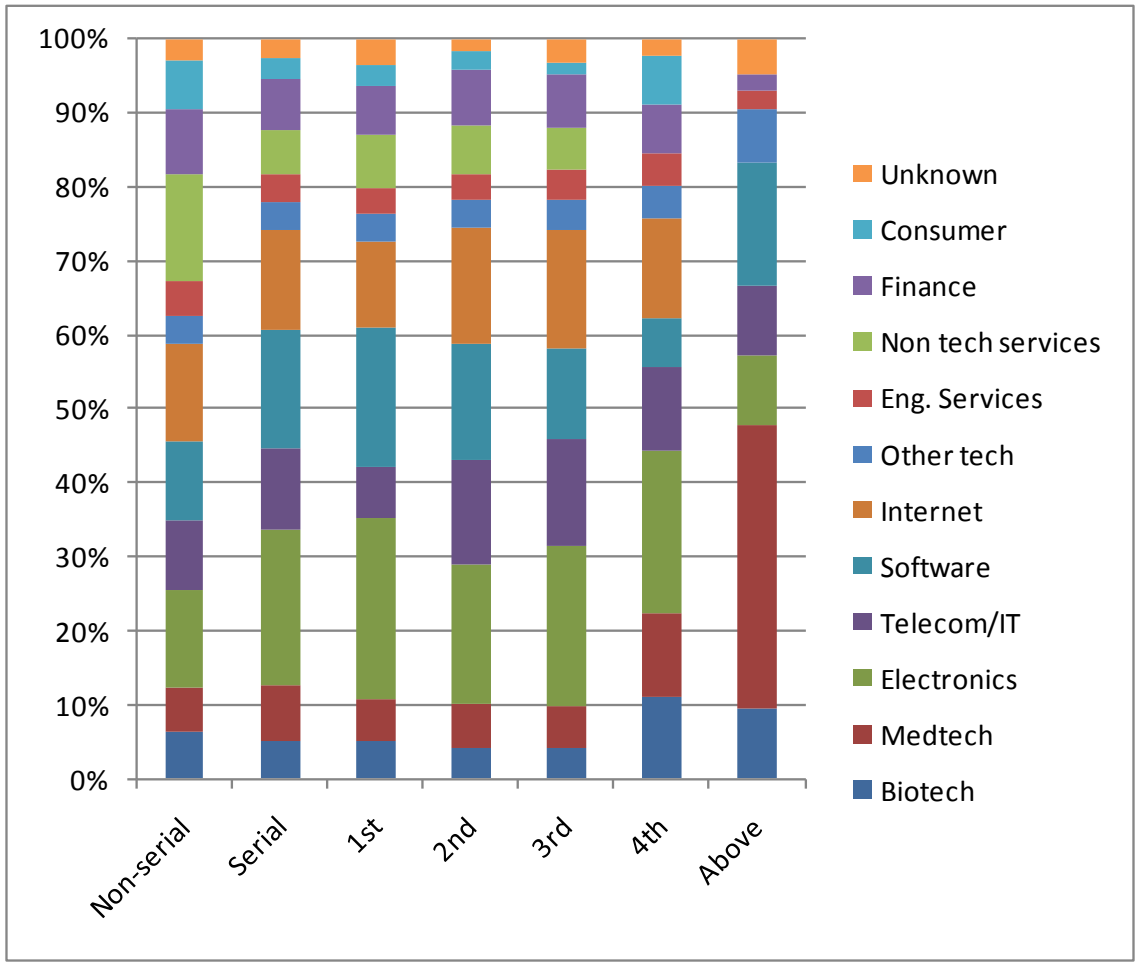
	Work done	Work in progress
Companies	2'727	5'669
Founders	2'711	6'810
Serial founders	445	1'066

Backup slides

Period


100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Non-serial
Serial
1st
2nd
3rd
4th
Above
NA
<2008
<2001
<1999
<1995
<1990
<1985
<1980
<1970

Fields


100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Non-serial
Serial
1st
2nd
3rd
4th
Above
Unknown
Consumer
Finance
Non tech services
Eng. Services
Other tech
Internet
Software
Telecom/IT
Electronics
Medtech
Biotech

Quantitative success measure - prior success impact

		Previous value ($M)				
	Entrepreneur	0-10	10-100	100-1000	>1000	All
New Value	0-10	47	12	25	10	94
($M)	10-100	9	4	18	1	32
	100-1000	12	12	18	16	58
	>1000	4	8	7		19
	Total	72	36	68	27	203
	% previous	35%	18%	33%	13%	
	Median ($M)	0	115	25	179	
	Mean ($M)	638	862	816	304	

%	0-10	10-100	100-1000	>1000	All
0-10	65%	33%	37%	37%	46%
10-100	13%	11%	26%	4%	16%
100-1000	17%	33%	26%	59%	29%
>1000	6%	22%	10%	0%	9%

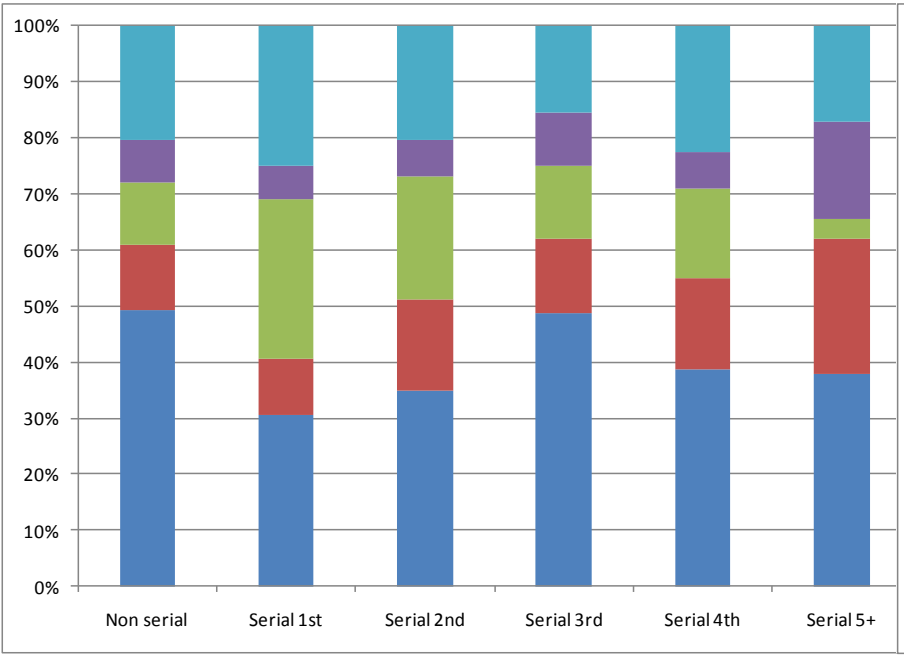
Quantitative success measure - prior success impact

		Previous value ($M)				
	Start-ups	0-10	10-100	100-1000	>1000	All
New Value	0-10	33	10	26	10	79
($M)	10-100	5	3	18	2	28
	100-1000	8	8	24	13	53
	>1000	4	4	8		16
	Total	50	25	76	25	176
	% previous	28%	14%	43%	14%	
	Median ($M)	0	55	45	166	
	Mean ($M)	398	465	832	209	

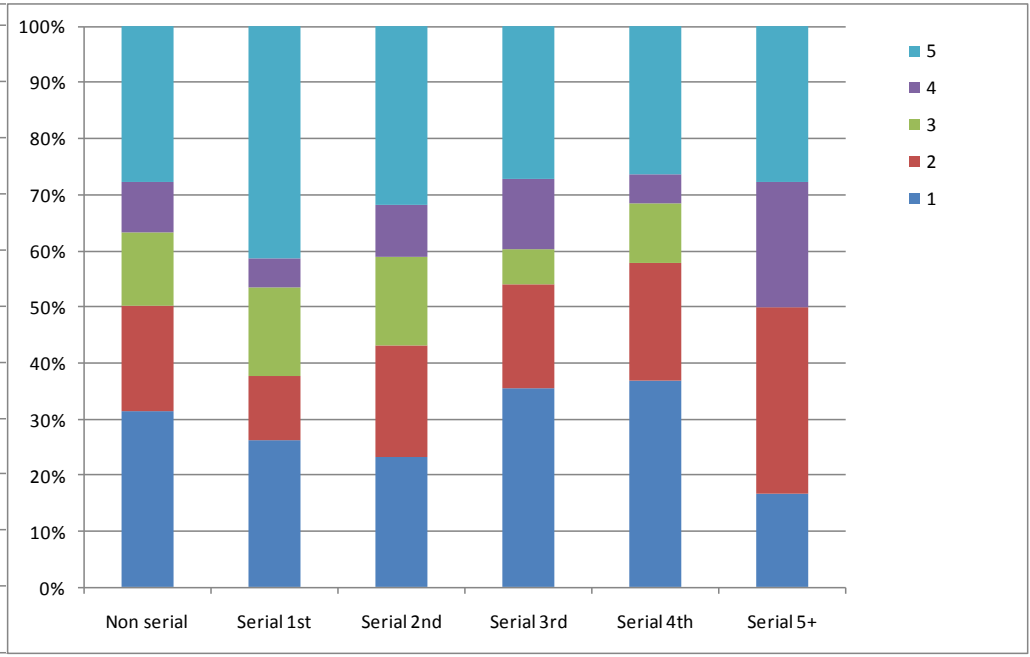
%	0-10	10-100	100-1000	>1000	All
0-10	66%	40%	34%	40%	45%
10-100	10%	12%	24%	8%	16%
100-1000	16%	32%	32%	52%	30%
>1000	8%	16%	11%	0%	9%

Qualitative success measure – All comps vs. VC impact

All companies



VC-backed



Criteria	if Exit/VC > 5 with exit > 50	5
	if Exit/VC > 2	4
	else	3
	if Exit / VC <1	2
	if Exit near zero	1
	No info	NR

Qualitative success measure - prior success impact

Impact of initial success

then new is \ if prior was	1	2	3	4	5	NR	Total
1	35	21	40	9	37	19	161
2	10	8	13	4	26	8	69
3	15	1	30	1	19	12	78
4	2	1	5	6	13	6	33
5	9	11	14	4	38	6	82
NR	28	11	29	12	42	65	187
Total	99	53	131	36	175	116	610
%	16%	9%	21%	6%	29%	19%	

Impact of initial success

then new is \ if prior was	1	2	3	4	5	NR	Total
1	**35%**	**40%**	**31%**	**25%**	**21%**	16%	26%
2	10%	15%	10%	11%	15%	7%	11%
3	15%	2%	23%	3%	11%	10%	13%
4	2%	2%	4%	17%	7%	5%	5%
5	9%	**21%**	11%	11%	**22%**	5%	13%
NR	28%	21%	22%	33%	24%	56%	31%

Criteria		
	if Exit/VC > 5 with exit > 50	5
	if Exit/VC > 2	4
	else	3
	if Exit / VC <1	2
	if Exit near zero	1
	No info	NR

Qualitative success measure - prior success impact and VCs

VC-backed then new is	Impact of initial success if prior was	1	2	3	4	5	NR	Total
	1	9	11	13	3	22	4	62
	2	6	4	8	3	24	4	49
	3	9	1	6		10	3	29
	4	1	1	2	5	11	5	25
	5	7	9	13	4	32	6	71
	NR	5	2	13	3	26	10	59
	Total	37	28	55	18	125	32	295
	%	13%	9%	19%	6%	42%	11%	

then new is	Impact of initial success if prior was	1	2	3	4	5	NR	Total
	1	**24%**	**39%**	**24%**	**17%**	**18%**	13%	21%
	2	16%	14%	15%	17%	19%	13%	17%
	3	24%	4%	11%	0%	8%	9%	10%
	4	3%	4%	4%	**28%**	9%	16%	8%
	5	19%	**32%**	**24%**	**22%**	**26%**	19%	24%
	NR	14%	7%	24%	17%	21%	31%	20%

Criteria		
	if Exit/VC > 5 with exit > 50	5
	if Exit/VC > 2	4
	else	3
	if Exit / VC <1	2
	if Exit near zero	1
	No info	NR

Qualitative success measure - common VC impact

	Total	1	2	3	4	5	NR
Serial w. no common VC	230	56	36	23	21	49	45
		30%	19%	12%	11%	26%	
		24%	16%	10%	9%	21%	20%
Prior success	230	32	24	54	14	78	28
		16%	12%	27%	7%	39%	
		14%	10%	23%	6%	34%	12%

	Total	1	2	3	4	5	NR
Serial w. common VC	65	6	13	6	4	22	14
		12%	25%	12%	8%	43%	
		9%	20%	9%	6%	34%	22%
Prior success	65	5	4	1	4	47	4
		8%	7%	2%	7%	77%	
		8%	6%	2%	6%	72%	6%

Criteria	if Exit/VC > 5 with exit > 50	5
	if Exit/VC > 2	4
	else	3
	if Exit / VC <1	2
	if Exit near zero	1
	No info	NR

More logistic regressions (serials with same VC)

	beta	se	t	p		DFE	Dev
	-0.5051	0.1513	-3.3373	0.0008			
SameVC	**0.5443**	0.3184	1.7096	**0.0873**	*		
	-0.4514	0.0853	-5.2905	0			
Ser (0/1)	-0.0646	0.1733	-0.3728	0.7093			
SameVC	**0.5539**	0.3169	1.748	**0.0805**	*	811	1087
	-0.4206	0.2266	-1.8557	0.0635			
Prior1	**-0.7747**	0.4683	-1.6543	**0.0981**	*	209	279
Prior5	-0.0816	0.3207	-0.2545	0.7991			
SameVC	**0.5564**	0.3466	1.6055	**0.1084**	.		
	-1.0278	0.3739	-2.749	0.006			
Priorsuc	0.4492	0.3379	1.3293	0.1837		210	280
SameVC	0.1356	0.0976	1.3891	0.1648			

Criteria		
	if Exit/VC > 5 with exit > 50	5
	if Exit/VC > 2	4
	else	3
	if Exit / VC <1	2
	if Exit near zero	1
	No info	NR

And fields of activities?

	1		2		3		4		5		6		7		8		9		10		11		12		13	
Field	'Biotech'		'Medtech'		'Electronics'		'Consumer'		'Finance'		'Healthcare'		'Internet'		'NA'		'Non tech services'		'OtherTech'		'Software'		'Tech Services'		'Telecom/IT'	
N=	160		140		436		145		219		36		362		76		310		104		341		121		277	
Interc	-0.9931	0.0000	-0.9767	0.0000	-1.0327	0.0000	-0.9299	0.0000	-0.9050	0.0000	-0.9357	0.0000	-0.8906	0.0000	-0.9052	0.0000	-0.8607	0.0000	-0.9158	0.0000	-0.8833	0.0000	-0.9093	0.0000	-0.9093	0.0000
Field	**0.7779**	**0.0001**	**0.7642**	**0.0007**	**0.4574**	**0.0006**	0.0291	0.9305	**-0.8442**	**0.0293**	0.4502	0.3203	-0.2333	0.1336	-101.6608	1.0000	**-2.4227**	**0.0000**	-0.4979	0.1855	**-0.3207**	**0.0543**	**-0.8084**	**0.051**	**-0.8084**	**0.0511**
	***		***		***				**								***				*		*		*	
Interc	-1.7288	0.0000	-1.7260	0.0000	-1.7932	0.0000	-1.7404	0.0000	-1.6948	0.0000	-1.7145	0.0000	-1.6598	0.0000	-1.6740	0.0000	-1.5937	0.0000	-1.7179	0.0000	-1.6586	0.0000	-1.6979	0.0000	-1.7118	0.0000
Field	**0.5557**	**0.0087**	**0.5306**	**0.0232**	**0.4116**	**0.0032**	0.5336	0.1276	-0.1879	0.6545	0.3954	0.4233	**-0.4378**	**0.0067**	-101.2683	1.0000	**-1.7379**	**0.0036**	0.1553	0.6900	**-0.3977**	**0.0219**	-0.1908	0.6555	0.0412	0.8085
Vcexists	1.2359	0.0000	1.2479	0.0000	1.2617	0.0000	1.3000	0.0000	1.2606	0.0000	1.2753	0.0000	1.3162	0.0000	1.2520	0.0000	1.1625	0.0000	1.2829	0.0000	1.2862	0.0000	1.2649	0.0000	1.2707	0.0000
	***		**		**								***				***				**					
DFE	1510		1510		1510		1510		1510		1510		1510		1510		1510		1510		1510		1510		1510	
Dev	1687		1689		1685		1692		1694		1693		1686		1681		1680		1694		1688		1694		1694	

	beta	se	t	p		DFE	Dev
	-1.6010	0.2182	-7.3366	0.0000		1507	1650
Vcexists	1.0899	0.1410	7.7284	0.0000	***		
Biotech'	0.5498	0.3019	1.8210	0.0686	*		
'Medtech'	0.5344	0.3170	1.6856	0.0919	*		
'Electronics'	0.3367	0.2508	1.3427	0.1794			
'Finance'	-0.2817	0.4607	-0.6115	0.5408			
'Internet'	-0.3151	0.2673	-1.1791	0.2384			
'Non tech services'	-1.7260	0.6274	-2.7509	0.0059	***		
'Software'	-0.3123	0.2731	-1.1435	0.2528			
'Tech Services'	-0.2539	0.4685	-0.5418	0.5879			
'Telecom/IT'	0.0730	0.2726	0.2678	0.7889			

	beta	se	t	p		DFE	Dev
	-1.8635	0.2847	-6.5447	0.0000		1506	1648
VC exists	1.0938	0.1413	7.7393	0.0000	***		
Biotech	0.8090	0.3516	2.3010	0.0214	**		
Medtech	0.7938	0.3647	2.1763	0.0295	**		
Electronics	0.5966	0.3091	1.9301	0.0536	*		
Consumer	0.7100	0.4386	1.6186	0.1055			
Finance	-0.0192	0.4957	-0.0388	0.9691			
Internet	-0.0557	0.3224	-0.1727	0.8629			
Non tech services	-1.4638	0.6535	-2.2399	0.0251	**		
Software	-0.0525	0.3274	-0.1605	0.8725			
Tech Services	0.0079	0.5028	0.0158	0.9874			
Telecom/IT	0.3325	0.3269	1.0171	0.3091			