

Should You Bet on the Jockey or the Horse?

or

What are Firms?
Evolution from Early Business Plan to Public Company

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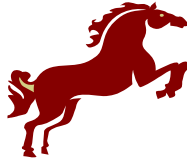
Motivation - Practical

- Teach Entrepreneurial Finance and Private Equity.
- Important component of course is a framework to evaluate VC investments.
 - OUTSIDE-IMPACTS
- Two key components are:
 - VCs want a strong opportunity – O; and
 - VCs want a strong management team – T.
- Students ask which is more important?
 - It is like asking does good hitting beat good pitching? Or vice versa?

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■ A very old debate among VCs:

- Some VCs believe company's product and market are key.
 - » Bet on the horse.



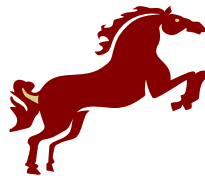
- Others believe that VC investment is about management, management, management.
 - » Bet on the jockey.



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■ "The Money of Invention" Gompers and Lerner (2001) and "Confessions of a VC" Quindlen (2000). Several successful approaches:

- Tom Perkins of Kleiner Perkins looked at a company's technological position. Was the technology superior to alternatives and proprietary?
- Don Valentine of Sequoia, investor in Cisco, assessed the market for the product or service. Is the market large and growing? Is it well-defined?
 - » Cisco was turned down by many other VCs because the team was considered weak.
 - » Valentine invested in Cisco anyway. He saw a huge market.



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- Arthur Rock, investor in Fairchild and Apple, emphasized the quality, integrity and commitment of the management team.

» “A great management team will find a good opportunity even if they have to make a huge leap from the market they currently occupy.”



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- Gladstone, Handbook of Private Equity:
 - VCs first look for what is special / unique about the product.
 - Then VCs look at management team. “They place more emphasis here. There is an old saying:”
 - » “You can have a good idea and poor management and lose every time.”
 - » “You can have a poor idea and good management and win every time.”
- In this research, we try to answer the jockey versus horse question.

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Motivation - Academic

- Since Coase (1937), economists have attempted to understand why firms exist and what constitutes firms.
- Despite long history of theory and empirical work, little systematic evidence concerning:
 - What constitutes a firm when it is very young; and
 - How a firm evolves to a mature company.
- Interesting because:
 - Useful to understand what firms are.
 - Can help shed light on questions concerning the nature and stability of firm assets and businesses.

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- Jockey versus horse is related to economic theories of the firm. The theories emphasize the difference between human and non-human assets. This paper attempts to inform those theories.
 - Hart (1995): “A firm’s non-human assets, then, simply represent the glue that keeps the firm together, **whatever this may be** ... Control over non-human assets leads to control over human assets... If non-human assets do not exist, then it is not clear what keeps the firm together.”

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- We address these theories in two ways:
 - Identify the “glue” that holds firms together and determine the extent to which the glue derives from non-human or human assets.

 - Identify when the glue emerges or “sticks” and how the “glue” evolves over a firm’s life cycle.

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- Also relate our results to theories of the firm that emphasize the existence of specific assets or resources that are critical to the firm’s evolution and growth. “Critical resource theories”.
 - Wernerfelt (1984) and Rajan and Zingales (2001b) focus on critical resources which may be “an idea, good customer relationships, a new tool, or superior management technique.” **Such resources may include specific human capital. I.e., specific people.**
 - According to these theories, a “firm is a web of specific investments built around a critical resource or resources... At some point, the critical resource becomes the web of specific investment itself.” [Zingales (2000)].
 - By examining firms’ non-human and human assets early in their lives and over time, we shed light on the nature of critical resources and the periods in which they are critical.
 - » For how long are specific people crucial?
 - » How quickly does the web develop?

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- Also, a question in the sociology literature:
 - Do populations of firms evolve by adapting or by creation and replacement?
 - » Adaptation = organizational / strategic change in response to environmental change.
 - » Creation and replacement = natural selection. Firms do not change, but more efficient organizations survive.
- Hannan and Freeman (1984) argue that
 - Selection favors firms with reliable / repeatable activities.
 - As a result, inertial pressures are strong and increase with time and size.
 - Creation and replacement more important / prevalent than adaptation.

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Human capital and rents

- Rajan and Zingales (2001a) and Zingales (2000) argue that today, “new” firms are different, more human capital reliant than firms have been historically.
- Will examine this issue by looking at size of the rents accruing to human capital providers.
 - » Are they larger for “new” firms compared to “old”?

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Previous work

- Bhide (2000) studies 100 companies from Inc. Magazine's list of 500 fastest growing companies in 1989. Based on interviews with founders,
 - Over 70% of those companies are founded by people who replicated or modified an idea encountered in their previous employment.
 - Founders do little planning before starting the business.
 - » Has been interpreted as saying business plan does not matter much.

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What do we do?

- In this paper, we study 49 venture capital (VC)-financed firms from early business plan to initial public offering (IPO) to public company (three years after the IPO).
- We:
 - describe companies at birth and as they evolve.
 - » Financial measures, business idea, point(s) of differentiation, assets and technology, growth strategy, customers, competitors, strategic alliances, management, ownership structure, and board of directors.
 - » Useful for understanding how firms grow.
 - consider the relative importance and stability of non-human capital vs. specific human capital assets.
 - consider the division of rents.
- To consider generality of our findings, we also look at all firms that do an IPO in 2004.

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Sample

- 49 companies that went public and for which we have early business plan or description at the time of a VC financing.
 - 31 cos. from VC financed companies in Kaplan and Stromberg (2003).
 - Additional 18 companies by asking VCs to provide business plans of companies they had financed that had gone public.
 - We have business plans from 10 different VCs.
 - » Through syndication, represent over 100 different VCs.

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Sample (cont.)

- Description -- Table 1.
 - Median company 24 months old at business plan.
 - Just under 3 years to IPO, just under 3 years post-IPO
 - Most sample business plans from 1995 - 1998.
 - Over-weighted in biotech relative to VC-funded universe.

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Sample (cont.)

- Sample selection issues.
 - Companies VC-financed.
 - » Will this generalize to non-VC firms?

 - Not random VC-financed companies?
 - » 31 companies from Kaplan and Stromberg (2003) likely to be random. Collected sample for other purposes.
 - » 18 other companies obtained specifically for this paper.
 - VCs gave us all business plans they could find.
 - Oversampling of biotech.
 - » No difference between two groups.

 - Majority of companies funded in tech boom?

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Sample (cont.)

- Only study firms that eventually go public
 - Necessary for methodology – need documentation across life cycle.
 - Bias in favor of more importance for specific human capital?
 - » Specific human capital arguably less important in acquisitions.

- Some of the firms are older at the time of business plan:
 - May not be capturing the “DNA” for these firms.
 - However,
 - » Main results robust to excluding those cos.
 - » IPO prospectuses and Lexi-Nexis do not find any changes pre-VC funding.

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Financial Information

- Table 2 summarizes financial and employment info.
 - Consistent with describing companies at an early stage, revenues, assets, and employees are small at the time of the business plans.
 - » Median revenues are 0.
 - » Median # employees is 22.
 - Company size increases by orders of magnitude between the business plan and the annual report.
 - » Assets and revenues increase more quickly than employees.
 - Negative profits are the norm at the business plan. Despite increases in revenues, assets, employees, revenue per employee, and market capitalization, median company does not become profitable through post-IPO annual report.

Table 2

	<u>All firms</u>			<u>Biotechnology firms</u>			<u>Non-biotechnology firms</u>		
<u>Revenue (\$M)</u>	<u>BP</u>	<u>IPO</u>	<u>AR</u>	<u>BP</u>	<u>IPO</u>	<u>AR</u>	<u>BP</u>	<u>IPO</u>	<u>AR</u>
Median	0	7.2	35.1	0	2.9	20.7	0.6	12.7	97.5
Average	5.54	40.5	179.0	0.7	4.9	30.1	8.3	59.5	241.4
St. dev.	13.6	154.5	332.7	1.6	5.3	14.8	16.5	189.4	376.0
Num. Obs.	47	49	39	17	17	11	30	32	28
<u>Number of employees</u>	<u>BP</u>	<u>IPO</u>	<u>AR</u>	<u>BP</u>	<u>IPO</u>	<u>AR</u>	<u>BP</u>	<u>IPO</u>	<u>AR</u>
Median	22	124	378	10	71	134	31	209	561
Average	92	340	1,267	17	87	195	138	475	1,688
St. dev.	202	659	2,320	13	67	141	246	785	2,630
Num. Obs.	42	49	39	16	17	11	26	32	28
<u>EBIT (\$M)</u>	<u>BP</u>	<u>IPO</u>	<u>AR</u>	<u>BP</u>	<u>IPO</u>	<u>AR</u>	<u>BP</u>	<u>IPO</u>	<u>AR</u>
Median	-0.8	-6.7	-25.6	-1.4	-10.3	-32.8	-0.8	-5.4	-22.4
Average	-1.6	-7.7	-48.6	-1.9	-11.7	-30.4	-1.5	-5.6	-55.8
St. dev.	2.5	13.5	93.3	2.0	7.5	18.1	2.6	15.5	109.2
Num. Obs.	36	49	39	8	17	11	26	32	28
% positive	17%	18%	15%	13%	6%	0%	18%	25%	21%
<u>Market capitalization (\$M)</u>	<u>BP</u>	<u>IPO</u>	<u>AR</u>	<u>BP</u>	<u>IPO</u>	<u>AR</u>	<u>BP</u>	<u>IPO</u>	<u>AR</u>
Median	17.9	232.4	176.9	14.1	254.9	265.8	18.7	218.8	163.5
Average	29.0	697.7	470.8	16.2	388.3	257.6	33.3	862.0	557.7
St. dev.	32.9	1920.3	1378.6	11.9	368.2	216.2	6.5	2357.8	1630.9
Num. Obs.	40	49	38	10	17	11	30	32	27

Lines of Business

- For each company, we determine if the description of the business changes from one point in time to the next.
- Categorize changes in two ways.
 - 1. Does firm change business description / line of business?
 - » Business changes if the firm sells to a different set of customers or if the firm markedly changes the products or services it offers.
 - 2. Does firm broaden, narrow, or maintain initial line of business?
 - » Narrowing = doing some of the same things, but jettisoning others.
 - » Broadening = doing most of the same things, but adding others
 - eBay. Began as web site to do online auctions – as the story goes to trade PEZ dispensers. Has broadened to many different product and geographic markets.

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Lines of Business - 2

- While we see changes in business focus, only 1 of 49 companies changes its line of business.
 - No unrelated acquisitions.
 - No radical shifts.
- This result suggests that initial business lines are core attribute of the sample firms.

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- For the most part, companies tend to broaden or at least not reduce their offerings within markets. Roughly:
 - 50% broaden.
 - 40% stay the same.
 - 10% narrow.
 - » Biotech more likely to narrow than non-biotech.

Table 3

<i>Companies whose line of business stays about the same over time</i>			
<u>Company</u>	<u>Business Plan</u>	<u>IPO</u>	<u>Annual Report</u>
1	●Development of analgesics	●Development of analgesics	●Development of analgesics
3	●Specialty supermarkets	● Specialty supermarkets	● Specialty supermarkets
4	●Customer information management software	●Enterprise relationship management software	●Enterprise customer relationship management software
<i>Companies whose line of business broadens/narrows (B/N) between the business plan and IPO but not between the IPO and the annual report</i>			
<u>Company</u>	<u>Business Plan</u>	<u>IPO</u>	<u>Annual Report</u>
16	●Wireless data communications	(N) Wireless communication and information systems for health information	●Wireless health information communication systems
21	●Implantable hearing devices	(B) Implantable and semi-implantable hearing devices	●Implantable and semi-implantable hearing devices
23	●Drug target discovery	(B) Drug target discovery and small molecule drug development	●Small molecule drug discovery and development
<i>Companies whose line of business broadens/narrows (B/N) between IPO and annual report but not between business plan and IPO</i>			
<u>Company</u>	<u>Business Plan</u>	<u>IPO</u>	<u>Annual Report</u>
31	●Internet data delivery software	●Internet data delivery software	(B) E-business infrastructure software and services
33	●Microfluidics	●Microfluidics	(B) Novel assay chemistry solutions for drug discovery and development
34	●Upscale, casual ethnic restaurants	●Upscale, casual ethnic restaurants	(B) Upscale, casual ethnic restaurants and casual ethnic diners
<i>Companies whose line of business broadens/narrows (B/N) between both the business plan and IPO and the IPO and annual report</i>			
<u>Company</u>	<u>Business Plan</u>	<u>IPO</u>	<u>Annual Report</u>
35	●E-commerce solutions	(N) E-commerce and direct marketing services	(B) Technology infrastructure and services
39	●Internet communication services	(B) Internet system and network management	(B) Internet infrastructure outsourcing
40	●Website production software	(B) Web content management software	(B) Enterprise content management software
41	●Hotel reservation and commission collection system	(B) Transaction processing services for the worldwide hotel industry	(B) Hotel reservation and representation services for the global hotel industry
45	●Basic local telephone services	(B) Facilities-based competitive local exchange carrier	(B) Facilities-based operator of a fiber optic communications infrastructure
<i>Companies whose line of business changes (C) between both the business plan and IPO and the IPO and annual report</i>			
<u>Company</u>	<u>Business Plan</u>	<u>IPO</u>	<u>Annual Report</u>
49	●New computing platform	(C) Computer operating system	(C) Software solutions for Internet appliances

Table 3

All Firms			
	<u>BP to IPO</u>	<u>IPO to AR</u>	<u>BP to AR</u>
Percent whose business model changes	2	3	3
Number observations	49	39	39
All Firms			
<u>Percent whose line of business</u>	<u>BP to IPO</u>	<u>IPO to AR</u>	<u>BP to AR</u>
Stays about the same	42	42	37
Broadens	46	50	50
Narrows	13	8	13
Number observations	48	38	38
Biotechnology Firms			
<u>Percent whose line of business</u>	<u>BP to IPO</u>	<u>IPO to AR</u>	<u>BP to AR</u>
Stays about the same	29	55	18
Broadens	47	27	45
Narrows	24	18	36
Number observations	17	11	11
Non -biotechnology Firms			
<u>Percent whose line of business</u>	<u>BP to IPO</u>	<u>IPO to AR</u>	<u>BP to AR</u>
Stays about the same	49	37	45
Broadens	45	59	52
Narrows	6	4	3
Number observations	31	27	27

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Reactions?

- “This must be true because the IPOs are only 3 years from the VC rounds. This is less likely to be true outside the '90s tech boom.”
- “This is obvious. VCs only fund deals around the business, not people. You would not necessarily find this for non-VC deals.” (from academics)

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To address selection issues, study all 2004 IPOs

- Total number of IPOs in SDC = 306.
 - 4 companies already listed on a foreign exchange.
 - 122 REITs, closed-end funds, trusts, other financials.
 - 21 holding companies (including companies formed solely to acquire other companies).
 - 21 spinoffs (some of which had buyouts in their histories).
 - 1 company formed as a joint venture.
 - 30 buyouts.

- IPOs of non-financial start-ups = 107.
 - VC Funded = 77 (or 72%)
 - Non-VC Funded = 30

- An aside: Large % of IPOs of true start-ups are VC financed.

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- For the 107 IPOs of true start-ups in 2004,
 - we:
 - » read the IPO prospectus.
 - » searched in Lexis-Nexis.
 - Identified any change in business.

- We repeated this methodology for the 49 firms in our sample.
 - We identified the one business change that we found in our more detailed data and only that one.
 - Suggests methodology is sound.
 - No evidence that businesses changed before VC funding.

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Results for 2004 IPO sample:

- 107 IPOs.
 - 8 change line of business. (7%).
 - » For six changes we can date, median change occurred 6.5 years before IPO.
 - » Not one change was less than 5 years before IPO.

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- 77 VC Funded IPOs
 - 6 change line of business. (8%)
 - » 2 changed before or concurrent with VC funding.
 - » 4 change after VC funding.
 - 1 of these changed through an acquisition.

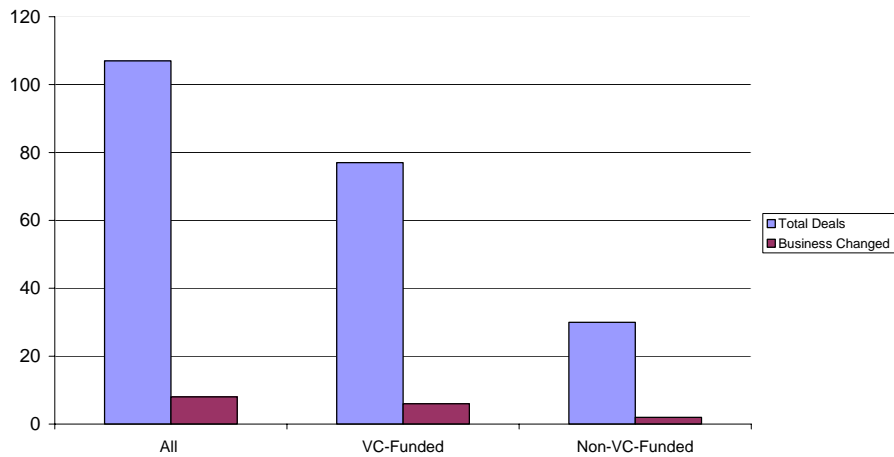
30

- 77 VC Funded IPOs
 - 6 change line of business. (8%)
 - » 2 changed before or concurrent with VC funding.
 - » 4 change after VC funding.
 - 1 of these changed through an acquisition.

- 30 non-VC funded IPOs.
 - 2 change line of business. (7%).

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Business Changes in 2004 Start-up IPOs



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- Line of business changes greater than in our sample, however, occurrence of changes still infrequent.

- No difference between VC and non-VC funded IPOs.
 - Suggests result is general.

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Points of differentiation

- Classify how sample firms differentiate themselves from their competitors over the sample period.
 - Rely on company self-descriptions.
- Most important factor is belief that company offers a unique product and/or technology.
 - 100%, 98%, and 92% of companies.
- Customer service increasingly important. Particularly, non-biotech.
- Expertise cited by almost 50% at the business plan. Drops off at IPO and annual report.
- Overall, self-reported distinguishing characteristics suggest that non-human capital assets are more important than human capital assets initially, and that the relative importance increases over time.

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Table 4
Differentiation

	<u>BP</u>	<u>IPO</u>	<u>AR</u>	<u>BP</u>	<u>IPO</u>	<u>AR</u>	<u>BP</u>	<u>IPO</u>	<u>AR</u>
	<i>All firms</i>			<i>Biotechnology</i>			<i>Non-biotechnology</i>		
Unique product/technology	100	98	92	100	100	91	100	97	93
Comprehensive products	6	12	13	6	6	0	6	16	18
Customer service	8	16	26	0	6	9	13	22	32
Alliances/partnerships	12	12	8	0	12	0	19	13	11
Expertise	45	14	13	47	12	18	44	16	11
Scientific advisors	4	2	5	6	0	0	3	3	7
Reputation	6	8	8	0	6	9	9	9	7
Number of observations	49	49	39	17	17	11	32	32	28

	<u>BP to IPO</u>				<u>IPO to AR</u>				<u>BP to AR</u>		
	Yes to yes	Yes to no	No to yes	No to no	Yes to yes	Yes to no	No to yes	No to no	Yes to yes	Yes to no	No to yes
Unique product/technology	98	2	0	0	92	5	0	3	92	8	0
Comprehensive products	4	2	8	86	8	3	5	85	3	5	10
Customer service	8	0	8	84	15	5	10	69	8	3	18
Alliances/partnerships	8	4	4	84	3	10	5	82	5	8	0
Expertise	8	37	6	49	8	5	5	82	8	36	5
Scientific advisors	2	2	0	96	3	0	3	95	3	3	3
Reputation	4	2	4	90	8	3	0	90	3	5	5
Number of observations	49	49	49	49	39	39	39	39	39	39	39

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Assets and Technology

- We describe the types of assets owned by our companies.
 - We note whether each company mentions patents, physical assets, and / or non-patented intellectual property as important or central to the business.
 - We classify the patents and physical assets as alienable assets because they can potentially be sold or assigned to other companies.
- Patents and physical assets become increasingly important from the business plan to the IPO to the annual report.
 - Patents / exclusive licenses: 29% to 49% to 62%. Biotech more.
 - Physical assets: 18% to 27% to 38%. Non-biotech more.
- Proprietary IP important for all and at all times.
 - 84% to 86% to 82%.
 - Basically 100% for biotech.

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Table 5
Assets

	<u>BP</u>	<u>IPO</u>	<u>AR</u>	<u>BP</u>	<u>IPO</u>	<u>AR</u>	<u>BP</u>	<u>IPO</u>	<u>AR</u>
	<i>All firms</i>			<i>Biotechnology firms</i>			<i>Non-biotechnology firms</i>		
Patents	29	49	62	53	76	91	16	34	50
Physical assets	18	27	38	6	6	9	25	38	50
Alienable assets	43	67	82	59	76	91	34	63	79
Proprietary IP	84	86	82	94	100	100	78	78	75
Number of observations	49	49	39	17	17	11	32	32	28

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Growth Strategies: **How do firms grow?**

- We classify firm growth strategies.
- Firms strongly oriented towards internal growth.
 - Produce new or upgraded products: 59%, 82% and 72%.
 - Obtaining additional customers through increased market penetration or market leadership: 49%, 71%, and 56%.
 - Geographical expansion: 20%, 43%, and 21%.
 - All three types of internal growth peak at the time of the IPO.
- External growth through alliances and partnerships or through acquisitions becomes relatively more important over time.
 - Alliances: 29%, 59%, and 51%.
 - Acquisitions: 2%, 22%, and 28%.

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Table 6
Growth Strategies

	<u>BP</u>	<u>IPO</u>	<u>AR</u>	<u>BP</u>	<u>IPO</u>	<u>AR</u>	<u>BP</u>	<u>IPO</u>	<u>AR</u>
	<i>All firms</i>			<i>Biotechnology firms</i>			<i>Non-biotechnology firms</i>		
Market penetration/leadership	49	71	56	24	47	55	63	84	57
New/upgraded products	59	82	72	94	100	91	41	72	64
Expand geographically	20	43	21	0	6	0	31	63	29
New alliances/partnerships	29	59	51	47	71	64	19	53	46
Acquisitions	2	22	28	0	29	27	3	19	29
Number of observations	49	49	39	17	17	11	32	32	28

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Customers

- Characterize customers and the evolution of customers.
- At bus. plan, IPO, annual report, 47%, 90%, 95% have customers;
 - At all stages, biotechnology less likely to have customers.
- Roughly 85% target businesses; 15% target consumers.
- Characterize the evolution of company customer bases as broadening, narrowing, or staying about the same.
 - One-third of the firms broaden their customer bases.
 - Small fraction narrow.
- ➔ Dramatic revenue increases in table 2 driven by selling more to an initial customer type either through increased market penetration or by selling additional products.
 - Revenue increases are likely driven secondarily by selling to new types of customers.

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Table 7
Customers

	<u>BP</u>	<u>IPO</u>	<u>AR</u>	<u>BP</u>	<u>IPO</u>	<u>AR</u>	<u>BP</u>	<u>IPO</u>	<u>AR</u>
	<i>All firms</i>			<i>Biotechnology firms</i>			<i>Non-biotechnology firms</i>		
Has customers (%)	47	90	95	12	83	82	66	94	100
Primarily businesses (%)	86	86	85	94	94	91	81	81	82
Primarily consumers (%)	14	14	15	6	6	9	19	19	18
Number of observations	49	49	39	17	17	11	32	32	28
		<u>BP to IPO</u>		<u>IPO to AR</u>		<u>BP to AR</u>			
Customer base similar (%)		73		77		62			
Customer base broader (%)		24		15		33			
Customer base narrower (%)		2		8		5			
Number of observations		49		39		39			

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Competitors

- Table 8 describes competition faced by the sample companies.
 - At business plan, 84% of the companies note that they face competition in their target markets. Typically this competition includes other startups as well as established firms.
 - Of the other 16% of companies, 10% do not mention competition while 6% claim that their product or market niche is so unusual that they face no real competition.
 - All 49 companies note that they have competition by the IPO.
- Type of competition named remains fairly stable:
 - 56% of firms claiming to face similar competition over all 3 stages.
 - 40% see a broadening in the types of companies they compete with while one company sees a narrowing.
- Again, this result seems consistent with the stability of the business model found in table 3.

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Table 8 Competitors

Number of observations: 49	Lists competitors as of business plan (%): 84		
	<u>BP to IPO</u>	<u>IPO to AR</u>	<u>BP to AR</u>
Competitor base similar (%)	63	79	56
Competitor base broader (%)	35	21	41
Competitor base narrower (%)	2	0	3
Number of observations	49	39	39

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Human capital (Table 10)

- Founders.
 - Heavily involved at the time of the business plan.
 - » Founder is CEO in 77% of 43 cos. with a CEO (33 of the 49).
 - » Founder is top five manager or on the board of all 47 cos.
 - Involvement of founders declines steadily over time. At IPO:
 - » 57% of CEOs are founders;
 - » 92% of companies have founder as top exec. or director.
 - At annual report:
 - » 46% of CEOs are founders;
 - » 72% of companies have founder as top exec. or director.

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Table 10
Management

Panel A:

	All firms			Biotechnology firms			Non-biotechnology firms		
	BP	IPO	AR	BP	IPO	AR	BP	IPO	AR
Has a CEO(%)	88	100	100	71	100	100	97	100	100
Num. Obs.	49	49	39	17	17	11	32	32	28
CEO is a founder (%)	77	57	46	75	53	36	77	59	50
Num. Obs.	43	49	39	12	17	11	31	32	28
A founder is a director if none is the CEO (%)	92	71	48	83	75	71	100	69	36
Num. Obs.	12	21	21	6	8	7	6	13	14
A founder is a top 5 manager or a director	100	92	72	100	94	82	100	94	68
Num. Obs.	47	49	39	16	17	11	31	32	28
Has a CFO or similar (%)	42	80	85	35	71	100	45	84	79
Num. Obs.	48	49	39	17	17	11	31	32	28
Has a CMO or similar (%)	38	37	41	12	12	9	45	50	54
Num. Obs.	48	49	39	17	17	11	31	32	28
Has a CTO or similar (non-retail) (%)	77	77	47	76	82	55	77	74	43
Num. Obs.	43	44	34	17	17	11	26	27	23

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Management - 3

- Overall, turnover is substantial. From business plan to the annual report, exactly 50% of the CEOs and only 25% of the other top five executives remain the same.
 - Works out to CEO turnover of roughly 11% per year.
 - Comparable to, maybe slightly lower than turnover of large public companies.
- Specific human capital assets (i.e., people) appear less stable than non-human capital assets.

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**What happens to departing founders / mgmt.?
Are departing founders starting other companies?**

- Panel D of table 10 looks at what departing founders and executives do after leaving the sample companies.
 - Search for subsequent job / founder history in the CapitalIQ, VentureEconomics, and VentureOne databases.
 - » Can identify activities for roughly 1/2 of departing fdrs & execs.
 - Relatively few departing founders and execs. found new cos.
 - » Only one founder, who departed between the business plan and the IPO, subsequently founded another company.
 - A larger fraction, roughly one-third, of founder and non-founders become top executives of other young companies, potentially providing early critical resources.

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Panel D: Departing founders/executives

	All firms: departed between	
	BP and IPO	IPO and AR
<i>Identified next job (%):</i>		
Founders	50	45
Num. Obs.	6	15
Non-founder CEOs	0	60
Num. Obs.	1	5
Non-founder other top 5	41	42
Num. Obs.	32	33
<i>Founded new company (%):</i>		
Founders	17	10
Num. Obs.	6	15
Non-founder CEOs	0	0
Num. Obs.	1	5
Non-founder other top 5	11	4
Num. Obs.	32	33
<i>Top executive of startup company (%):</i>		
Founders	33	27
Num. Obs.	6	15
Non-founder CEOs	0	40
Num. Obs.	1	5
Non-founder other top 5	36	36
Num. Obs.	32	33

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Ownership (Table 11)

- We estimate that founders extract 11.8% to 19.1% of pre-IPO net value for idea / non-incentive reasons. (I.e, ownership not related to ongoing management.)
- Pre-IPO CEO ownership in our sample is lower than that in sample of IPOs between 1978 and 1987 studied by Baker and Gompers (1999).
 - On average, CEOs of VC-backed firms own
 - » 19.1% in Baker and Gompers' sample.
 - » 9.8% in our sample.
- Clear that our founders (overall) own less (avg. 14.6%) than CEOs in Baker and Gompers.
- Not consistent with idea that human capital has become more important in recent years.

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Table 11 Ownership

Panel A – Beneficial ownership of common stock

Founder(s) (%)	All firms				Biotechnology firms				Non-biotechnology firms			
	BP	Pre-IPO	Post-IPO	AR	BP	Pre-IPO	Post-IPO	AR	BP	Pre-IPO	Post-IPO	AR
Median	28.9	12.4	8.8	5.3	28.9	4.3	3.5	5.1	31.7	13.1	10.3	5.3
Average	36.0	14.6	11.2	7.2	34.4	11.4	8.6	8.0	36.7	16.4	12.6	6.8
St. dev.	25.4	12.4	9.7	7.5	30.8	12.7	9.5	9.2	23.6	12.1	9.7	7.0
Num. Obs.	31	49	49	37	9	17	17	10	22	32	32	27

CEO (%)	All firms				Biotechnology firms				Non-biotechnology firms			
	BP	Pre-IPO	Post-IPO	AR	BP	Pre-IPO	Post-IPO	AR	BP	Pre-IPO	Post-IPO	AR
Median	15.9	6.7	5.4	3.6	6.8	4.3	3.1	3.2	17.4	8.0	6.4	3.8
Average	20.1	9.8	7.5	5.7	15.5	8.2	6.2	6.1	22.0	10.6	8.2	5.6
St. dev.	15.8	9.0	7.0	6.6	14	9.9	7.1	8.7	16.5	8.6	6.9	5.9
Num. Obs.	27	49	49	38	8	17	17	10	19	32	32	28

Non-founder CEO (%)	All firms				Biotechnology firms				Non-biotechnology firms			
	BP	Pre-IPO	Post-IPO	AR	BP	Pre-IPO	Post-IPO	AR	BP	Pre-IPO	Post-IPO	AR
Median	5.5	4.2	3.0	1.7	4.2	3.6	2.8	1.2	6.5	6.6	5.0	2.0
Average	5.1	5.0	4.0	1.9	4.2	3.5	2.7	1.6	5.5	6.0	4.8	2.1
St. dev.	2.0	3.1	2.6	1.4	0.7	1.2	0.9	1.3	2.4	3.5	2.9	1.4
Num. Obs.	6	21	21	20	2	8	8	6	4	13	13	14

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Table 11
Ownership

Panel B – Division of ownership pre-IPO (%)

	Founders	Non-founder founder CEO	Non-founder other top 5 managers	VCS	Partners	Others	All executive officers and directors	Founders + top 5 mgrs	Founder not a mgr: top 5 mgrs	Founder \$ pre-IPO (\$M)
<u>All firms</u>										
Median	12.4	4.2	2.2	52.6	0.0	22.7	52.0	16.3	6.2	25.9
Average	14.6	5.0	3.5	53.0	3.8	23.1	55	20.3	6.0	122.0
St. dev.	12.4	3.1	4.4	17.1	8.2	13.0	21.9	13.1	3.4	442.4
Num. Obs.	49	21	49	49	49	49	49	49	6	49
<u>Biotechnology firms</u>										
Median	4.3	3.6	1.6	52.6	0.0	28.0	48.3	8.0	6.1	15.9
Average	11.4	3.5	2.2	51.4	4.7	28.8	49.7	15.2	6.1	38.3
St. dev.	12.7	1.2	1.7	16.4	7.8	12.7	17.2	12.5	3.6	49.1
Num. Obs.	17	8	17	17	17	17	17	17	2	17
<u>Non-biotechnology firms</u>										
Median	13.1	6.6	2.8	54.1	0.0	20.5	56.0	18.9	6.2	33.3
Average	16.4	6.0	4.2	53.9	3.3	20.1	57.9	23.0	6.0	166.5
St. dev.	12.1	3.5	5.2	17.6	8.5	12.3	23.8	12.7	3.9	543.9
Num. Obs.	32	13	32	32	32	32	32	32	4	32

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Cross-sectional Analysis:
Relation of Non-Human and Human Assets

- Can interpret the theories as suggesting that founders and specific human capital less important or critical when a firm has built up its non-human capital. I.e., specific people may be particularly important in certain situations or stages:
 - when firm has few other assets, such as tangible assets.
 - when the firm is reliant on intellectual property that has not yet been patented and therefore specific to the founder.
 - when the firm is very young.
- We try to test this by looking at whether a founder remains CEO
 - at the time of the IPO.
 - at the time of the first Annual Report after going public.

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- Likelihood of keeping the founder as CEO:
 - Negatively related to alienable assets at business plan.
 - » Negatively related to physical assets at business plan.
 - » Negatively related to patents at business plan.
 - Negatively related to non-patentable IP at business plan.

- Specific people are more critical before alienable assets have formed, consistent with the critical resource and the Hart-Moore-Holmström theories.

Panel A: Founder remains CEO at the IPO.

	Coeff.	(STDE)	Coeff.	(STDE)	Coeff.	(STDE)	Coeff.	(STDE)
Alienable assets at BP	-0.148	(0.150)						
Physical assets at BP			-0.443	(0.198)**	-0.700	(0.164)***	-0.971	(0.048)***
Patents at BP			-0.069	(0.169)	-0.529	(0.235)**	-0.814	(0.194)***
Non-pat. IP at BP					-0.504	(0.194)***	-0.698	(0.167)***
Age (months) at BP	0.002	(0.002)	0.005	(0.003)*	0.007	(0.003)**	0.008	(0.003)**
Fdr ownership at BP							0.014	(0.005)**
Constant	0.118	(0.270)	0.009	(0.273)	1.165	(0.567)**	0.711	(0.839)
Number of obs.	49		49		49		30	
Pseudo R-squared	0.03		0.07		0.12		0.38	

Panel B: Founder remains CEO at the first Annual Report.

	Coeff.	(STDE)	Coeff.	(STDE)	Coeff.	(STDE)	Coeff.	(STDE)
Tangible assets at BP	-0.518	(0.195)***						
Physical assets at BP			-0.506	(0.252)**	-0.642	(0.232)***	-0.835	(0.165)***
Patents at BP			-0.359	(0.195)*	-0.599	(0.235)**	-0.599	(0.262)**
Non-pat. IP at BP					-0.355	(0.247)	-0.568	(0.245)**
Age (months) at BP	0.014	(0.004)**	0.012	(0.005)**	0.014	(0.006)**	0.014	(0.005)***
Fdr ownership at BP							0.010	(0.005)**
Constant	-0.543	(0.326)*	-0.665	(0.348)*	-0.012	(0.605)	-0.445	(0.843)
Number of obs.	39		39		39		26	
Pseudo R-squared	0.27		0.25		0.28		0.40	

Summary of results

- Companies grow dramatically, but lines of business are remarkably stable, suggesting that these are core attributes.
 - Does not appear to be specific to sample.
 - Seems to generalize to all 2004 IPOs.

- Non-human capital – lines of business, points of differentiation, alienable assets, customers, and competitors – remains relatively constant, while human capital changes more substantially.
 - Human capital turnover related to the tangibility of the firms assets,

- The rents to specific human capital are 11-19% of value.
 - Unrelated to the nature of the assets.
 - No evidence that rents to human capital have increased in the “new” economy.

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Implications - Academic

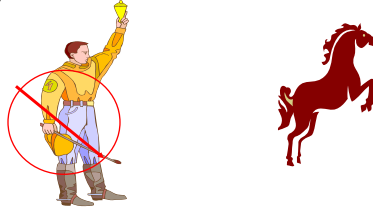
- With regard to economic theories: core non-human capital assets form very early in a firm’s life.
 - Identifiable lines of business and important physical, patent, and IP assets exist by the time of the early business plan and do not change or disappear as specific human capital assets turn over.
 - These arguably constitute the “glue” that holds firms together.

- The early emergence and stability of non-human assets are consistent with those assets being critical resources.

- Consistent with Hannan-Freeman structural inertia view.
 - Firms evolve through natural selection.

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**Should you bet on the jockey or the horse?
On the margin, bet on the horse.**



- Recall the jockey arguments:
 - “You can have a poor idea and good management and win every time.”
 - “A great management team will find a good opportunity even if they have to make a huge leap from the market they currently occupy.”
- **This rarely happens.**

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- On the other hand, you can have a good idea and a poor management team and still end up winning.
 - VCs change management teams frequently.
- In other words,
 - a bad management team does not necessarily kill a good idea, but
 - a bad idea is rarely overcome by a good management team.
- Implications:
 - The business plan / business matters a lot.
 - Spend marginal due diligence time evaluating the business.

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Does this mean good jockeys do not matter?

No.

- Strong management is valuable and important.
 - Non-founder CEOs get 4% to 5% of the company.
 - They would not receive so much if they were not valuable.
- Point is that poor management is much more likely to be fixed by new management than a poor idea is likely to be fixed by a new idea.
- Also has been suggested that some jockeys are good at picking horses.
 - I.e., certain founders may be particularly good at choosing good businesses.

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Other implications

- What should you do if business is not succeeding with a good management team?
- Many VCs work hard to try to fix business:
 - "If at first you don't succeed, try, try again."

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Other implications

- What should you do if business is not succeeding with a good management team?
- Many VCs work hard to try to fix business:
 - "If at first you don't succeed, try, try again."
- For VCs, maybe it ought to read,
 - "If at first you don't succeed; quit, quit at once."
 - If business is not materializing, unusual to see successful shifts into other markets / other businesses.

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Thank you

- If you would like a copy of the slides / paper, please email me at:
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