A Framework for Evaluating Start-Ups:
Thoughts and Evidence

Steven Kaplan

University of Chicago Graduate School of Business
Intro

- Will present a framework to evaluate start-up / VC investments.
  - Two key components are:
    » VCs want a strong opportunity – O; and
    » VCs want a strong management team – T.

- Students ask which is more important?
  - Will discuss research that addresses that question.
Research and teach Entrepreneurial Finance and Private Equity.

Important component of course is a framework to evaluate VC investments.
  – OUTSIDE-IMPACTS

Framework is based on:
  – Spending time with several VC firms.
  – Reading and coding investment memos of more than 10 VC firms in more than 80 investments.
**OUTSIDE - IMPACTS**

*Opportunity, Uncertainty, Team, Strategy, Investment, Deal, Exit.*

- (O) Opportunity: Is this a positive present value opportunity? (Does it have IMPACTS?)
  - (I) What is the idea / industry?
  - (M) Is the target market large enough to support substantial growth / valuation?
  - (P) Why does the opportunity generate a positive present value? What is unique?
  - (A) Acceptance: Will customers in that market accept / buy this new product / service?
  - (C) Why won't the value be competed away?
  - (T) Why is this a good time to enter?
  - (S) Speed? How quickly can this be implemented?
OUTSIDE - IMPACTS

- (O) Opportunity: Is this a positive present value opportunity? (Does it have IMPACTS?)
  - (I) What is the idea / industry?
    » Explain the idea / opportunity clearly and succinctly.
  - (M) Is the target market large enough to support substantial growth / valuation?
    » How large is the overall market?
    » How large is the market segment you are targeting?
      - Provide solid support for your analysis.
    » Are there additional opportunities?
  - (P) Why does the opportunity generate a positive present value? What is unique? What is differentiating (Ryan)?
    » The answer to this should be implicit in other parts of OUTSIDE-IMPACTS. But, doesn’t hurt to be explicit.
    » Why will you make money?
    » How will you make money?
OUTSIDE - IMPACTS

(A) Acceptance: Will customers in that market accept / buy this new product / service?

» Who is the customer in the target segment? Put yourself in shoes of a customer.
  ■ How does the customer spend the day.

» Why will they buy your product / service?
  ■ What do they buy now?
  ■ Why do they buy what they do now?
  ■ Why will they switch from their current product?

» How will you get to the customers?
  ■ Direct Salesforce? Resellers? Distributors?
    - How much of each? How quickly?
  ■ Advertising?
  ■ How much will it cost?
  ■ Common to underestimate time / cost

» How will you keep customers? How much will it cost?
OUTSIDE - IMPACTS

- (C) Why won't the value be competed away?
  » What will existing competitors do?
  » What will other new entrants do? How will you respond?
- (T) Why is this a good time to enter?
  » Why hasn't the opportunity been taken already?
- (S) Speed? How quickly can this be implemented?

- Good opportunities have positive IMPACTS.
- If the opportunity does not have IMPACTS, then it should not be pursued.
(U) Uncertainties: What are major uncertainties?
- Possible uncertainties:
  » Market size.
  » Customer acceptance.
  » Customer approach.
  » Competition.
  » Management team.
  » Potential real options.
- Which uncertainties can be managed so that outcome is more likely to be favorable?
  » Choice of initial customers? Choice of investors?
- How do the answers affect the opportunity?
OUTSIDE - IMPACTS

(T) Team.
- Can management team implement opportunity?
  » How does previous experience relate to opportunity?
  » How “hungry” is the management team?
- If management pieces are missing:
  » What pieces are missing?
  » What type of person will you look for to fill them?
  » How will you find that person?
- For VCs, a good team and a good opportunity are necessities.

(S) Strategy.
- Is strategy consistent with opportunity, uncertainty, team, and exit?
OUTSIDE - IMPACTS

- (I) Investment Requirements.
  - Cash flow requirements.

- (D) Deal.
  - Does deal structure provide appropriate incentives?
    » Is the deal priced attractively?
    » Do key individuals have incentives to do deal?
    » Do key individuals have incentives to make deal work?
  - Does deal structure provide / ensure appropriate governance?
  - Does deal structure help manage the uncertainties?

- (E) Exit. Can investors exit the deal? How?

If an investment does not pass the OUTSIDE tests, leave it outside.
Two key components are:
- VCs want a strong opportunity – O; and
- VCs want a strong management team – T.

Students ask which is more important?
- Does good hitting beat good pitching?
- Does good defense beat a good offense?
- Or vice versa?
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.
“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.
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.”
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 my research (with Berk Sensoy and Per Stromberg), we try to address the jockey versus horse question.
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.
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.”

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.
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”.

- Critical resources can be products, ideas or people.
- 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?
What do we do?

In this paper, we study 50 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.

To consider generality of our findings, we also look at all firms that do an IPO in 2004.
Sample 1

- 50 companies that went public and for which we have early business plan or description at the time of a VC financing.
  - We have business plans from 10 different VCs.
    » Through syndication, represent over 100 different VCs.
Sample (cont.)

- Median company 24 months old at business plan.
- Just under 3 years to IPO, just under 3 years post-IPO
- Over-weighted in biotech relative to VC-funded universe.
Sample (cont.)

- Sample selection issues.
  - Companies VC-financed.
    » Will this generalize to non-VC firms?
  - Majority of companies funded in tech boom?

- 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.
Financial Information

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.
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.
Line of Business Changes from Business Plan to IPO for 50 VC-Funded Companies the Go Public
While we see changes in business focus, only 1 of 50 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.
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.
### Companies whose line of business stays about the same over time

<table>
<thead>
<tr>
<th>Company</th>
<th>Business Plan</th>
<th>IPO</th>
<th>Annual Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Development of analgesics</td>
<td>Development of analgesics</td>
<td>Development of analgesics</td>
</tr>
<tr>
<td>3</td>
<td>Specialty supermarkets</td>
<td>Specialty supermarkets</td>
<td>Specialty supermarkets</td>
</tr>
<tr>
<td>4</td>
<td>Customer information management software</td>
<td>Enterprise relationship management software</td>
<td>Enterprise customer relationship management software</td>
</tr>
</tbody>
</table>

### Companies whose line of business broadens/narrows (B/N) between the business plan and IPO but not between the IPO and the annual report

<table>
<thead>
<tr>
<th>Company</th>
<th>Business Plan</th>
<th>IPO</th>
<th>Annual Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>Wireless data communications</td>
<td>(N) Wireless communication and information systems for health information</td>
<td>Wireless health information communication systems</td>
</tr>
<tr>
<td>21</td>
<td>Implantable hearing devices</td>
<td>(B) Implantable and semi-implantable hearing devices</td>
<td>Implantable and semi-implantable hearing devices</td>
</tr>
<tr>
<td>23</td>
<td>Drug target discovery</td>
<td>(B) Drug target discovery and small molecule drug development</td>
<td>Small molecule drug discovery and development</td>
</tr>
</tbody>
</table>

### Companies whose line of business broadens/narrows (B/N) between IPO and annual report but not between business plan and IPO

<table>
<thead>
<tr>
<th>Company</th>
<th>Business Plan</th>
<th>IPO</th>
<th>Annual Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>31</td>
<td>Internet data delivery software</td>
<td>Internet data delivery software</td>
<td>(B) E-business infrastructure software and services</td>
</tr>
<tr>
<td>33</td>
<td>Microfluidics</td>
<td>Microfluidics</td>
<td>(B) Novel assay chemistry solutions for drug discovery and development</td>
</tr>
<tr>
<td>34</td>
<td>Upscale, casual ethnic restaurants</td>
<td>Upscale, casual ethnic restaurants</td>
<td>(B) Upscale, casual ethnic restaurants and casual ethnic diners</td>
</tr>
</tbody>
</table>

### Companies whose line of business broadens/narrows (B/N) between both the business plan and IPO and the IPO and annual report

<table>
<thead>
<tr>
<th>Company</th>
<th>Business Plan</th>
<th>IPO</th>
<th>Annual Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>E-commerce solutions</td>
<td>(N) E-commerce and direct marketing services</td>
<td>(B) Technology infrastructure and services</td>
</tr>
<tr>
<td>39</td>
<td>Internet communication services</td>
<td>(B) Internet system and network management</td>
<td>(B) Internet infrastructure outsourcing</td>
</tr>
<tr>
<td>40</td>
<td>Website production software</td>
<td>(B) Web content management software</td>
<td>(B) Enterprise content management software</td>
</tr>
<tr>
<td>41</td>
<td>Hotel reservation and commission collection system</td>
<td>(B) Transaction processing services for the worldwide hotel industry</td>
<td>(B) Hotel reservation and representation services for the global hotel industry</td>
</tr>
<tr>
<td>45</td>
<td>Basic local telephone services</td>
<td>(B) Facilities-based competitive local exchange carrier</td>
<td>(B) Facilities-based operator of a fiber optic communications infrastructure</td>
</tr>
</tbody>
</table>

### Companies whose line of business changes (C) between both the business plan and IPO and the IPO and annual report

<table>
<thead>
<tr>
<th>Company</th>
<th>Business Plan</th>
<th>IPO</th>
<th>Annual Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>49</td>
<td>New computing platform</td>
<td>(C) Computer operating system</td>
<td>(C) Software solutions for Internet appliances</td>
</tr>
</tbody>
</table>
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)
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.
  - 1 company foreign owned.
  - 30 buyouts.
- IPOs of non-financial start-ups = 106.
  - VC Funded = 88 (or 83%)
  - Non-VC Funded = 18

- An aside: Large % of IPOs of true start-ups are VC financed.
For the 106 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 50 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.
Results for 2004 IPO sample:

Line of Business Changes from Founding to IPO for all start-up IPOs in 2004
- 106 IPOs.
  - 8 change line of business. (7.5%).
    » For six changes we can date, median change occurred 6.5 years before IPO.
    » Not one change was less than 5 years before IPO.
What about VC vs. Non-VC?
Line of Business Changes from Founding to IPO for all start-up IPOs in 2004 by VC Involvement
88 VC Funded IPOs

- 7 change line of business. (8%)
  » 3 changed before or concurrent with VC funding.
  » 4 change after VC funding.

- 1 of these changed through an acquisition.
88 VC Funded IPOs
- 7 change line of business. (8%)
  » 3 changed before or concurrent with VC funding.
  » 4 change after VC funding.
  ▪ 1 of these changed through an acquisition.

18 non-VC funded IPOs.
- 1 changes line of business. (6%).
- 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.
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.
Differentiation

<table>
<thead>
<tr>
<th></th>
<th>BP</th>
<th>IPO</th>
<th>AR</th>
<th></th>
<th>BP</th>
<th>IPO</th>
<th>AR</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All firms</strong></td>
<td>100</td>
<td>98</td>
<td>90</td>
<td><strong>Biotechnology firms</strong></td>
<td>100</td>
<td>100</td>
<td>91</td>
<td><strong>Non-biotechnology firms</strong></td>
</tr>
<tr>
<td>Unique product/technology</td>
<td>8</td>
<td>14</td>
<td>16</td>
<td></td>
<td>6</td>
<td>6</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Comprehensive products</td>
<td>10</td>
<td>18</td>
<td>29</td>
<td></td>
<td>0</td>
<td>6</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Customer service</td>
<td>14</td>
<td>12</td>
<td>10</td>
<td></td>
<td>0</td>
<td>12</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Alliances/partnerships</td>
<td>46</td>
<td>16</td>
<td>16</td>
<td></td>
<td>47</td>
<td>12</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Expertise</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td></td>
<td>6</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Scientific advisors</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td></td>
<td>0</td>
<td>6</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Reputation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of observations</td>
<td>50</td>
<td>50</td>
<td>31</td>
<td></td>
<td>17</td>
<td>17</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td></td>
<td>33</td>
<td>33</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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.
## Assets

<table>
<thead>
<tr>
<th></th>
<th>BP</th>
<th>IPO</th>
<th>AR</th>
<th></th>
<th>BP</th>
<th>IPO</th>
<th>AR</th>
<th></th>
<th>BP</th>
<th>IPO</th>
<th>AR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All firms</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>Biotechnology firms</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>Non-biotechnology firms</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patents</td>
<td>28</td>
<td>48</td>
<td>61</td>
<td>53</td>
<td>76</td>
<td>91</td>
<td>15</td>
<td>33</td>
<td>45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical assets</td>
<td>20</td>
<td>28</td>
<td>42</td>
<td>6</td>
<td>6</td>
<td>9</td>
<td>27</td>
<td>39</td>
<td>60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alienable assets</td>
<td>44</td>
<td>68</td>
<td>84</td>
<td>59</td>
<td>76</td>
<td>91</td>
<td>36</td>
<td>64</td>
<td>80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proprietary IP</td>
<td>82</td>
<td>84</td>
<td>81</td>
<td>94</td>
<td>100</td>
<td>100</td>
<td>76</td>
<td>76</td>
<td>70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of observations</td>
<td>50</td>
<td>50</td>
<td>31</td>
<td>17</td>
<td>17</td>
<td>11</td>
<td>33</td>
<td>33</td>
<td>20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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%.
Human capital

- Founders.
  - Heavily involved at the time of the business plan.
    » Founder is CEO in 66% of cos.
    » Founder is CEO in 77% of 43 cos. with a CEO.
    » Founder is top five manager or on the board of all cos.
  - Involvement of founders declines steadily over time. At IPO:
    » 58% of CEOs are founders;
    » 94% of companies have founder as top exec. or director.
  - At annual report:
    » 39% of CEOs are founders;
    » 68% of companies have founder as top exec. or director.
Comparable turnover numbers for 2004 IPO sample.

<table>
<thead>
<tr>
<th></th>
<th>Overall</th>
<th>VC-backed</th>
<th>Not VC-backed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Founder is CEO:</td>
<td>51%</td>
<td>49%</td>
<td>61%</td>
</tr>
<tr>
<td>Founder employee or director:</td>
<td>84%</td>
<td>84%</td>
<td>83%</td>
</tr>
</tbody>
</table>

Our sample:

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Founder is CEO:</td>
<td>58%</td>
<td>58%</td>
<td></td>
</tr>
<tr>
<td>Founder employee or director:</td>
<td>94%</td>
<td>94%</td>
<td></td>
</tr>
</tbody>
</table>
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.
Ownership

- 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.
## Ownership

### Panel A – Beneficial ownership of common stock

<table>
<thead>
<tr>
<th>Founder(s) (%)</th>
<th>All firms</th>
<th>Biotechnology firms</th>
<th>Non-biotechnology firms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-</td>
<td>Post-</td>
<td>BP</td>
</tr>
<tr>
<td>Median</td>
<td>31.7</td>
<td>12.5</td>
<td>9.0</td>
</tr>
<tr>
<td>Average</td>
<td>37.1</td>
<td>14.7</td>
<td>11.3</td>
</tr>
<tr>
<td>St. dev.</td>
<td>25.7</td>
<td>12.3</td>
<td>9.6</td>
</tr>
<tr>
<td>Num. Obs.</td>
<td>32</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CEO (%)</th>
<th>All firms</th>
<th>Biotechnology firms</th>
<th>Non-biotechnology firms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-</td>
<td>Post-</td>
<td>BP</td>
</tr>
<tr>
<td>Median</td>
<td>15.8</td>
<td>7.0</td>
<td>5.4</td>
</tr>
<tr>
<td>Average</td>
<td>20.1</td>
<td>9.8</td>
<td>7.5</td>
</tr>
<tr>
<td>St. dev.</td>
<td>15.9</td>
<td>8.9</td>
<td>6.9</td>
</tr>
<tr>
<td>Num. Obs.</td>
<td>27</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non-founder CEO (%)</th>
<th>All firms</th>
<th>Biotechnology firms</th>
<th>Non-biotechnology firms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-</td>
<td>Post-</td>
<td>BP</td>
</tr>
<tr>
<td>Median</td>
<td>5.5</td>
<td>4.2</td>
<td>3.0</td>
</tr>
<tr>
<td>Average</td>
<td>5.1</td>
<td>5.0</td>
<td>4.0</td>
</tr>
<tr>
<td>St. dev.</td>
<td>2.0</td>
<td>3.1</td>
<td>2.5</td>
</tr>
<tr>
<td>Num. Obs.</td>
<td>6</td>
<td>21</td>
<td>21</td>
</tr>
</tbody>
</table>
## Ownership

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

<table>
<thead>
<tr>
<th>Founders</th>
<th>Non-founder CEO</th>
<th>Non-founder 5 managers</th>
<th>VCs</th>
<th>Partners</th>
<th>Others</th>
<th>All executive officers and directors</th>
<th>Founders + top 5 mgs</th>
<th>Founder not a mgr: top 5 mgs</th>
<th>Founder $ pre-IPO ($M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median</td>
<td>12.5</td>
<td>4.2</td>
<td>2.1</td>
<td>53.0</td>
<td>0.0</td>
<td>22.8</td>
<td>53.2</td>
<td>16.4</td>
<td>6.2</td>
</tr>
<tr>
<td>Average</td>
<td>14.7</td>
<td>5.0</td>
<td>3.4</td>
<td>53.1</td>
<td>3.7</td>
<td>23.1</td>
<td>55.8</td>
<td>20.3</td>
<td>6.0</td>
</tr>
<tr>
<td>St. dev.</td>
<td>12.3</td>
<td>3.1</td>
<td>4.4</td>
<td>16.9</td>
<td>8.2</td>
<td>12.8</td>
<td>22.3</td>
<td>12.9</td>
<td>3.4</td>
</tr>
<tr>
<td>Num. Obs.</td>
<td>50</td>
<td>21</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>6</td>
</tr>
</tbody>
</table>

49
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.
- Generalizes to all 2004 IPOs – VC- and non-VC-backed.

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 firm’s 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.
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.
Implications - Practical
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.
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.
Warren Buffett:

“When a management team with a reputation for brilliance tackles a business with a reputation for bad economics, it is the reputation of the business that remains intact.”
Warren Buffett:

- “When a management team with a reputation for brilliance tackles a business with a reputation for bad economics, it is the reputation of the business that remains intact.”

- “Should you find yourself in a chronically leaking boat, energy devoted to changing vessels is likely to be more productive than energy devoted to patching leaks.”
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.
  - What do VCs say is their biggest mistake?
    » They did not fire management fast enough.
    » Do not say that they picked the wrong business.
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."
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.
Thank you

- If you would like a copy of the slides / paper, please email me at:
  - skaplan@uchicago.edu