The Entrepreneur’s Idea and Outside Finance: Theory and Evidence about Entrepreneurial Roles

Presentation
June 29, 2015
The Entrepreneur’s Idea and Outside Finance

• Entrepreneur’s Roles
  – Hébert and Link (2009)
  – Manne (2014)

• Complexity → Probability of early outside finance → Probability of commercial agreements

• NRC SBIR data
SBIR Project

Phase I → Phase II → further development → commercialization

- Basic structure of an SBIR project
- Audretsch, et al. (2002)
SBIR Project

Phase I → Phase II → further development → commercialization

Early Outside, Third-Party Finance
SBIR Project

Phase I → Phase II → further development → commercialization

Early Outside, Third-Party Finance

= f(complexity of idea, . . . )

• Complexity → Communications costs → Less room for mutually agreeable bargain between entrepreneur and outside financier

• Callaud & Tirole (2007), communications problems with multiple technologies

• More ways components can turn out along dimensions that must be consistent across the components → consistent solutions are:
  – large in absolute number → divergent opinions
  – a small proportion of outcomes → focus on failure

• Measure of Complexity of entrepreneurial idea
SBIR Project

Phase I $\rightarrow$ Phase II $\rightarrow$ further development $\rightarrow$ commercialization

Early Outside, Third-Party Finance

$= f(\text{complexity of idea, . . . })$

Controls

- Prior SBIR
- Founders’ business background
- Minority ownership
- Broad Technology Agency
- Geographic Region
## Complex Ideas & Probability of Outside Finance

<table>
<thead>
<tr>
<th></th>
<th>Low Complexity</th>
<th>High Complexity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High Probability Case:</strong> in West, for Army, computers, no prior SBIR, no business background for founders, not minority owned</td>
<td>0.98</td>
<td>0.78</td>
</tr>
<tr>
<td><strong>Low Probability Case:</strong> in Northeast, for DARPA, computers, no business background for founders, not minority owned</td>
<td>0.15</td>
<td>0.0071</td>
</tr>
</tbody>
</table>

p-value = 0.11, so the probability of a negative effect this large or larger is 0.06 against the null hypothesis.
SBIR Project

Phase I → Phase II → further development → commercialization

Early Outside, Third-Party Finance

Agreements with other firms for development, production, and marketing

= f(complexity of idea, ...)
Entrepreneur's Idea & Outside Finance

SBIR Project

Phase I → Phase II → further development → commercialization

Agreements with other firms for development, production, and marketing

Early Outside, Third-Party Finance

Outside finance → Probability of commercial agreements (Link, Ruhm, and Siegel, 2014)

= f(complexity of idea, . . . )

Greater likelihood of commercial agreements with other firms
## Probability the Entrepreneur Wears All the Hats

<table>
<thead>
<tr>
<th></th>
<th>Zero-One for Explanatory Variable</th>
<th>Prediction for Explanatory Variable</th>
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</thead>
<tbody>
<tr>
<td>Early Outside Finance</td>
<td>0.77</td>
<td></td>
</tr>
<tr>
<td>No Early Outside Finance</td>
<td>0.91</td>
<td></td>
</tr>
<tr>
<td>High Predicted Probability of Outside Finance</td>
<td></td>
<td>0.79</td>
</tr>
<tr>
<td>Low Predicted Probability of Outside Finance</td>
<td></td>
<td>0.90</td>
</tr>
<tr>
<td>p-value</td>
<td>0.083</td>
<td>0.37</td>
</tr>
</tbody>
</table>

- Signaling value of outside finance rather than unobserved effects
Complex Entrepreneurial Ideas & Outside Finance

• Policy
  – Public-private partnership for evaluation: Panels of reviewers qualified to evaluate entrepreneurs’ technology-spanning ideas

• Future Research
  – A different measure of complexity
  – A different sample
Thank You