Financing Ventures

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Discussion by E. McGrattan, February 2018

GHS

- Develop model of venture capital (VC) financing
- Calibrate it with evidence on VC-backed companies
- Quantify the impact of higher capital gains taxes on
  - Growth
  - Welfare

Why the Focus on VC?

- Many successful companies have had some VC-backing
- Evidence from growth regression:
  - If VC inv/GDP $\uparrow$ from 0.00003 (JP) to 0.002 (US),
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GHS Model

- Dynamic contracts between
  - Entrepreneur with ideas, no money
  - VC capitalists with money, no ideas
  - How much money used to develop idea is private info
- Multiple funding rounds with costly monitoring
- Partnerships end with IPO or termination

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Embed in endogenous growth model

Main Finding

- Based on calibrated endogenous-growth model:
  - If cap gains tax $\uparrow$ from 0.15 (US) to 0.6 (PT),
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Why Are Effects so Large?

- VC-backed firms modeled as:
  - 80% more productive than non-VC
  - Significant fraction (all?) of R&D and market cap
  - Highly responsive to tax incentives

$\Rightarrow$ huge impact on growth and welfare

Discussion

- Review the evidence
- Recommend:
  - Broadening the scope
  - Tracking the innovation

VC-Backed Companies

- Companies in VentureXpert database account for
  - 20% of market capitalization
  - 35% of R&D
  - 11% of employment
- But,
  - Many have other sources of financing
  - VCs often come in after initial financing

Other Sources of Financing

- Angel investors (eg, Brin & Page, Google)
- Trade credit (eg, Jobs & Wozniak, Apple)
- Sweat equity (eg, Gates & Allen, Microsoft)
- Own savings (eg, Ellison, Oracle)

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Next, consider these famous examples...

Google Financed Even Before Existed

- First investors:
  - Faculty, family, and friends (servers and rent)
  - Andy Bechtolsheim of Sun Microsystems ($100K)
- Subsequent financing:
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Apple I's built with Trade Credit

- The Byte Shop
  - Ordered 50 computers for \$500/each
  - J&W used invoice to order parts on 30 day credit
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  - Angel investor Markkula (for Apple II)
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MS Software from Sweat Equity

- David Rubenstein interview with Bill Gates

  Q *When you started, how did you avoid...VC money?*

  A *The first few years Paul and I worked for free, but after that we were just generating cash. We eventually sold 5% of the company... just to get a VC compuany to join the board and give us some adult advice.*

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Oracle from Own Savings

- Initial investment of 3 partners was \$2K
- Very typical story:
  - Work first and save
  - Invest savings in new venture
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VC vs non-VC Investments

- How are VC and non-VC investors paid?
- Are there economically significant differences?
- Do contracting frictions matter for innovation?

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Next, consider pre-1980s evidence...

Pre-1980s Evidence

- VC was non-existent until...
- Small Business Investment Act, 1958
  - Tax breaks and access to federal funds for SBICs
- ERISA's Prudent Man Rule, 1979
  - Regulation relaxing rules pension fund investing

$\Rightarrow$ Growth of VC industry

Pre-1980s Evidence

- VC was non-existent
- But,
  - Other sources of financing available
  - And economic growth strong
- So... why focus only on VC-financing?

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- But,
  - Other sources of financing available
  - And economic growth strong
- And... why not compare US pre- and post-1980?

  ... rather than Japan and US?

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  or, show evidence that VC is sine qua non

Track the Innovation

- US R&D
  - Roughly 2% of GDP ($\gg$ 0.2% VC investment)
- US business investment
  - Roughly 12% of GDP ($\times$ 2 if intangibles counted)
- Recommend: track the innovation and its financing

Summary

- Great topic!
- Recommend:
    - Broadening the scope
    - Tracking the innovation