Banking on Innovation

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Banking on Innovation

I. The Innovation Setting
II. From Equity to Debt
III. Three Looks at
Bank Financing and Innovation
IV. The Ecosystem for Innovation Finance

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The Innovation Setting

- Not like conventional corporate investment (e.g., capital expenditures)
  - *Radical* **uncertainty:**
    - Difficult to predict even the form of the potential outcomes
    - Not possible to estimate expected values for range of possible outcomes

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The Innovation Setting


1888


1961

1965


2009


2003


1980

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The Innovation Setting

Innovation is experimental

Difficult to discern worthy projects: Only way to get better information about a project is to invest and see what happens

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The Innovation Setting

Innovation is experimental

Staged financing

- Continuing re-evaluation of real options
- Winners and losers don't get decided in product markets
- Whether best projects get to the top depends on investors' org environments
- Somewhat *idiosyncratic* live-or-die decisions

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The Innovation Setting

Innovation is experimental

Staged financing

Skewed returns: 10% of innovations may acct for 90% of returns

Information asymmetry: Contracting is difficult.

High adjustment costs

- High %-age of intangible assets
- Especially embedded in human capital
- 50% of R&D is wages & salaries
- Loathe to lose or layoff human K

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From Equity to Debt

Early assumption:
equity more conducive to innovation

Uncertainty and long time horizons:

Lenders risk averse; short-term focused

Share no upside from borrower firm's success

Instead, debt demands regular cash flows

Seemingly not set up to tolerate failure as easily as equity

Lenders like tangible, redeployable assets for collateral

From Equity to Debt

Early assumption:
equity more conducive to innovation

"[I]nformation problems, skewed and highly uncertain returns, and lack of collateral value likely make debt a poor substitute for equity finance."

Brown, Fazzari, Peterson (JF '09)

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From Equity to Debt

Intangible assets used as collateral
Lender intervention →
Efficient refocusing of innovation activity
Agency costs of equity

Managerial myopia
→ Activist investors may demand short-term stock returns
Information asymmetry
→ stock market undervaluation
→ manager ouster or hostile TKO
Anti-TKO provisions may go too far: no benefit to innovation

Going public reduces novelty
Analyst coverage, stock liquidity
—reduce info asymmetry, lower capital costs
BUT analyst coverage → S/T earnings targets
Stock liq → TKO exposure

Three Looks at Bank Financing and Innovation

1. Lender governance
   Post-covenant-violation intervention
   → Efficient refocusing of innovation activity
   Especially for high-agency-cost firms

   (Gu, Mao & Tian (JLE '17);
   Chava, Nanda & Xiao (Rev. Corp. Fin Stud. '17))

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Three Looks at Bank Financing and Innovation

2a. Improved property rights for patents

→ lower loan pricing

Especially for:

higher patent and citation counts

more general, younger patents

Natural experiments:

TRIPS

State anti-recharacterization statutes (protect SPV)

(Chava, Nanda & Xiao (Rev. Corp. Fin Stud. '17))

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Three Looks at Bank Financing and Innovation

2b. Improved property rights for patents

Among innovating firms, pledging patent collateral

→ more borrowing, R&D spending

Especially for financially constrained firms

Natural experiment:

DE state anti-recharacterization statute

\+ 4 fed court decisions

(Mann (JFE '18))

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Three Looks at Bank Financing and Innovation

3. Interstate and intrastate banking deregulation

a. Interstate deregulation

→ increased innovation by public manufacturing firms

Enabled geographic diversification of credit risk

Enabled banks to finance riskier projects

(Amore, Schneider & Zaldokas (JFE '13)

b. Intrastate deregulation

→ less, and less risky, innovation in small private firms

Market concentration benefited large banks

Enhanced bargaining power over small firms

(Chava, Oettl, Subramanian & Subramanian (JFE '13))

The Ecosystem for Innovation Finance

Institutional context surrounding
bank-borrower relationship
[CDS & securitization mkts & FinReg]

CDS markets– Limits of lender governance

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The Ecosystem for Innovation Finance

Institutional context surrounding bank-borrower relationship
[CDS & securitization mkts & FinReg]

CDS markets– Limits of lender governance

Inception of CDS trading
→ riskier reference firm

Hedged banks increase credit supply to reference firms
→higher default risk

Looser covenants and monitoring

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The Ecosystem for Innovation Finance

Institutional context surrounding bank-borrower relationship [CDS & securitization mkts & FinReg]

CDS markets– Limits of lender governance

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Potentially offsetting effects

CDS promotes innovation:
Improves banks' risk tolerance
→ allows borrower risktaking
Looser covenants:
Lower probability of lender intervention
Later intervention if any
Could be good or bad:
More novel innovation?
More failures?

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