Discussion of

Firm Innovation and Financial Analysis How Do They Interact?

by Goldman and Peress

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Context: Innovation, financing, and financial development

- Innovations are difficult to finance due to
  - incomplete appropriability of the returns to R&D
    Arrow '62, Levine et al '87, Griliches '92, Hall ' 96
  - asymmetric information and moral hazard problems
    Rajan and Zingales '98, Acemoglu and Zilibotti '99
- Positive impact of financial development on innovation and growth
  Rajan and Zingales '98, Levine and Zervos '98, Wurgler '00, Carlin and Mayer '03, Brown, Fazzari, and Peterson '08
- Link between analyst coverage and intangible asset
  Barth, Kasznik, and McNichols '99, Yu '08, He and Tian '13
- **Contribution:** Innovation and learning mutually reinforce each other

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What the paper does

Theory

- Entrepreneurs innovate more when financiers are better informed about their projects
- Conversely, financiers learn more when entrepreneurs innovate more.

Empirical analyses

- Report evidence consistent with the model predictions

Model

- OLG model (two periods)
- Risk neutral agents: entrepreneur and financier
- Entrepreneur
  - chooses research effort
  - produces intermediate goods
- Financier
  - works in the final goods sector and earns wage w
  - observes innovation signal S
  - chooses learning effort q
  - provides capital K
- Both innovating and learning incur costs
- Two sector economy
  - Intermediate goods sector: entrepreneur innovate and get fund from financiers
  - Final goods produced by intermediate goods and labor from financiers

Key assumptions and insights

- Key friction: Incomplete information of innovations
- Research effort of entrepreneurs is contractable, implying
  - symmetric information
  - no external financing cost caused by asymmetric information
- Key insight: Learning mitigates allocational inefficiency
- Intermediate goods production: $Y = AK$
  - A and K are complementary
- Research effort in boosting A increases the productivity of K
- Learning improves the efficiency in K, allowing to match capital and R&D projects more efficiently

Empirical results

- In states where R&D tax credits were implemented, analyst coverage increased significantly
- Firms that experience decrease in analyst coverage due to broker house closure or merger reduce R&D investment

What I like about the paper

- New insight on R&D financing and learning
- Well blended theoretical and empirical work

Outline of discussion

1. Distortions in R&D financing
2. Link between the model and the data
3. Tests of the model mechanism

Comment 1: Distortions in R&D financing

- A key distortion in R&D financing: Asymmetric information
- Augmented q-theory: **q=marginal adjustment cost*wedge**
- Financial development/analyst coverage reduce the asymmetric information problem
- This paper highlights the role of allocation inefficiency
- Would be nice to distinguish different mechanisms and guide empirical research
- Gauge different implications for
  - R&D dynamics
  - financing patterns
  - the cross sectional of firms with different access to financing

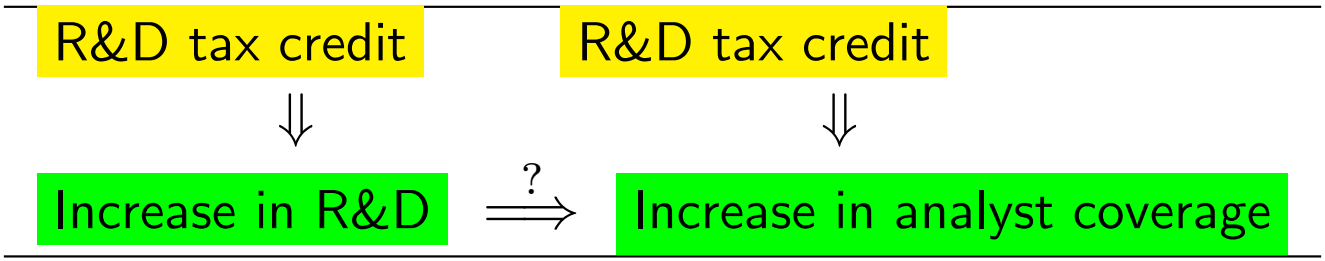
Comment 2: Link between the model and the data

- The model is on allocation efficiency of capital and R&D project
- The empirical evidence is consistent with the model predictions, but doesn't provide direct test for the model mechanism
- Would be nice to see direct test for the model mechanism, i.e., coverage mitigates allocational inefficiency
- Link the finding to the IO literature on misallocation (Hsieh and Klenow '09)
- The finding that more dispersion in ROA after tax credit law suggests that misallocation may not be mitigated

Comment 3: Empirical tests

Test 1: More innovation leads to more financial analyses

Results:



Would be nice to sharpen the test

- Test on the causal relationship between R&D and analyst coverage
- Cross state differences may drive the change in coverage

Comment 3: Empirical tests

Test 2: More financial analysis leads to more innovation

Results:

Reduction in analyst coverage

$\Downarrow$

Decrease in R&D

Would be nice to sharpen the test

- Is the reduction in analyst coverage exogenous to firms' polices? e.g., investment, hiring, etc?
- Firms' market value will respond to analyst covering (Kimbrough '07), which in turn may affect R&D investment decisions
- Reconciliation with the existing literature: analyst coverage reduces patents (He and Tian '13)

Conclusion

- Interesting paper!
- More elaboration of the model insight
- More direct tests of the model mechanism