Born in Hard Times: Startup Selection and Intangible Capital during the Financial Crisis

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Evidence from a Natural Experiment

2007-08 interbank credit market freeze

- Combine balance-sheet and matched bank-firm data for the census of Italian limited liability companies for 1999-2017.

- Firms born during the financial crisis feature a higher share of intangible assets than incumbents.
  * Difference persists over time & is driven by selection at entry.
  * Intangible-intensive firms are more productive & less leveraged.
  * Leverage of tangible-intensive firms declined during the crisis.

- Empirical strategy: exploit variation in pre-crisis exposure to interbank market at the local level.

- Results show
  1. Interbank exposure reduced credit access during the crisis.
  2. Interbank shock leads to less but more intangible-intensive and productive entry.

Firm Dynamics & Intangible Capital

Model & Simulations

- Firm dynamics model with capital accumulation and aggregate fluctuations (Clementi and Palazzo, 2016) **plus**

  * Tangible and intangible capital.
  * Two efficiency levels in the use of intangible capital.
  * Tangible capital partial irreversibility.
  * External financing costs: increasing in amount borrowed, decreasing in tangible capital.

- Model validation: (i) declining path of intangible share & capital-labor ratio by age, (ii) more exit among intangible-intensive firms.

- Simulate the model with an increase in financing costs that matches fall in leverage of start-ups.

  * 8% increase in share of intangible-intensive firms.
  * Composition effect: less net entry of tangible-intensive firms

Some Remarks

Great paper: important question, rich micro data with neat identification strategy & interesting model to match novel facts.

Summary of my comments

1. Current framing is misleading
   - This is not a paper about technology adoption.
2. Simulation exercise can (and should) be improved.
   - Proper quantification, aggregate effects and normative implications.
3. Other minor suggestions and concerns.

Current framing is misleading

- Take-away according to intro: Does credit access shape technology adoption by new firms? Yes!
  - A technology's rate of adoption depends on its ability to generate internal funds.
  - Intangible, capital-saving technology spreads faster in a financial crisis.
  - Especially among credit rationed firms $\Rightarrow$ entrants.
- But, no clear link between capital-saving technology and investment in intangibles.
- Moreover, model (and data) captures a composition effect driven by tangible-intensive firms.
- **Suggestion: incorporate endogenous innovation and quantify how much it explains (vs composition effect).**

Simulation exercise can (and should) be improved

- This is a very interesting part of the paper, but requires more work to be fully convincing.
- It is unclear what the goal of the exercise is.
- Most of the results are qualitative, what about quantifying effects?
- There are many aggregate questions that can be answered using this framework:
  * What is the effect of the intangible investment channel in overall aggregate productivity?
  * Given the life-cycle of firms, how does the composition effect shape the recovery?
- What are the normative implications?

Other minor suggestions and concerns

- Elaborate further on data description
  - Coverage and representativeness of CERVED.
  - How is entry and exit measured in the data?
  - Current draft is silent about matched bank-firm data.
  - How do you deal with multi-establishment firms?
- How does interbank exposure affect credit and interest rate to young *relative to older firms*? Is that the right comparison?
- Model equilibrium needs to be defined explicitly.
- In the model average TFP by age of incumbents is upward-sloping and concave by assumption. How is this consistent with Figure 10?

Summing Up

- Intangible investment works as a buffer against financial shocks $\Rightarrow$ more intangible-intensive entrants.
- I really enjoyed reading this paper. Watch out for the next version!