Credit Allocation under Economic Stimulus: Evidence from China

Discussion

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Broad Facts for China (Pre 2008)

- Aggregate investment rate is high – 40%
- Rates of return on capital are high – 20-30% – and increasing.
- SOEs account for a large but declining share of economic activity (DPEs increased from 4 to 56% of employment between 1997-2007).
- SOEs are heavily represented in capital rather than labor intensive industries.
SOEs have lower productivity but better access to finance.

DPEs mostly grow through internal funds.

As economy transitions, efficient DPEs have access to highly elastic input supply as inputs are reallocated from SOEs to DPEs.

Combined with lack of internal investment opportunities for savers this implies current account surpluses combined with high and growing rates of return on capital.
Massive increase in bank lending – growth rate roughly doubles pre-stimulus.

In 1 quarter alone bank lending increased 6 fold – since loan size remained roughly constant this implies a six fold increase in the number of loans made between 2008:Q4 and 2009:Q1.

In stimulus years (2009-2010) growth rate of loans at firm level roughly doubles from 10 to 20 percent.
How was this accomplished?

- Reduction in required reserves
- Reduction in lending rate.
- Both appear to be highly effective.
Issues

- Was such a massive increase in credit efficiently allocated?
- Did SOEs distort the process?
- Did credit flow to firms with high or low return to capital?
- Did credit expand capital relative to labor or vice-versa?
Results

- Credit flowed more to SOEs
- Credit flowed more to firms with low capital productivity.
- Reversed allocative efficiency gains of the prior decade.
- Achieved through implicit guarantees to state-owned firms.
Firm-bank relationships are highly persistent.

Stimulus policy was heterogeneous across banks (delivers cross-firm supply variation).

Supply measure is weighted average of total bank lending at each bank:

\[ S_{i,t} = \sum_b \omega_{i,b,t} \Delta \log(l_{b,t,-i}) \]

- Firm-specific weights reflect borrowing share of firm \( i \) across banks \( b \).
- Bank lending variable \( \Delta \log(l_{b,t,-i}) \) is total loan growth for bank \( b \) omitting lending to city-industry pair corresponding to firm \( i \).
This does not explicitly control for firm-level demand.

Paper exploits subset of data of firms with multiple banking relationships to show robustness of supply effects on firm-level lending.

In outcome regressions, paper include firm-specific variables to soak up demand.

Concern: there may unobservables that matter (including industry or regional variation in cyclicality).
Why are banks reacting differentially to stimulus policy?

Heterogenous bank effects primarily due to variation in reserves.

Why do some banks hold excess reserves?
- More expected loan losses?
- More lending opportunities?
Alternative approach:

- Use sample of firms with multiple banking relationships to estimate fixed effects model for lending to firm $i$ by bank $b$:

$$\Delta \log l_{i,b,t} = \alpha_{i,t} + \gamma_{b,t} + \varepsilon_{i,b,t}$$

- $\alpha_{i,t}$ captures firm demand in time $t$
- $\gamma_{b,t}$ capture bank supply in time $t$.

- Construct weighted-average of bank supply effects to obtain firm-specific credit supply shock:

$$S_{i,t} = \sum \omega_{i,b,t} \gamma_{b,t}$$

- Exploits multiple banking relationships to identify supply but once estimated this supply shock is a valid instrument arguably even for firms with only one bank.
Key results on lending outcomes

- 1% increase in credit supply leads to 1% increase in firm borrowing.
- SOEs receive 36% more credit during stimulus.
- No obvious difference across firm lending outcomes based on capital productivity (APK) – noisy estimates.
- Dynamics: many interactions and large standard errors, better to split sample pre and post stimulus?
Comments on lending outcomes:

- SOE not independent of APK so what do we learn by using multiple interactions?
- Include industry-time and region-time effects.
- Look at within-industry variation in APK for interactions.
- Question – can we measure TFP or profit rates?
Key results on outcome variables

- Credit expansion implies substantial decrease in capital-labor ratios (0.2 for $\Delta \log K$ versus 0.3 for $\Delta \log E$).
- This is especially true for SOEs during and post stimulus.
- SOEs also experience lower loan losses from lending during and post stimulus.
- In contrast, DPEs experience increase in loan losses from lending during and post stimulus.
Implicit government guarantees explain lower post-stimulus loan losses for SOEs.

Evidence also consistent with SOEs shift towards less reliance on capital and as a result have higher profits and lower default rates?

Empirical results also imply that high APK firms increase labor relative to capital more than low APK firms – consistent with stimulus providing gains in allocative efficiency.
Summary

- Rich data set that combines firms and banks allows one to understand economic implications of credit supply shift during massive banking stimulus.
- Key results suggest stimulus led (treated) firms to increase inputs and hence firm size and also increase labor relative to capital.
- Questions:
  - Was this shift in factor allocation productivity enhancing or productivity weakening?
  - Is reduction in loan losses for SOEs evidence of government bailouts or efficiency gains?