Firm Heterogeneity, Capital Misallocation and Optimal Monetary Policy

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Outline

- Summary
- Mechanism
- Extensive margin
- Medium-run dynamics
- Empirics: validation of the main mechanism
Framework

1. How does monetary policy affect capital misallocation?
2. What is the optimal monetary policy in this context?

- Standard New Keynesian model
- Heterogeneous firms (Moll 2014)
  - Heterogeneous productivity
  - Heterogeneous net worth
  - Borrowing constraint
Model

- Productivity threshold: $z_t^*$
- Firms with productivity $\geq z_t^*$:
  - active
  - borrow from hh and inactive firms
  - financially constrained
- Firms with productivity $< z_t^*$
  - inactive
  - lend to active firms
Mechanism

- Expansionary monetary policy: $r_t \downarrow$
  - Borrowing costs $\downarrow \rightarrow$ constraint firms increase their investment $\rightarrow$ misallocation $\downarrow$ (net-worth channel)
  - Discount rate on profits $\downarrow \rightarrow z_t^* \downarrow \rightarrow$ less productive firms become active $\rightarrow$ misallocation $\uparrow$ (productivity threshold channel)
  - The first dominates the second: misallocation $\downarrow$

- Demand shock: $\rho^h \downarrow \rightarrow \uparrow$ misallocation

- Under what conditions the first effect dominates the second?
  - How likely is the result?
  - How to design optimal monetary policy?
Mechanism: Excess Investment Rate

- Under what conditions the model predicts a reduction in capital misallocation?
- Excess investment rate: \( \tilde{\Phi} = f(q_t, m_t, w_t, z_t, z_t^*) \)
- \( f'(\tilde{\Phi}) \uparrow \rightarrow \) high-productivity firms invest more than low-productivity firms
- Expansionary monetary policy \( \rightarrow f'(\tilde{\Phi}) \uparrow \rightarrow \) misallocation \( \downarrow \)
- Demand shock: \( \rho^h \downarrow \rightarrow f'(\tilde{\Phi}) \downarrow \)
Mechanism: Extensive Margin

- Large literature on firm entry/exit over the business cycle: Bilbiie, Ghironi and Melitz (2007, 2013)
- How should we think about entry/exit in this model?
  1. active/inactive firms
  2. retired entrepreneurs replaced by entrepreneurs with the same productivity
- How important quantitatively is extensive versus intensive margin in the model?
Mechanism: Competition

- What is the medium-run impact of monetary policy on TFP and misallocation?

- Colciago and Silvestrini (2022):
  \[ r_t \downarrow \rightarrow z^*_t \downarrow \rightarrow \text{TFP} \downarrow \rightarrow \]
  net entry \(\uparrow\) \rightarrow competition \(\uparrow\) \rightarrow exit of the least productive firms \(\rightarrow\)
  TFP \(\uparrow\) \rightarrow market concentration \(\uparrow\)

- What is the medium-run impact of the competition on TFP?

- What is the impact of monetary policy on TFP given the initial level of competition?
  - High concentration \(\rightarrow\) larger impact on TFP
  - Low concentration \(\rightarrow\) smaller impact on TFP
Empirics: Validation of the Main Mechanism

- In response to the monetary shock, more productive firms increase their investment by more than less productive firms = decline in misallocation
- Consistent with:
  - More productive firms = low-risk firms face flatter marginal cost for financing (Ottonello and Winberry 2020)
  - Demand for high productivity firms goods increases by more
- Model: No financial constraint → the most productive firm is the only producer
- Are those firms financially constraint in the data?
What are the characteristics of those firms: distribution plots
- Financially constraint
- Productivity
- Size
Conclusion

- Great paper: 2 papers?
- Pin down the main mechanism
- Exploit more the micro data