Firm Heterogeneity, Capital Misallocation and Optimal Monetary Policy

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Overview

Broad question:
Should central banks care about capital misallocation when setting rates?

- Very tractable model addressing a very important question
- The authors nested an heterogeneous-firm block (from Moll, 2014) into a standard NK model $\rightarrow$ TFP is endogenous
- Expansionary monetary policy reduces misallocation
  $\rightarrow$ confirmed by firm-level data analysis

Main results for optimal monetary policy

- New source of time inconsistency encouraging a temporary expansion
- However, the timeless full-commitment optimal m.p. requires zero inflation $\rightarrow$ the "divine coincidence" is preserved

Main elements from the model

- Standard NK block: monopolistic competitive retailers facing nominal rigidities, final producers, capital producers, households, central bank
- Heterogeneous entrepreneurs use capital and labor to produce $\rightarrow$ sell inputs to retailers
- Heterogeneous productivities z_t (idiosyncratic shocks) and assets a_t
- The entrepreneurs face collateral constraints:

$$k_t \leq \gamma a_t \text{ with } \gamma > 1 \tag{1}$$

- In eq. only entrepreneurs with $z_t > z_t^*$ produce with binding (1)
- The net-worth evolves according to:

$$\dot{a}_t = \left(\max\left\{ \frac{\gamma \varphi_t}{q_t}(z_t - z_t^*), 0 \right\} + \frac{R_t - \delta q_t}{q_t} \right) a_t \text{ with } \varphi_t = \alpha \left(\frac{1-\alpha}{w_t} \right)^{\frac{1-\alpha}{\alpha}} m_t^{\frac{1}{\alpha}}$$

- Aggregate TFP is $Z_t = \left(\mathbb{E}_{\omega_t} [z | z > z_t^*] \right)^{\alpha}$

Effect of shocks

Monetary shock

- Households increase consumption demand $\rightarrow$ price of inputs $m_t \uparrow$
  - $\rightarrow$ high-MRPK (active) entrepreneurs invest relatively more
  - $\rightarrow$ the threshold z_t^* goes up

$\rightarrow$ TFP increases while real rates decline

Time preference shock without nominal rigidities

- Households increase savings $\rightarrow$ cost of capital $q_t \uparrow$
  - $\rightarrow$ high-MRPK (active) entrepreneurs invest relatively less
  - $\rightarrow$ the threshold z_t^* goes down

$\rightarrow$ TFP declines together with real rates

Impulse responses

Optimal monetary policy

- The authors computationally solve a Ramsey problem
- The central bank sets i_t to maximize household utility

Time-0 optimal policy (no pre-commitment)

- The economy starts from an inefficient s.s. (markets are incomplete!)
- It is optimal to temporarily increase inflation in order to raise efficiency

Timeless optimal policy (full-commitment)

- Price stability is the optimal response to time preference or aggregate TFP shocks $\rightarrow$ "divine coincidence"
- This is a bit surprising

Why does the divine coincidence hold in the model?

- The divine coincidence typically holds when the gap between efficient and natural output is constant (Blanchard and Gali, 2007)
- The efficient allocation in this model requires all capital in the hands of the most productive entrepreneur
- Changes in the efficient-natural gap do not generate large trade-offs for the shocks considered in the paper:
  - Time preference shocks reduce both output and inflation
  - Aggregate shocks to TFP shifts all productivities
- Some crises are associated with a large increase in productivity dispersion (Kehrig (2015), Alam (2020))

What could break the divine coincidence?

When would a monetary policy rule targeting misallocation improve on just sticking to price stability?

Potential directions:

- Shocks to dispersion of productivities or financial frictions
- Shocks destroying wealth of productive firms

Strength of the misallocation channel of monetary policy

- The model underestimates the response of monetary policy on misallocation Response of average MRPK
- Why don't you use the estimates from empirical analysis to calibrate the model?
- Also, these are average effects
- Is the response different depending on the state of the economy?

A few comments on the firm-level analysis

- The main specification is:

$$\log\left(\frac{k_{j,t}}{k_{j,t-1}}\right) = \beta_0 + \beta_1 \underbrace{\log\left(\frac{y_{t-1}}{k_{j,t-1}}\right)}_{MRPK_{j,t-1}} + \beta_2 \underbrace{\log\left(\frac{y_{t-1}}{k_{j,t-1}}\right)}_{MRPK_{j,t-1}} \varepsilon_t + \beta_3 \varepsilon_t + controls_t + u_{j,t} \quad (2)$$

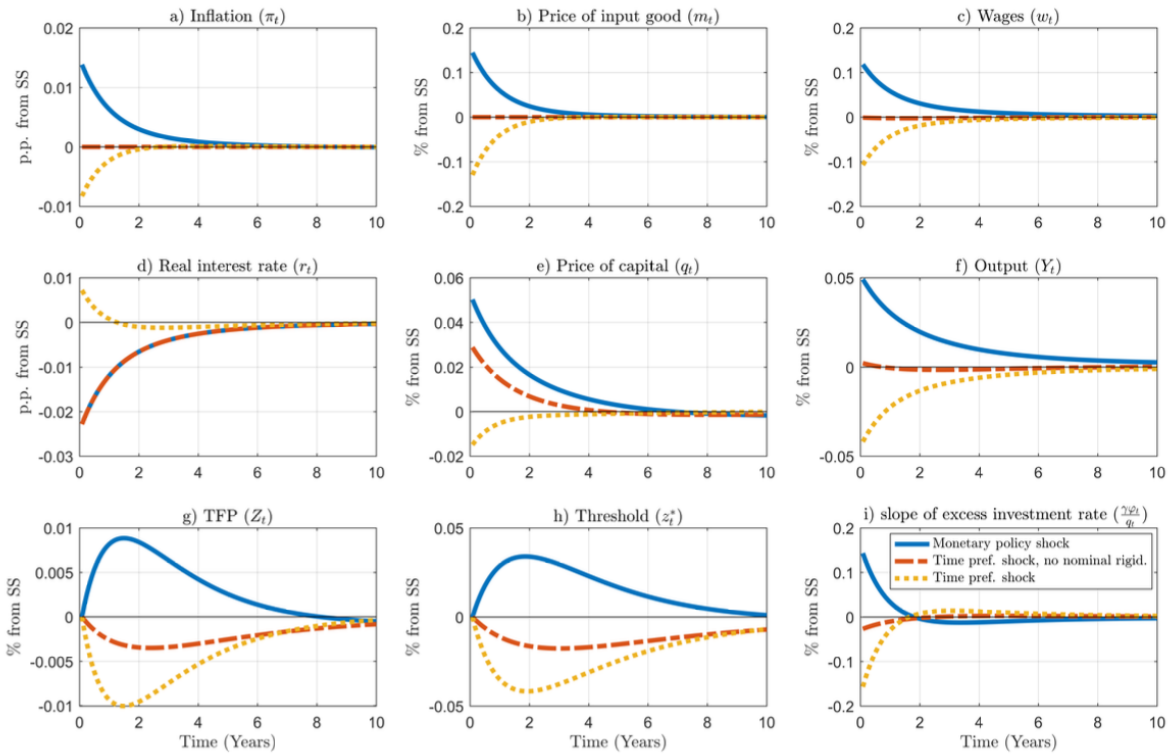
- I would try fixing $MRPK_j$ at some initial year and running the regression for the following years
- I would consider the average $MRPK_j$ over more years (firms with high earnings volatility may drive the result)
- Data from Credit Register at the Bank of Spain?

Conclusions

- This is a seminal paper addressing a very important question
- Misallocation is modeled based on a standard incomplete-market idiosyncratic shocks environment
- This allows for a clean identification of the channels
- Would the results on optimal policy be different in a richer model of firms' frictions?
- Starting point for more research on the role of monetary policy on firms' misallocation

Impulse responses

Figure: Impulse responses of monetary and time preference shocks.



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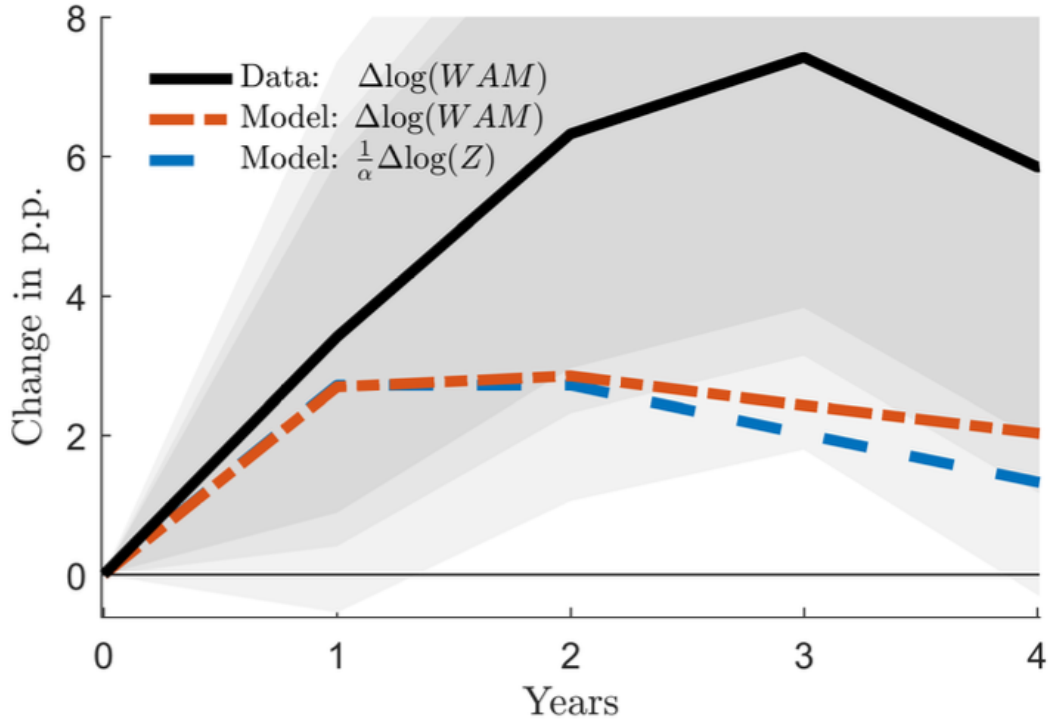
Response of average MRPK

Figure: Response of average MRPK to an expansionary monetary policy shock.



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