Bank Recapitalizations, Credit Supply and the Transmission of Monetary Policy

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Main Questions

How does the design of **bank recapitalization** affect the **supply of credit** and the **transmission of monetary policy** *after a crisis*?

- focus: on **immediate vs delayed** bank recapitalization
- framework of analysis: **New Keynesian model** with a **simple banking** sector

Literature

This paper is part of the literature which incorporates **banking in otherwise standard DSGE models**

Goodfriend and McCallum (2007), Curdia and Woodford (2010), Gertler and Kiyotaki (2010), Gerali et al. (2010), Meh and Moran (2010), Gertler and Karadi (2011)...

–> *transmission of standard shocks through banks*
–> *transmission of shocks generated in the banking sector*

Literature

Closely related is the growing literature on the role of **bank capital and leverage requirements in macro-banking framework**

Vanden Heuvel (2008), Martinez-Miera and Suarez (2014), Nguyen(2014), Clerc et al (2015), Kiley and Sim (2015), Christiano and Ikeda (2017)...

–> *long-run effects of changes in regulation*

Literature

...and in particular recent papers on the interaction between **bank regulation and monetary** policy in a new Keynesian framework

Angeloni and Faia (2013), Angelini et al. (2014), Gersbach, Hahn and Liu (2016), Mendicino et al. (2017)...

–> *interaction between policies*
–> *short vs long-run effects of changes in regulation*

Main Contribution

- It studies the importance of **government recapitalization** policies
- for the **pass-through of monetary policy** in response to negative productivity shocks
- in a framework that **isolates the effect of recapitalization policies** (allowing for outside equity, i.e. banks per se do not alter the transmission mechanism)

–> This paper explores the role of bank equity from a different angle.

Simple Banking Sector

Bank supply loans L_t to capital producers using deposit funding D_t and equity funding E_t from Households.

Bank only financier of the capital producers –> appropriates profits Π^K_{t+1}

Bank equity = Outside Equity, no costs

Max expected profits: $\Pi^B_{t+1} = \frac{R^L_t}{\pi_{t+1}} L_t - (\frac{R^D_t}{\pi_{t+1}} D_t + \frac{R^E_t}{\pi_{t+1}} E_t) + \Pi^K_{t+1}$

subject to: $E_t + D_t = L_t$ balance sheet constraint

$E_t \geq \kappa_t L_t$ regulatory capital/leverage constraint

Equilibrium

- Banks
  $R_t^L = (1-\kappa_t)R_t^D + \kappa_t R_t^E$
  $E_t = \kappa_t L_t$
  $D_t = (1-\kappa_t)L_t$
- Households: $R_t^D = R_t^E$
- Firms: $L_t = K_t$

–> Same properties as the baseline New Keynesian model without Banks!

Bank Recapitalization

$$\textbf{Shortfall}: \; S_{t+1} = \max\left[\frac{R_t^D}{\pi_{t+1}} D_t - (\frac{R_t^L}{\pi_{t+1}} L_t + \Pi_{t+1}^K), 0\right]$$

$$= \max(\frac{R_t^L}{\pi_{t+1}} L_t)\left[(1-\kappa_t)\frac{R_t^D}{R_t^L} - \frac{R_{t+1}^K - \delta}{R_t^L/\pi_{t+1}}), 0\right]$$

Shortfall depends on ***aggregate reasons***:

- Can occur it **return on capital below expectations** ($R_t^L/\pi_{t+1} = E_t R_{t+1}^K - \delta$)
- Large when **equity requirement low** ($\kappa = 1$ no shortfalls)

If Shortfall: government transfers resources to the bank in the form of **equity injections** (financed by a lump sum tax on households)

Bank Recapitalization

Define:

- **Threshold**: $\overline{\omega}_t = (1 - \kappa_t)\frac{R_t^D}{R_t^L}$
- **Stochastic Variable**: $\omega_{t+1} = (\frac{R_{t+1}^K - \delta}{E_t R_{t+1}^K - \delta})$

Assume that ω_{t+1} normally distributed with std σ_ω. Useful to characterize

size of shortfall and effects of government interventions...**But WHY?**

This Paper

- **Policy exercise**: *immediate vs delayed bank recapitalization*
  - **immediate**: the bank receive the transfer from the government directly when experiences a shortfall
    –> **ex-ante bank charges lower lending rates**
  - **delayed**: one period after the shortfall; profits and income on loans reduce size of transfer –> **smaller reduction in lending rates**
- Recapitalization is a subsidy to banks: leads to over-lending.

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Crisis Scenario: one percent *decrease in productivity*: output (capital and loans) declines, inflation and the policy rate increase, as well as other interest rates

Pass-through of monetary policy to lending rates

- **lower** under immediate and large recapitalization
  –> reduces effects of a drop in productivity (mitigate the output-inflation trade-off)
- **larger** in between a shortfall and a delayed recapitalization
  –> amplifies effects of drop in productivity in between a short fall and delayed recapitalization (aggravates the trade-off between output and inflation)

This Paper

Main result:

- Government recapitalization policies affect the **supply of credit** and the **transmission of monetary policy** in a crisis scenario
- Delayed recapitalization amplifies the effects of a negative productivity shock

This Paper

- **Crisis scenario**: why productivity shocks?

  Capital quality shock: shock to the quality of intermediary assets
  Risk shock: shock to the variance of idiosyncratic uncertainty on the returns on capital
  –> Output, Inflation and the policy rate fall: interesting effects at ZLB?
- **Monetary Policy**: why only conventional?

  Liquidity Injections: mitigate potential funding needs of banks
  CB Credit Policy: the central bank injects credit in response to movements in credit spreads/credit growth –> Interaction between policies?
- **Banking Sector**: why not microfounding the banking frictions?
  Zheng (2013): if there exists an agency problem between banks and their private-sector creditors, the recapitalization policy has real effects on the economy even in a flex price environment.