BIS CCA-002-2010
May 2010

Discussant comments on
The role of bank capital in the propagation of shocks

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Prepared for the BIS CCA Conference on

"Systemic risk, bank behaviour and regulation over the business cycle"

Buenos Aires, 18–19 March 2010

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* These comments reflect the views of the author and not necessarily those of the BIS or of central banks participating in the meeting.

The Role of Bank Capital in the Propagation of Shocks

by C. Meh and K. Moran

'Systemic risk, bank behaviour and regulation over the business cycle' Conference,
Central Bank of Argentina and BIS, March 18-19 2010

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Summary

Objective

Introduce the **bank capital channel** (i.e. banks' balance sheets + bank capital) to an otherwise canonical DSGE model with financial frictions (a la Bernanke, Gertler, Gilchrist, 1999)

$\Downarrow$

- To take account of the role of banks' capital in the propagation of shocks via its effects in bank lending and thus, the real sector of the economy.
- Also the authors argue that they provide an explanation for the current 'credit crunch' as a phenomenon that arises due to a contraction of banks' capital (caused by asset writedowns).

Summary

Main results

- The bank capital channel is 'active' and amplifies and propagates the effects of shocks in the economy.
  - More bank capital $\Longrightarrow$ better absorption of shocks
  - The transmission mechanism of shocks via the bank capital channel depends on the nature of the shock (e.g. effects are more pronounced with a productivity rather than with a monetary policy shock.)
- *Exogenous* financial shocks leading to a reduction of bank capital, induce sharp declines in bank lending and real economic activity.
- The model captures the countercyclicality of Capital Adequacy Ratios observed in the data.

Summary

Key features of the model

- Bank capital solves an asymmetric information problem between lenders and borrowers
- A double moral hazard problem is introduced in the capital goods production sector $\Longrightarrow$ allows for an interaction between bank capital, net worth and economic activity, and obtains stronger friction effects.
  - 1. Investor-bank moral hazard problem (due to costly monitoring) $\Longrightarrow$ banks' capital determines their ability to attract loanable funds (or make credit extensions)
  - 2. Bank-entrepreneur moral hazard problem $\Longrightarrow$ entrepreneur's net worth determines how much they can borrow

Comments

- Basic proposition is that banks' capital position determines their ability to lend, thereby abstracting from other two **key** factors: liquidty and default (especially if the model seeks to explain the 2007-2009 credit crunch)

- 'Bank capital emerges endogenously to solve an asymmetric information problem between bankers and their creditors'. This problem is mitigated when banks put capital down to finance entrepreneurs, such that they also bear the risk of default. **However**...
  - Default is **not** modelled and/or does **not** arise as an equilibrium outcome
  - The role for banks, which is to assess probabilities of default (better than individuals) and construct loan portfolios accordingly to reduce risk premia, cannot be embedded in this framework.

Comments

- Authors abstract from household heterogenity by *assuming* the existence of complete state-contigent asset markets. **However...**
  - Securities markets are not modelled
  - Market completeness is a corollary of the *no default assumption*: complete markets prevent default from arising, because they allow agents to hedge against all possible (bad) outcomes. This is *unrealistic* and *alien* to the present crisis.
  - Household homogeneity is not appropriate for welfare analysis

- The optimal financial contract prevents entrepreneurs from choosing 'bad projects'. **However...**
  - This could follow from, or be related to, the market completeness assumption
  - The model does not explain what happens off-equilibrium; default events could arise under non-optimal contract specifications.
  - Is there scope for welfare improving economic policy?

Comments

- The rich set of interactions between bank capital, entrepreneurial net worth, and economic activity that arise in a double moral hazard framework can also emerge, and furthermore depict a contagion phenomenon, in a model with agent **heterogeniety** (and thus, **trade**), **liquidity**, and **default** (see Goodhart et.al., 2006 and Tsomocos, 2003).

- It is assumed that banks diversify away bank-level risk; **however**, if banks were not assumed to be risk neutral, then they could face a portfolio allocation problem and *naturally* diversify away idiosyncratic risks.

- The optimal financial contract is set in real terms. **But**, had default been taken into account, the contract would need to been set in nominal terms since money is a *veil* only in the absence of default.

Comments

- Money in the utility function $\Longrightarrow$ bad modelling (as well as bad economics)
- Habit formation $\Longrightarrow$ cheap trick to match the data
- Homogenous and risk neutral banking sector $\Longrightarrow$ mechanical behaviour of banks and trivial transmission mechanism

Comments

- Why is an exogenous shock to bank capital so important, when bank capital is mostly comprised of (endogenous) retained earnings?

- New literature on DSGEs and financial frictions worth revising
  - Leao and Leao, 2007: Include default but ignore liquidity and agent heterogeneity
  - de Walque et. al, 2008: Include default and heterogeneity in the banking sector but treat money as a veil
  - Iacoviello and Neri, 2007: have agent heterogeneity and a (non-active) banking sector, but no default risk

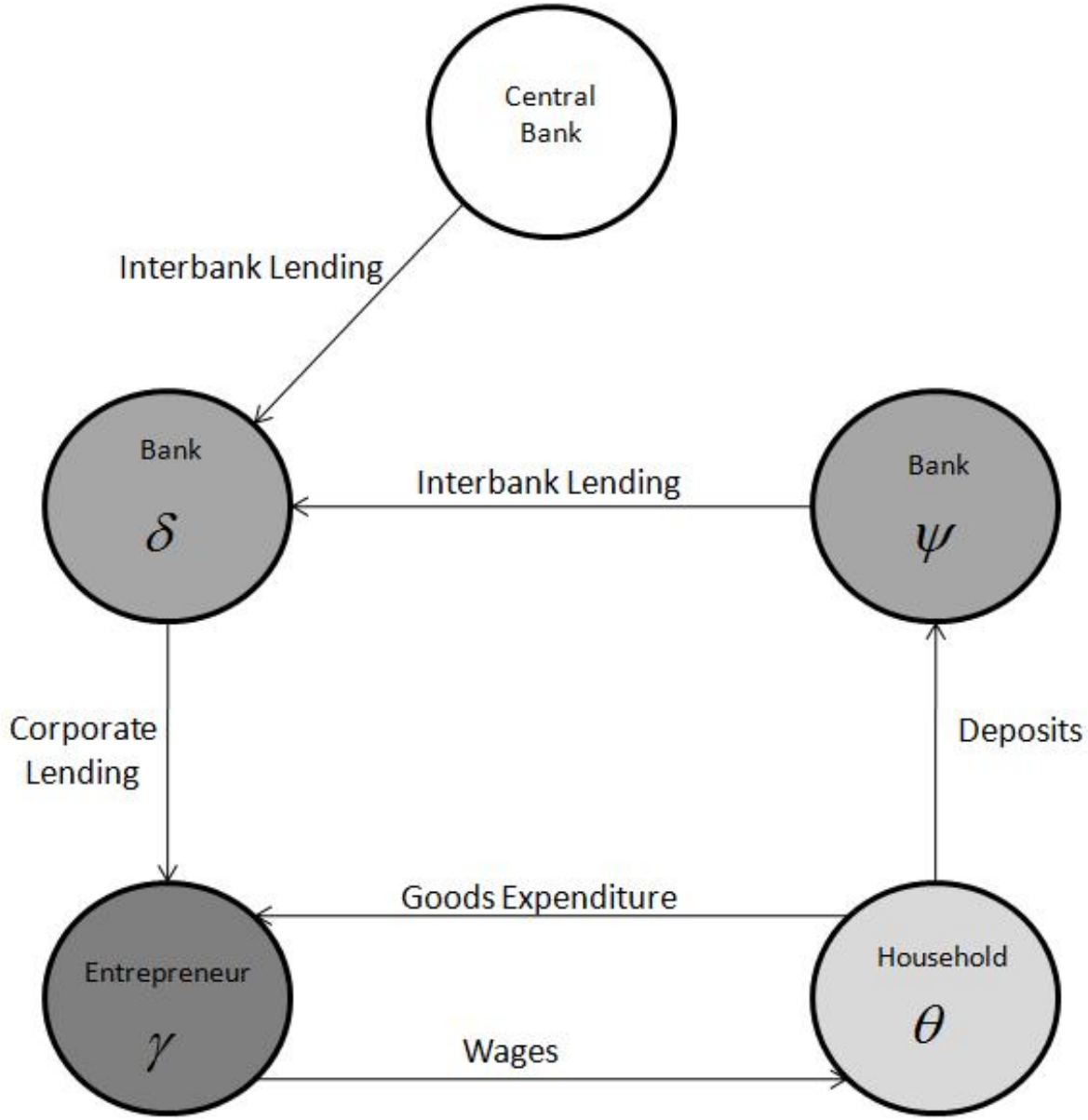
Alternative Framewrok

Analysis of Monetary Policy and Financial Stability: A New Paradigm (Goodhart,Osorio and Tsomocos, 2009; CESifo Working Paper Series No. 2885)

Minimum Structural Characteristics

- Dynamics, aggregate uncertainty and agent heterogeneity
- Money and liquidity constraints
- Active commercial banking sector
- *Endogenous* default
- Definition of Financial Stability, contagion, systemic risk, etc.

The Economy


Central Bank
Interbank Lending
Bank
δ
Interbank Lending
Bank
ψ
Corporate Lending
Deposits
Goods Expenditure
Entrepreneur
γ
Household
θ
Wages

Financial Frictions

Default

- Agents are allowed to default partially: they choose the fraction of outstanding debt they repay
- Default choice trade-offs the benefit of defaulting (more consumption) and its cost (credit costs)

Money

- Introduced by a cash-in-advance (liquidity) transaction technology
- Enters the system as *outside* or *inside* money
  - Outside money: enters the system free and clear of any offsetting obligations (monetary endowments)$\longrightarrow$ proxies liquidity injections from the Government/International Economy $\longrightarrow$ grows constantly.
  - Inside money: enters the system accompanied by an offsetting obligation $\longrightarrow$ exits the system with accrued interest and net of default

Market Clearing Conditions and Rational Expectations

(Policy) Interest Rate determined by market clearing condition

$$1 + r_t^{IB} = \frac{\hat{\mu}_t^{IB}}{\hat{d}_t^{IB} + \hat{M}_t}$$

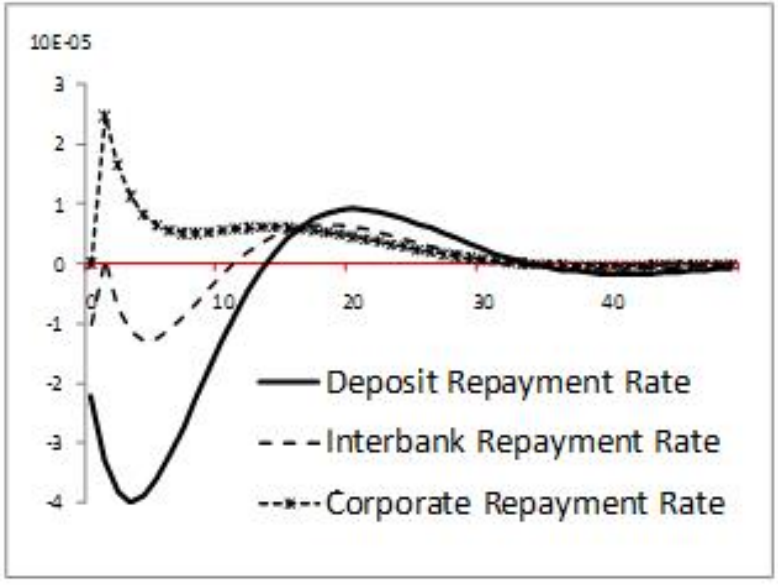
Expected Delivery Rates

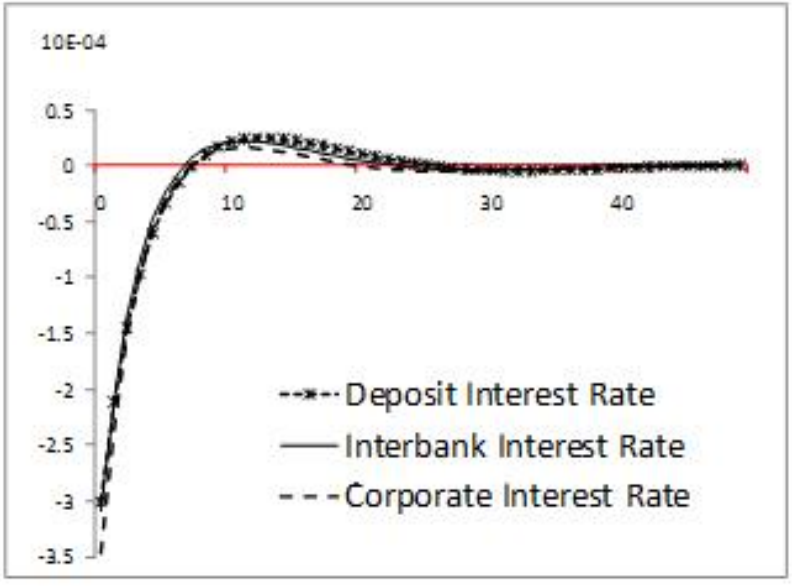
$$R_t^j = \begin{cases} \dfrac{v_t^j \mu_{t-1}^j}{\mu_{t-1}^j} = v_t^j & \text{if} \quad \mu_{t-1}^j > 0 \\ \text{arbitrary} & \text{if} \quad \mu_{t-1}^j = 0 \end{cases} \qquad \forall t \in T$$

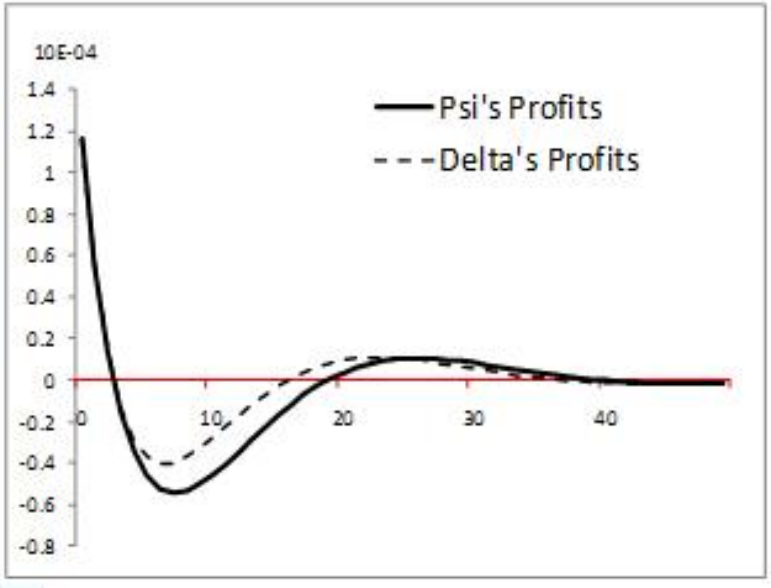
Key Results

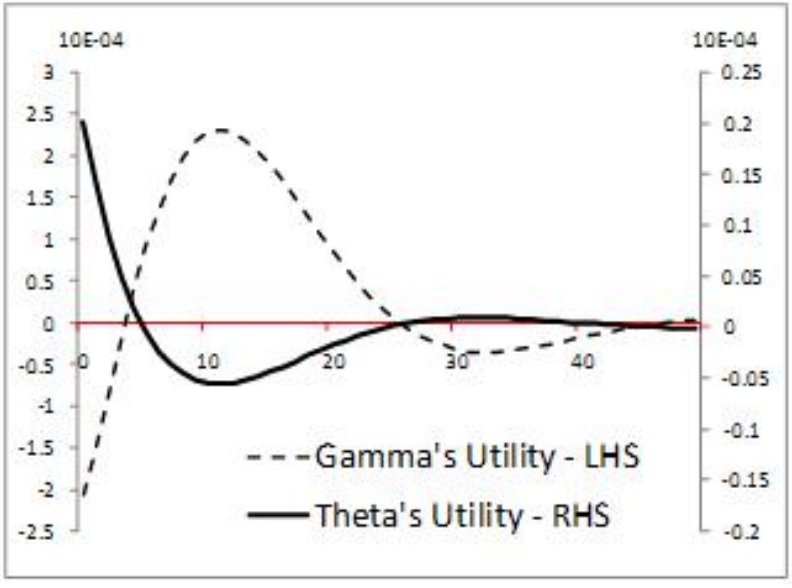
- Non-trivial transmission mechanism of shocks due to the presence of an **active** and **heterogenous** banking sector
- By allowing for default, we capture short to medium run dynamics which may generate financial instability
- Due to agent heterogenity we can conduct **welfare** analysis across different sectors of the real economy
- There is scope for welfare improving economic policy (monetary, fiscal and *regulatory*).

Monetary Policy Shock with Default









Meh and Moran: cannot capture 'threatening' dynamics

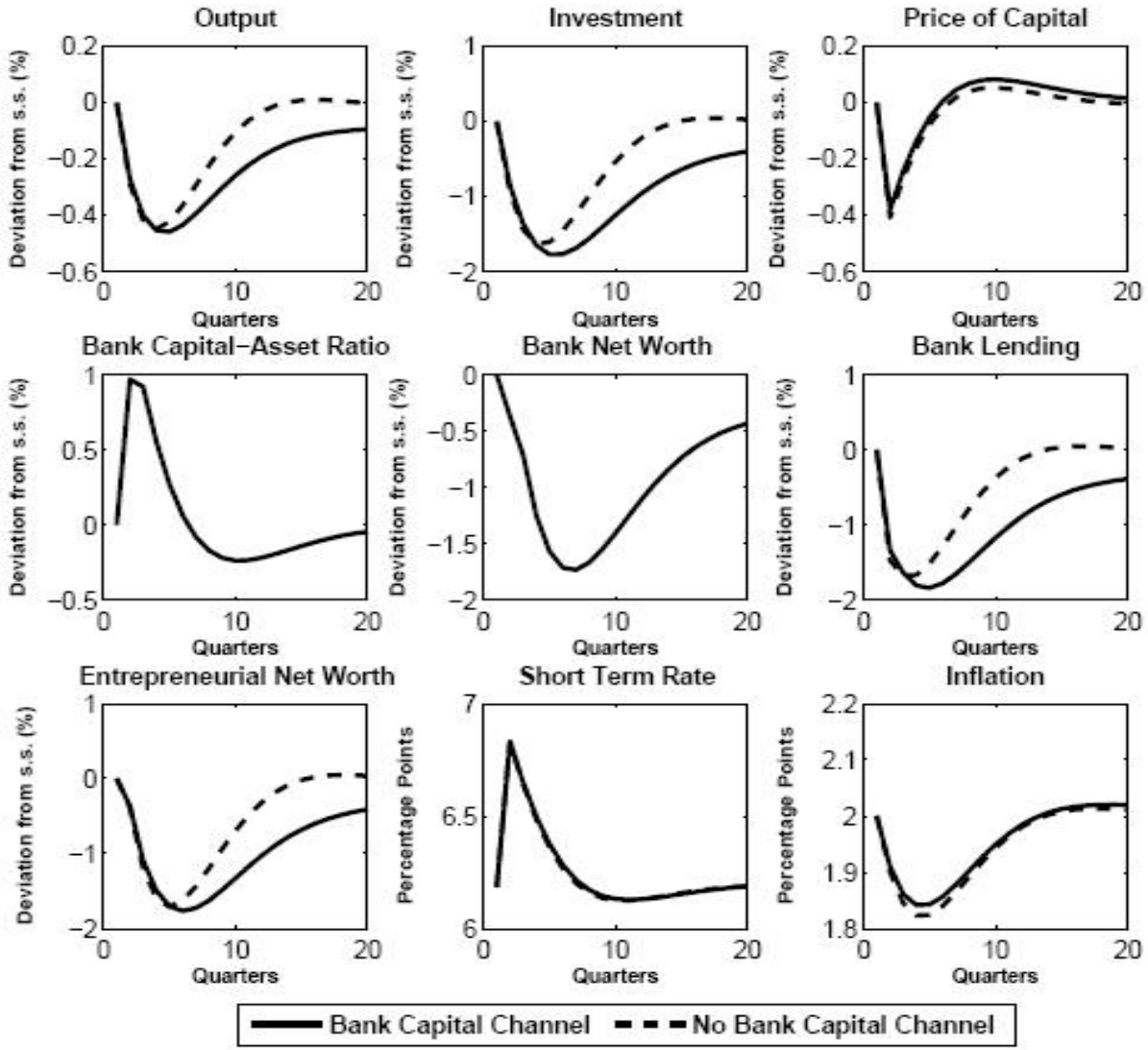
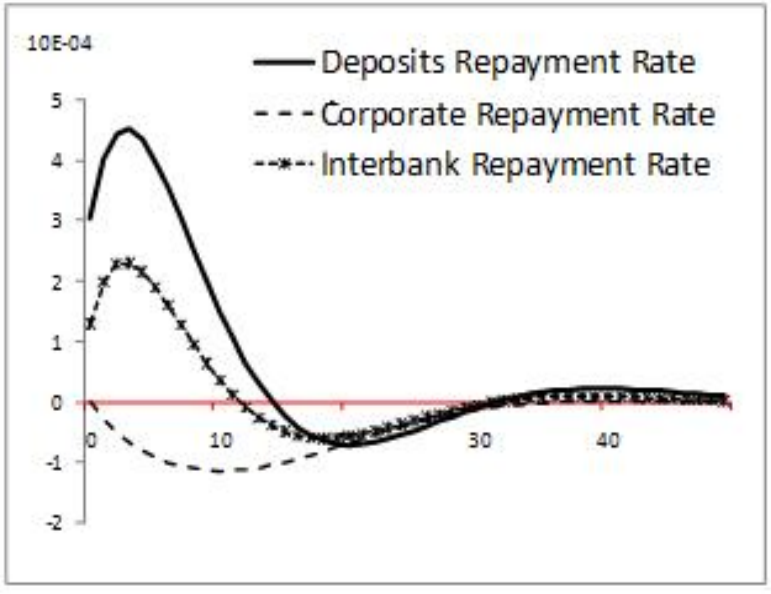
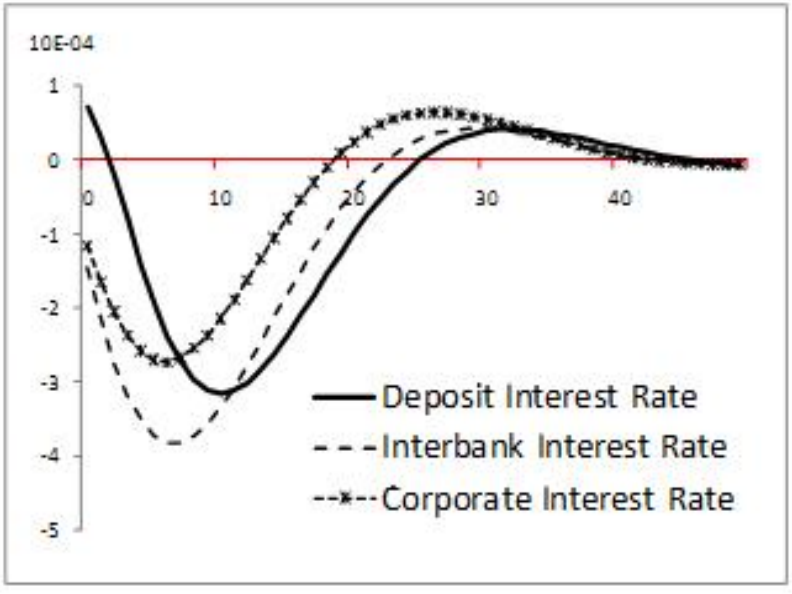
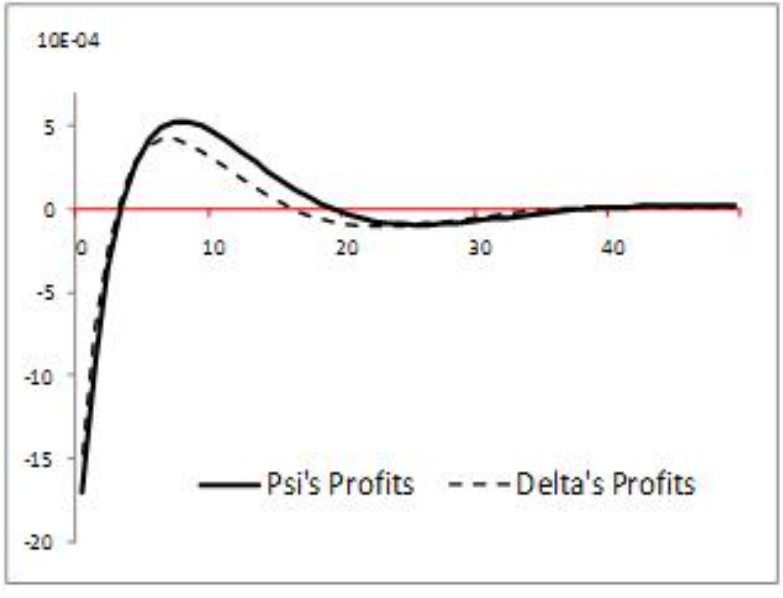


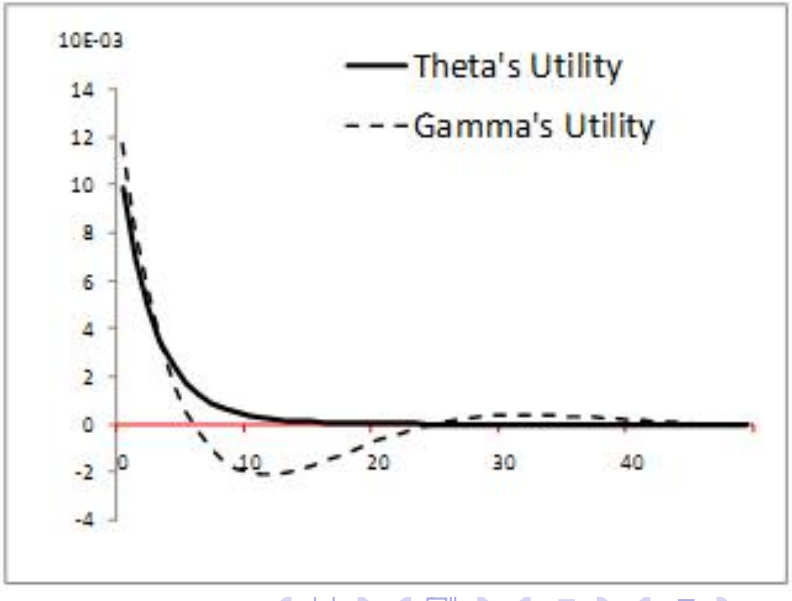
Fig. 2. Responses to a negative monetary policy shock

Technological Shock with Default









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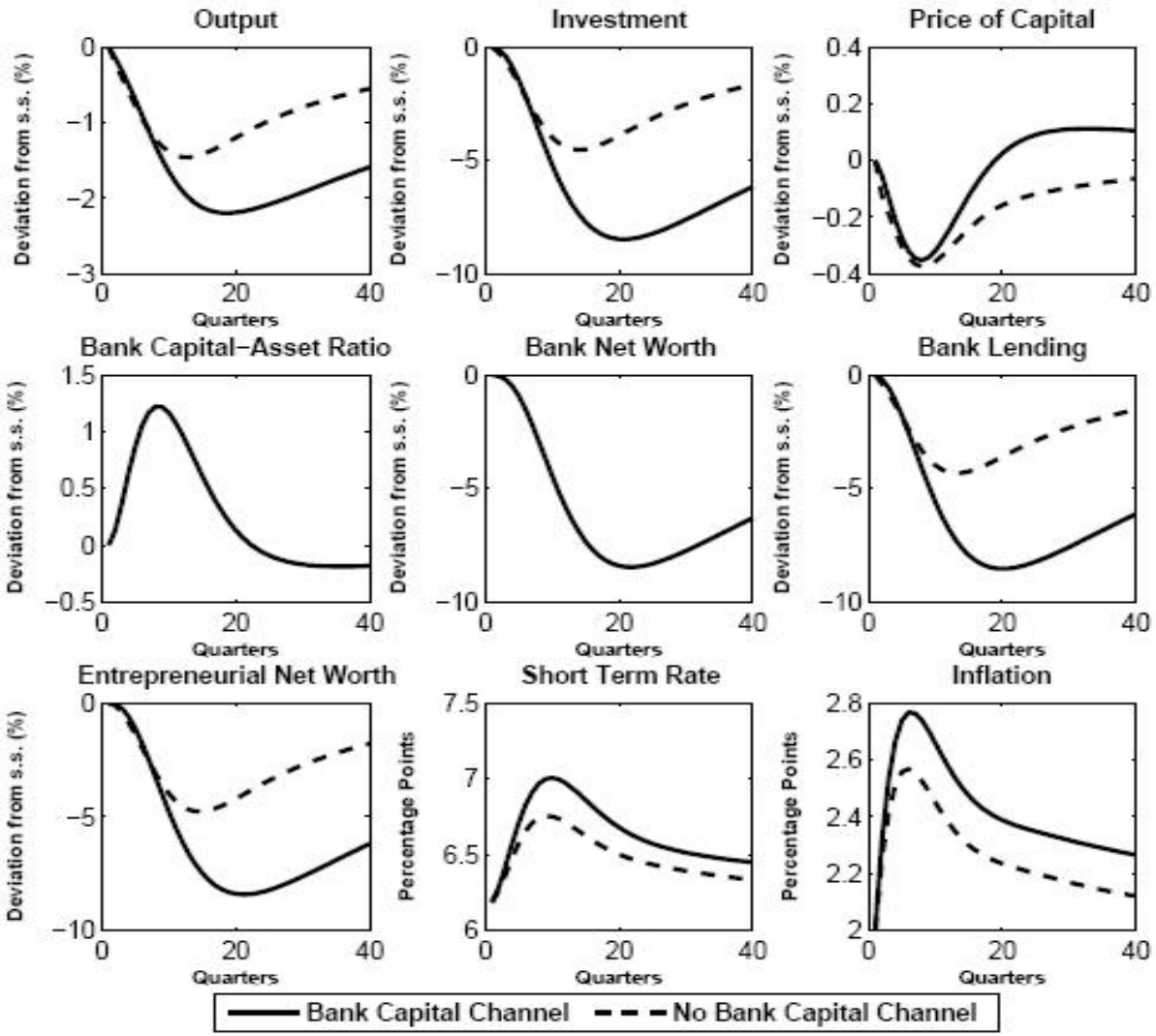

Fig. 1. Responses to a negative technology shock

Conclusions

- Liquidity and default are key factors that should be taken into account in any macroeconomic model with financial frictions
- Models with financial frictions, incomplete markets, and heterogeneity are preferable because:
  - There is scope for welfare improving policy
  - Agent heterogeneity is necessary; thus, trade and default emerge as equilibirum outcomes, and proper welfare analysis can be undertaken