

Macroeconomics of Bank Capital and Liquidity Regulations

Authors: Frederic Boissay and Fabrice Collard
Discussion by: David Martinez-Miera

UC3M & CEPR

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- Main goal
 - Understand effects of capital and liquidity regulation on economic outputs
- Methodology
 - General Equilibrium model
 - Adverse selection in interbank market
 - Calibration
- Results
 - Capital and Liquidity requirements are large and reinforce each other
 - 17.35% and 12.5% respectively

- Interesting paper with a nice "micro-macro" approach
 - Talk about "nice micro-macro" approach next
 - Analysis of interbank friction
 - Bank quality is heterogeneous and unobservable
- There are some issues that might be worth analyzing
 - Other regulatory policies?
 - How relevant is timing?

- Modigliani and Miller (1958) - Irrelevance Proposition
 - In a **frictionless** financial **financing decisions irrelevant**
 - Theoretical model already with deviations (Taxes)
- Economic fluctuations are not caused by financial issues
 - Analyzing finance is at best second order
 - At most could be auxiliary to other frictions
- 1958 onwards
 - Theoretical and Empirical literature on **financial frictions**
 - Compelling arguments that financial markets have frictions
 - Informational frictions, Adverse selection, moral hazard, coordination failures, risk taking incentives, etc

Financing with frictions

- Finance decisions can be relevant for economic outputs
- Two different approaches
 - With different objectives
- Microeconomic approach (Ant)
 - Understand different mechanisms (frictions)
 - Little focus on aggregate implications
 - Partial equilibrium models
- Macroeconomic approach (Bird)
 - Focus on aggregate implications
 - Little focus on different frictions
 - General equilibrium models

Micro Financial frictions (Ant) - lessons

- Various frictions shape financial landscape
 - Moral hazard problems (Holmstrom and Tirole, 1997)
 - From borrowers & from lenders
 - Runs in demandable debt (credit lines) (Diamond and Dybvig, 1983)
 - Many others
- Not all financial frictions have the same implications
 - Neither the same solutions
- Financial Intermediaries are a KEY player
 - Solve and **generate** economic problems
 - React to different economic conditions
 - Risk is a fundamental element of the analysis
 - Exposure (creation) of risk by Financial Intermediaries

Micro Financial frictions (Ant) - caveats

- Main question is the Financial Sector
 - Not much analysis of spillovers to other sectors
 - Not much analysis of overall economic impact
- Effort to clarify the mechanism at play
 - Mickey Mouse models
 - Cost of not exploring all the ramifications

Macro Financial frictions (Bird)- lessons

- Focus on aggregate outcomes
 - DSGE Models as a benchmark (RBC)
- Financial frictions have aggregate effects
 - Important role in amplifying shocks
- Focus on borrower driven issues (subset of frictions)
 - Borrower moral hazard
 - Pledgeability Constraint (Kiyotaki and Moore (1997))

Macro Financial frictions (Bird) - caveats

- Low detail of the financial sector
 - Small possibility of risk origination in Financial Sector
 - Main role is to amplify crisis not to create them
 - Financial Industry = Parameter (in some cases)
- Disregard Financial Industry issues
 - Ad-hoc constraints
 - Frictionless financial markets
 - No (correlated) bank failures

The Bird (Macro) and the Ant (Micro) should talk

- The Ant (Micro) can be shortsighted
 - Not all frictions have implications for overall output
 - Some "nice" frictions could have little impact
 - Some of them could have important spillovers not analyzed
- The Bird (Macro) can miss relevant details
 - There can be other relevant frictions at play (not only one)
 - It can be really difficult to analyze them together
 - Different frictions mean different problems and solutions

- Need a Body of new research
 - **This paper** is part of this new body of research
 - Also Boissay, Collard and Smets (2016) JPE
- **Financial Intermediaries** should have a **prevalent role**
 - Different underlying issues
 - Maturity Mismatch, Moral Hazard, Safety Asset, Risk-taking
 - *Source* of economically significant issues
- **Aggregate implications should be important**
 - General equilibrium and multiple markets

- Brief recap of the model - friction
- Brief review of results
- Comments

Brief recap of the model

- Macro model with financial frictions- Aggregate effects
 - Calibrated - magnitude of effects
- Households make traditional decisions
 - Consumption, labour and savings decisions
 - Infinitely lived
- Government: issues debt (exogenously)
 - Gov bonds are the liquid assets
- Firms (short lived) use factors of productions
 - Need finance to prepay those factors
- Financing is done (partly) through banks
 - Raise funding from households (deposits)
 - Raise funding from other banks - interbank market

Brief recap of the friction

- Banks have some funding at the beginning of the period
 - After that they receive an heterogenous shock to their quality
 - Better quality banks make firms produce more (production-link)
- Banks can receive an interbank loan from another bank
 - This allows goods banks to lend more
 - Better allocation of resources
- However **banks can divert (steal) money** $\gamma < 1$
 - This is why the best bank can not raise a lot of money
- The amount of funds a bank can raise in the interbank money is limited
 - Hampers production as good banks can not lend a lot

Brief recap of the friction

- How much can a bank borrow in the interbank market ϕ ?
 - Has to guarantee that bad banks don't want to divert funds
 - If a bad bank doesn't want a good bank won't either
- The following condition (IC) has to hold for no diversion (determines ϕ)

$$\underbrace{\gamma(1 + \phi)n}_{\text{fund diversion}} \leq \underbrace{r^s s^b - r^d d + r^m n}_{\text{lending in interbank}}$$

- Where $n = d + e - s^b$
- Less incentives fund diversion (more ϕ is possible)
 - High return in the interbank market
 - High amount (return) of liquid assets
 - Also higher equity ratios (less incentives to steal from yourself)

Brief recap of the friction-inefficiency

- Banks are price takers
 - Do not internalize the impact of their decisions on market prices
 - Raise to pecuniary externalities
- Imagine r^m increases (for everyone)
 - Reduces the leverage constraint of banks $\phi \uparrow$
 - Increases the amount of borrowing banks can do
 - Increases the amount of bad banks that lend in interbank
 - Better economic allocations
- But banks are atomistic so they do not want high r^m on their own
- Similar effects when holding liquidity or equity
 - More liquid assets - more borrowing - increases r^m
 - More equity funding - more borrowing - increases r^m
- Role for regulation

Brief recap of the friction-general equilibrium

- However general equilibrium effects matter
- Higher liquid assets regulations
 - Reduces the return of gov bonds r^S
 - Increases the demand of deposits - decreases deposit rate
 - Increases the leverage of banks (deposits are cheaper than equity)
 - Change in effect of equity regulation
- Liquidity and Equity regulation are linked
 - Role for a general equilibrium model

- The paper calibrates the model and shows that

Table 3: Welfare Gains

	Perm. cons. gain (%)		Regulation (%)	
	St. St.	Incl. Transition	τ_C	τ_L
NR \rightarrow ORM	0.6591	0.5888	17.35	12.50

Note: NR \rightarrow ORM: Permanent Consumption gain (in percent) from the non-regulated (NR) economy to the economy with the optimal regulatory mix (ORM).

- Would other policy measures be more effective?
 - Could regulations in the interbank market help?
 - For example setting a centralized interbank market
 - Another example would be setting reference interbank rates
- Liquid assets and diversion
 - Are liquid assets easier to divert or not?
 - Divert an illiquid house vs divert cash
- What if the shock is not after deposits are raised but before
 - Could good banks then raise more deposits and the interbank friction be lowered?
 - Or would there still be a friction vis a vis the depositors with a similar magnitude?

- Nice paper
 - Role for bank heterogeneity generating aggregate effects
 - Through an interbank friction
 - Role for bank regulation to have aggregate effects
 - Carefully calibrated
- Policy measures could be broader
 - Capital and liquidity requirements are very important
 - But maybe are not the only way to solve this issue