A quantitative analysis of the countercyclical capital buffer

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The paper

- New Keynesian DSGE model with occasional financial crisis and occasionally bindning constraints: bank capital and borrowers
- Policy application on the 2007-2008 US crisis to assess the potential role of CCyB during the GFC
- Non linear solution, particle filter and counterfactual exercise
- Key finding: a CCyB rule would have prevented a financial crisis, with substantial gains in consumption terms

Key mechanism

- Banks and borrowers are subject to an occasionally binding constraints
- Banks are subject to runs when their equity net worth gets closer to 0
- Borrowers can default when their net worth becomes negative
- When banks are levered, the interaction of those elements triggers an important financial accelerator and bank funding shocks are amplified
- The CCyB has two functions:
  - ex ante: it prevents crisis by limiting banks leveraging
  - ex post: in case of substantial release it mitigates the bindingness of capital constraints reducing the economic loss in case of crisis

This discussion

- Model - Crisis vs Financial recession
- Model - Households vulnerability and the BBM
- Application on real data: particle filter and counterfactual exercises
- Policy take-aways - the CCyB rules
  - The releasable space
  - Structural versus Cyclical crisis

Crisis versus Financial Recession

- Crisis / Bank run:
  - endogenous component for the bank run: $u_R > 1$ where u_R is a threshold function of bank leverage
  - exogenous component: sunspot shock realizes
- Financial recession: bank enters in the run region but the sunspot shock does not materialize

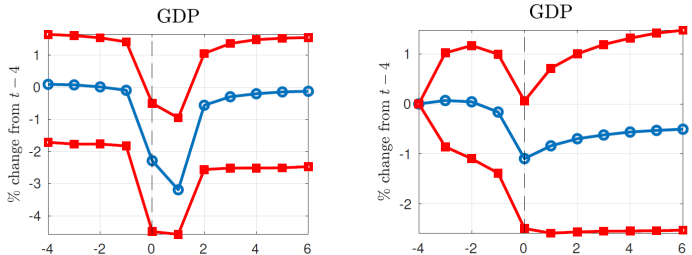


Figure: LHS: GDP enters a financial crisis. RHS: GDP enters a financial recession

Crisis versus Financial Recession

- The financial recession resembles more to episodes observed in the recent years in which a bank run does not happen but the cost of funding increases
- Nice feature of the model that could be further developed
- Question: What is the role of the CCyB in limiting the financial recession in terms of effectiveness?

Households versus banks vulnerability

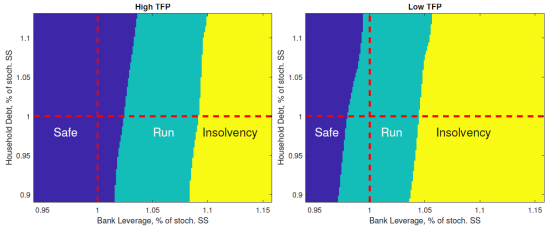


Figure: Model state space for different realizations of the TFP shock. The horizontal axis corresponds to bank leverage, while the vertical axis is household debt.

- The model incorporates two sources of vulnerabilities
- Bank leverage is the primary source of vulnerability
- Household indebtedness seems to play a smaller role
- Private sector indebtedness has substantial early warning indicator properties and can play the role of financial accelerator (Aikman et al. [2016], Lang et al. [2019])

A role for the BBM

- Take away for policy the model: Capital requirements are the first key tool to avoid crisis
- Here the financial shock is hitting the banks funding
- Would the key role of the capital buffers remain the same also hold considering a shock hitting the households borrowing constraint?
- Borrowers based measures would be more important in stabilising the cycle via smaller default and smaller indebtedness?

Application on real data

- Calibration on US data and Particle filter
  - Three shocks: Bank funding shock, TFP shock and the sunspot shock
  - Observables: Consumption, TED spread
  - Counterfactual to assess the effect of CCyB rule
- Sunspot shock: does the filtering capture this shock? How is this treated in the filtering?

Structural shocks used for the filtering

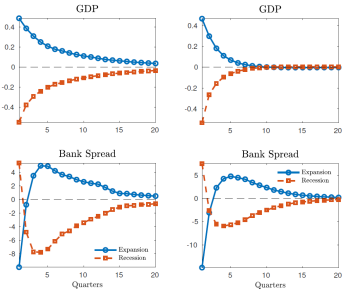
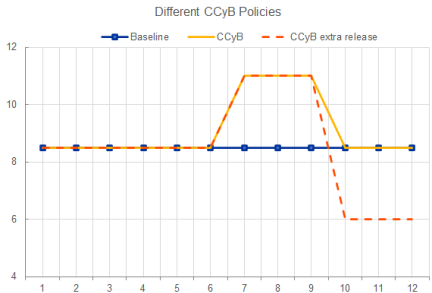


Figure: LHS: TFP shock RHS: financial shock

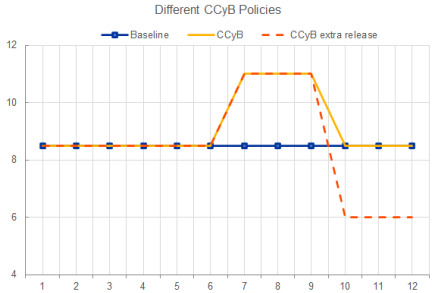
- The two shocks considered are not that different in terms of average dynamics: other shocks could be considered demand shock/collateral shock
- The smoothed shocks in the appendix and the smoothed (i.e. housing prices) are very convincing

The CCyB rules of the model



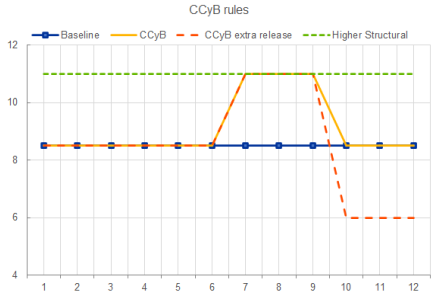
- Standard CCyB reduces crisis probability but makes GDP losses larger because of more binding capital constraint
- CCyB extra release eases this bindingness issue and reduces the GDP losses $\longrightarrow$ importance of the releasable space

The CCyB rules - ex post dimension



- The CCyB with extra release could be read as a positive neutral level for the CCyB, increasing the releasable space in case of crisis
- Activation is abrupt here: when bank leverage starts to increase:
  - What if the rule of activation is more gradual?
  - What if the rule moves with respect to private indebtedness (credit/GDP)?

The role of resilience: cyclical versus structural



- In the model application the CCyB prevents crisis, threatening higher capital requirements
- Ex ante benefit - resilience: the promise of an increase in resilience (smaller banks leverage) prevents crisis (Clerc et al. [2015], Mendicino et al. [2018])
- $\longrightarrow$ Resilience vs Taming the financial cycle
- What if banks are asked to have a higher capital requirement in a structural way?

Conclusion: great paper!

- Key contributions on many dimensions: Model, non-linearity, empirical application, and policy questions
- Non-linear dynamics fully exploited to show policy relevant point for macroprudential policy
- Final provocative questions:
  - Importance of the release: if we don't release enough in terms of crisis, is macroprudential policy detrimental?
  - Bank vulnerability is the key vulnerability: what about BBMs?
  - What if capital requirements are structurally higher so that banking crisis are fully avoided? Do we need the extra relase/release dimension?

Literature I

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