Banking Dynamics, Market Discipline and Capital Regulations

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Motivation

- **C**ounter-**C**yclical **C**apital **B**uffer (**CCyB**) is one of the Basel III capital requirements
  - Address the pro-cyclicality of capital requirements and smooth bank credit supply over time
  - In Canada, **Domestic Stability Buffer (DSB)** works similarly to CCyB, applied to DSIBs Chart
    - 2018: With the range of 0-2.5%, set at **1.5%** with the total capital requirements of **13%** of RWAs (and **11.5%** if released)
    - 2019-2021: Changed in the range of 1-2.5%
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    - ◦ 2019-2021: Changed in the range of 1-2.5%
    - ◦ 2022 December: Increased to 3% with the range expanded to 0-4%
- Basel III: *Market discipline* important and complement capital regulations
  - ▷ Facilitate the pricing of *individual* bank risk to limit "over-borrowing" from the wholesale market.

Questions and findings

1. What is the impact of CCyB through a Great Financial Crisis-like episode:
   - Average impact on bank credit supply and insolvency?
   - Differential policy impacts across banks with different capital ratios?
2. How does market discipline change the way banks react to CCyB? Heterogeneity?

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2. How does market discipline change the way banks react to CCyB? Heterogeneity?
   - ▷ *Raises capital ratios in normal times (precautionary savings), softening the impact of crisis*
   - ▷ *Raises the liquidity risk; even large and well-capitalized banks could be vulnerable to crisis*

Model features

A heterogeneous-bank model with Timing of events

- stochastic aggregate state – normal and crisis

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- banks must satisfy capital requirements, including CCyB

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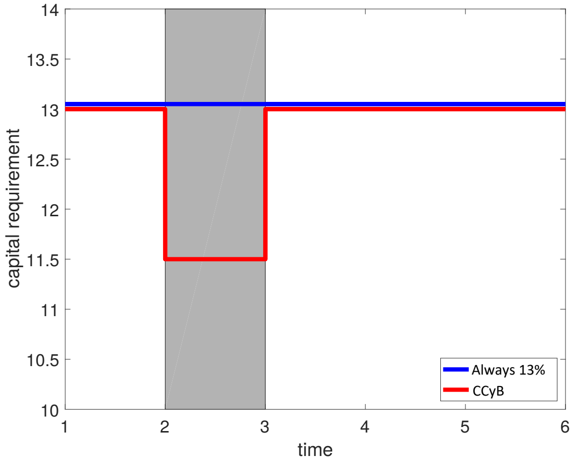

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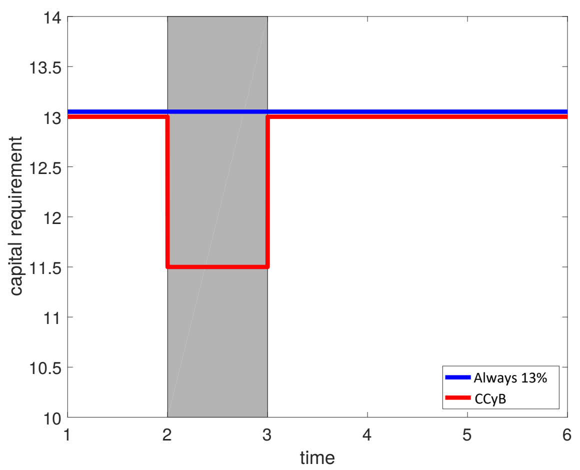
   - Three bank groups in capital ratio
     - Top decile
     - All banks
     - Bottom decile



Stationary economy where simulation starts

	1.5pp CCyB (Baseline)
Capital Requirement	13%
Average Capital Ratio	14.64%
Bank Insolvency Rate	0.12%
New Loans/Deposit	1.02

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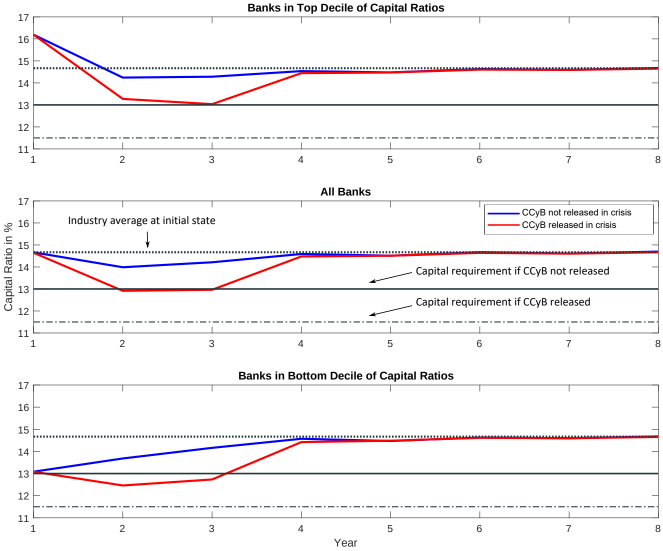
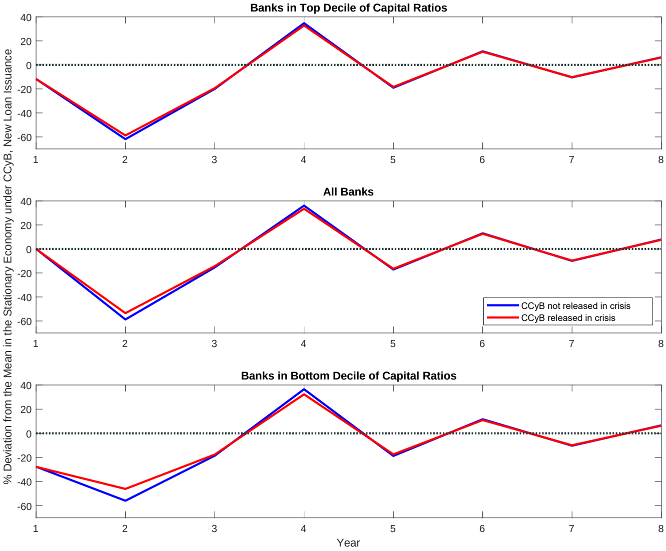
- Market discipline makes banks more prudent and hold more capital in normal times
  - complementing CCyB in normal times
  - However, in crisis times, market discipline can amplify crisis shocks via higher risk premiums whereas CCyB dampens them

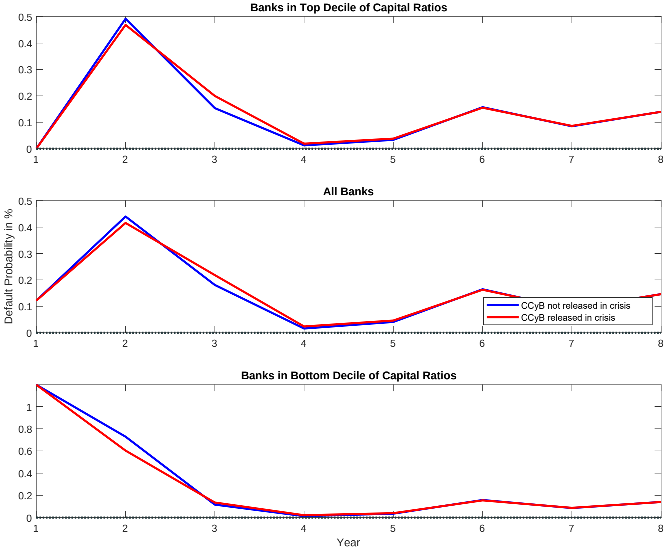
IRF of Capital Ratio with 1.5-pp CCyB ($13\% \to 11.5\%$)



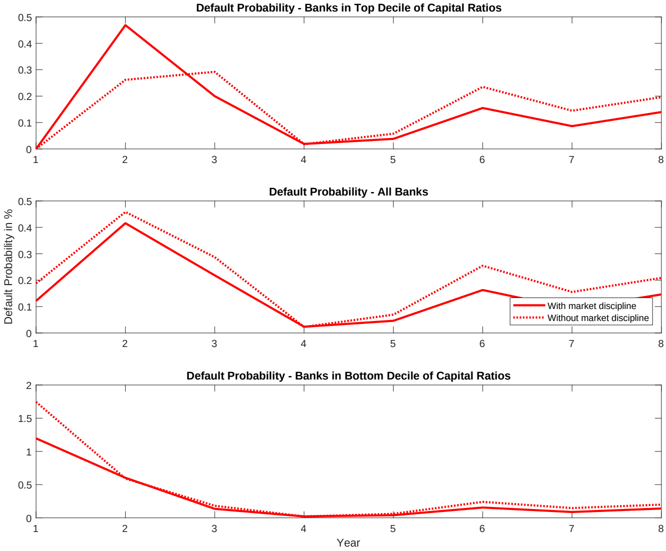
IRF of New Loan Issuance with 1.5-pp CCyB (13% $\rightarrow$ 11.5%)



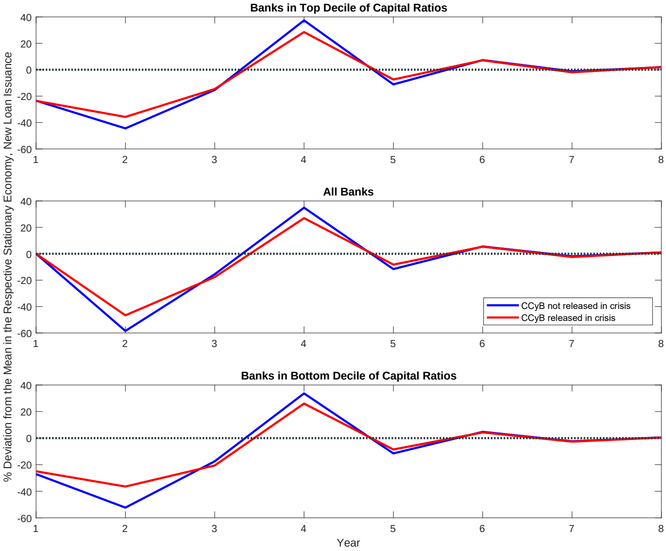
IRF of % of Bank Default with 1.5-pp CCyB ($13\% \rightarrow 11.5\%$)



IRF of Bank Default with and w/o Market Discipline, 1.5-pp CCyB



IRF of New Loan Issuance with 5-pp CCyB ($16.5\% \to 11.5\%$)



Conclusion

1. Confirms the intended benefits of CCyB over constant capital requirements:
    - ▷ Smoother credit supply and bank insolvency dynamics in a crisis-recovery episode
    - ▷ Average quantitative impact is limited at low levels of CCyB, but a larger impact on inadequately-capitalized banks

2. Market discipline has opposing effects on banks:
    - ▷ Lower bank risk-taking during normal times, *complementing CCyB*
        - softens the impact of the crisis on loan supply
        - reduces bank default on average
    - ▷ Larger liquidity risk during a crisis, *working against CCyB*
        - potentially increases default risk for even well-capitalized banks with large exposure on wholesale funding

History of Dynamics Capital Requirement in Canada

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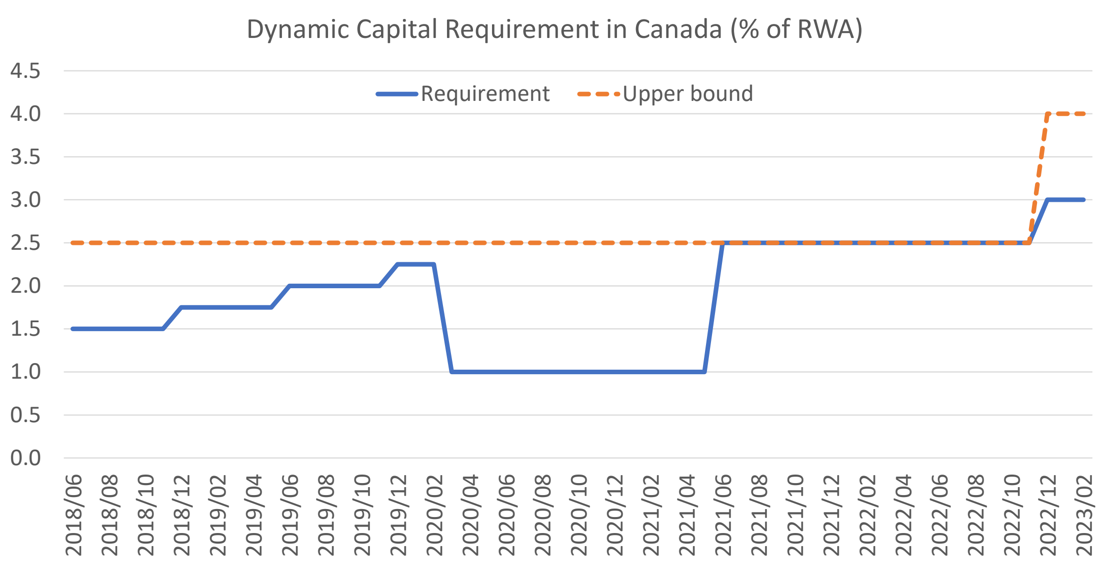
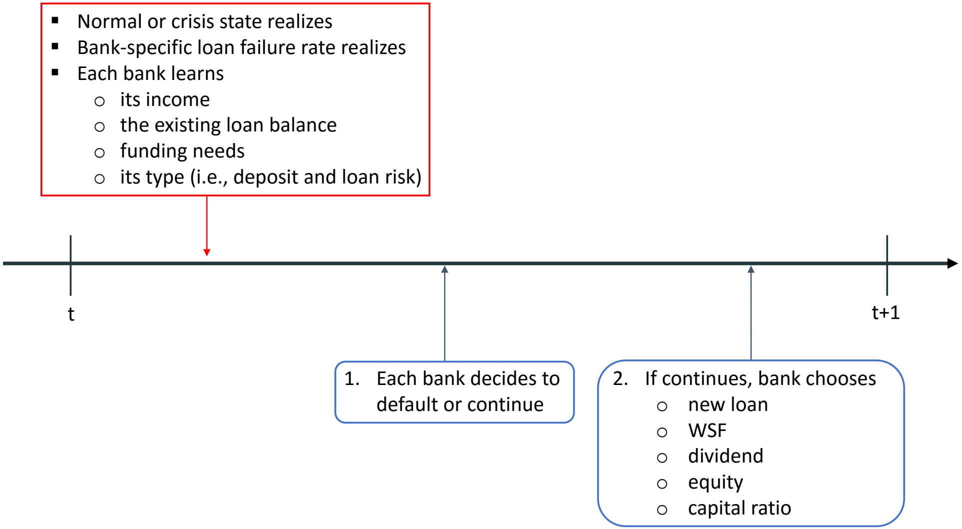


Model: Timing of shocks and decisions Back



Discount price of WSF for large banks in normal times

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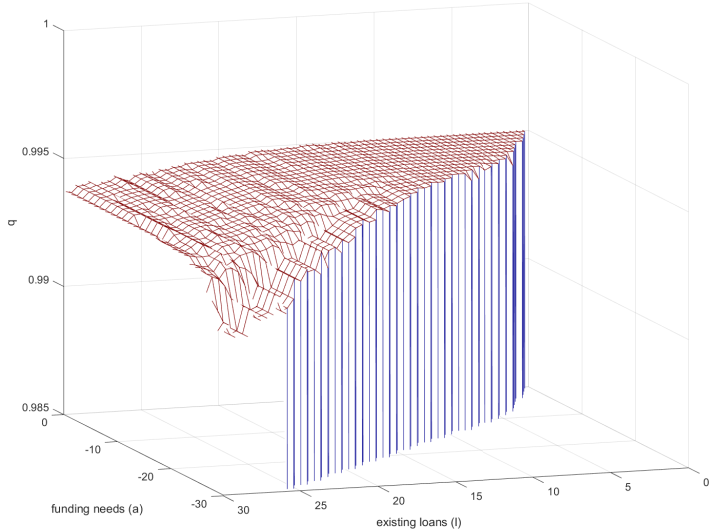

Bank Distributions Before and After the Crisis Shock

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