



Discussion of

The state-dependent impact of changes in bank capital requirements

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Disclaimer: The opinions and assessments expressed in this presentation do not necessarily reflect those of the Central Bank of Chile, its Management, or its Board Members.

Paper in a nutshell

- **Motivation:** Empirical evidence points out to moderate effects on credit of raising CCyB and considerable effects during release
- **Research question:** How can we rationalize this conflicting evidence?
- **Model:** Partial equilibrium model of bank credit supply with two OBC
- **Findings:** Can successfully generate state-dependent effects

Quick overview

- Given a loan demand schedule, problem of the bank

$$V(\theta, L, E, L^A) = \max_{L', E'} \quad d + \beta \mathbb{E}[V(\theta', L', E', L^{A'})]$$

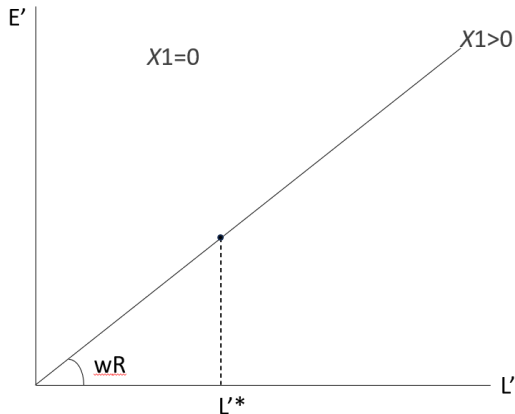
$$s.t. \quad E' = E + \pi(\theta, L, E, L^A) - d$$

$$E' \geq R' \omega L' \quad (\chi^1)$$

$$d \geq 0 \quad (\chi^2)$$

Quick overview

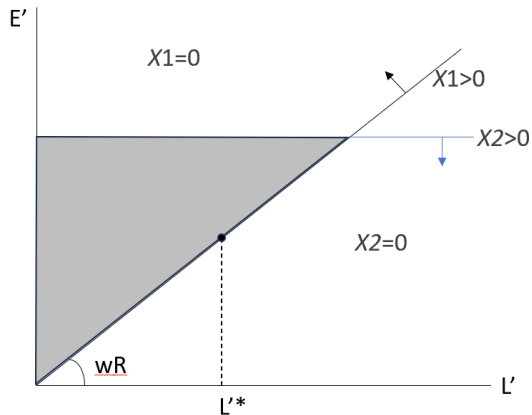
- Oversimplification of the model (in particular solution for L')
- If only capital requirement constraint \rightarrow optimal to minimize equity funding



Quick overview

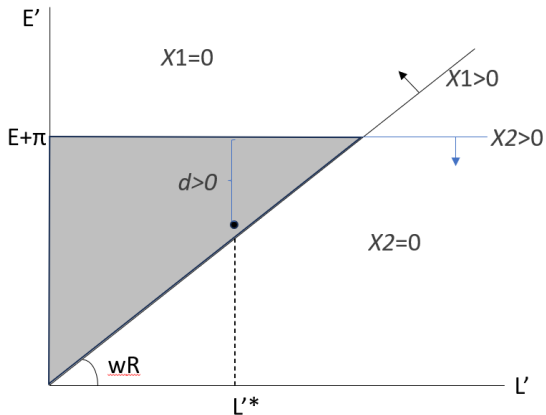
- Consider constraint $d \geq 0$ which implies

$$E' \leq E + \pi$$



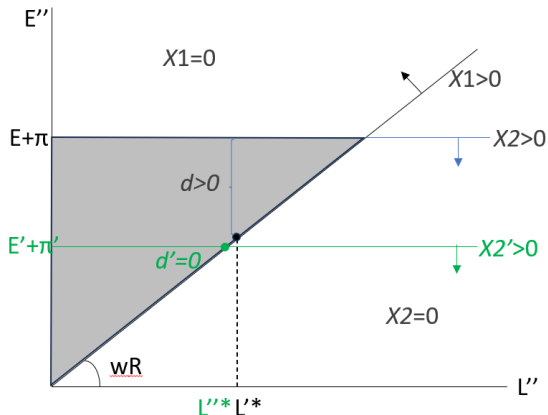
Quick overview

- Large positive dividends **today**
- Positive but small capital headroom



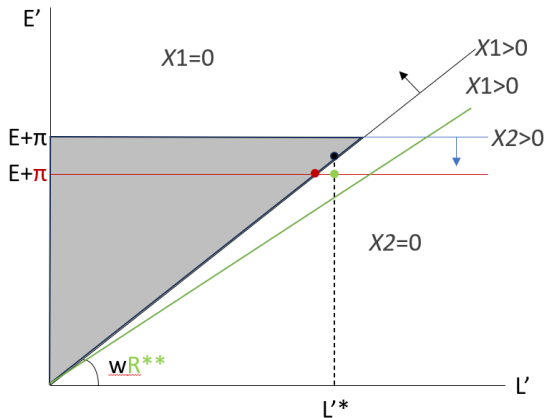
Quick overview

- Large positive dividends **today**
- Profits tomorrow may reduce capital available. If no issuance, need to deleverage
- Loan decline is actually large
- Better not to give such large dividend \Rightarrow more voluntary capital!



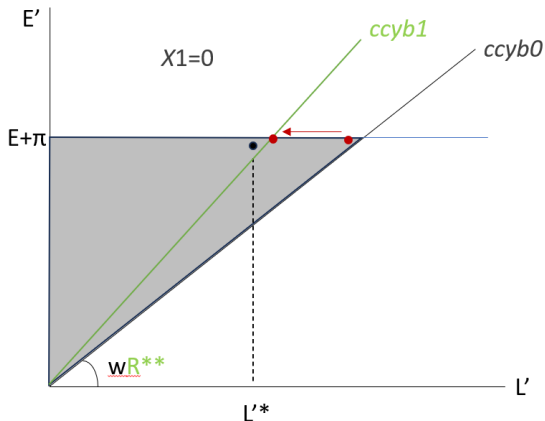
Quick overview

- A releasable capital buffer can avoid deleverage
- If no bad shock ●
- Profit realization is low \Rightarrow ●
- Release of R to accommodate \Rightarrow ●



Quick overview

- If initial condition in ● with ample voluntary capital, increasing CCyB has moderate effect in credit (pricing channel)
- If initial condition in ● then increase of CCyB has strong effect in lending
- (AGAIN: lending is endogenous in model))



General comments

The paper is really nice

1. Simple model but it can speak to several empirical evidence papers. Exploit that
2. Is there another way to generate state-dependence? How can we choose?
3. Minor questions on performance of the model

1. Beef up empirical results section

- Main contribution is theory, but starts from empirical observation.
 - Main reference to [Jimenez et al. \(2017\)](#): Increasing capital in good times has (much) lower effects than releasing in bad times
 - Empirical evidence has more to say
 - When capital requirements are raised, banks with smaller capital headroom contract credit more ([Gropp et al 2019](#); [Berrospide and Edge 2019](#); [Juelsrud and Wold 2020](#); [Fang et al. 2022](#); [Behn et al. 2024](#); [Bedayo and Galan 2024](#))
 - Release during COVID also consistent with lower contraction of credit for banks with smaller capital headroom ([Couiallier et al. 2022](#), [Bedayo and Galan 2024](#); [Mathur et al. 2024](#), [BCBS 2020](#))
 - Gradual adoption can mitigate effect effect ([Mendicino et al. 2020](#); [De Nicolo 2024](#))
 - Effect seems to be temporary (2-10q) ([Bedayo and Galan 2024](#); [Cespedes et al. 2024](#); [Jimenez et al. 2017](#))
- ... and not inconsistent with predictions of this model

2. Modeling state-dependence

- This model uses two OBC

$$E' \geq \omega RL' \quad \checkmark \quad (1)$$

$$E' \leq E + \pi \quad (d \geq 0) \quad (2)$$

- OCB (2) : Elaborate on how this model compare to other modeling choices that generate state-dependence?
 - [Schroth, JME 2021](#) Uses non-negativity in dividend policy and no-default condition
 - [Akinici and Queralto, AEJ:Macro 2022](#). Explicitly introduces a financial friction a la [Gertler Kiyotaki \(2010\)](#) and endogenous equity issuance ($d < 0$?). Precautionary motive generates voluntary capital headroom.
 - [Mendicino et al., JF 2024..](#) Capital requirements are verified by supervisor ex-post. If not met, costly emergency equity injection (costly $d < 0$?). Also need charter value to deal with limited liability.
- These models can generate voluntary capital and large crisis with standard shocks, can they generate asymmetric effects of CCyB?

3. Minor issues

- Proposition 2: *in the absence of an equity issuance constraint, equilibrium loans respond to changes in bank capital requirement through a pricing channel*
 - If d unconstrained, banks can always go to the market to raise new equity. Because both E' and L' are choice variables

$$E' \geq \omega RL'$$

- We know E can be difficult to adjust. Is this modeling assumption too crucial? what changes with “sticky” equity?
- Quantitative predictions
 - Benchmark model: 0.5% RWA voluntary capital, “q-event” every 12.5 years and $Pr(d = 0) = 0.3$.
 - Voluntary capital can be **a lot higher** → Can the model accommodate frequency of q-events and empirical frequency of zero dividends?

Final comments

- Useful and timely paper. Enjoyed it very much.
- This paper convinces me that our models for capital requirements need to consider dividend-policy and constraints
- This paper provides a tractable and intuitive framework to motivate key implementation ideas: graduality, size of increases, timing of increase/release.
- I hope I helped polish the distinguishing aspects for publication.
- Good luck in publication :)



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