Countercyclical Regulation?

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Outline

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2. What do we find in Basel III?
3. The countercyclical capital buffer of Basel III
4. Forecasting financial crises
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6. Concluding remarks
Part 1

The procyclicality problem
In the beginning was Basel II

• Objectives
  → Better alignment of capital requirements with banks’ risks
  → Provide incentives for improving risk management

• Closer relationship between capital requirements and risk
  → Makes perfect sense in the cross-section domain
  → Has unfortunate consequences in the time domain
  → Risk-sensitive regulation is (by definition) procyclical
The procyclicality problem

• What happens in a downturn?
  → Banks’ capital is likely to be eroded by loan losses
  → Borrowers are downgraded
  → Banks will be required to have more capital
  → Since it is difficult to raise fresh capital in bad times
  → Banks will cut back on its lending
  → Contributing to worsening of downturn
The initial response of the regulators

• Almost complete neglect

  “In the discussion on the possible effects of Basel II, the issue of procyclicality has often been center stage. I continue to think that this is an important issue, which needs to be monitored but that many times it has been exaggerated.”

  Jaime Caruana (2007)
The G-20 response to the crisis

• “Until recovery is assured the international standard for the minimum level of capital should remain unchanged.”

• “Where appropriate, capital buffers above the required minima should be allowed to decline to facilitate lending in deteriorating economic conditions.”

• “Once recovery is assured, prudential regulatory standards should be strengthened.”

London Summit, 2 April 2009
Part 2

What do we find in Basel III?
Addressing procyclicality in Basel III

Stated objectives

• Dampen any excess cyclicality of minimum requirements

• Promote more forward looking provisions

• Conserve capital to build buffers that can be used in stress

• Protect banking sector from excess credit growth
Addressing procyclicality in Basel III

What do we find?

• Dampen any excess cyclicality of minimum requirements
  → Nothing

• Promote more forward looking provisions
  → Nothing

• Conserve capital to build buffers that can be used in stress
  → Capital conservation buffer

• Protect banking sector from excess credit growth
  → Countercyclical capital buffer (CCB)
Part 3

The CCB and the credit-to-GDP gap
Objective

“The primary aim is to use a buffer of capital to achieve the broader macroprudential goal of protecting the banking sector from periods of excess aggregate credit growth that have often being associated with the build up of system-wide risk.”

Countercyclical Capital Buffer Guidance
How does it work?

• Extension of capital conservation buffer (up to 2.5% of RWAs)
  → Restrictions on distributions if requirement is not met

• For internationally active banks
  → Weighted average of requirements across jurisdictions

• Common starting reference point for taking buffer decisions
  → Aggregate private sector credit-to-GDP gap
Countercyclical capital buffer (i)

Notation

\[ c_t = \text{aggregate private sector credit-to-GDP ratio} \]
\[ \bar{c}_t = \text{Hodrick-Prescott trend of } x_t \]
\[ x_t = c_t - \bar{c}_t = \text{credit-to-GDP gap} \]
\[ b(x_t) = \text{Countercyclical capital buffer} \]
Countercyclical capital buffer (ii)

Additional capital requirement

\[
b(x_t) = \begin{cases} 
0 & \text{if } x_t < L \\
\frac{x_t - L}{H - L} & \text{if } L \leq x_t \leq H \\
2.5 & \text{if } H < x_t
\end{cases}
\]

→ where \( L \) and \( H \) are fixed parameters

→ in the Guidance document \( L = 2\% \) and \( H = 10\% \)
Countercyclical capital buffer (iii)
Credit-to-GDP ratio (Spain)

Source: ESRB.
Note: Nominal credit to households and non-financial corporates over GDP.
Credit-to-GDP ratio and its trend (Spain)

Source: ESRB.
Note: Nominal credit to households and non-financial corporates over GDP. HP Lambda 400,000 (recursive).
Credit-to-GDP gap (Spain)

Source: ESRB
Note: HP Lambda 400,000 (recursive).
Credit-to-GDP gap and crises (Spain)

Source: ESRB
Note: HP Lambda 400,000 (recursive).
Credit-to-GDP gap and crises (Spain)

Source: ESRB
Note: HP Lambda 400,000 (recursive).
Part 4

Forecasting financial crises
Standard forecasting model

- Notation

\[ y_t = \begin{cases} 
0, & \text{if no crisis at quarter } t \\
1, & \text{if crisis at quarter } t 
\end{cases} \]

\[ x_t = \text{credit-to-GDP gap (or other variable) at } t \]

- Model

\[ \Pr(y_{t+4} = 1|x_t) = F(x_t) \]

→ Special case: Logit

\[ F(x_t) = \frac{\exp(\alpha + \beta x_t)}{1 + \exp(\alpha + \beta x_t)} \]
Data

• Data collected for the work of ESRB Expert Group on CCB

• Quarterly data for EU-15 (1970-2012)
  → Three countries without crisis
  → Model estimated for 12 countries
Individual country results (i)

• Very large variation in estimated values of $\beta_i$

\[
\begin{array}{l}
\min \hat{\beta}_i = -0.14, \ \text{median} \ \hat{\beta}_i = 0.15, \ \max \ \hat{\beta}_i = 1.33
\end{array}
\]

→ Positive and significant for 7 countries

→ Negative for 2 countries (one significant)
Individual country results (ii)

• Assessment
  → Effect of the gap is very different for different countries
  → And it may be even negative

• What could be done?
  → Try first alternative specification of empirical model
An alternative model

• Original model is unconditional
  → Forecasting crises regardless of the current state

• It seems better to condition on the current state
  → Estimating transition probabilities

$$\Pr(y_{t+4} = 1 | x_t, y_t = 0) = G(x_t)$$
New individual country results (i)

• Still very large variation in estimated values of $\beta_i$

\[ \min \hat{\beta}_i = -0.14, \text{ median } \hat{\beta}_i = 0.15, \text{ max } \hat{\beta}_i = 1.04 \]

→ Positive and significant for 9 countries
→ Negative and significant for 1 country

• Assessment: Same as for the unconditional model
What happens with panel data?

• Panel results allow for
  → Correcting for time and country correlations
  → Testing whether $\beta_i$’s are different across countries

• Results for both specifications (conditional and unconditional)
  → $\beta_i$’s are different across countries

• Conclusion: Panel approach reinforces previous results
Summing up

• From early warning perspective
  → Credit-to-GDP gap has some forecasting power

• Effect is very heterogeneous by countries
  → No empirical basis for CCB formula $b(x_t)$ in Basel III
  → With the same parameters $L$ and $H$ for all countries
Part 5
The credit-to-GDP gap and the business cycle
Credit-to-GDP gap and GDP growth

• Rationale of credit-to-GDP gap
  → Leading indicator of financial crises

• No consideration of how it might correlate with business cycle
  → Will it serve as a countercyclical regulation?
Correlation results

• Compute

\[ \rho_i = \text{Corr}(\text{Gap}_i, \ln \text{GDP}_{i+4} - \ln \text{GDP}_i) \]

• Results for full sample

\[
\begin{array}{l}
\text{min } \rho_i = -0.68, \quad \text{median } \rho_i = -0.43, \quad \text{max } \rho_i = 0.30
\end{array}
\]

• Results for restricted sample (excluding crises quarters)

\[
\begin{array}{l}
\text{min } \rho_i = -0.69, \quad \text{median } \rho_i = -0.33, \quad \text{max } \rho_i = 0.23
\end{array}
\]
Summing up

• Correlation is negative for many countries
  → Gap would signal to reduce capital in good times
  → Gap would signal to increase capital in bad times

• From a procyclicality perspective
  → Using credit-to-GDP gap is undesirable
  → It would exacerbate procyclicality of regulation
Concluding remarks
The procyclicality problem

- Procyclicality in regulatory policy is a first-order problem
- Principles laid by the G-20 in 2009 have been overlooked
  - Supervisors have ignored macroprudential concerns
  - Requiring banks to hold more not less capital
- Basel III is very disappointing on the procyclicality front
What should be done?

First best

• Adopt idea of “automatic stabilizers”

• Proposal in Repullo, Saurina and Trucharte (2010)
  → Capital multiplier (scaling factor) based on GDP growth
  → Multiplier greater than 1 in expansions
  → Multiplier smaller than 1 in recessions
What should be done?

Second best

• Macroprudential authorities should be sufficiently powerful
  → Overcome microprudential supervisors

• Macroprudential authorities should use a lot of judgment
  → There is no simple (Taylor rule type) formula for the CCB
  → Much more complicated than monetary policy
  → Upgrade research capabilities
Is there any hope?

“Each appropriate Federal banking agency shall seek to make the capital standards countercyclical so that the amount of capital required to be maintained by an insured depository institution increases in times of economic expansion and decreases in times of economic contraction.”

Dodd-Frank Act, Section 616
References


