Countercyclical Regulation?

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Outline

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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 = aggregate private sector credit-to-GDP ratio

$\overline{c}_t$ = Hodrick-Prescott trend of x_t

$x_t = c_t - \overline{c}_t$ = credit-to-GDP gap

$b(x_t)$ = Countercyclical capital buffer

Countercyclical capital buffer (ii)

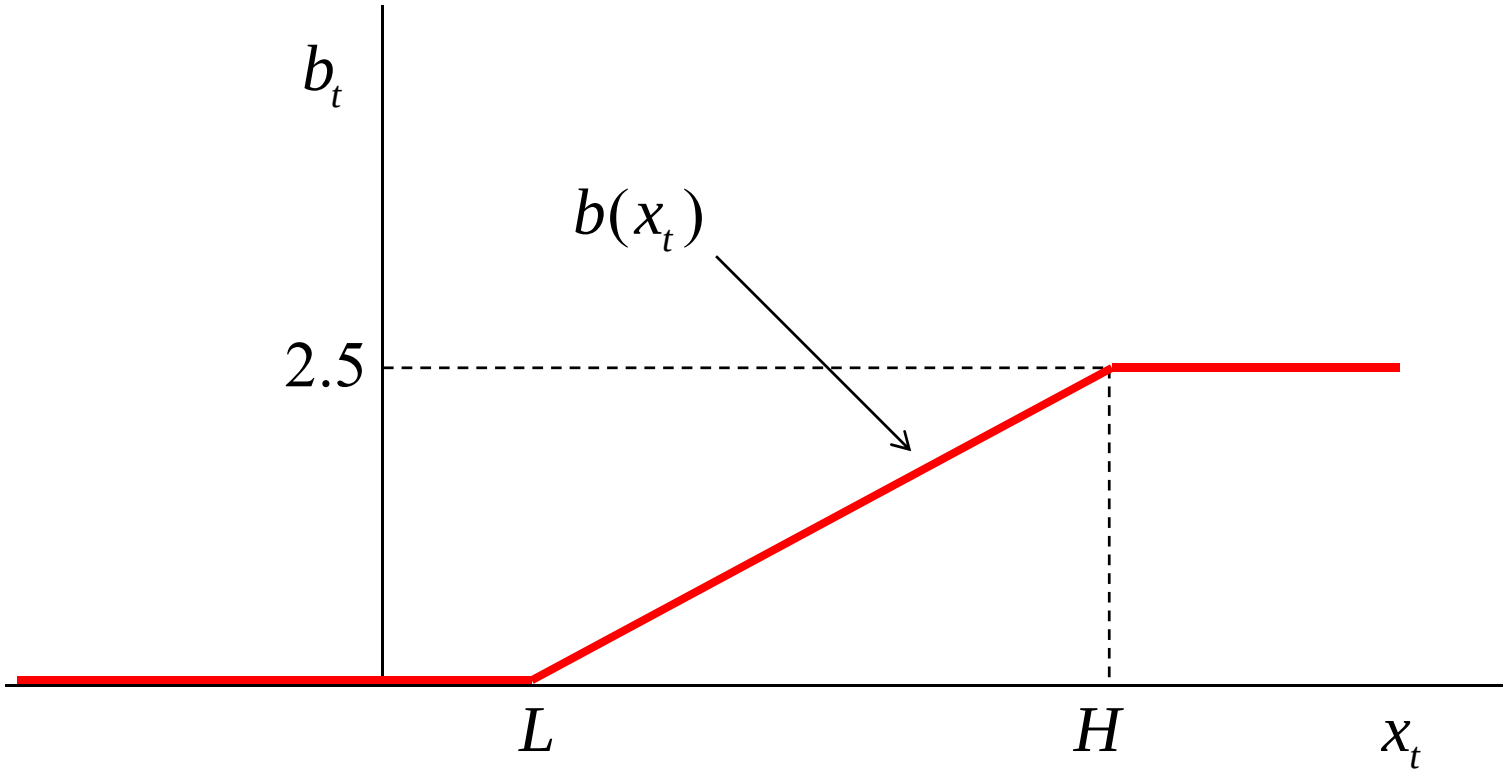
Additional capital requirement

$$b(x_t) = \begin{cases} 0 & \text{if } x_t < L \\ \dfrac{x_t - L}{H - L} 2.5 & \text{if } L \le x_t \le H \\ 2.5 & \text{if } H < x_t \end{cases}$$

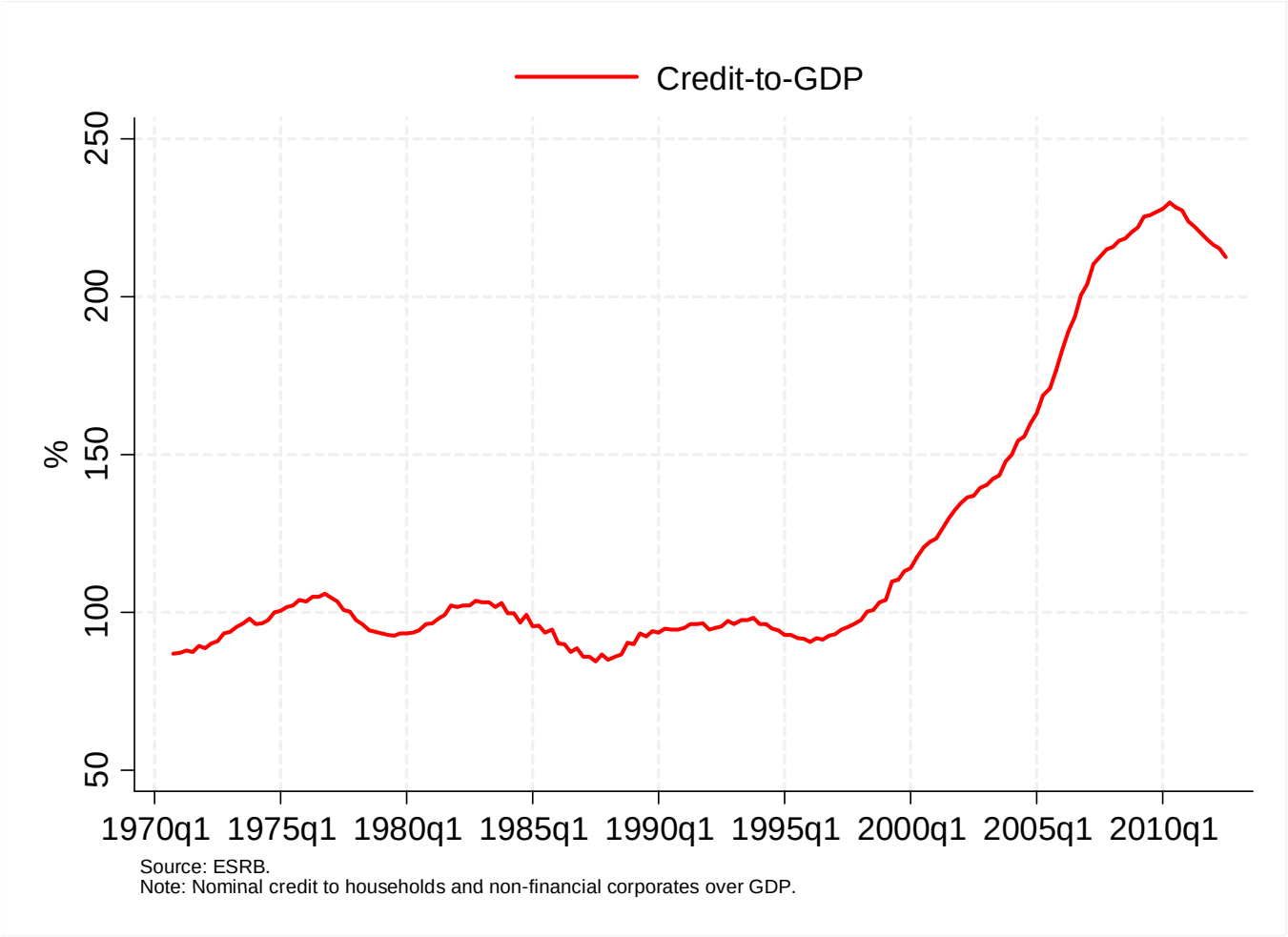
→ where L and H are fixed parameters

→ in the Guidance document $L = 2\%$ and $H = 10\%$

Countercyclical capital buffer (iii)

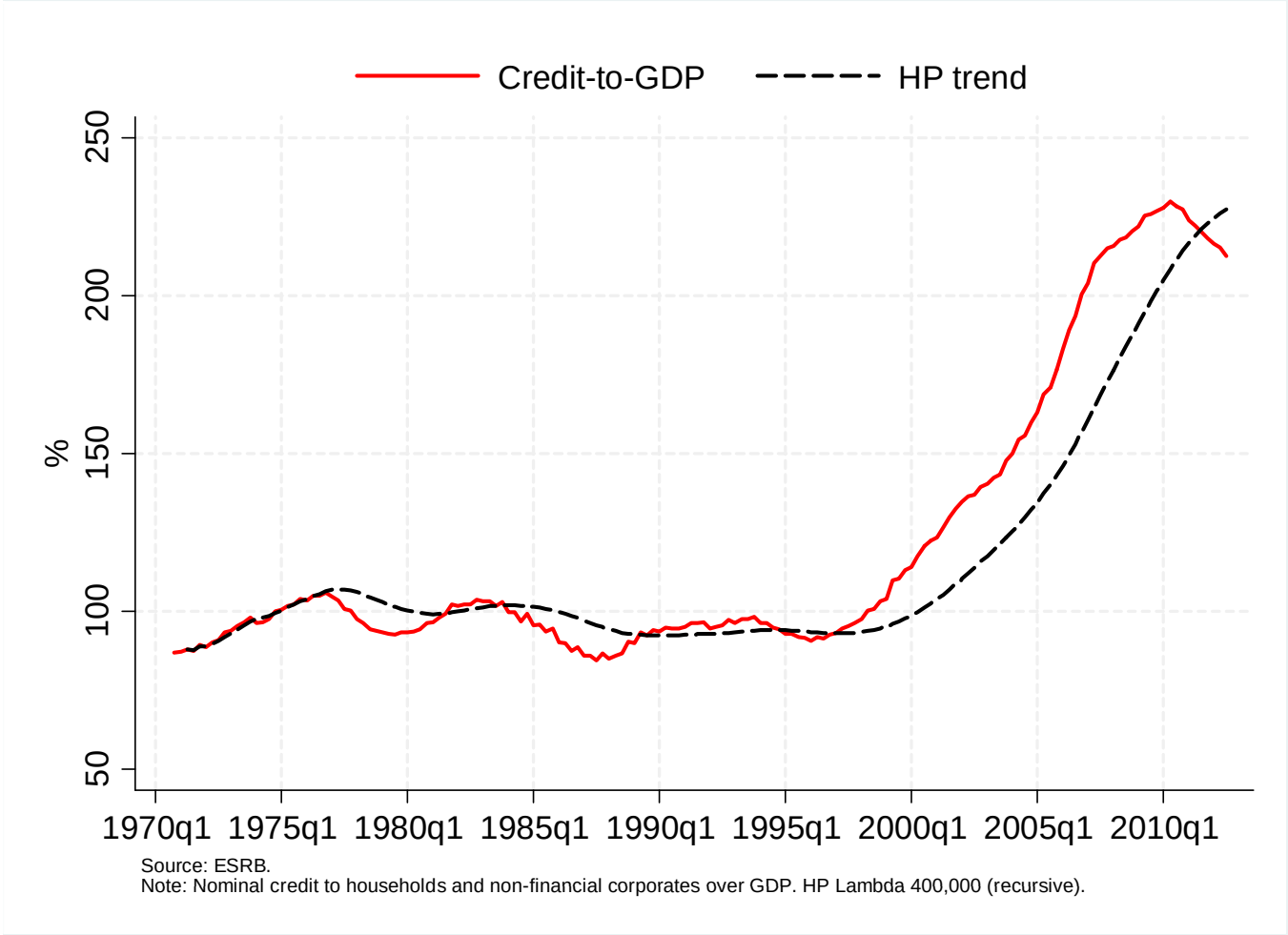


Credit-to-GDP ratio (Spain)



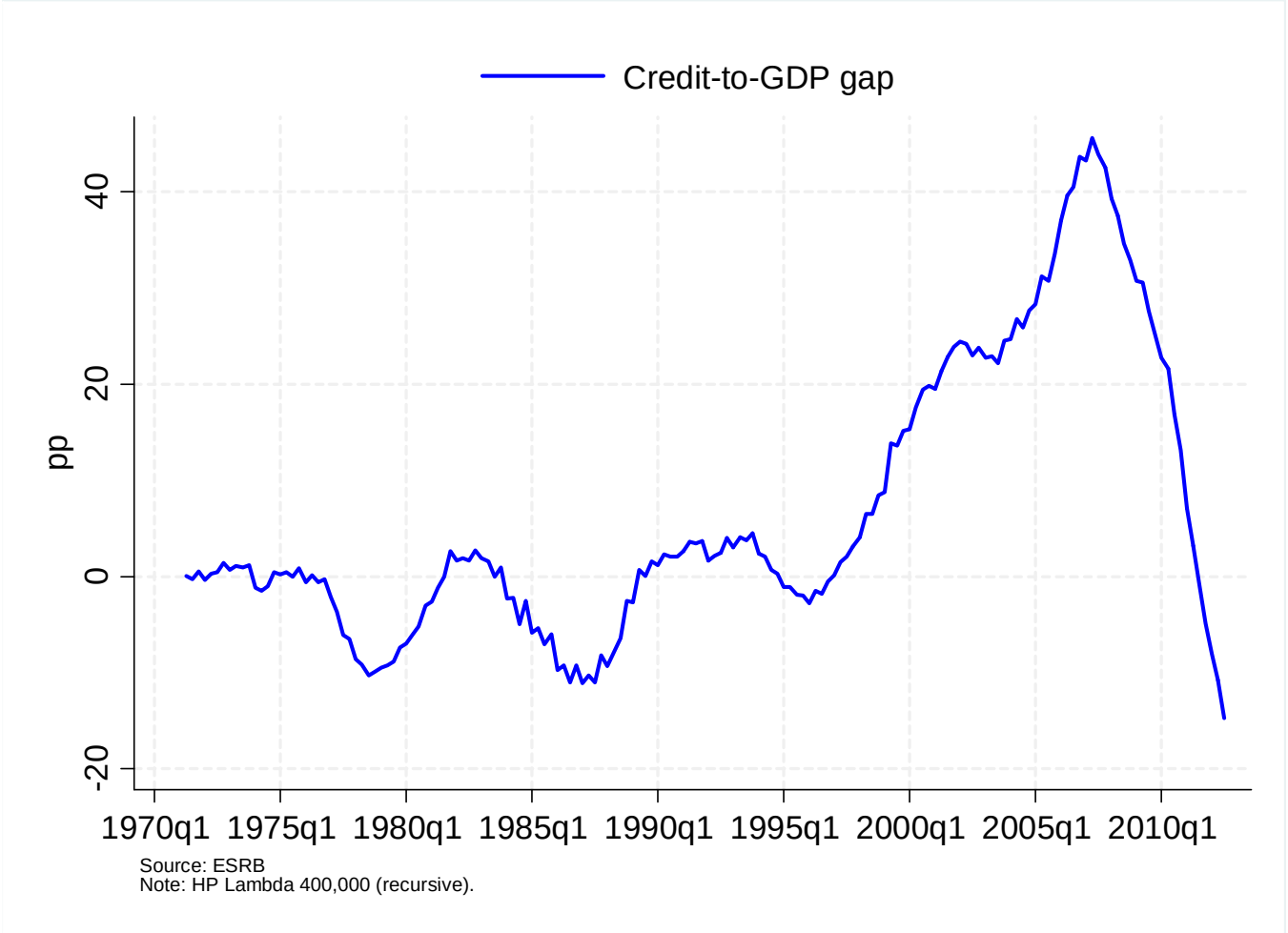
Source: ESRB.
Note: Nominal credit to households and non-financial corporates over GDP.

Credit-to-GDP ratio and its trend (Spain)

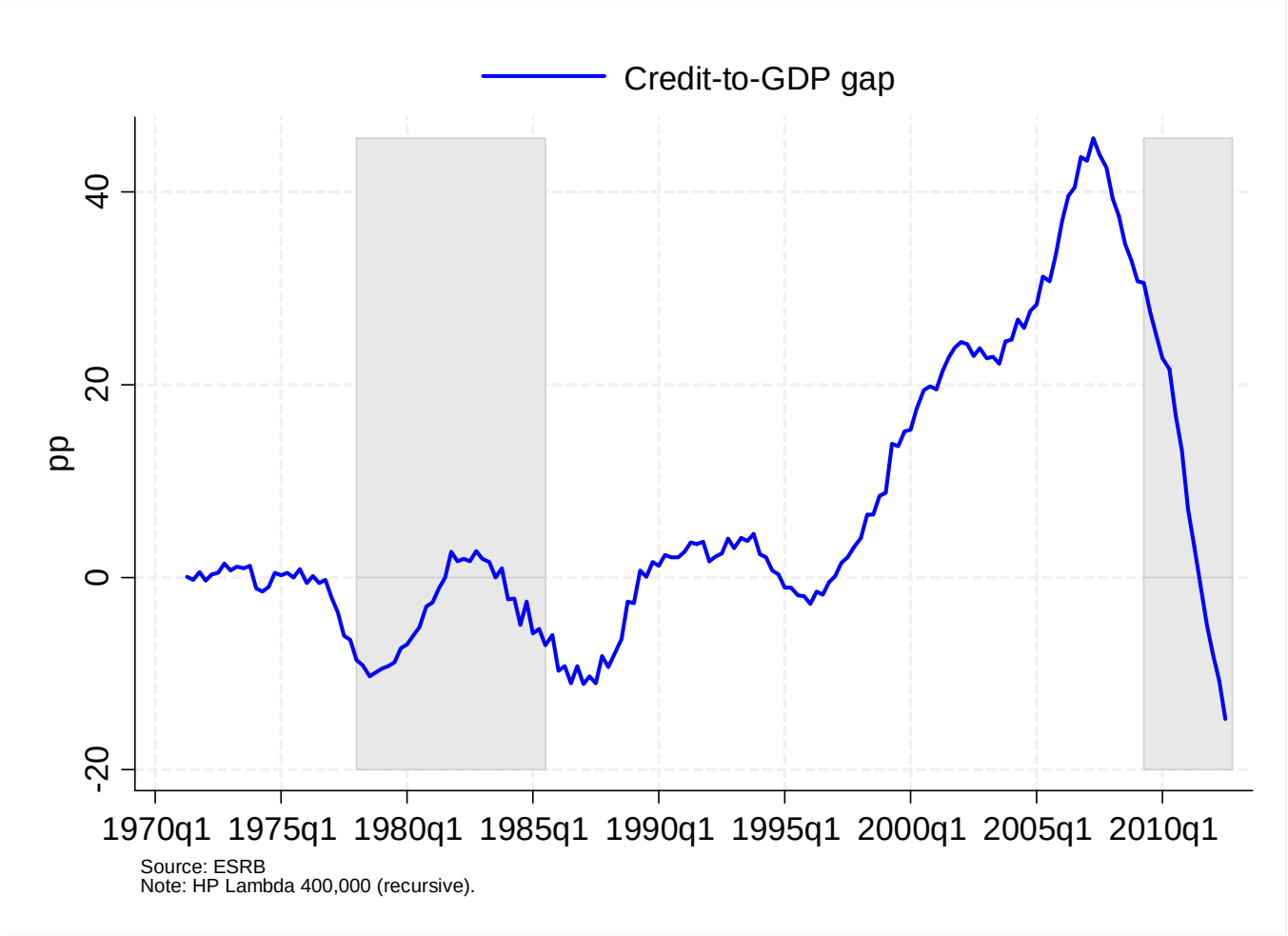


Source: ESRB.
Note: Nominal credit to households and non-financial corporates over GDP. HP Lambda 400,000 (recursive).

Credit-to-GDP gap (Spain)



Credit-to-GDP gap and crises (Spain)



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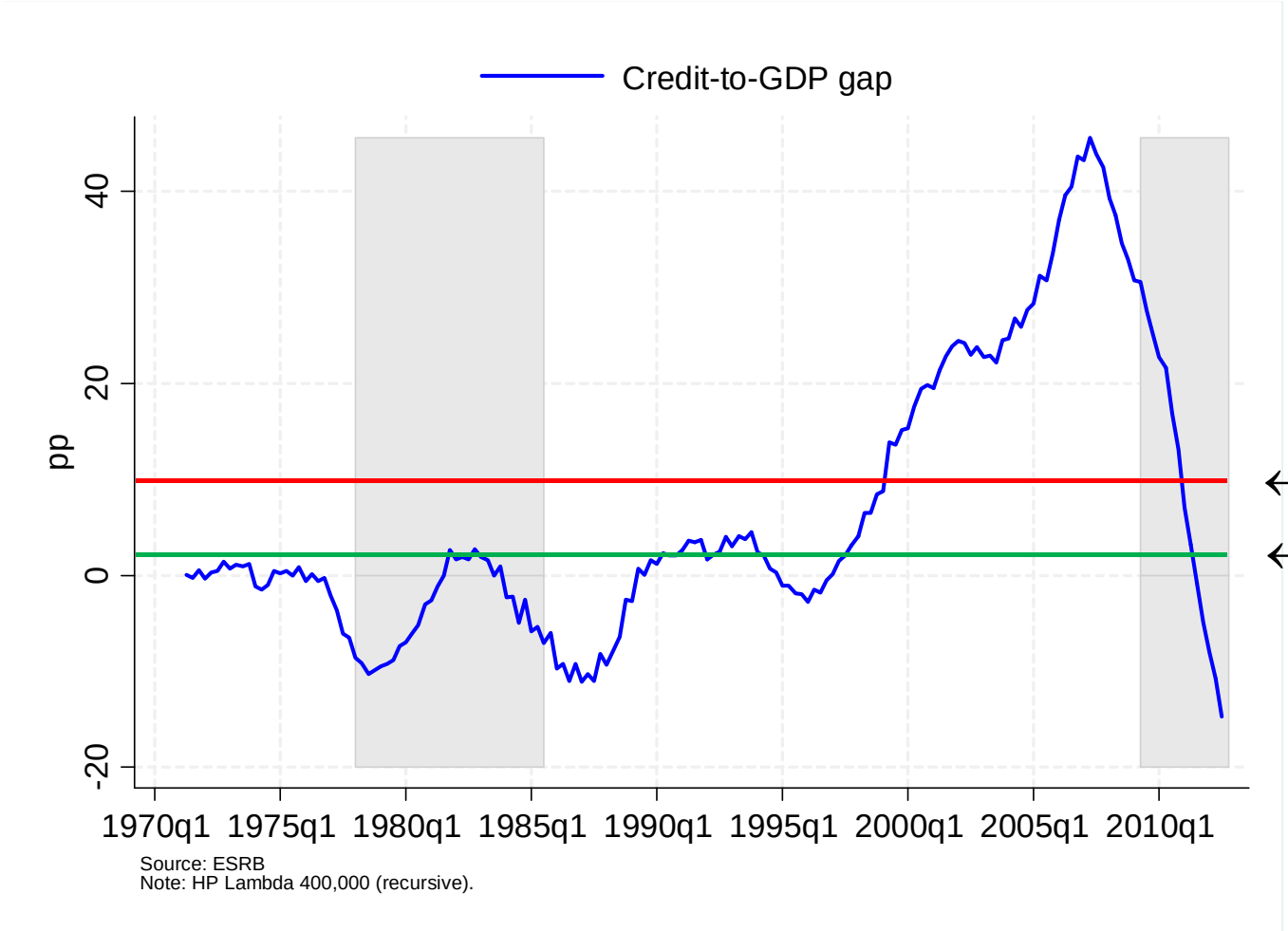

Part 4

Forecasting financial crises

Standard forecasting model

- Notation

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

$x_t =$ 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 β_i

$$\min \hat{\beta}_i = -0.14, \quad \text{median } \hat{\beta}_i = 0.15, \quad \max \hat{\beta}_i = 1.33$$

→ 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

$$\Pr(y_{t+4} = 1 \,|\, x_t, \underbrace{y_t = 0}_{\text{new}}) = G(x_t)$$

New individual country results (i)

- Still very large variation in estimated values of β_i

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

→ 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 β_i's are different across countries

- Results for both specifications (conditional and unconditional)

  → β_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

$$\rho_i = \text{Corr}(\text{Gap}_{it}, \ln \text{GDP}_{it+4} - \ln \text{GDP}_{it})$$

- Results for full sample

$$\min \rho_i = -0.68, \quad \text{median } \rho_i = -0.43, \quad \max \rho_i = 0.30$$

- Results for restricted sample (excluding crises quarters)

$$\min \rho_i = -0.69, \quad \text{median } \rho_i = -0.33, \quad \max \rho_i = 0.23$$

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 prociclicality 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

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