

# **The New Regulatory Architecture**

## **A Critical Assessment of Basel III**

Rafael Repullo

CEMFI

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# In the beginning was the G-20

“We must lay the foundation for reform to help to ensure that a global crisis, such as this one, does not happen again.”

“We pledge to strengthen our regulatory regimes, prudential oversight, and risk management, and ensure that **all financial markets, products and participants are regulated or subject to oversight**, as appropriate to their circumstances.”

*Washington Summit*

November 2008

# Introduction

- Major overhaul of financial regulation is under way
- Four “critical areas” noted in the G-20 Pittsburgh declaration
  - Building high quality capital and mitigating pro-cyclicality
  - Reforming compensation practices
  - Improving over-the-counter derivatives markets
  - Addressing systemically important financial institutions

# Focus of presentation

- Reform of bank regulation (Basel III)
  - Capital requirements
  - Liquidity risk requirements
  - Countercyclical capital buffers
  - Systemically important financial institutions

# **Part 1**

## **Capital requirements**

# Structure of capital requirements

$$\frac{\text{Capital}}{\text{Risk-weighted assets}} \geq \text{Minimum}$$

- Three elements
  - Numerator: What do we mean by capital?
  - Denominator: How do we compute the risk weights?
  - Minimum requirement: How large should the ratio be?

# The proposals of the Basel Committee (i)

- Numerator
  - More restrictive definition of common equity
- Denominator
  - Higher weights for trading assets and structured products
- Minimum
  - Higher requirement for common equity: from 2% to 4.5%
  - Higher requirement for Tier 1: from 4% to 6%

## The proposals of the Basel Committee (ii)

- Capital conservation buffer
  - Additional 2.5% of common equity (and Tier 1 capital)
  - Constraints on earnings distributions
- Non-risk-based leverage ratio

$$\frac{\text{Tier 1 capital}}{\text{Total assets + Off-balance sheet exposures}} \geq 3\%$$



# Comments on the proposals

- Stricter definition of capital → Probably good idea
- Higher capital for riskier products → Badly needed
- Higher common equity requirements → Long overdue
- Capital conservation buffer → Good idea
  - In the spirit of Prompt Corrective Action
- Leverage ratio → Probably good idea
  - Should not be binding constraint

## **Part 2**

# **Liquidity risk requirements**

# The mandate of the G-20

“Regulators should develop and implement procedures to ensure that financial firms implement policies to better manage liquidity risk, including by creating **strong liquidity buffers.**”

*Washington Summit*

November 2008

# The proposal of the Basel Committee

→ *International Framework for Liquidity Risk Measurement*

Basel Committee Consultative Document, December 2009

→ Two regulatory standards for liquidity risk

- Liquidity Coverage Ratio (LCR)

Liquid assets  $\geq$  Unstable funds

- Stable Funding Ratio (SFR)

Stable funds  $\geq$  Illiquid assets

# Comment 1: Insufficient justification

- Not clear what is the nature of the externality
  - Central banks can provide liquidity at zero cost
- No clear that quantitative requirements are best instruments
  - Even if there is an externality to be corrected
  - Disciplining role of short-term wholesale financing
  - Goodhart's critique: required liquidity is not usable
- Why not use Pigovian taxes?
  - Proposal of Perotti and Suarez (2010)

## **Comment 2: No relation to capital**

- Proposal focuses on “market liquidity”
  - Ability to sell assets to meet obligations when due
- Proposal ignores “funding liquidity”
  - Ability to borrow to meet obligations when due
- Funding liquidity depends on the solvency of borrower
  - Higher capital reduces funding risk

## Comment 3: Why two requirements? (i)

### Balance sheet

Liquid assets	Unstable funds
Illiquid assets	Stable funds

- By balance sheet identity we have

$$\text{LCR (Liquid} \geq \text{Unstable)} \Leftrightarrow \text{SFR (Illiquid} \leq \text{Stable)}$$

→ One of the two requirements appears to be redundant

## Comment 3: Why two requirements? (ii)

- More complex balance sheet

$$A_1 + A_2 + \dots + A_m = L_1 + L_2 + \dots + L_n$$

- Let  $0 \leq \lambda_i \leq 1$  denote the “liquidity” of asset  $i = 1, \dots, m$
- Let  $0 \leq \sigma_j \leq 1$  denote the “instability” of liability  $j = 1, \dots, n$
- Basel III requirements
  - LCR:  $A_1 \lambda_1 + \dots + A_m \lambda_m \geq L_1 \sigma_1 + \dots + L_n \sigma_n$
  - SFR:  $A_1 (1 - \lambda_1) + \dots + A_m (1 - \lambda_m) \leq L_1 (1 - \sigma_1) + \dots + L_n (1 - \sigma_n)$
- By balance sheet identity we have: LCR  $\Leftrightarrow$  SFR



## Comment 3: Why two requirements? (iii)

- What is the explanation for the two requirements?
  - Two measures of liquidity of assets:  $\lambda_i^{LCR} \neq \lambda_i^{SFR}$
  - Two measures of instability of liabilities:  $\sigma_j^{LCR} \neq \sigma_j^{SFR}$
- For example

$$\lambda^{LCR}(\text{ST retail loans}) = 0.00 \neq 0.15 = \lambda^{SFR}(\text{ST retail loans})$$

$$\sigma^{LCR}(\text{Retail deposits}) = 0.05 \neq 0.10 = \sigma^{SFR}(\text{Retail deposits})$$

## **Comment 3: Why two requirements? (iv)**

- There is no obvious rationale for the different weights
- Opens door to
  - Distortions in banks' asset and liability decisions
  - Regulatory arbitrage

## **Comment 4: Other distortions**

- Proposal will generate huge demand for government paper
  - Distortion in bond prices (and yield curves)
- Proposal may have level playing field effects
  - Depending on monetary policy implementation
  - ECB relies on having a large structural liquidity deficit

# What would I recommend?

- Abandon the proposal
- Deal with liquidity risk with additional capital charge
  - More justified than capital charge for operational risk
  - Capital as insurance against liquidity shocks

## **Part 3**

# **Countercyclical capital buffer**

# The mandate of the G-20

“In future, regulation must prevent excessive leverage and require **buffers of resources to be built up in good times.**”

*London Summit*

April 2009

# The proposal of the Basel Committee

→ *Countercyclical Capital Buffer Proposal*

Basel Committee Consultative Document, July 2010

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

# Proposal (i)

## Notation

$x_t$  = aggregate private sector credit-to-GDP ratio

$\bar{x}_t$  = Hodrick-Prescott trend of  $x_t$

$z_t = x_t - \bar{x}_t$  = credit-to-GDP gap



## Proposal (ii)

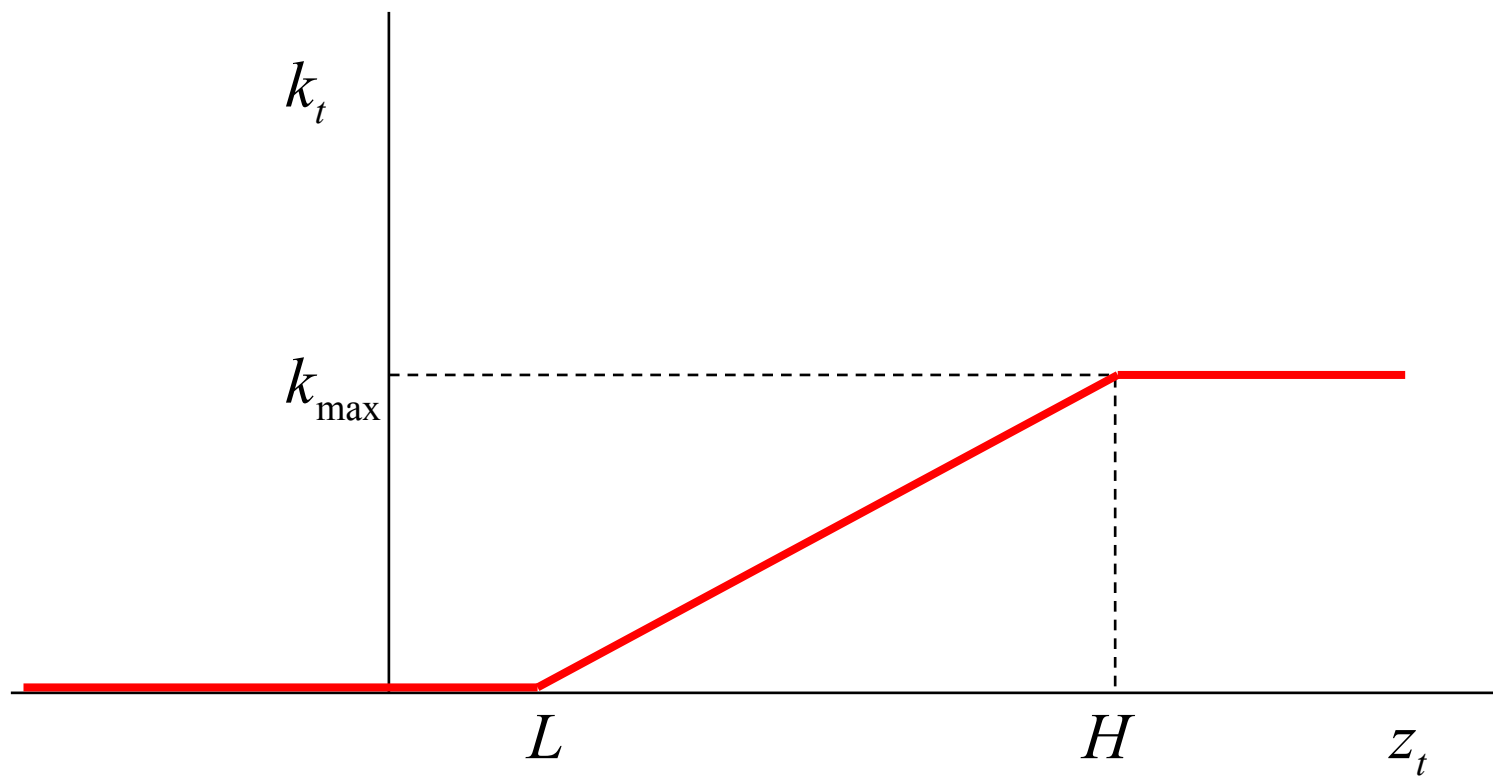
Countercyclical capital add-on

$$k_t = \begin{cases} 0 & \text{if } z_t < L \\ \frac{z_t - L}{H - L} k_{\max} & \text{if } L \leq z_t \leq H \\ k_{\max} & \text{if } H < z_t \end{cases}$$

→ where  $L$ ,  $H$ , and  $k_{\max}$  are fixed parameters

→ in the proposal  $L = 2\%$ ,  $H = 10\%$ , and  $k_{\max} = 2\%$

# Proposal (iii)



# Comment 1: Insufficient theory or evidence

- Insufficient theory or evidence to justify the proposal

“Previous **academic work** has shown that the credit-to-GDP gap can be a **powerful predictor** for banking crises” (p. 26)

- What is this “academic” work?
  - Two papers in the *BIS Quarterly Review*
  - One *ECB Working Paper*
- Not much to base such strong assessment!

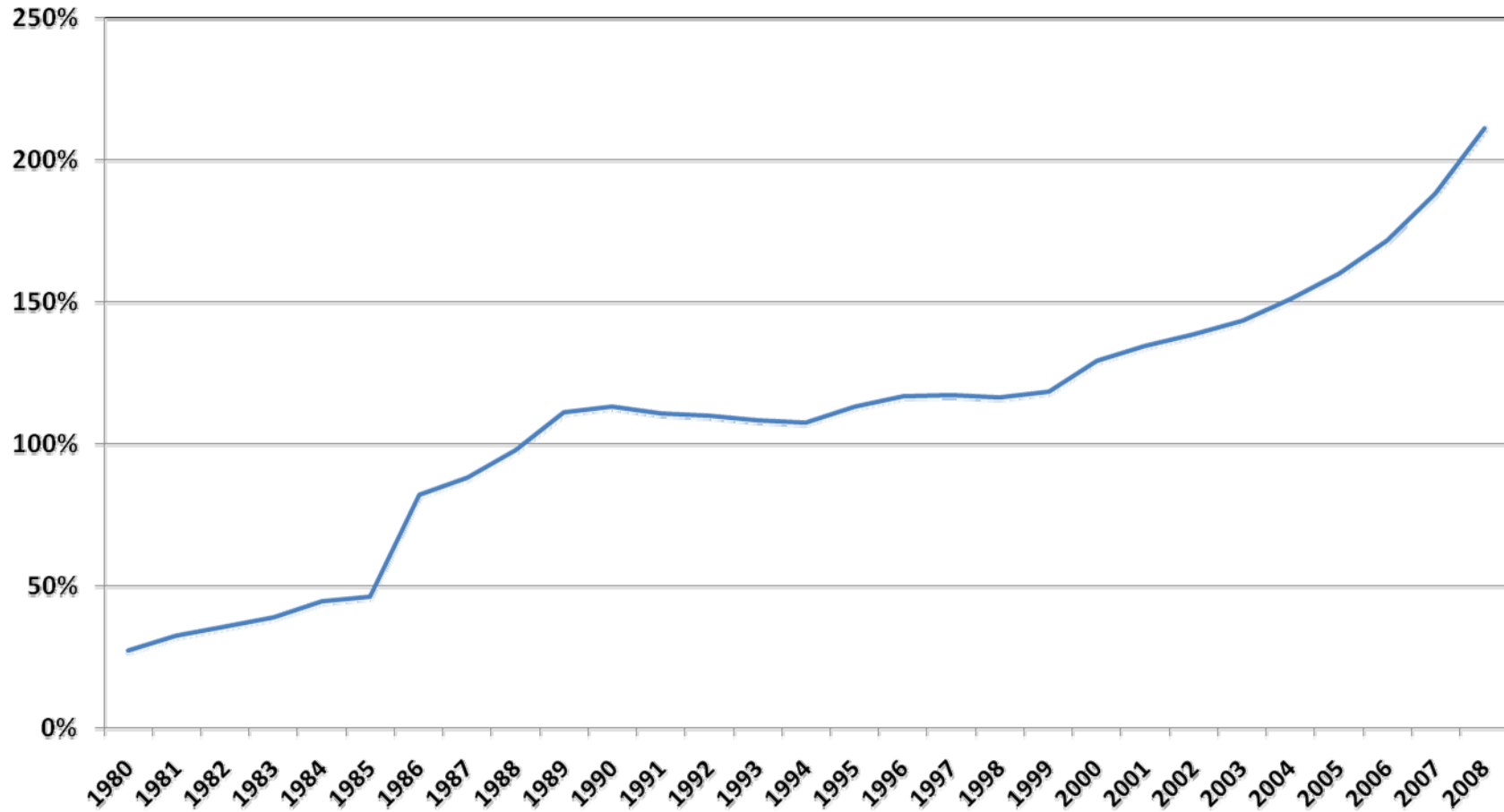
## Comment 2: Insufficient justification

- Predictive power does not necessarily justify regulation
  - Correlation does not imply causation
  - Even if this could be established
    - Need to argue that regulation would be effective
    - Without undesirable side-effects
- The “academic” homework has not been done!

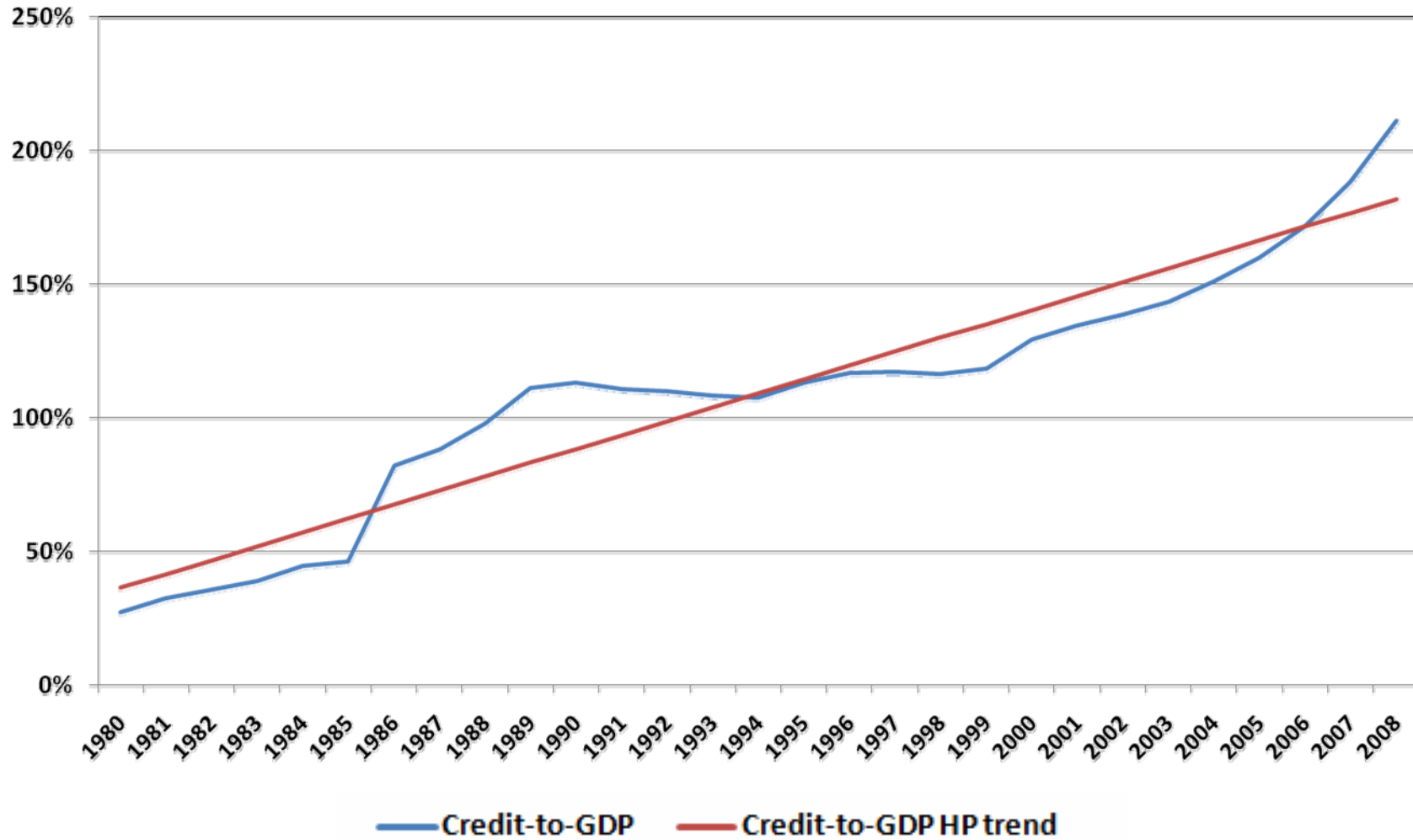
## Comment 3: Possible negative effects (i)

- Look at data on correlations
  - Between  $z$  (credit-to-GDP gap) and  $y$  (GDP growth)
- Data source
  - World Bank: <http://data.worldbank.org/>
  - Domestic credit to private sector (% of GDP)

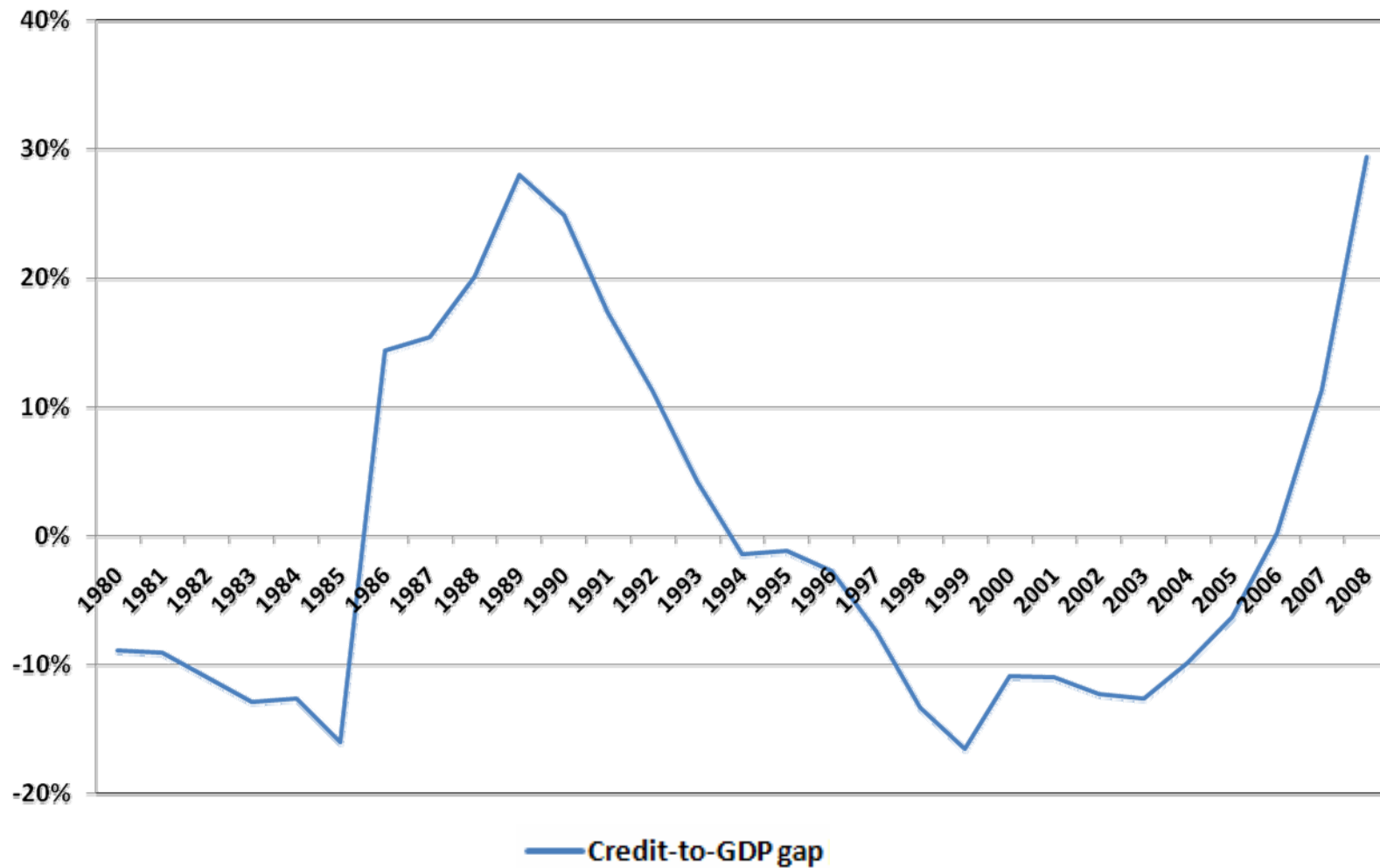
# Credit-to-GDP ratio (UK)



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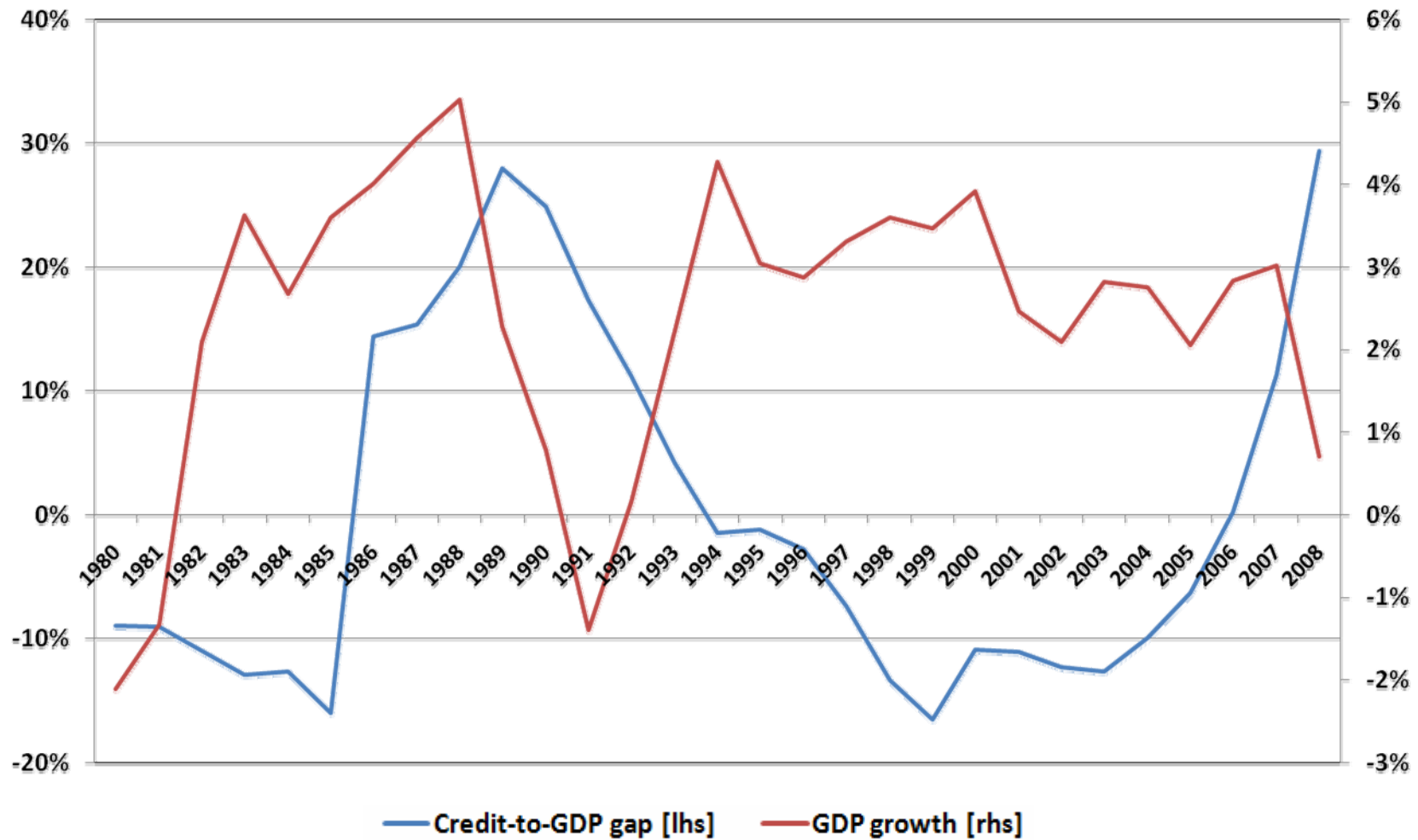


# Credit-to-GDP gap (UK)

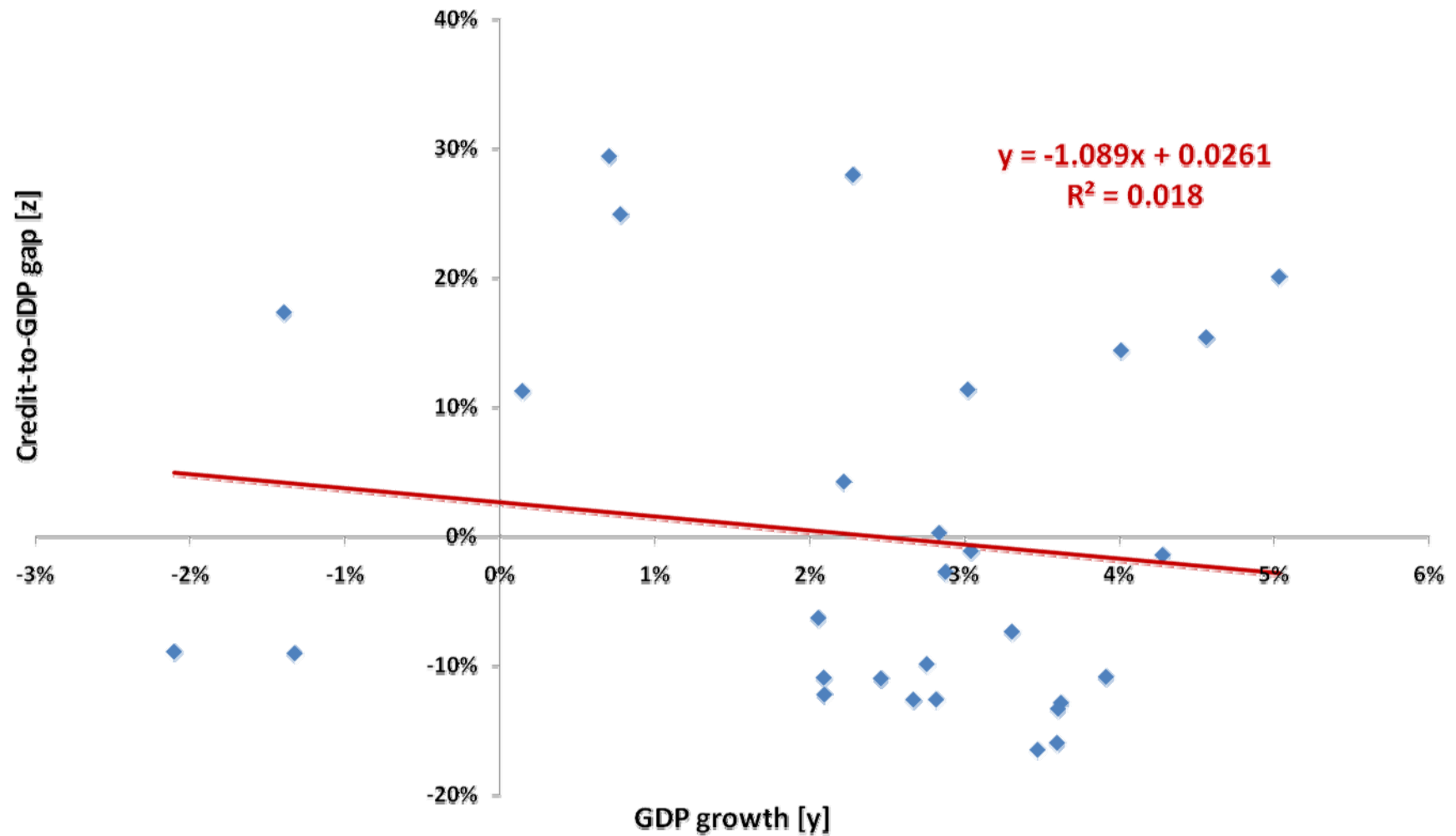




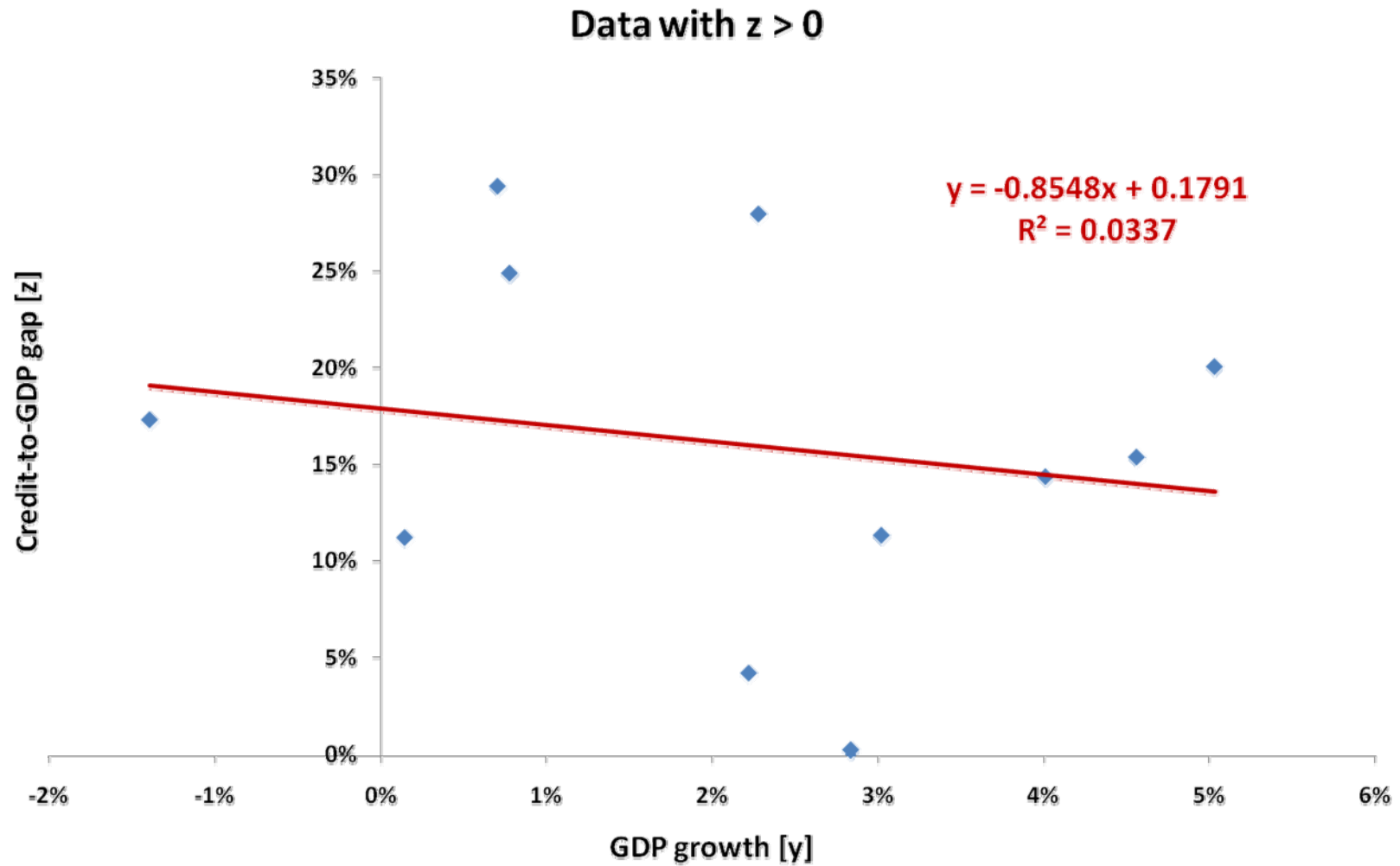
# Credit-to-GDP gap & GDP growth (UK)



# Credit-to-GDP gap & GDP growth (UK)



# Credit-to-GDP gap & GDP growth (UK)



# Credit-to-GDP gap & GDP growth

	Correlation	Correlation for $z > 0$
UK	-0.13	-0.18
USA	-0.03	-0.25
Canada	-0.18	-0.21
Germany	-0.25	0.46
Japan	-0.09	-0.25
Spain	-0.25	-0.37

## **Comment 3: Possible negative effects (ii)**

- Credit-to-GDP gap is negatively correlated with business cycle
  - Proposal fails Hippocratic dictum: “First, do no harm”
  - Gap would signal to reduce capital in good times
  - Gap would signal to increase capital in bad times

## Comment 4: Dealing with downturns (i)

- What happens in downturns?
  - Credit-to-GDP indicator continues to grow
  - Greater credit demand by firms and households
  - Slower (sometimes even negative) GDP growth
- Basel Committee is aware of this shortcoming
  - “Credit growth can be a lagging indicator of stress” (p. 9)
  - Proposes to use supervisory “judgment” to release buffer

## **Comment 4: Dealing with downturns (ii)**

- What is wrong with supervisory “judgment” to release buffer?
  - Undesirable mixture of Pillar 1 and Pillar 2
  - Markets might react very negatively to such decision
  - Supervisors would probably do too little too late

# Summing up

- Insufficient work to justify proposal
- Not clear that will do very much in good times
  - when capital is abundant
- Potential negative effects in bad times
  - additional reduction in credit supply



# What would I recommend?

- Abandon the proposal
- Deal with excessive credit growth (if identified) via
  - Pillar 2 capital surcharges
  - Other macroprudential tools (e.g. LTV ratios)
- Focus on the really important problem
  - Cyclicalities of the minimum capital requirements

## **Part 4**

# **Cyclicality of capital requirements**

# The mandate of the G-20

“We request our Finance Ministers to formulate additional recommendations, including in the following specific areas:

- Mitigating against pro-cyclicality in regulatory policy
- ...”

*Washington Summit*

November 2008

# The proposal of the Basel Committee

→ *Strengthening the Resilience of the Banking Sector*

Basel Committee Consultative Document, December 2009

- Issue: Risk-sensitivity of capital requirements
  - Possible amplification of business cycle fluctuations
- Response: Smooth inputs of Basel II formula
  - Downturn losses given default (LGDs)
  - Through-the-cycle probabilities of default (PDs)

## Comment 1: Significance of effects (i)

- Basel Committee should not downplay amplification effects

“It is not possible to achieve greater risk sensitivity without introducing **a certain degree of cyclicity** in minimum requirements over time” (BCBS, 2009, p. 66)

- Academic literature shows effects could be very significant
  - Gordy and Howells (JFI 2006)
  - Repullo and Suarez (CEMFI Working Paper 2009)

## **Comment 1: Significance of effects (ii)**

- Summary of results in Repullo and Suarez (2009)
  - Basel II leads banks to hold more capital above minimum
    - Precautionary capital buffers
  - Basel II is significantly more procyclical than Basel I
    - Risk of credit crunch when entering recession
  - Proposal: Cyclical adjustment in capital requirements

## **Comment 2: TTC approach (i)**

- What is wrong with through-the-cycle (TTC) approach?
  - No consensus on what TTC exactly means
    - Applied differently for different banks and jurisdictions
    - Opens door to excessive supervisory discretion
    - Risk of unlevel playing field

## Comment 2: TTC approach (ii)

- What is wrong with TTC approach?

→ Violate the “usage test” requirement of Basel II

“Internal ratings and default and loss estimates must play an essential role in the credit approval, risk management, internal capital allocations, and corporate governance functions of banks using the IRB approach.” (BCBS, 2006, par. 444)

→ TTC ratings not useful for pricing and risk management

→ Banks would need to have two risk measurement systems



## Comment 2: TTC approach (iii)

- What is wrong with TTC approach?
  - Complicate implementation of Basel II
    - Based on delegating to banks measurement of risk
  - How do we ensure truth-telling behavior?
    - Use measures of risk that are verifiable
    - TTC is not well-defined and hence not verifiable
    - Point-in-time (PIT) is well-defined and hence verifiable

## **Comment 2: TTC approach (iv)**

- Basel II and III rest on correct computation of risk weights
  - TTC guarantees that risk weights are wrong at all times
  - Risk of throwing out Basel baby with bath water

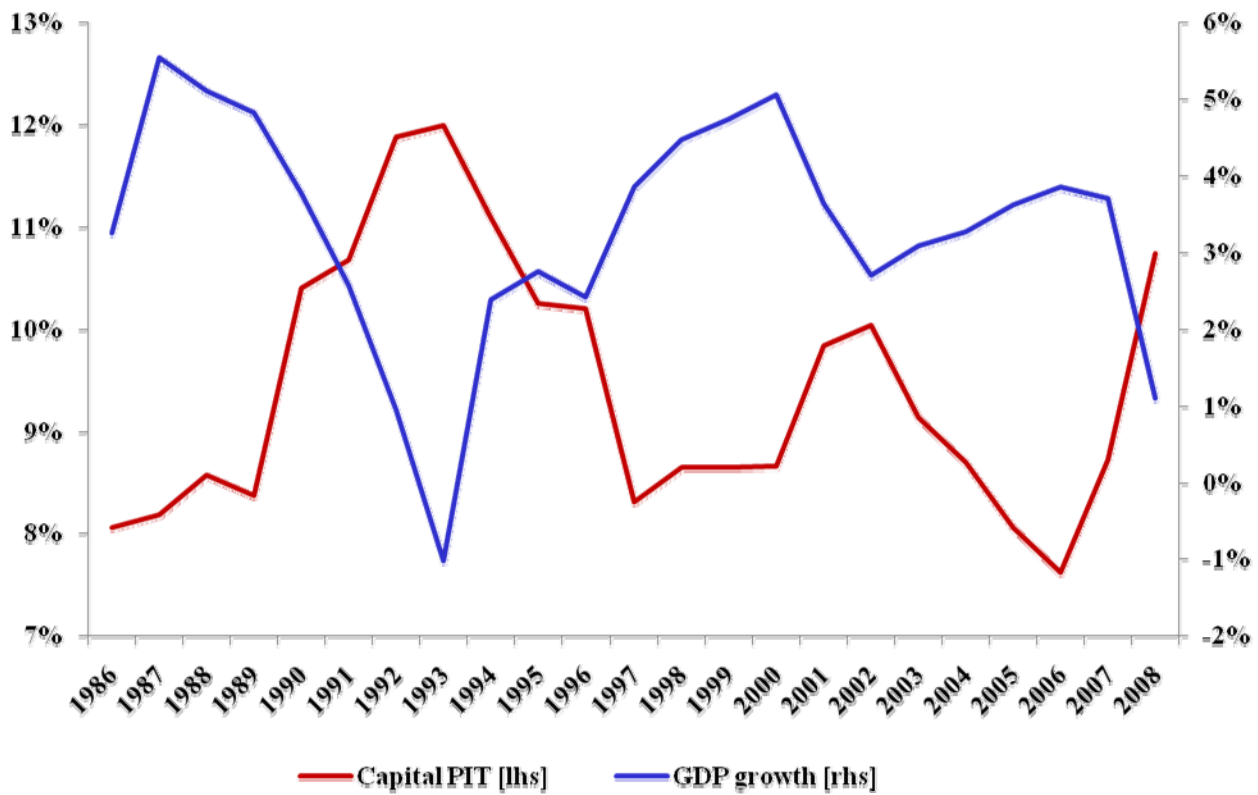
# What should be done?

- Smooth output not inputs of Basel II formula
  - Adopt idea of “automatic stabilizers”
- Proposal in Repullo, Saurina and Trucharte (EP 2010)
  - Compute capital requirements with PIT ratings
  - Use multiplier (scaling factor) based on GDP growth
    - Multiplier greater than 1 in expansions
    - Multiplier smaller than 1 in recessions

# How is it justified?

- Estimate model of probabilities of default (PDs) for Spain
  - Data on firms' loans for the period 1984-2008
  - Credit Register of Bank of Spain
- Compute corresponding PIT Basel II capital requirements
- Smooth cyclical behavior using Hodrick-Prescott (HP) filter
- Compare different smoothing procedures
  - Using root mean square deviations from HP trend
- Best procedure: smooth output with GDP growth multiplier
  - Very high correlation with GDP growth (-0.81)

# Capital requirements and GDP growth (Spain)



## How would it work? (i)

- Proposed business cycle multiplier

$$\mu(g_t) = 2N\left(\frac{\alpha(g_t - \bar{g})}{\sigma_g}\right)$$

$g_t$  = GDP growth in year  $t$

$\bar{g}$  = average GDP growth

$\sigma_g$  = standard deviation of GDP growth

$N$  = cdf of normal random variable

$\alpha$  = free parameter to be estimated

## How would it work? (ii)

- Proposed business cycle multiplier

$$\mu(g_t) = 2N\left(\frac{\alpha(g_t - \bar{g})}{\sigma_g}\right)$$

- Properties

→ Increasing in  $g_t$

→ If  $g_t = \bar{g}$  then  $\mu(\bar{g}) = 2N(0) = 1$

→ Bounded above and below:  $0 < \mu(g_t) < 2$

## How would it work? (iii)

- How do we choose parameter  $\alpha$ ?
  - Minimize root mean square deviation from HP trend
  - Benchmark result:  $\alpha = 0.081$

- Size of the multiplier: for  $g_t = \bar{g} + \sigma_g$  we have

$$\mu(g_t) = 2N\left(\frac{\alpha(g_t - \bar{g})}{\sigma_g}\right) = 2N(\alpha) = 2N(0.081) = 1.065$$

- 6.5% surcharge for each standard deviation of GDP growth



# Summing up

- Cyclical capital requirements
  - Big problem especially in downturns
  - TTC approach has major shortcomings
  - Basel Committee should go for macro multiplier approach
  - Treat the disease without killing the patient (M. Gordy)

## **Part 5**

# **Systemically Important Financial Institutions**

## The mandate of the G-20 (i)

“We request our Finance Ministers to formulate additional recommendations, including in the following specific areas:

- ...
- Defining the scope of systemically important financial institutions and determining their appropriate regulation or oversight.”

*Washington Summit*

November 2008

## The mandate of the G-20 (ii)

“Our prudential standards for systemically important institutions should be commensurate with the costs of their failure. The FSB should propose by the end of October 2010 possible measures including more intensive supervision and specific **additional capital, liquidity, and other prudential requirements.**”

*Pittsburgh Summit*

September 2009

# The interim proposal of the FSB

→ *Reducing the Moral Hazard Posed by SIFIs*

FSB Interim Report to G-20 Leaders, June 2010

→ Main ingredients:

- Effective resolution regimes
- Prudential requirements (capital or liquidity surcharges)
- Structural constraints (separate incorporation)
- Effective supervisory oversight

# Comments on the proposal

- Nature of “moral hazard risks” is not described
  - Makes it difficult to assess the proposal
- Proposal has some good ideas that still have to be developed
  - Devil in in the details!
- Regulators should stay away from very complex rules
  - Should not underestimate potential for regulatory arbitrage
  - Should not overestimate supervisory capabilities

# **Concluding Remarks**

# Assessment of Basel III

- Capital requirements: reasonable proposals
- Liquidity risk requirements: many problems
  - Better to introduce capital charge for liquidity risk
- Countercyclical capital buffer: very misguided
  - Should be replaced by macro multiplier approach
- SIFIs: reasonable ideas
  - Proposal has not yet been spelled out



# Assessment of Basel Committee

- Basel Committee does reasonable job “inside the box”
  - Tighten a screw here and putting a nail there (M. Hellwig)
- Basel Committee is pretty hopeless “outside of the box”
  - Liquidity risk requirements
  - Countercyclical capital buffer
- Basel Committee should not conduct its work in silos
  - Different risks are not independent
- Basel Committee should analyze regulatory trade-offs
  - Risk of inefficient (or even counterproductive) regulation

# Final thought

- Regulatory community should upgrade research capabilities
  - They have been effectively downgraded
- Regulatory community should seriously engage academics
  - There has been very little consultation
- Badly designed regulation may be very costly
  - Investment in research could have very high return