The financial cycle and macroeconomics: What have we learnt?

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Financial Cycles and the Real Economy: Lessons for CESEE

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Introduction

- Object of analysis:
  - The financial cycle (FC), relationship with systemic financial crises ("financial distress" (FD)) and the business cycle (BC)
  - Analytical and policy implications
- FC = Self-reinforcing interaction between risk perceptions/tolerance and financing constraints
  - can lead to widespread FD and macroeconomic dislocations
  - "procyclicality" of the financial system
- Basic thesis
  - FC should be at the core of our understanding of the macroeconomy
  - Need to rethink approach to modelling
  - Need to adjust policy accordingly
- Underlying themes
  - Think medium term; Think monetary; Think global
- Structure
  - I   - What is the FC? How is it related to financial crises and the BC?
  - II - What would it take to model it better?
 - III - What are the policy implications?

I. The FC: 7 key properties

- **P1:** Most parsimonious description: credit and property prices
  - Equity prices can be a distraction (Graph 1)

- **P2:** The FC has a lower frequency (longer duration) than the <u>traditional</u> BC
  - (medium term!) 16-20 years approximately since 1980s (Graph 2)
    - Traditional business cycle: up to 8 years

- **P3:** Peaks in the FC tend to coincide with FD (Graph 2)
  - Post-1985 all peaks do in sample of advanced economies examined
  - Few crises do not occur at peaks (all "imported": cross-border exposures)

- **P4**: Risks of FD can be identified in real time with good lead (2-4 years)
  - (Private-sector) credit-to-GDP and asset prices (especially property prices) jointly exceeding certain thresholds (Graph 3)
    - proxy for build-up of financial imbalances (FIs)
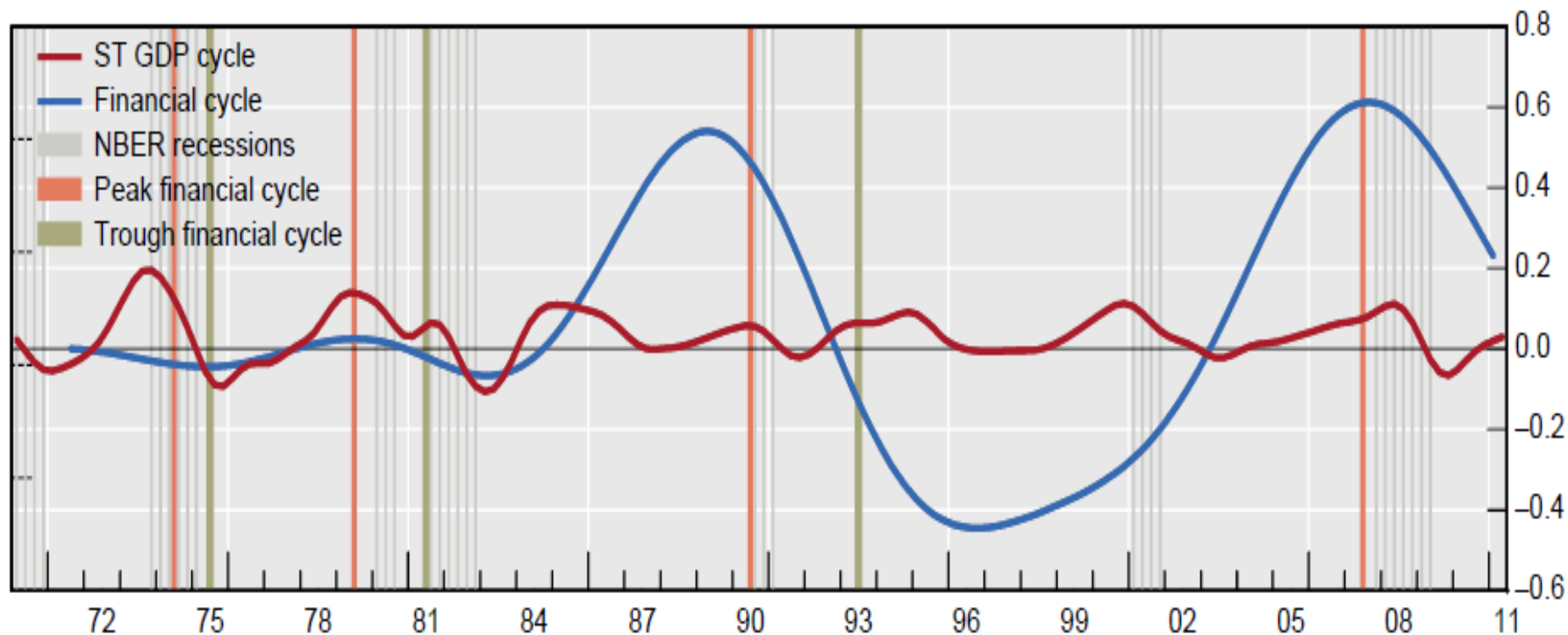 - Cross-border credit often outpaces domestic credit (Graph 4)

Graph 1: Unfinished recessions: US example

Source: Drehmann et al (2012)

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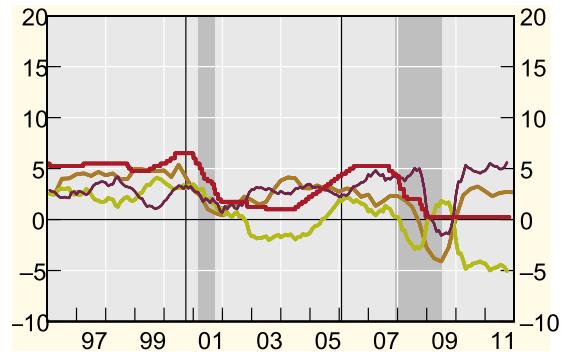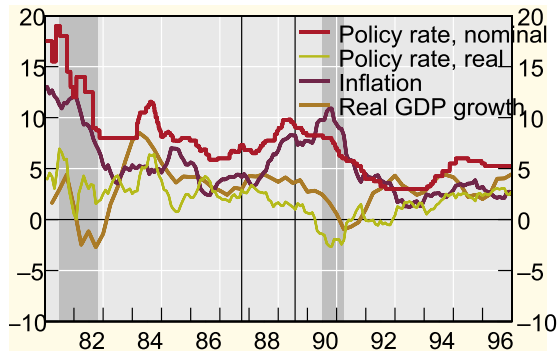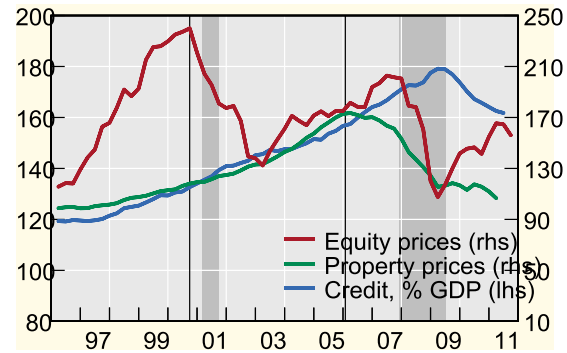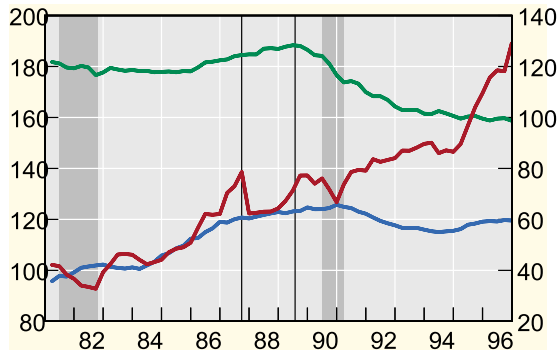
Graph 2: The financial cycle is longer than the business cycle
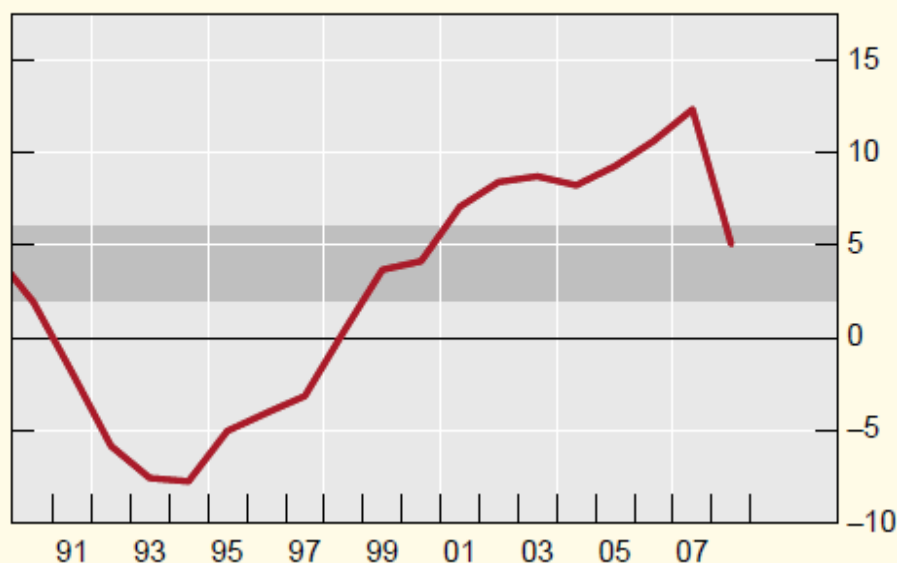## the United States example

Note: Pink and green bars indicate peaks and troughs of the combined cycle using the turning-point (TP) method. The frequency-based cycle (blue line) is the average of the medium-term cycle in credit, the credit to GDP ratio and house prices (frequency-based filters). The short-term GDP cycle (red line) is the cycle identified by the short-term frequency filter. NOTE: the amplitude of the blue and red lines are not directly comparable. Source: Drehmann et al (2012).
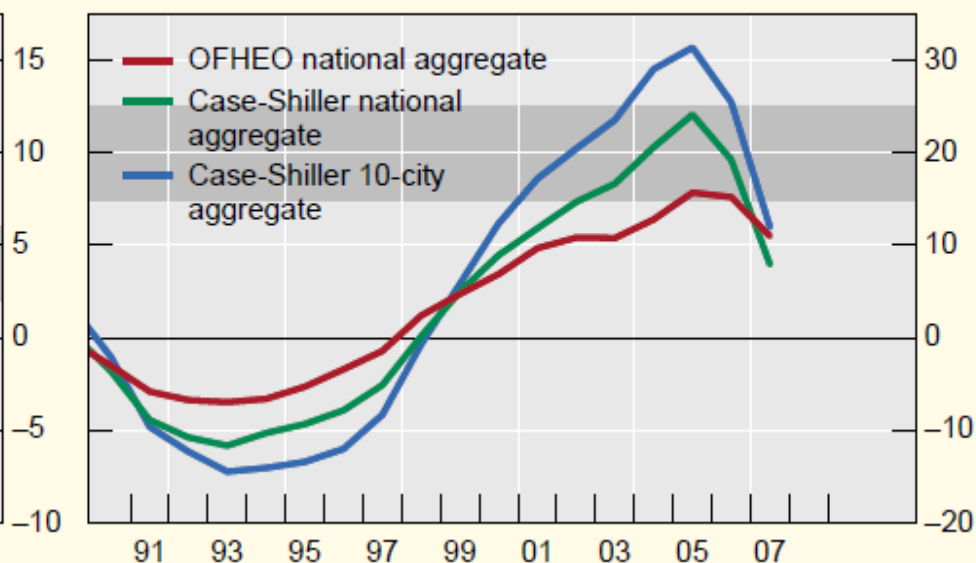
Graph 3: Financial imbalances can be identified in real time
The US example

Credit-to-GDP gap (percentage points) — Real property price gap (%)[1]

Legend: OFHEO national aggregate; Case-Shiller national aggregate; Case-Shiller 10-city aggregate

The shaded areas refer to the threshold values for the indicators: 2–6 percentage points for credit-to-GDP gap; 15–25% for real property price gap. The estimates for 2008 are based on partial data (up to the third quarter).

[1] Weighted average of residential and commercial property prices with weights corresponding to estimates of their share in overall property wealth. The legend refers to the residential property price component.
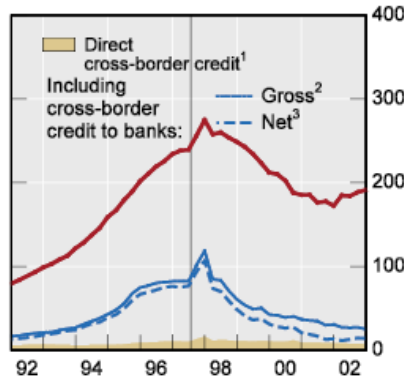
Source: Borio and Drehmann (2009).

Graph 4
Credit booms and external credit: selected countries
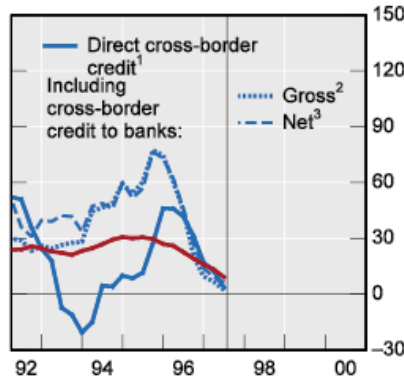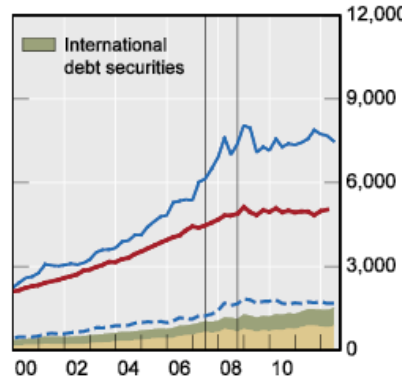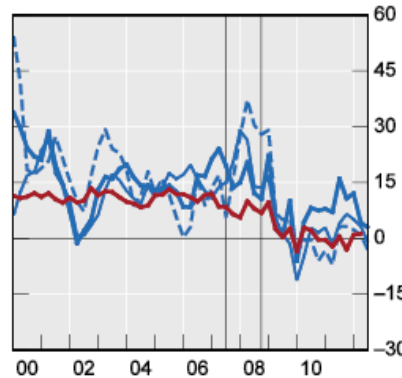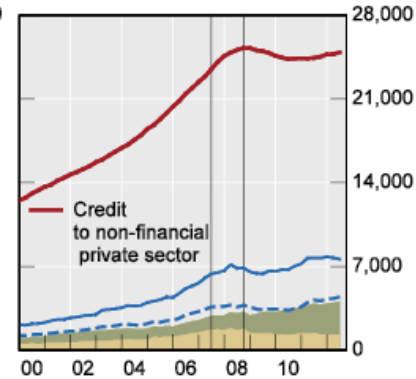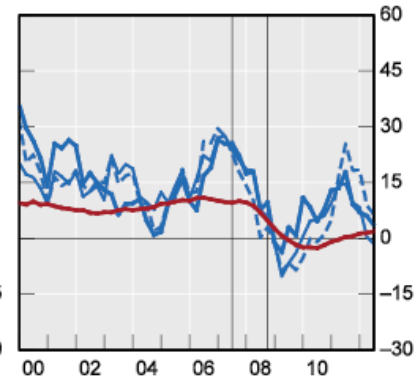
The vertical lines indicate crisis episodes end-July 1997 for Thailand and end-Q2 2007 and end-Q3 2008 for the United States and the United Kingdom. For details on the construction of the various credit components, see Borio et al (2011).
[1] Estimate of credit to the private non-financial sector granted by banks from offices located outside the country. [2] Estimate of credit as in footnote (1) plus cross-border borrowing by banks located in the country. [3] Estimate as in footnote (2) minus credit to non-residents granted by banks located in the country.
Source: Borio et al (2011).

I. The FC: 7 key properties (ctd)

- **P5:** FC helps to measure potential (sustainable) output much better in real time
  - Current methods, partly based on inflation, can be very misleading (Graph 5a,b)

- **P6**: Amplitude and length of the FC are regime-dependent: supported by
  - Financial liberalisation
    - Weakens financing constraints
  - MP frameworks focused on (near-term) inflation
    - Provide less resistance to build-up
  - Positive supply side developments (eg, globalisation of real economy)
    - ↑ financial boom; ↓ inflation

- **P7:** Busts of FCs are associated with balance-sheet recessions
  - Preceding boom is much longer
  - Debt and capital stock overhangs are much larger
  - Damage to financial sector is much greater
  - Policy room for manoeuvre is much more limited: buffers depleted
  - Result in permanent output losses
  - Usher in slow and long recoveries
    - Japan in the early 1990s is closest equivalent
  - Why?
    - Legacy of previous boom and subsequent financial strains

Graph 5
US output gaps: ex-post and real-time estimates
In per cent of potential output

IMF

OECD

HP

Finance neutral

Real-time
Ex-post

Linear estimates; the non-linear ones for the finance-neutral, which should better capture the forces at work, show show an output gap that is considerably larger in the boom and smaller in the bust.
Source: Borio et al (2013).

II – What is needed to model the financial cycle?

- Features
  - The boom does not just precede but <u>causes</u> the bust
    - endogenous financial and business cycles
  - Meaningful treatment of capital stock and debt overhangs
    - inclusion of stocks and disequilibria in stocks
  - Potential output : distinguish "non-inflationary" from "sustainable" output (Graph 5 above)
    - Concept and measurement
- How?
  - Endogenous time-varying risk perceptions/tolerance and defaults
  - Expectations are not fully "rational"
  - A true monetary economy!
    - Financial system does not just allocate "savings" but <u>generates</u> purchasing power
      - feeding back into output and expenditures
    - Inside money creation is essential
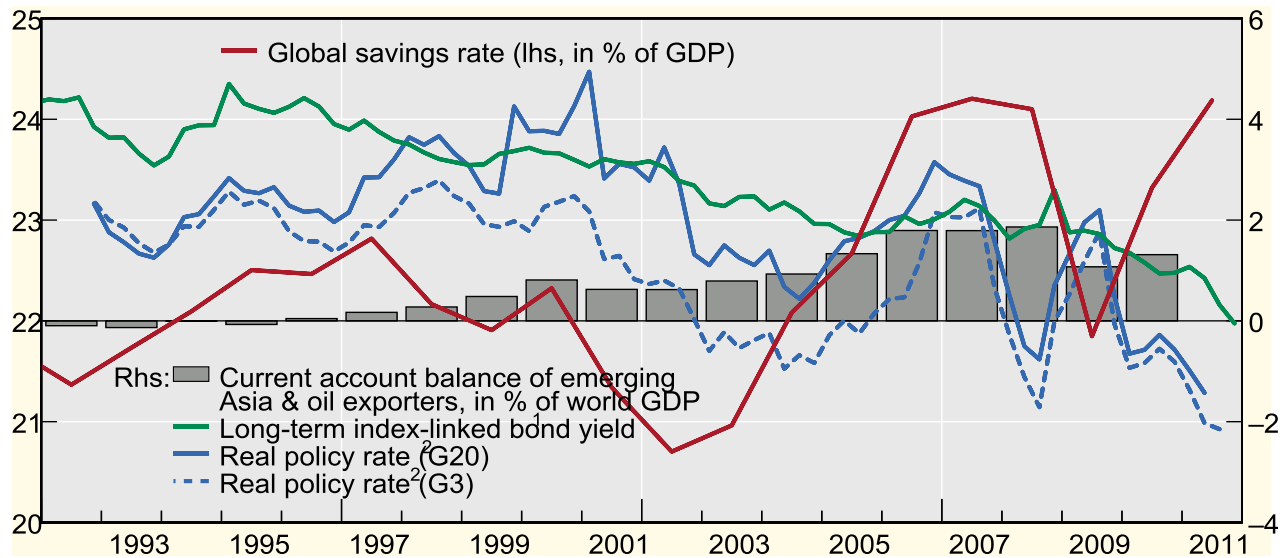   - Current models are real economies disguised as monetary ones

II – Global C/A imbalances and the crisis: an example

- Global C/A imbalances did not play a significant role in the crisis
- The "excess saving" view
  - Surplus countries "financed" the US credit boom
  - "Excess saving" reduced global (real) interest rates
- Problem: conflates "financing" and "saving"
    - Financing: (gross) cash flow concept
    - Saving: "hole" in aggregate demand ($\equiv$ investment)
  - Expenditures need financing, not saving
    - Credit important
    - Little relationship between credit and saving
- Gross, not net, capital flows matter
  - US credit boom was mostly financed domestically (Graph 4)
  - Foreign part mostly by European banks, including UK (balanced or deficit regions)
- Saving-investment balances affect natural, not market, interest rates
  - Monetary and financing conditions determine market rates
    - expectations need not drive them to unobservable natural rate!
    - natural rate = equilibrium concept: can it cause a crisis?
  - Little relationship: long-term rates and global saving or C/A balances (Graph 6)
- Questionable application of "real" analysis to "monetary" economies
  - No distinction between saving and financing

Graph 6: Global C/A imbalances, saving and interest rates

Legend within chart:
- Global savings rate (lhs, in % of GDP)
- Rhs: Current account balance of emerging Asia & oil exporters, in % of world GDP
- Long-term index-linked bond yield[1]
- Real policy rate[2] (G20)
- Real policy rate[2] (G3)

[1] Simple average Australia, France, the United Kingdom and the United States; prior to 1998, Australia and the United Kingdom.   [2] Weighted averages based on 2005 GDP and PP exchange rates.

Sources: Borio and Disyatat (2011)

III. Policies for the FC: general

- Dealing with the FC requires policies that
  - Fully recognise its existence: put in on the radar screen!
  - Are more symmetric across boom and bust phases
    - Lean against the booms
    - Ease less during the financial bust
      - Address the debt-asset quality problems head-on
    - Medium-term focus is essential

- We are not quite there
  - True of Prudential (PP), Monetary (MP) and Fiscal (FP) policies

- Will discuss policies to address the bust in more detail
 - Less well understood and more controversial

III – Prevention: addressing the boom

- PP : put in place macroprudential (MaP) frameworks
  - Strong systemic orientation that embeds the FC
  - Two goals
    - Make financial system (less ambitious)
    - Constrain the financial boom (more ambitious)
- MP: implement the "lean option"
  - Tighten MP even if near-term inflation is under control
    - Lengthen horizon and pay more attention to balance of risks
    - Key concept: <u>sustainable</u> price stability
- FP: be more prudent
  - FIs hugely flatter the fiscal accounts! (eg, ES, IR)
    - Government debt-to-GDP ratios were falling during boom!
    - Overestimation of potential output and growth (Graph 7)
    - Revenue-rich nature of financial booms (compositional effects)
    - Large contingent liabilities needed to address the bust
- Medium-term focus is key
  - Avoid "unfinished recessions"
    - Contain short-term business fluctuations at expense of larger recessions further down the road (Graph 1)
      - Equity price crashes can be are misleading (1987; 2001)
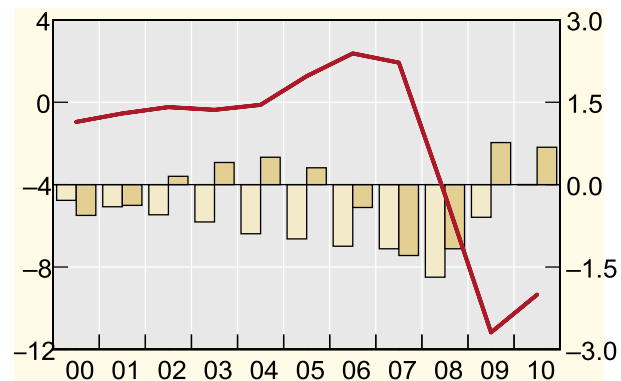
Graph 7: Cyclically-adjusted budget balances: one-sided estimates
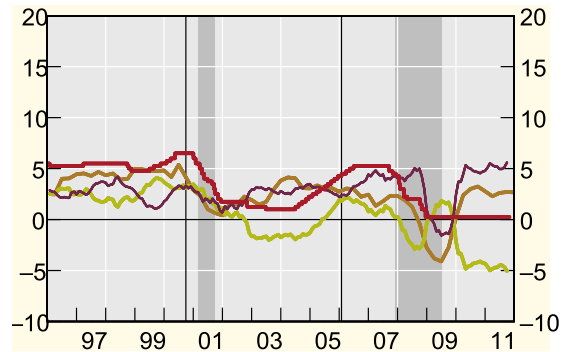
United States

Spain

Cyclical adjustment[1] (rhs):
Financial cycle approach
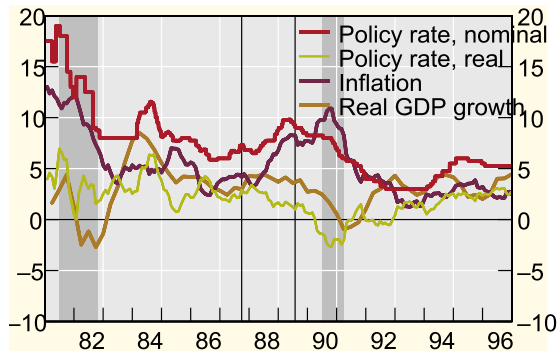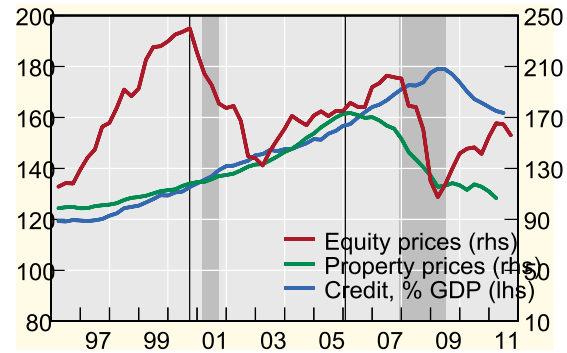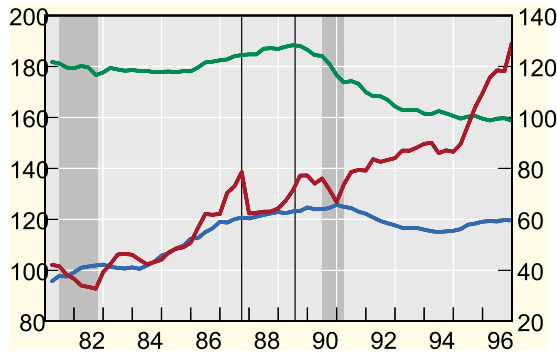HP filter

Unadjusted budget balance[2] (lhs)
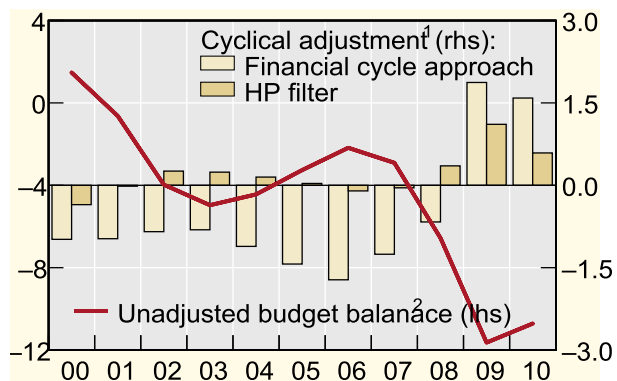
Source: Borio et al (2013).

Graph 1: Unfinished recessions: US example

Source: Drehmann et al (2012)

III. Cure: addressing the bust

- What if unable to build up buffers and constrain the boom sufficiently?
    - Need to address its legacy: a balance sheet recession
        - capital stock and debt overhangs; possibly a banking crisis
- Key issue
    - Prevent a major <u>stock</u> problem from becoming a major and persistent <u>flow</u> problem (weak expenditures and output)
- Constraint 1: Room for manoeuvre is very limited
    - Buffers depleted
- Constraint 2: Effectiveness of tools is limited
    - Not just because of tighter credit-*supply* constraints
    - But even more important credit-*demand* constraints
        - No-one wishes to borrow: agents give priority to debt reduction
            - affects MP and FP
        - Excessive capital weighs down on investment
    - Emerging evidence consistent wit this (see below)
        - Need to distinguish recessions with and without financial crises
            - MP and FP are less effective
            - Greater debt reduction in recession strengthens the subsequent recovery

III – Cure: crisis management and resolution

- Distinguish
  - Crisis management: prevent implosion of system
  - Crisis resolution: establish basis for self-sustained recovery
    - Should move swiftly from the first to the second

- Crisis management
  - Priority is to shore up confidence
    - Aggressive MP is key (interest rates, liquidity, etc)
    - Where necessary, provide (short-term) public guarantees

- Crisis resolution
  - Priority is balance-sheet repair
    - Address debt overhang/asset quality nexus
  - Recognise the limitations of traditional countercyclical MP and FP
    - Buy time but make it easier to waste it
    - Risk bigger problems down the road

III – Cure: policies for crisis resolution

- **PP**
  - Ensure full loss recognition
  - Recapitalise financial institutions
  - Promote removal of excess capacity in financial sector
- **FP**
  - Make room to shore up private-sector balance sheets
  - Calls for substitution of public for private-sector debt (eg, debt relief)
    - Buck for buck much better use of public money than pump-priming
- **MP**
  - Recognise unintended side-effects of (interest-rate and balance-sheet policy), which can
    - Mask underlying balance-sheet weaknesses/delay loss recognition
    - Numb incentives to reduce excess supply in financial sector and encourage "wrong" risk-taking
    - Undermine earnings capacity of financial sector
    - Atrophy financial markets as central bank takes over intermediation
    - Raise political economy concerns
      - Especially balance-sheet policy (quasi-fiscal nature)
  - Major risk of <u>overburdening</u> MP!

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III – Limitations of policies: evidence?

- Recent preliminary empirical evidence
  - Financial bust/balance-sheet recessions are indeed different
- Approach
  - 24 countries since mid-1960s; 73 recessions; 29 financial crises
  - Distinguish recessions (downturns) without and with financial crises
  - Control for various factors (severity downturn, etc)
- Findings: traditional macroeconomic policies are less effective
  - In normal recessions, the more accommodative MP in the <u>downturn</u>, the stronger the <u>subsequent</u> recovery
    - but this relationship is no longer apparent if a financial crisis occurs (Graph 8a,b)
  - Similar results for FP
  - And in recessions with crises, in contrast to normal ones
    - the faster the debt reduction in the downturn, the stronger the subsequent recovery

Graph 8a: Monetary policy is less effective in financial-crisis downturns
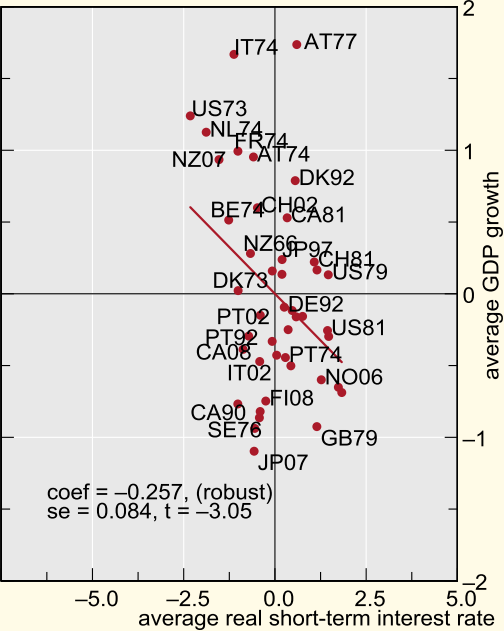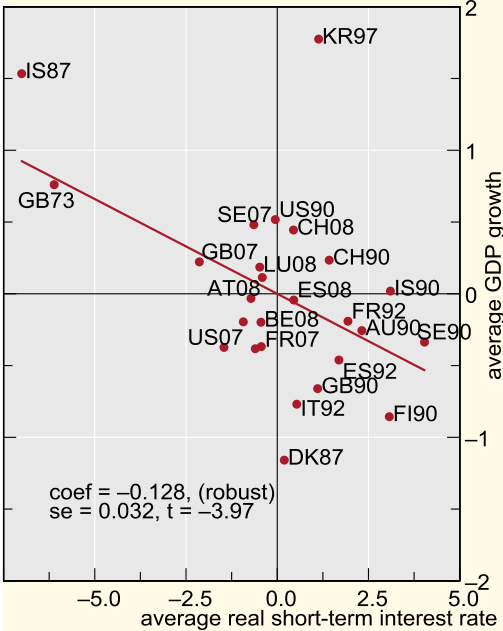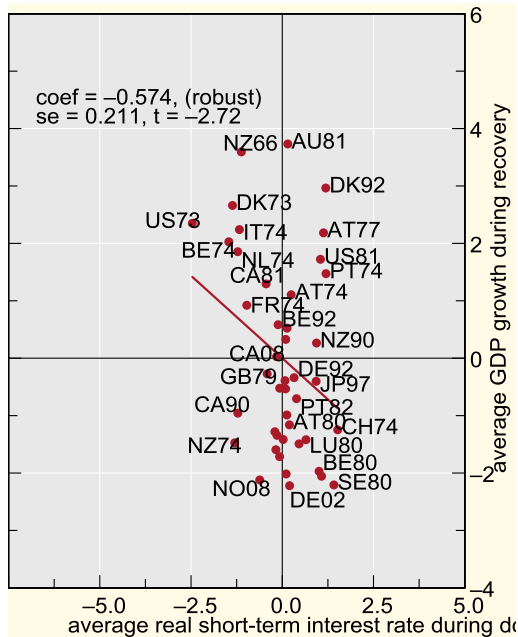
GDP cycles without a financial crisis

GDP cycles with a financial crisis

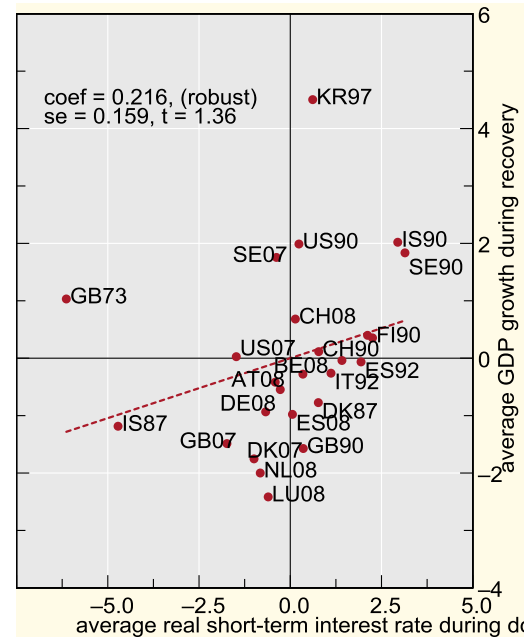# Graph 8b: Monetary policy is less effective in financial-crisis downturns

GDP cycles without a financial crisis

coef = −0.574, (robust)
se = 0.211, t = −2.72

GDP cycles with a financial crisis

coef = 0.216, (robust)
se = 0.159, t = 1.36

Source: Bech et al (2012)

III. Overall assessment: are policies falling short?...

- Obvious pre-crisis, but also since then
- PP has adjusted most
    - Basel III (countercyclical capital buffer) and MaP frameworks
    - But expectations unrealistic?
        - Calibration of instruments and regulatory arbitrage
    - And not enough done to repair banks' balance sheets (crisis resolution)
- MP has adjusted less
    - Some shift towards "lean option", but very timid and little done in practice
    - Temptation to rely exclusively on MaP measures
        - Should complement PP: more robust to regulatory arbitrage
    - Limitations during busts fully appreciated?
- FP has adjusted least, if at all
    - Little recognition of flattering effect of booms and limitations in busts
- Bottom line: policies remain too asymmetric and insufficiently targeted
    - Not prudent enough during booms and ease too much during busts
    - They tend to buy time, but also make it easier to waste it, during busts
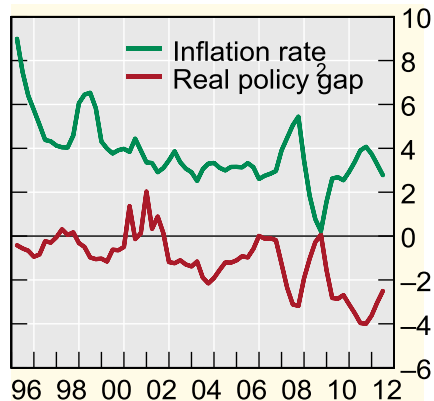
III. ...raising significant risks

- **Risk 1:** insidious new form of "time inconsistency"
    - Policy remains asymmetric and generates bias over time
    - Erodes economy's defences, exhausts policy ammunition, entrenches instability
  - Evidence
    - Banks' capital and liquidity buffers were too low; now opposition to rebuild them
    - Actual and looming sovereign strains
    - MP is testing its outer limits (interest rates and balance sheets)
      - For world as a whole, interest rates look unusually low regardless of the benchmark used (Graph 9)
        - Not internalise enough global effects (eg, currencies and capital flows)?
          - Analogous to micro/macroprudential policy distinction

- **Risk 2:** return to the equivalent of disruptive competitive devaluations of interwar years

- **Risk 3:** yet another epoch-defining shift in economic regimes
  - Return to financial and trade protectionism
  - Ultimately, a return to inflationary historical phase
    - As sovereign's temptation to inflate debt away becomes irresistible
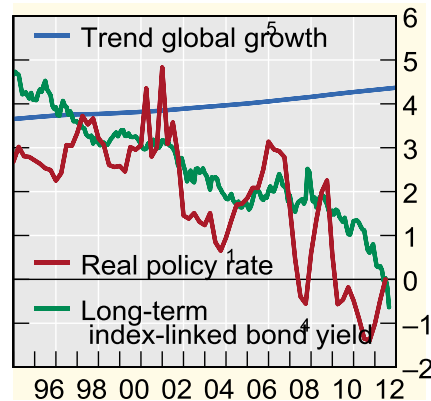
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Graph 9: unusually accommodative monetary conditions

Inflation and real policy gap[1]

- Inflation rate
- Real policy gap[2]

Interest rates and trend growth[3]

- Trend global growth[5]
- Real policy rate
- Long-term index-linked bond yield[4]

Global Taylor rule[7]

- Policy rate
- Mean Taylor rate
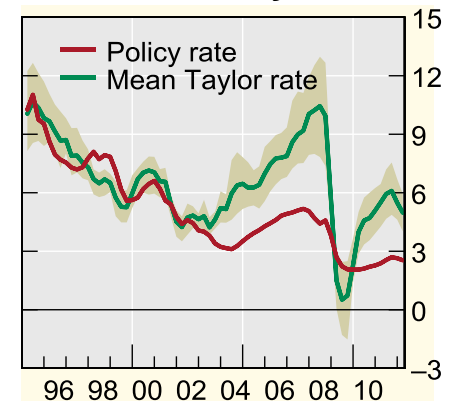
[1] G20 countries; weighted averages based on 2005 GDP and PPP exchange rates.   [2] Real policy rate minus natural rate. The real rate is the nominal rate adjusted for four-quarter consumer price inflation. The natural rate is defined as the average real rate 1985–2005 (for Japan, 1985–95; for Brazil, China, India, Indonesia, Korea, Mexico, Russia, Saudi Arabia and South Africa, 2000–05; for Argentina and Turkey, 2003–05) plus the four-quarter growth in potential output less its long-term average.   [3] In per cent.   [4] From 1998; simple average of Australia, France, the United Kingdom and the United States; otherwise only Australia and the United Kingdom.   [5] Trend world real GDP growth as estimated by the IMF in WEO 2009 April.   [6] Relative to nominal GDP; 1995 = 100.   [7] The Taylor rates are calculated as i = r*+p* + 1.5(p–p*) + 1.0y, where p is a measure of inflation, y is a measure of the output gap, p* is the inflation target and r* is the long-run level of the real interest rate. For explanation on how this Taylor rule is calculated see Hoffmann and Bogdanova (2012).

Sources: Borio (2011); Hoffmann and Bogdanova (2012).

Conclusion

- Need macroeconomic paradigms that incorporate FCs
  - Distinguish sustainable from non-inflationary output
  - Treat meaningfully debt and capital stock overhangs
  - Take nature of monetary economy more seriously

- Need to adjust policies accordingly: need to be more symmetric
  - Constrain financial booms
  - Address balance-sheet repair during busts

- Beware of new form of time inconsistency
  - Limited incentive to tighten during the boom
  - Overwhelming incentive to loosen during bust
  - Leaves policy with no ammunition left and entrenches instability over successive business and financial cycles

- The FC is a medium-term phenomenon
  - We need to think and act medium-term!
  - Plea for longer policy horizons

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