



BANK FOR INTERNATIONAL SETTLEMENTS

# The financial cycle and macroeconomics: Rethinking the way forward

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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
- 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 – Two illustrative implications of the analysis
    - Achilles heel of the international monetary and financial system (IMFS)
    - How to interpret the trend decline in real (natural?) interest rates



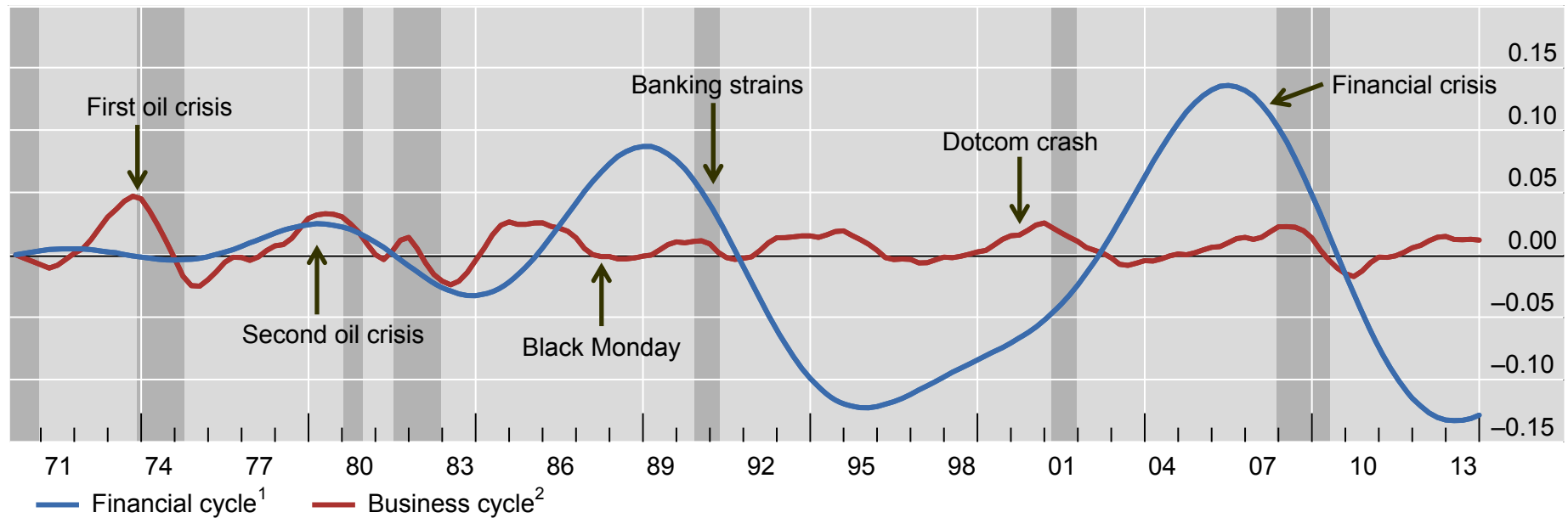
# I. The FC: 7 key properties

- **P1:** Most parsimonious description: credit and property prices (G 1)
  - Equity prices can be a distraction
- **P2:** The FC has a lower frequency (longer duration) than the traditional BC
  - (medium term!) 16-20 years approximately since 1980s (G 1)
    - Traditional business cycle: up to 8 years
- **P3:** Peaks in the FC tend to coincide with FD (G 1)
  - 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 (G 2)
    - proxy for build-up of financial imbalances (FIs)
  - Cross-border credit often outpaces domestic credit (G 3)



# Graph 1

## The financial and business cycles in the United States



1 The financial cycle as measured by frequency-based (bandpass) filters capturing medium-term cycles in real credit, the credit-to-GDP ratio and real house prices. <sup>2</sup> The business cycle as measured by a frequency-based (bandpass) filter capturing fluctuations in real GDP over a period from one to eight years.

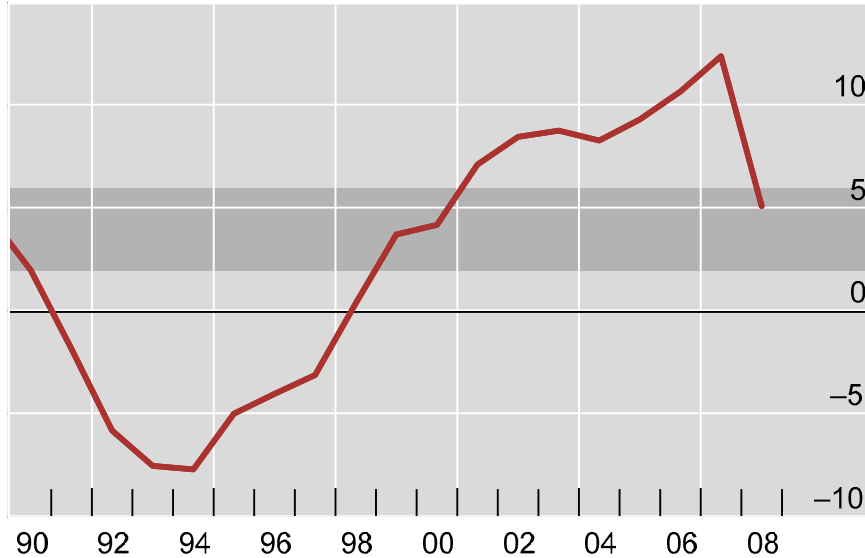
Source: updated from M Drehmann et al (2012) in BIS (2914).

# Graph 2: Financial imbalances can be identified in real time

## The US example

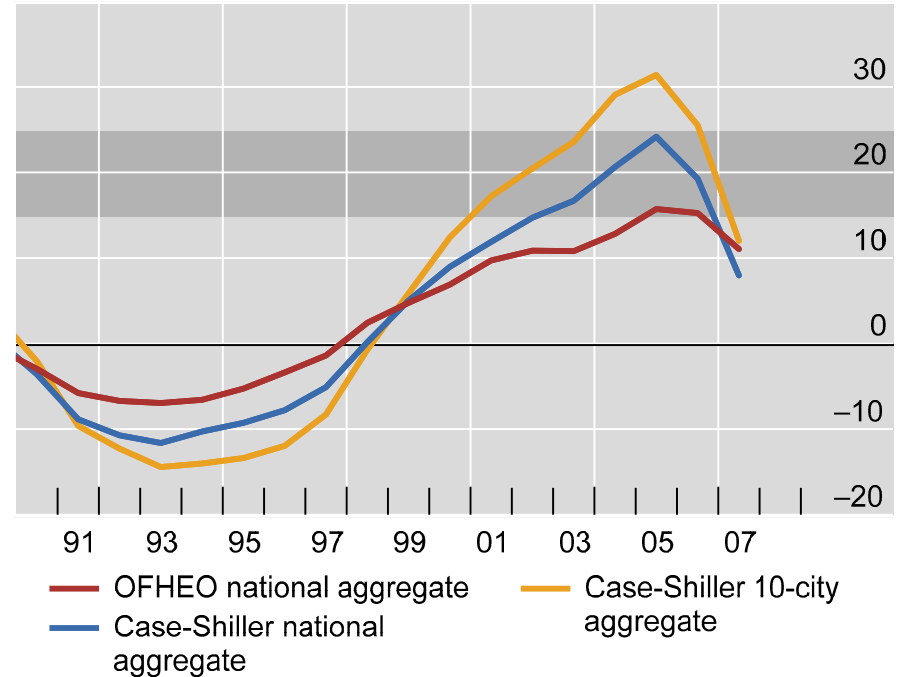
Credit-to-GDP gap

Percentage points



Real property price gap

%



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).

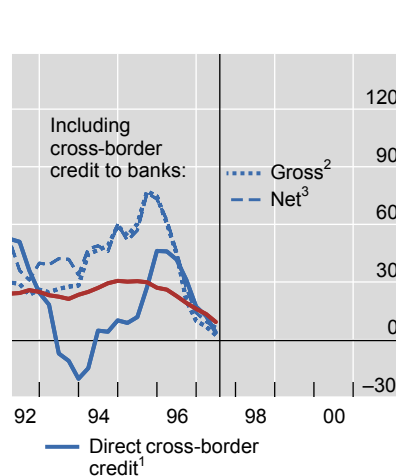
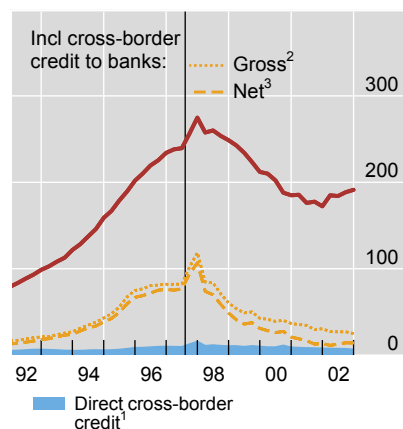
1 Weighted average of residential and commercial property prices with weights corresponding to estimates of their share in overall property wealth. The legend refers to the residential property price component.

Source: Borio and Drehmann (2009).



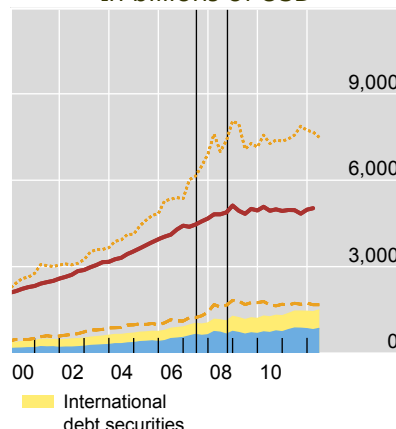
## Graph 3: Credit booms and external credit: selected countries

### Thailand in the 1990s

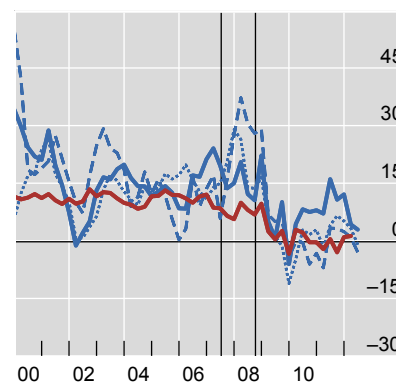


### United Kingdom

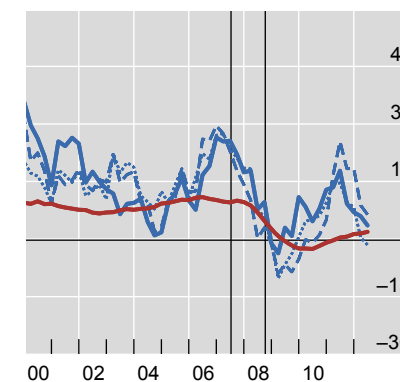
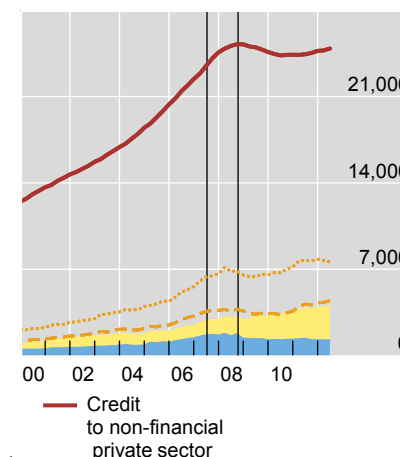
In billions of USD



Year-on-year growth, in per cent



### United States



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.

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)

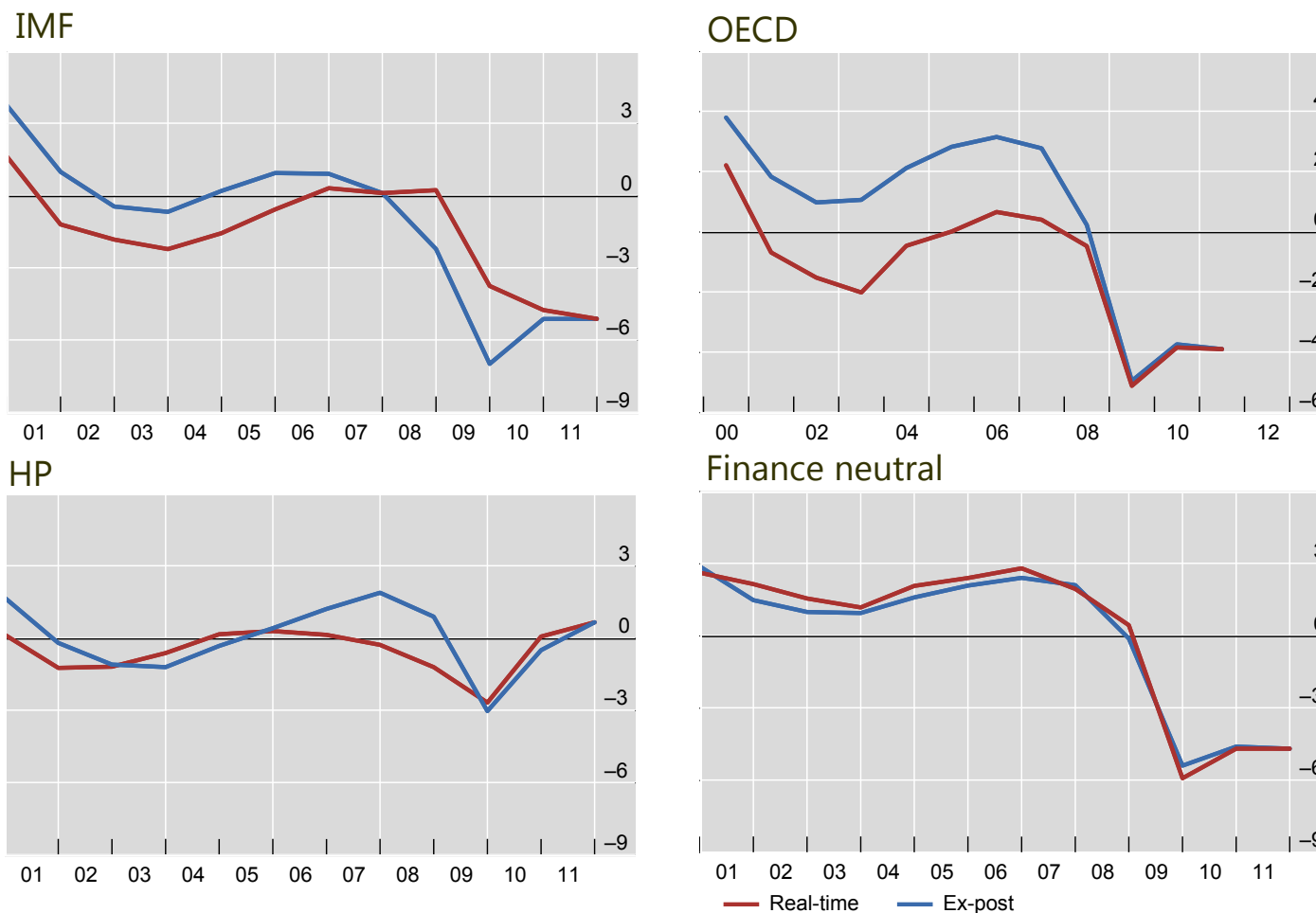
- **P5:** FC helps to measure potential (sustainable) output much better in real time
  - Current methods, partly based on inflation, can be very misleading (G 4)
- **P6:** Amplitude and length of the FC are regime-dependent: supported by
  - Financial liberalisation
    - Weakens financing constraints
  - 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
  - => “excess (financial) elasticity”
    - Length and amplitude have increased since early 1980s (G 1)
- **P7:** Busts of FCs are associated with balance-sheet recessions (G 5)
  - 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; recent post-crisis recovery
  - Why? Legacy of previous boom and subsequent financial strains



# Graph 4

## US output gaps: ex-post and real-time estimates

In per cent of potential output



Note: For each time  $t$ , the "real-time" estimates are based only on the sample up to that point in time. The "ex-post" estimates are based on the full sample.

Source: Borio et al (2013).



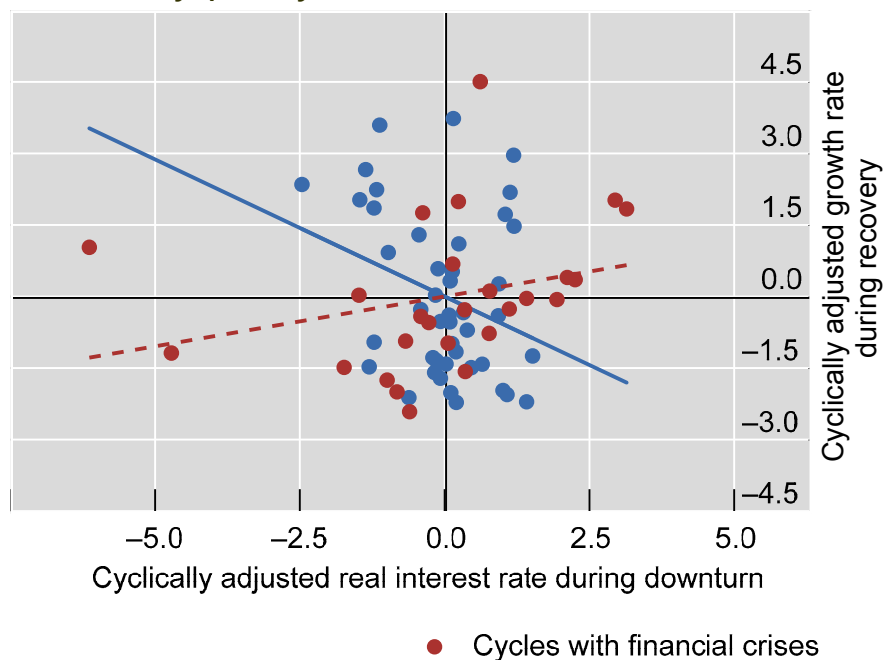
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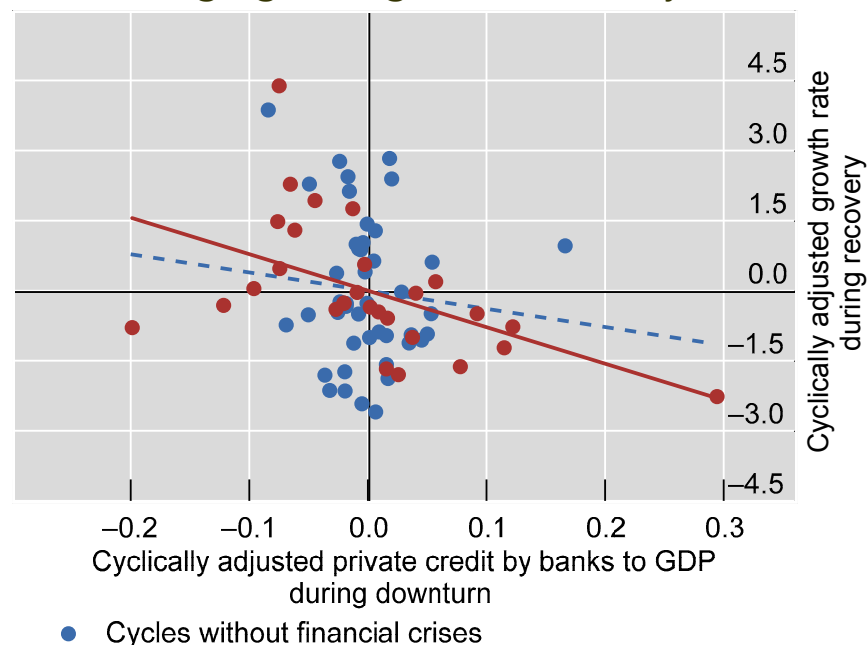


## Graph 5: Balance sheet recessions are different<sup>1</sup>

### Monetary policy is less effective



### Deleveraging strengthens recovery



<sup>1</sup> In per cent. The solid (dashed) regression lines indicate that the relationship is statistically significant (insignificant). For a sample of 24 economies since the mid-1960s. Downturns are defined as periods of declining real GDP and recoveries as periods ending when real GDP exceeds the previous peak. The data cover 65 cycles, including 28 cycles with a financial crisis just before the peak. Data points for cycles are adjusted for the depth of the preceding recession and the interest rate at the cyclical peak. See Bech et al (2014) for details.

Source: elaborated from Bech et al (2014) and included in BIS (2014).



## II – What is needed to model the financial cycle?

- Features
  - The boom does not just precede but causes 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 (G 4 above)
    - Concept and measurement
- How?
  - Endogenous time-varying risk perceptions/tolerance and defaults
    - Limitations in expectations: expectations are not fully “rational”
    - Limitations in incentive: co-ordination failures
  - A true monetary economy!
    - Financial system does not just allocate “savings” but generates purchasing power
      - feeding back into output and expenditures
    - Inside money creation is essential
    - Current models are real economies disguised as monetary ones

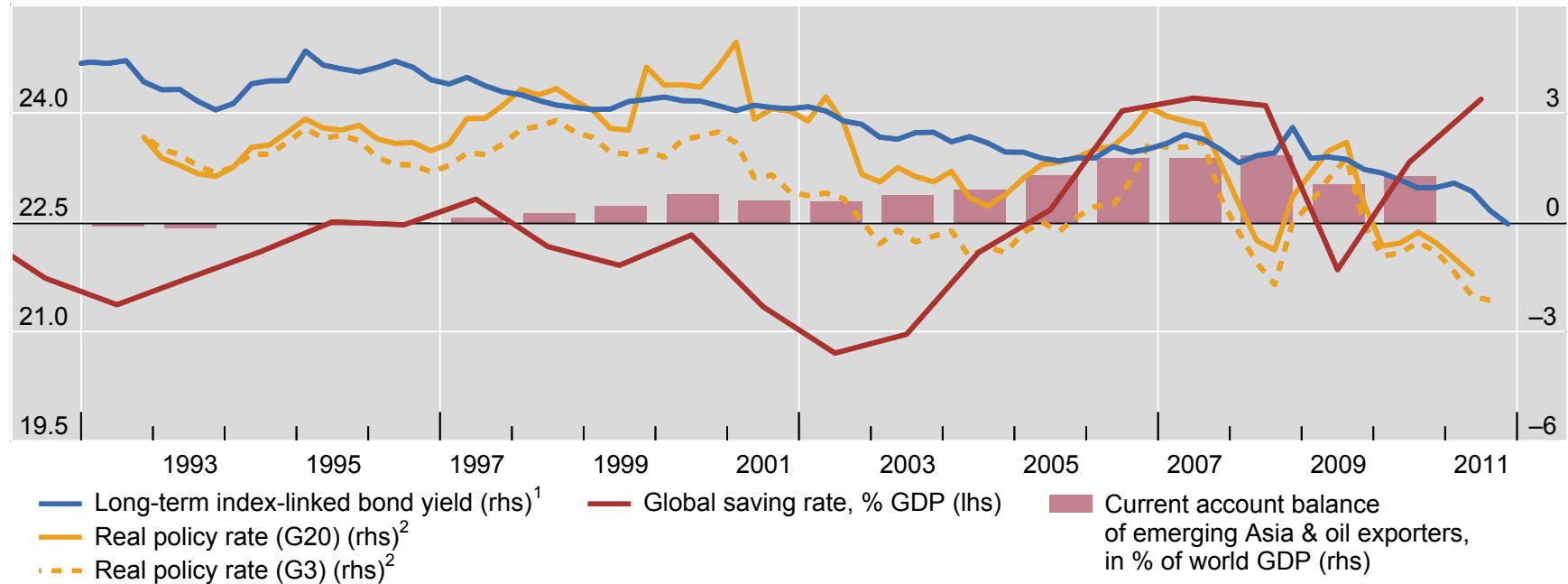


## II – Global C/A imbalances and the crisis: an example

- 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
- **Objection 1:** Gross, not net, capital flows matter for financial stability
  - US credit boom was mostly financed domestically (Graph 4)
  - Foreign part mostly by European banks, including UK (balanced or deficit regions)
- **Objection 2:** 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 current account imbalances, saving and interest rates



<sup>1</sup> Simple average of Australia, France, the United Kingdom and the United States; prior to 1998, Australia and the United Kingdom. <sup>2</sup> Weighted averages based on 2005 GDP and PP exchange rates.

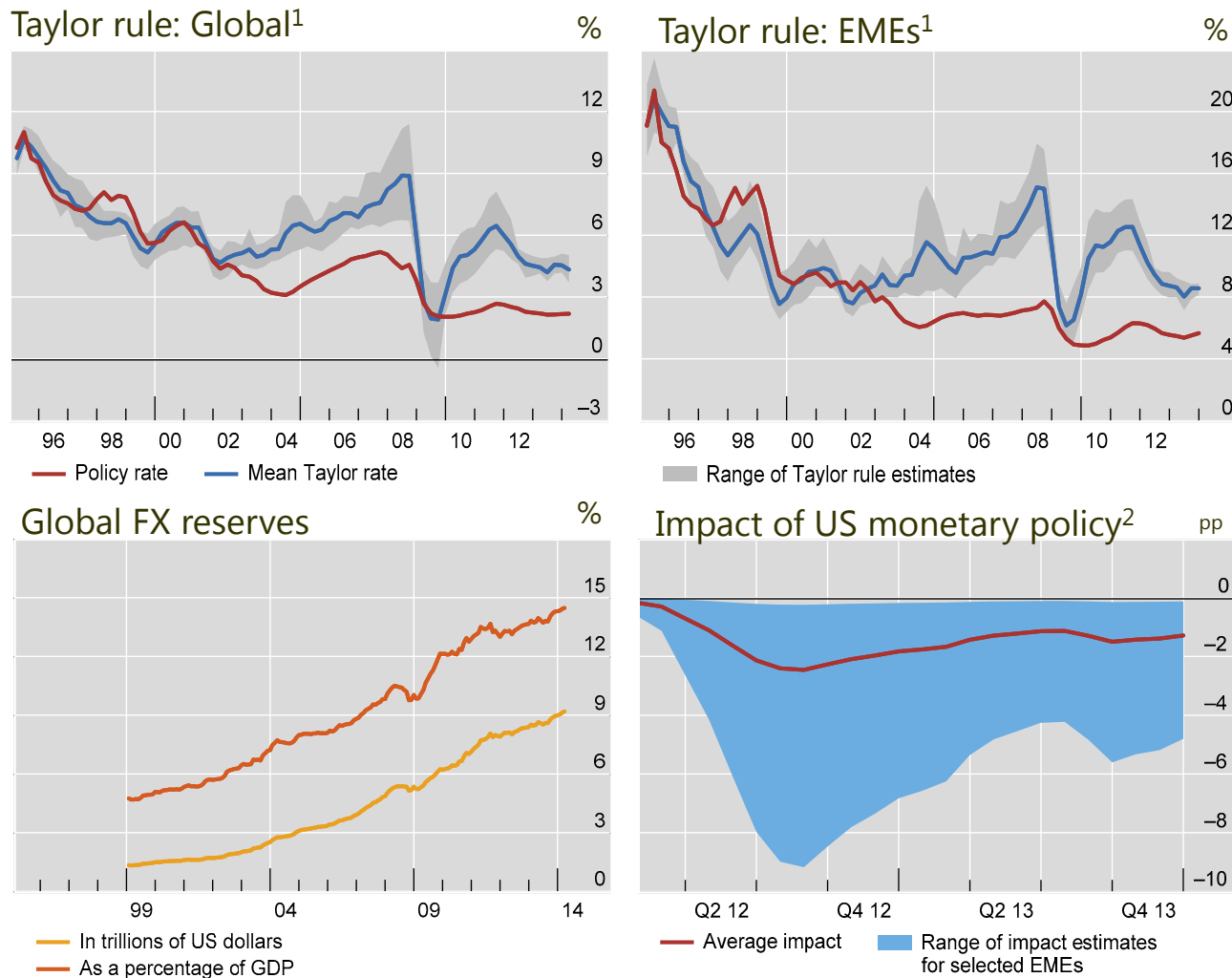
Source: Borio and Disyatat (2011).

### III. Illustration 1: Achilles heel of the IMFS

- Same as domestic monetary and financial systems: “excess elasticity”
  - Inability to prevent the build-up of financial imbalances
  - IMFS amplifies this through the interaction of financial and monetary regimes
- Interaction of financial regimes: mobile financial capital across currencies and borders
  - Adds external (marginal) source of finance
    - External credit tends to outpace domestic credit during booms (G 3)
  - Makes exchange rates subject to overshooting
    - Like domestic asset prices (perceptions of/incentives to take on risk)
- Interaction of monetary regimes: generalises easy monetary conditions in core economies and hence risk of build-up of FIs (G 7)
  - Indirectly: through resistance to exchange rate appreciation
    - Keep policy rates lower than otherwise
      - Impact on domestic interest rates
    - Intervene in FX markets and invest proceeds in reserve currency assets
      - Impact on foreign bond yields
  - Directly: currency areas extend beyond national jurisdictions (eg, US Dollar)
    - More direct influence on financial conditions elsewhere



# Graph 7: Unusually easy monetary policy spreads globally



1 See B Hofmann and B Bogdanova, "Taylor rules and monetary policy: a global 'Great Deviation'?", BIS Quarterly Review, September 2012, pp 37–49. 2 The component of the augmented Taylor equation driven by the shadow US policy rate when it is significant at the 5% level. Data are for Brazil, China, Colombia, the Czech Republic, Hungary, India, Indonesia, Israel, Korea, Mexico, Peru, the Philippines, Poland, Singapore (overnight rate), South Africa and Turkey. Source: Borio (2014a)

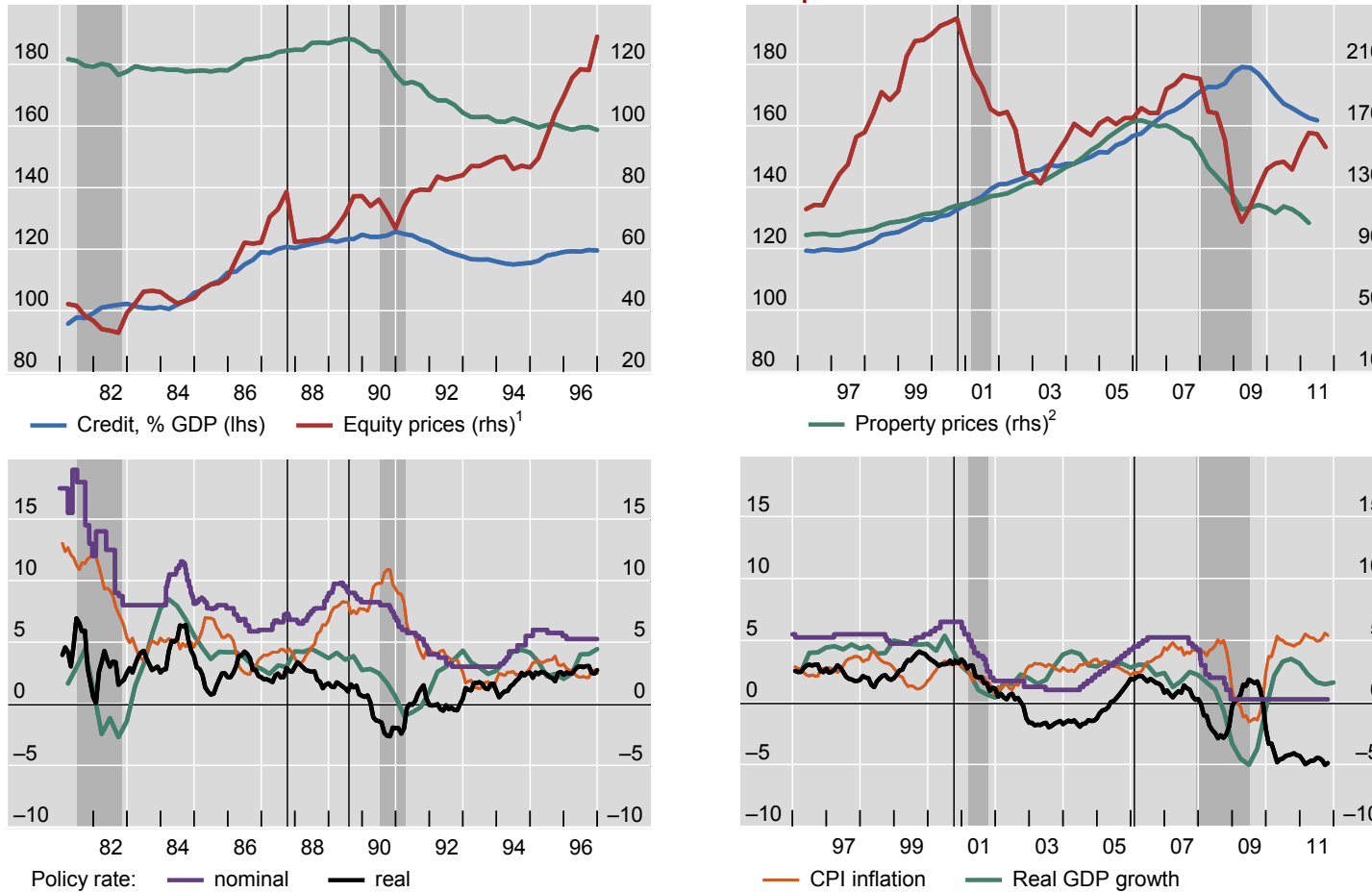


### III. Illustration 2: a trend decline in natural rates?

- Conventional view:
  - Trend decline in real interest rates shadows natural rates
    - equilibrium phenomenon that may even reflect secular stagnation
- Alternative view
  - It reflects asymmetric monetary policies over successive FCs and BCs (G 8)
  - Fail to lean against the build-up of FIs; busts cause long-term damage to the economy; policy responds further, etc
    - Downward bias in interest rates and upward bias in debt (G 9)
    - Debt trap (form of “time inconsistency”)
    - Low interest rates become self-validating
- Analytical points
  - Money is not neutral in the long-run
  - Conventional notions of the natural rate fail to incorporate FC
  - Trend decline is (partly) a policy-induced disequilibrium phenomenon
- Policy concern
  - Entrench instability and chronic weakness in the global economy



## Graph 8: Unfinished recessions: the US example



The vertical lines denote stock and real estate market peaks in each sub-period. The shaded areas represent the NBER business cycle reference dates.

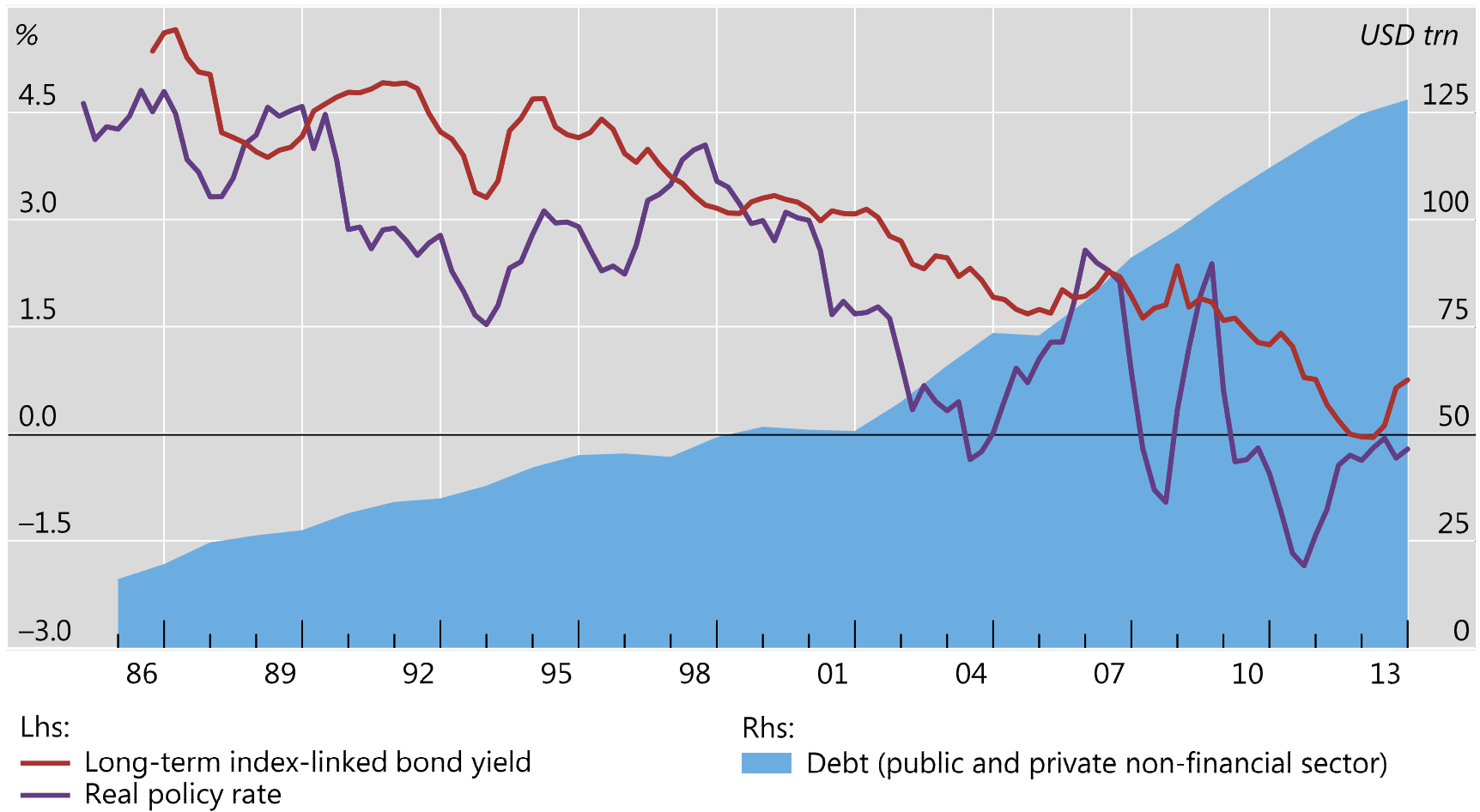
<sup>1</sup> 1995 = 100; in real terms. <sup>2</sup> Weighted average of residential and commercial property prices; 1995 = 100; in real terms.

Source: Drehmann et al (2012).





## Graph 9: Global debt and interest rates



Source: Borio and Disyatat (2014).

## Conclusion

- Need macroeconomic paradigms that incorporate FCs
  - Allow for financial booms that generate busts
  - Allow for financial cycles that are longer than business cycles
  - Distinguish sustainable from non-inflationary output
  - Treat meaningfully debt and capital stock overhangs
  - Take nature of monetary economy more seriously
- Two applications
  - Achilles heel of the IMFS
    - Not “excess saving” or “excess demand for safe assets”
    - But “excess (financial) elasticity”
      - Exacerbates inadequacy of domestic policy regimes
  - The long-term decline in real interest need not be an equilibrium phenomenon
    - Disequilibrium process that may entrench instability
      - Time inconsistency; debt trap
- Macroeconomics without the FC is like Hamlet without the Prince



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