Panel on Financial Systemic Risk and Optimal Monetary Policy

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European Central Bank

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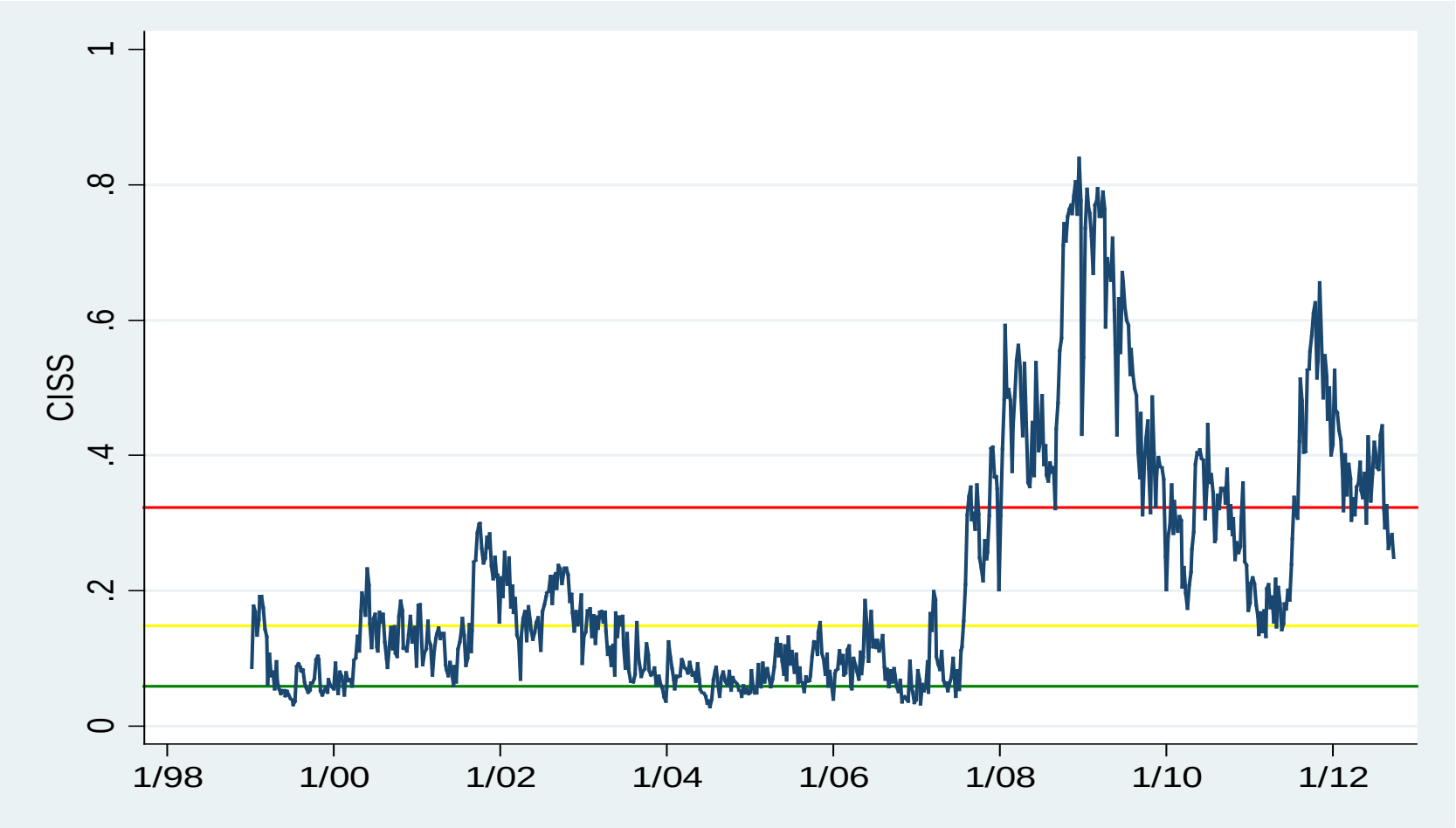
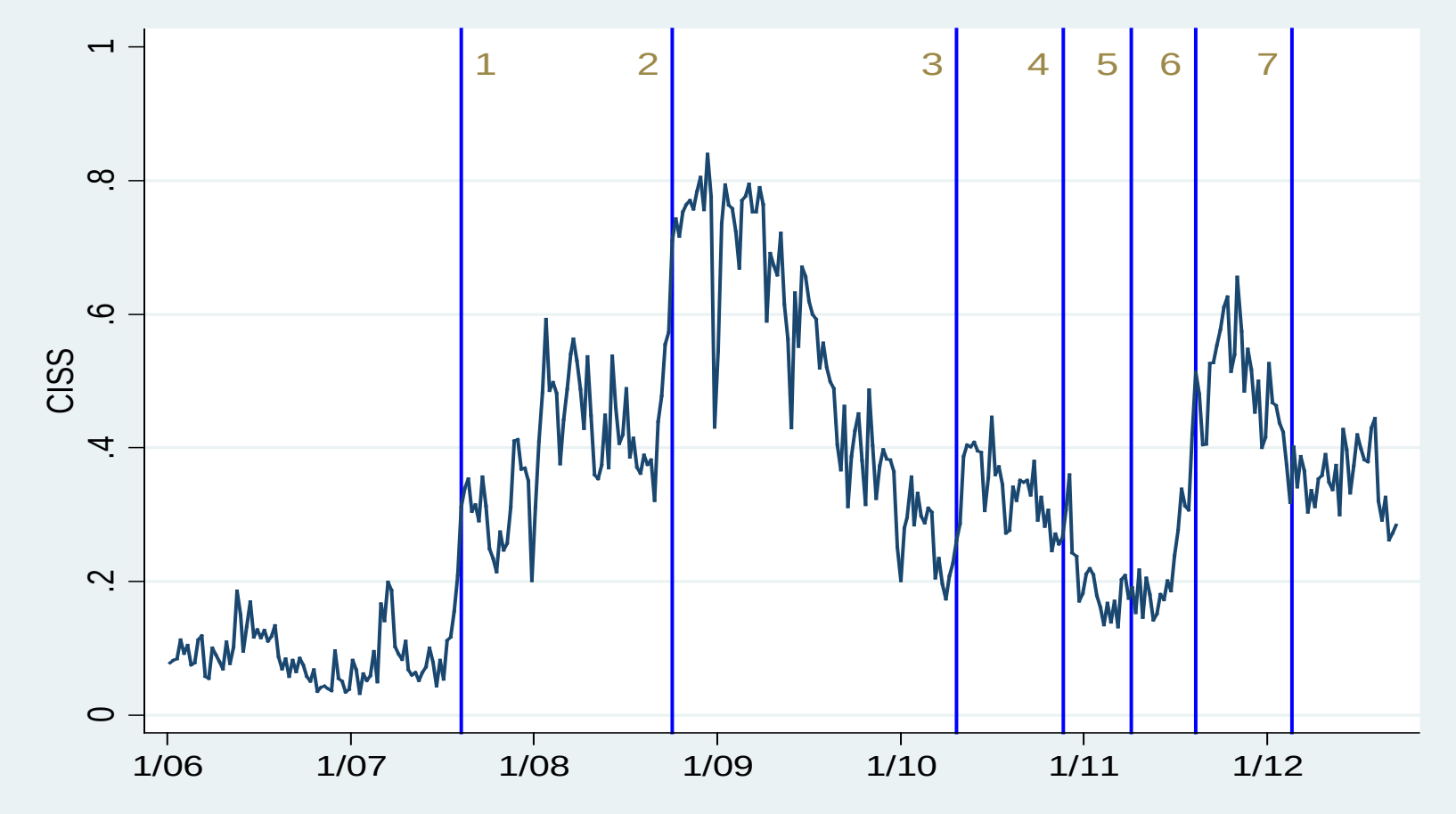
EMU Composite Index of Systemic Stress (CISS)



Low stress (green)
Intermediate stress (yellow)
Crisis threshold (red)

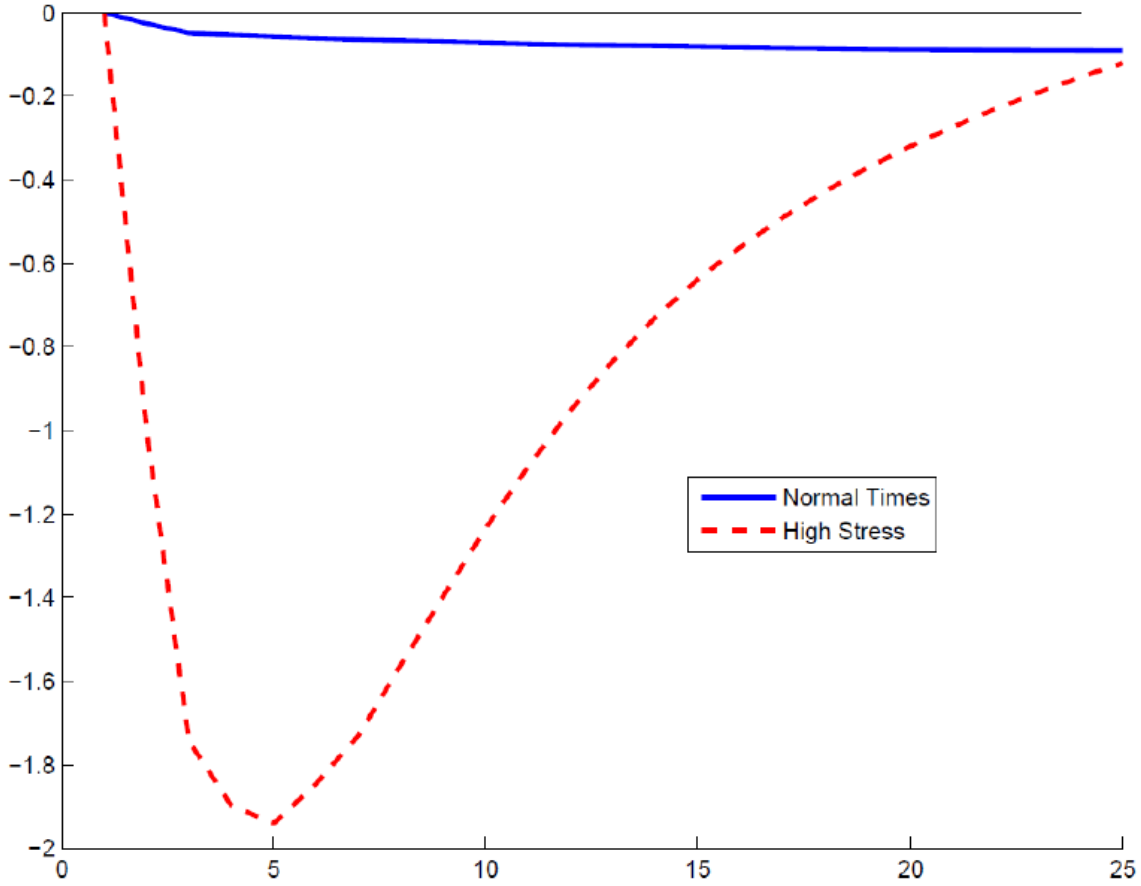
Last data point: Sept 21st 2012
Hollo, Kremer and Lo Duca (2011)

CISS: Trigger events



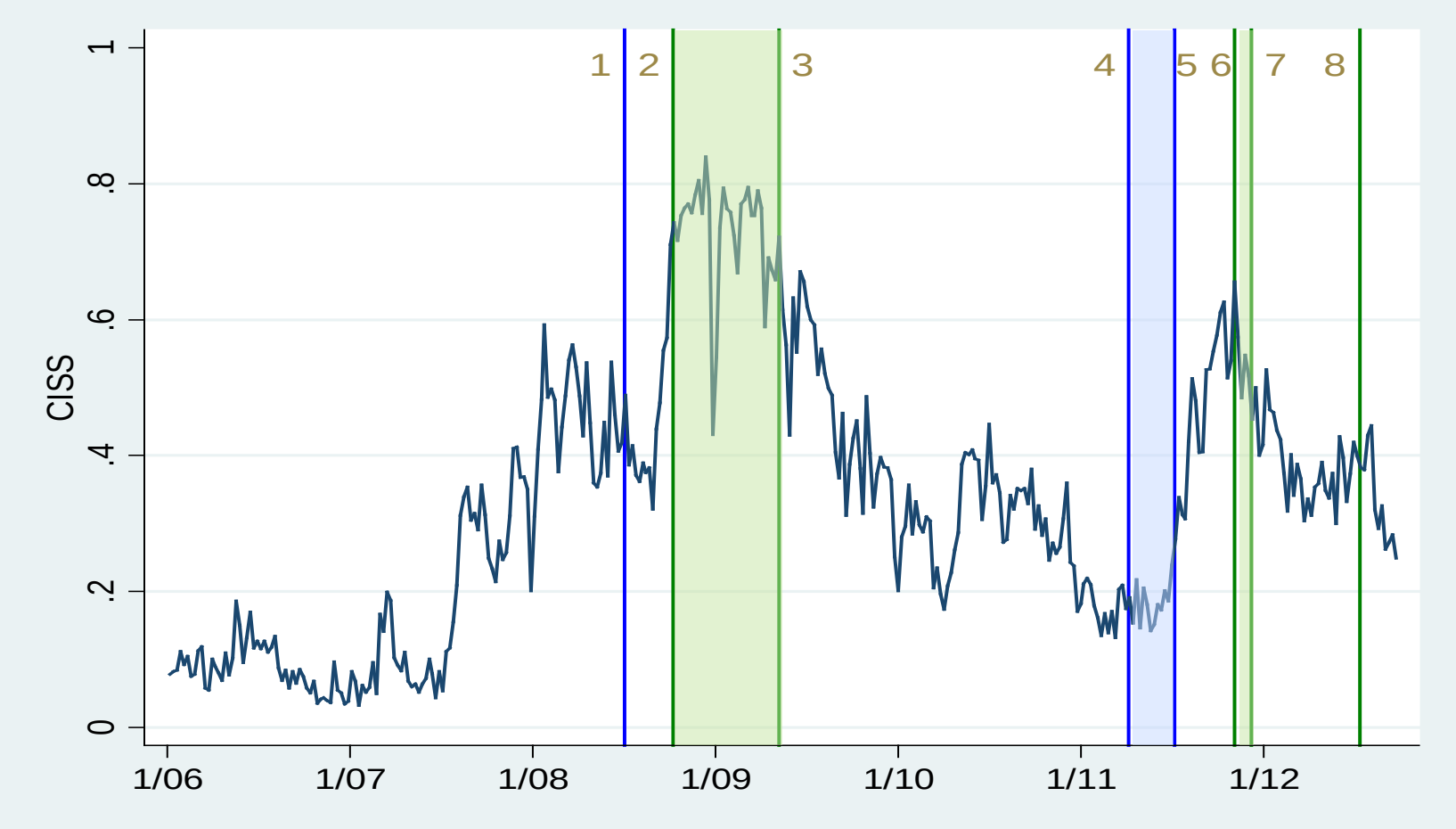
1: Subprime crisis 2: Lehman 3: Greece seeks financial support 4: Ireland seeks financial support 5: Portugal requests activation of aid mechanism 6: Intensified sovereign debt crisis 7: Eurogroup agrees on second financial aid package for Greece

The economic effects of systemic stress



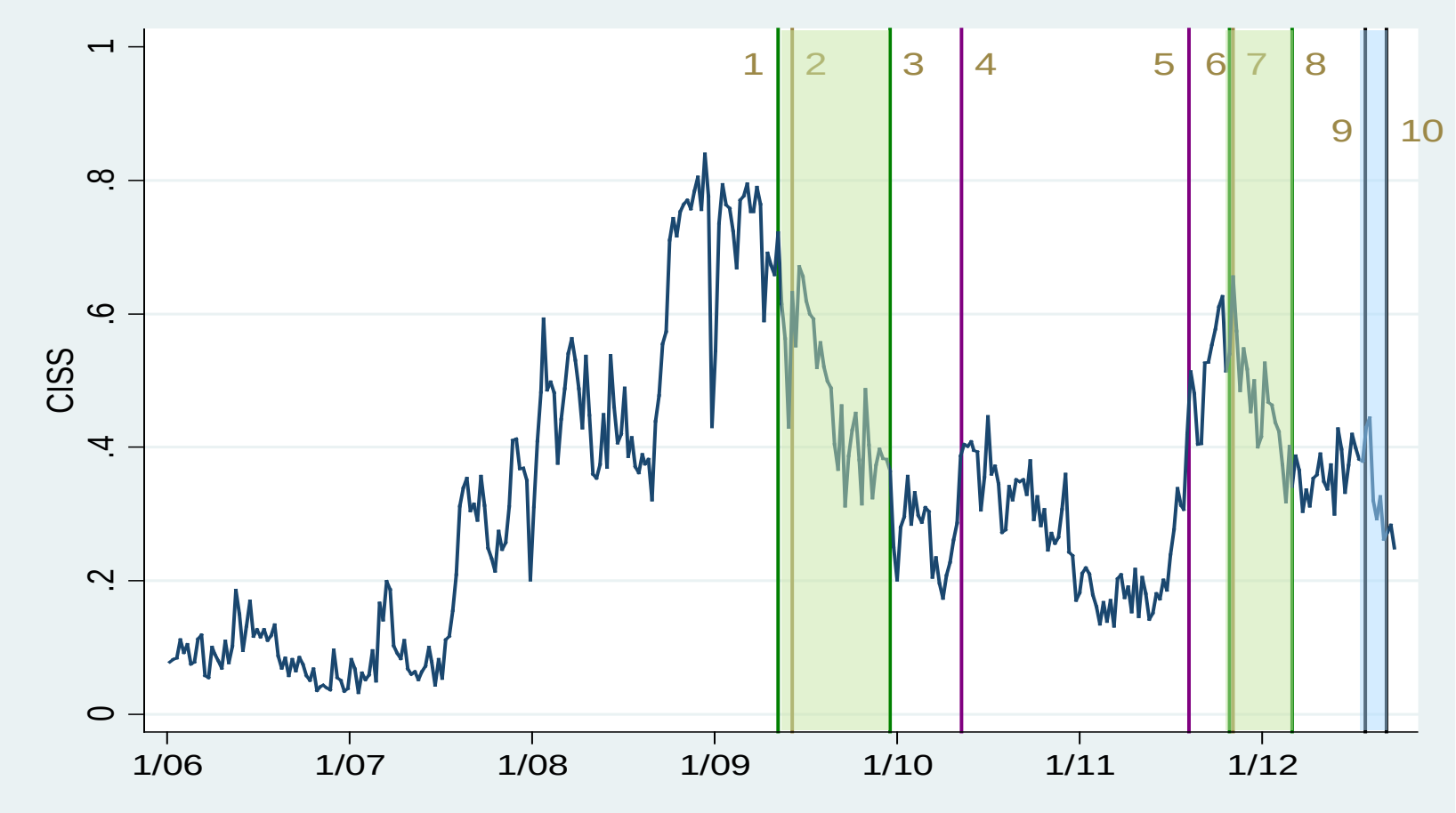
Source: Hartmann et al (2012)

Standard monetary policy actions



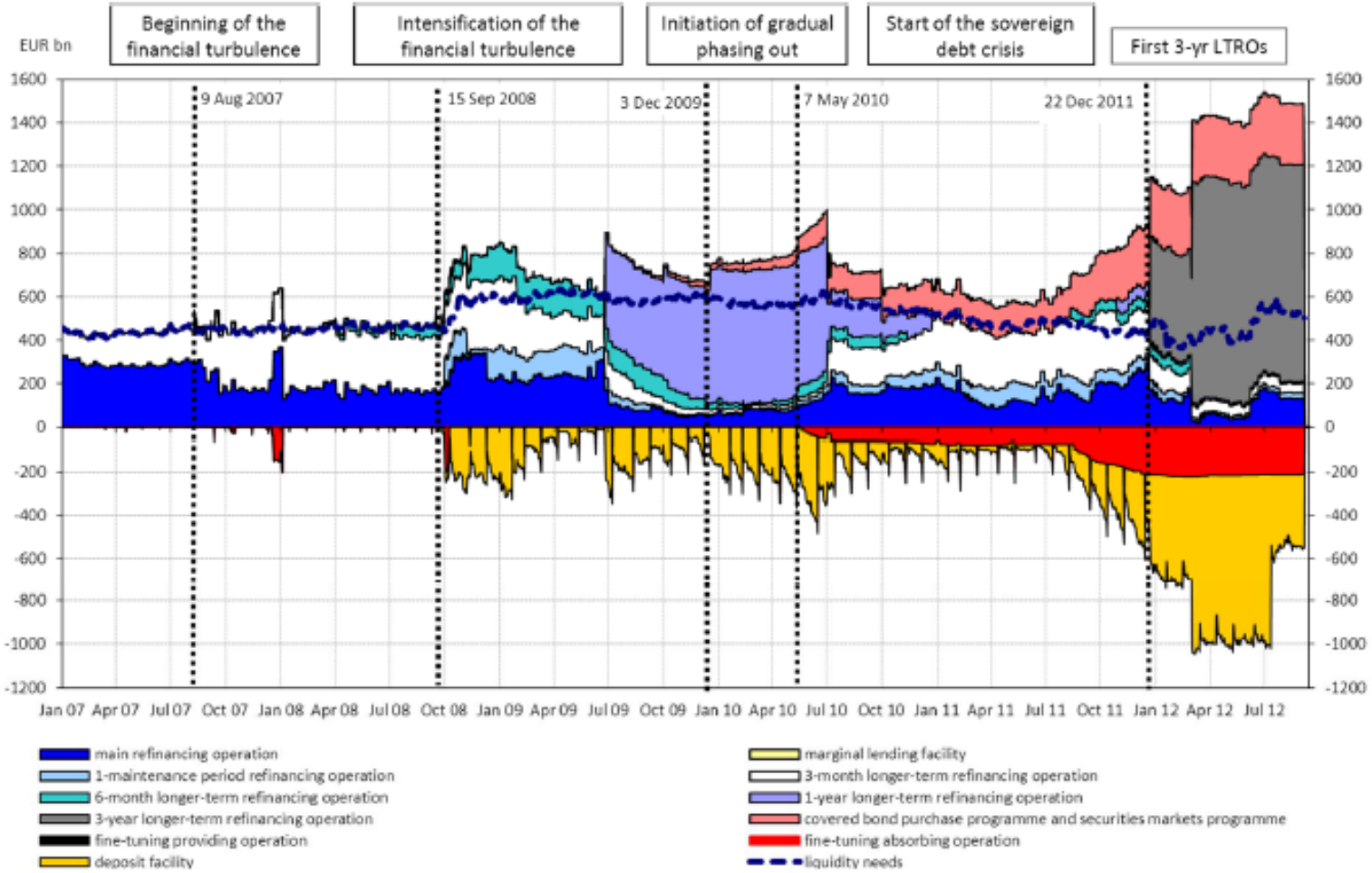
Interest rate increases (blue)
Interest rate cuts (green)

Non-standard monetary policy actions

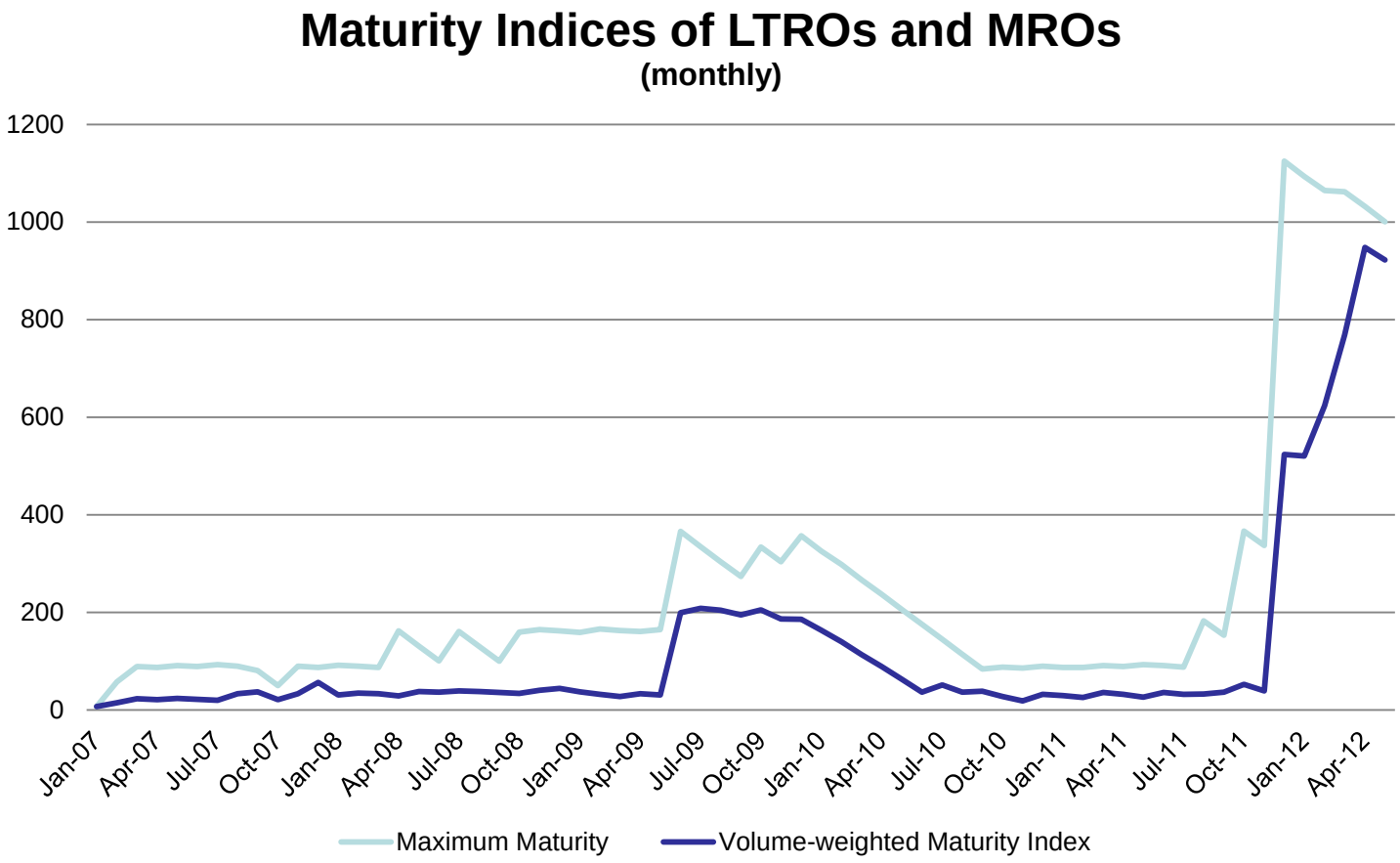


1-year and 3-year LTRO events (green); SMP launch and reactivation (purple)
1st and 2nd Covered bond purchase programs
Mr. Draghi speech and OMT announcement (black)

The ECB's monetary policy operations

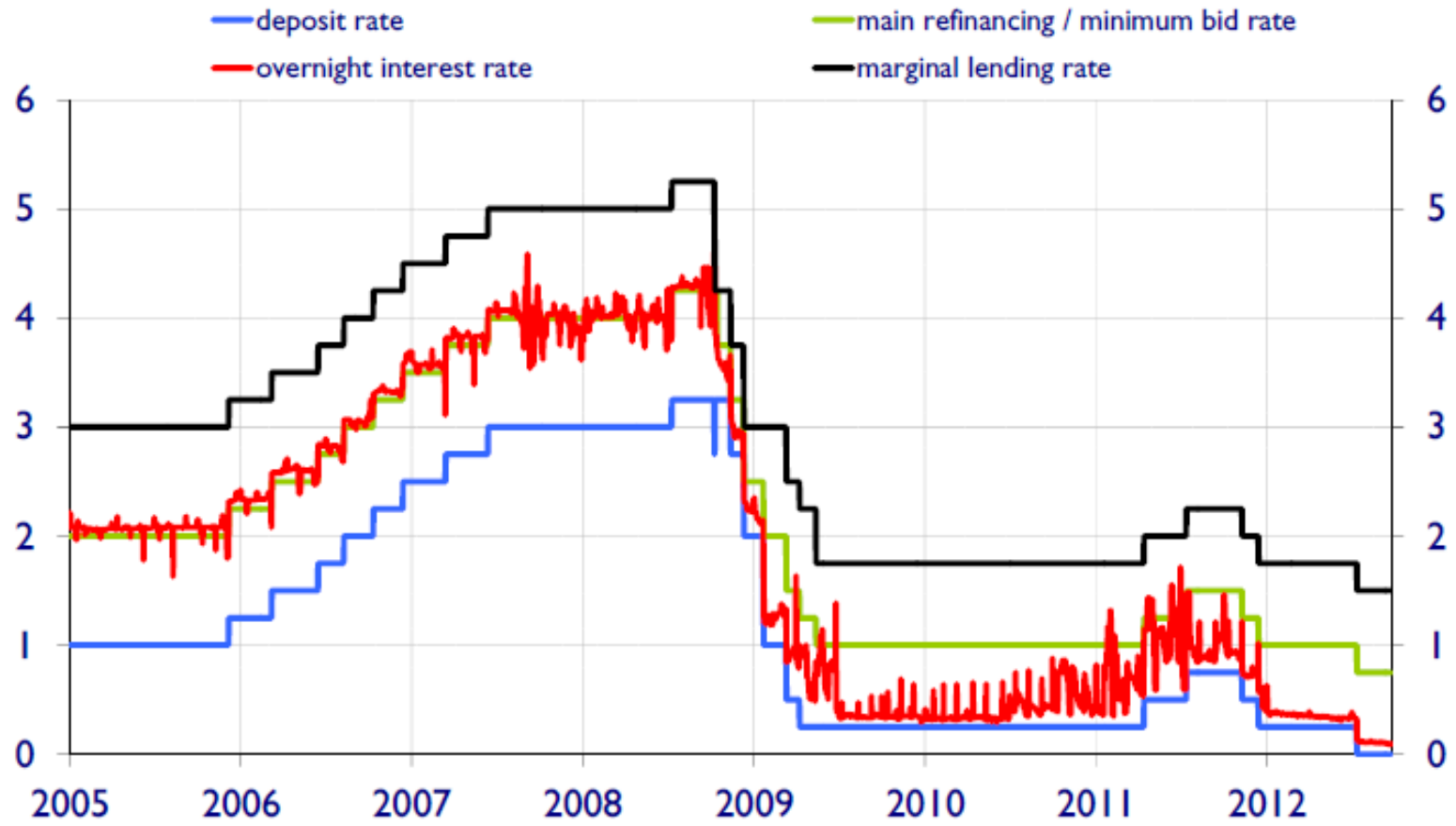


Maturity structure of ECB's refinancing operations



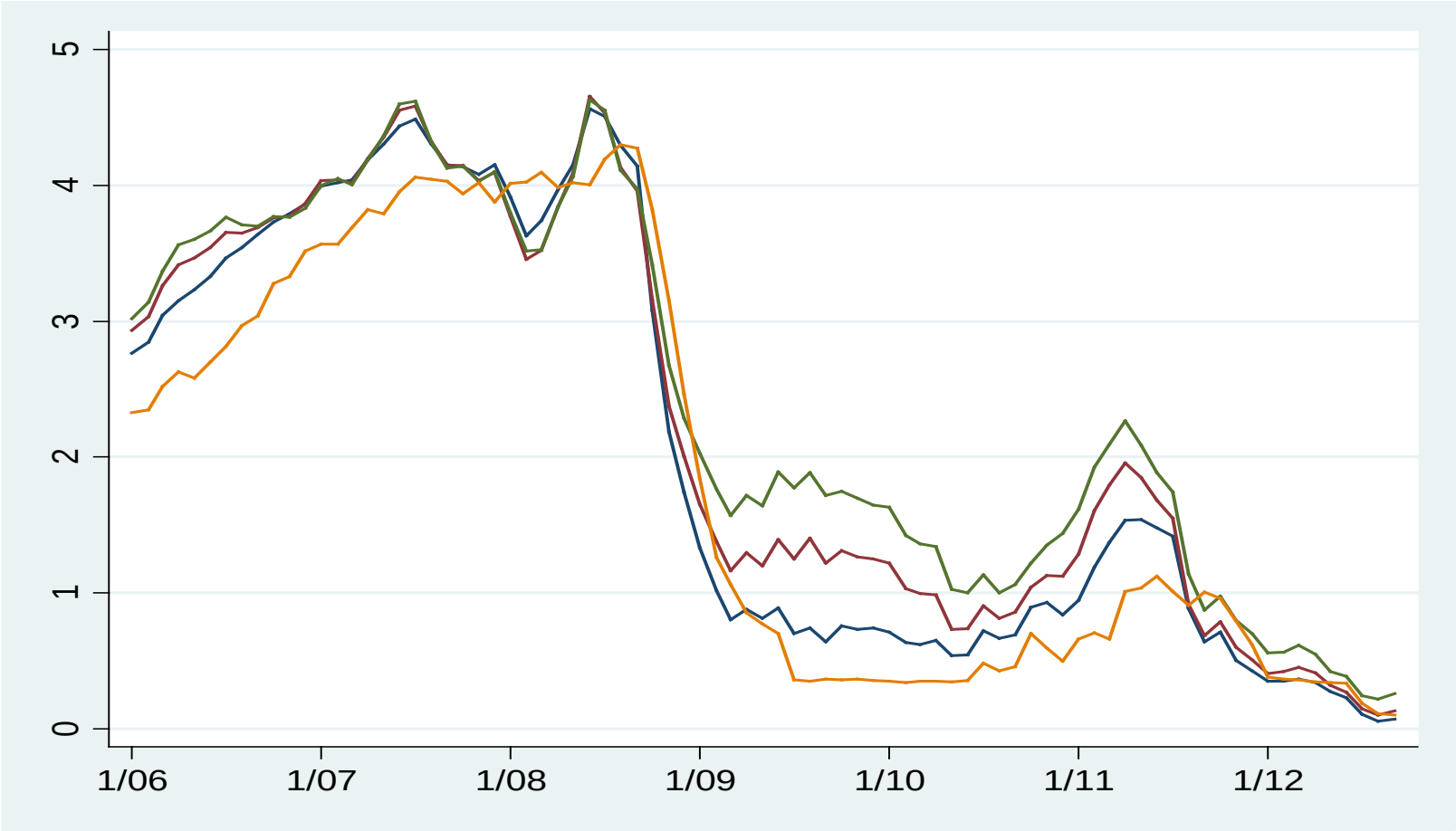
Source: ECB

Policy-controlled interest rates and EONIA



Source: ECB; percentages per annum; daily data.
Latest observation: 21 September 2012

Term structure of interest rates: Eonia-OIS 1,2,3 years



Eonia (orange)
OIS 1-year (blue) ; OIS 2-year (red); OIS 3-year (green)

Systemic risk in macro models: Two challenges

- Why do leverage, complexity (e.g. the length of the intermediation chain), maturity transformation and foreign exchange mismatches (and thereby the fragility of the financial system) increase as credit expands?
- Why do bad credits build-up alongside benign credit market indicators?
- More generally, there is a need to bring the time series dimension (the building up and the unravelling of financial imbalances) and the cross-section perspective (feedback loops and contagion in interconnected financial systems) of systemic risk together.

Boissay, Collard and Smets (2012)
Booms and systemic banking crises

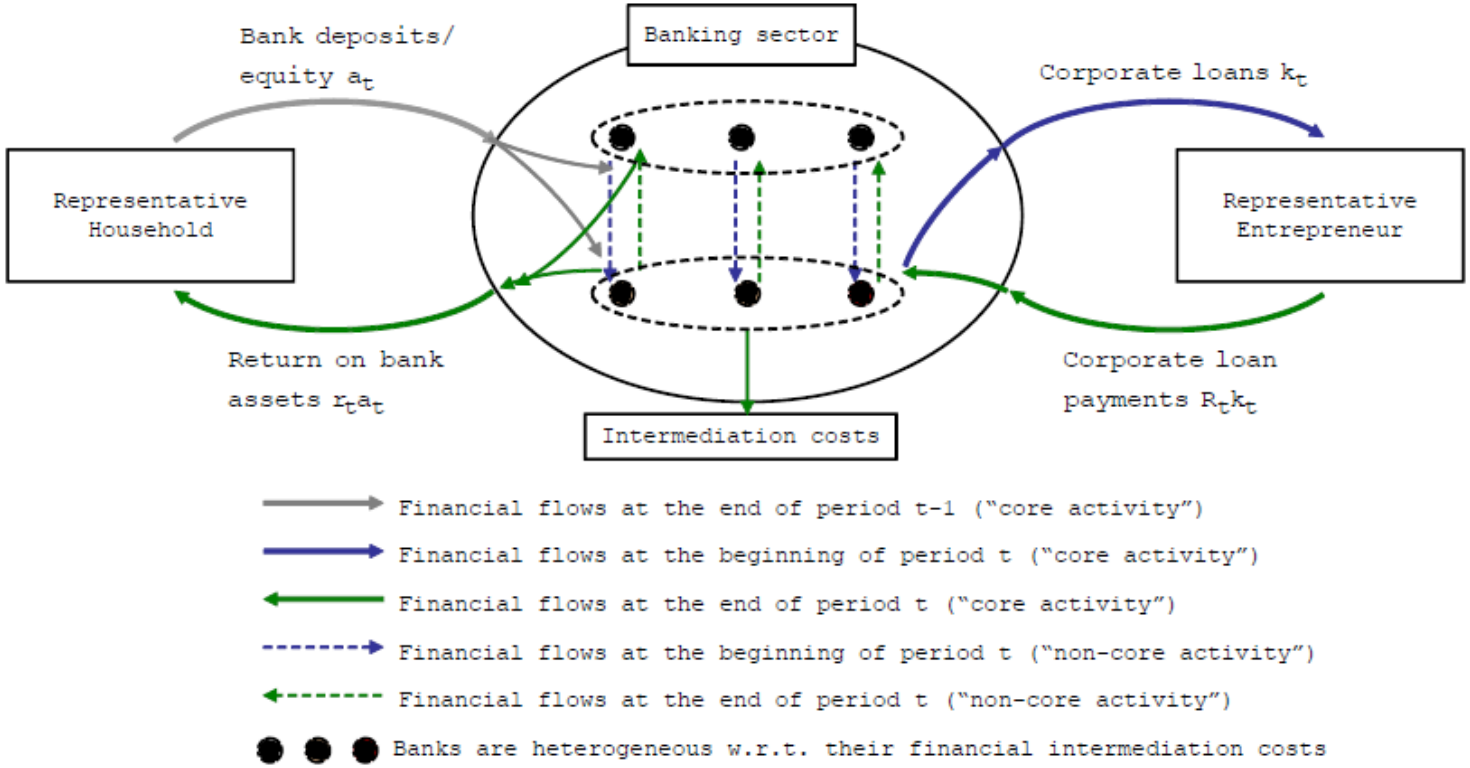
- Better understand the joint dynamics of regular business cycles and rare systemic banking crises:
  - Why are recessions coupled with banking crises much deeper and more protracted than other recessions (Claessens et al, 2011; Jordà et al, 2011b; Borio et al, 2012)?
  - Why do systemic banking crises tend to break out in the midst of credit-intensive booms (Borio and Lowe, 2002; Jordà et al, 2011)?

    "Banking crises are credit booms gone wrong"

Dynamic macro model with systemic bank crises

- Textbook (annual) Real Business Cycle (RBC) model
  - with heterogeneous banks
  - and an interbank market subject to moral hazard and asymmetric information
- A systemic bank crisis is an interbank market freeze
- Spill-over effects between the interbank market, the corporate loan market and the real economy (credit crunch)

The structure of the model



The banking sector: Absorptive capacity

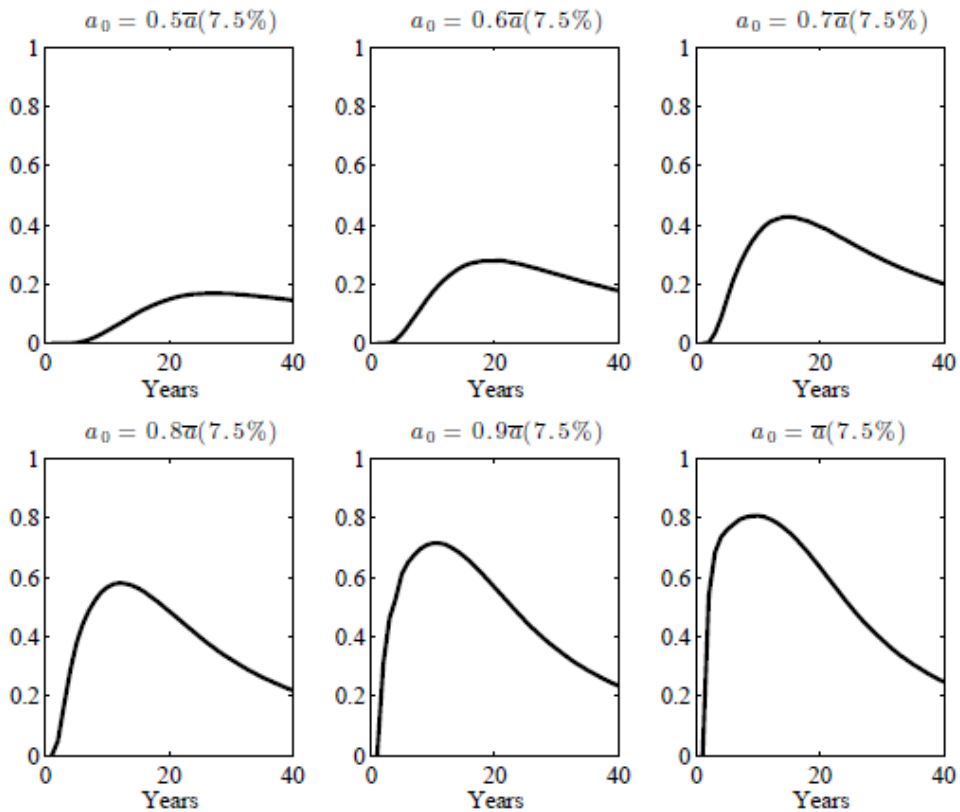
- The interbank market improves the banking system's overall efficiency, but freezes when the return on loans is too low ($R(t)<R^*$).
- In general equilibrium, the return on loans is driven by savings ($a(t)$) and productivity ($z(t)$): Hence, the interbank market freezes when $a(t)>a^*(t)$.
- This threshold is the banking sector's absorptive capacity.
- Freezes are inefficient because i) less productive banks do financial intermediation; and ii) bad banks hoard cash which triggers a credit crunch
- Precautionary savings in anticipation of a banking crisis increases the probability of such a crisis.

Key results

- The economy features a (small) financial accelerator in normal times and financial crises every 40 years
- The typical banking crisis follows an unusually long sequence of small, positive, transitory productivity shocks, not a large negative shock
- Systemic banking crises follow credit booms and are deeper and longer because they involve credit crunches
- The likelihood, depth, and length of a financial recession increase with the intensity of the credit boom that precedes it.
- Crises occur when the banking sector grows "too big" and real interest rates are "too low"

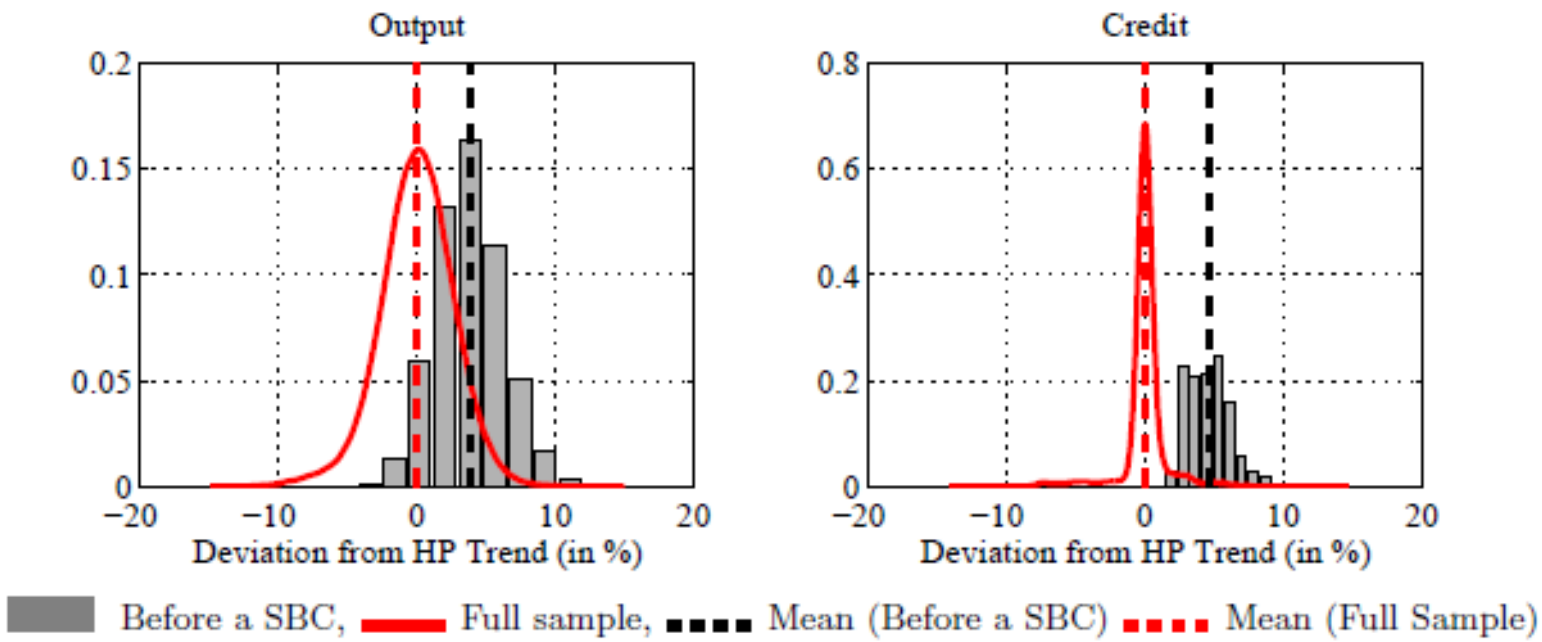
The role of financial imbalances

The sensitivity of the frequency of systemic banking crises to initial conditions (Productivity 7.5% above average)



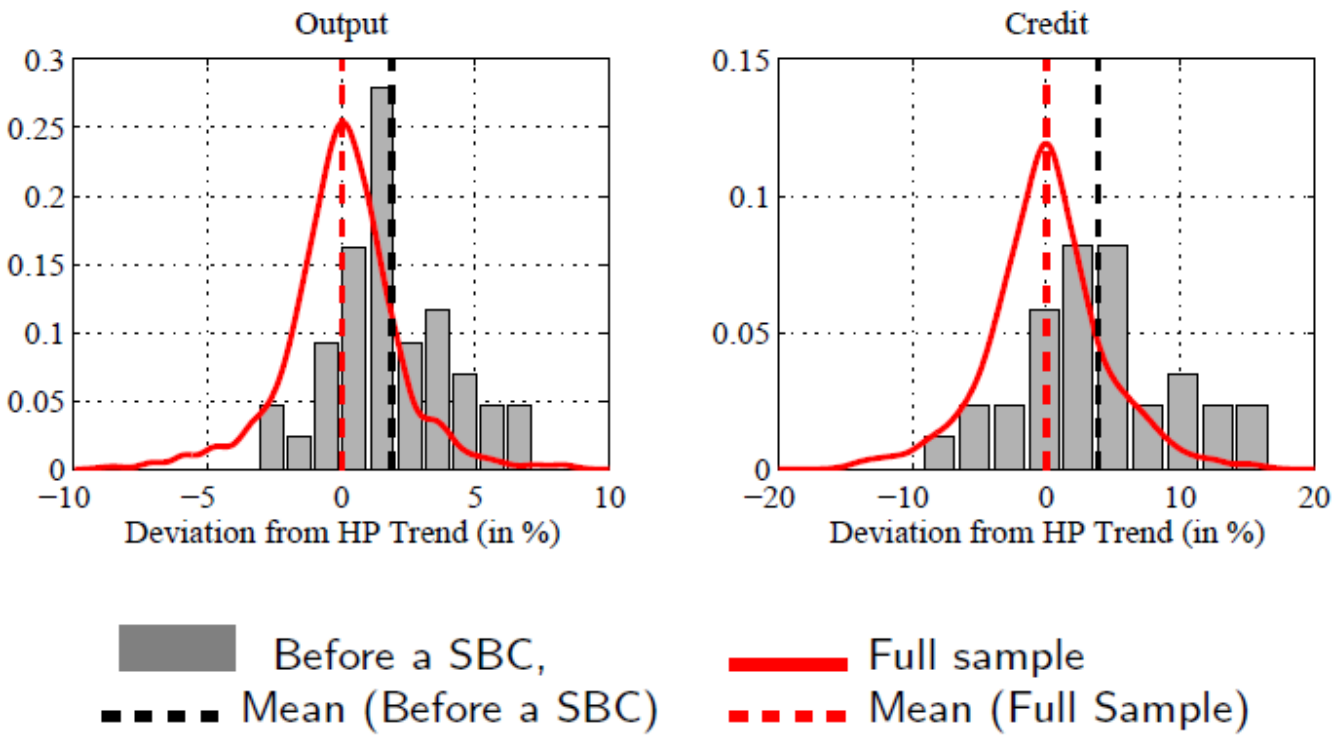
This figure reports the evolution of the frequency of SBCs during the transition toward the average steady state.

Credit booms and banking crises



Systemic banking crises break out in the midst of a credit-intensive boom

Credit booms and banking crises: Stylised facts



Conclusions

- Joint quantitative macro-economic analysis of business cycles and systemic banking crises (SBC):
  - Crises are defined as interbank market runs/freezes;
  - Crises are not caused by large negative shocks, but rather by a long sequence of positive shocks that lead to an expansion and a deterioration of the quality of the banking sector;
- Mimics what is observed in the data:
  - Behaves like a standard RBC model most of the time
  - Accounts for basic banking crisis facts