Indicators for liquidity shortages

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Outline

- Introduction

- Research Question

- Data

- Identifying liquidity problem

- "ECG" of liquidity

- How to identify liquidity shortages?

- Behaviour of banks

Introduction

- Financial crisis has shown that liquidity problems can arise quickly.

- Due to interconnectedness spill over effects to other banks in the (payment) system.

- Payment system (LVPS/RTGS) is platform where liquidity flows become visible.

- Need for measures to identify liquidity problems.

Research question

How to identifying potential liquidity problems (timely) of banks using LVPS (TARGET2) and collateral data?

Data

- TARGET2-NL transaction data
  - ~ 35000 transactions (daily).
  - ~ EUR 250 billion (daily).
  - ~ 10% of TARGET2 (value and volume).

- Collateral management data
 - EUR 150 billion pledged (August 2011).
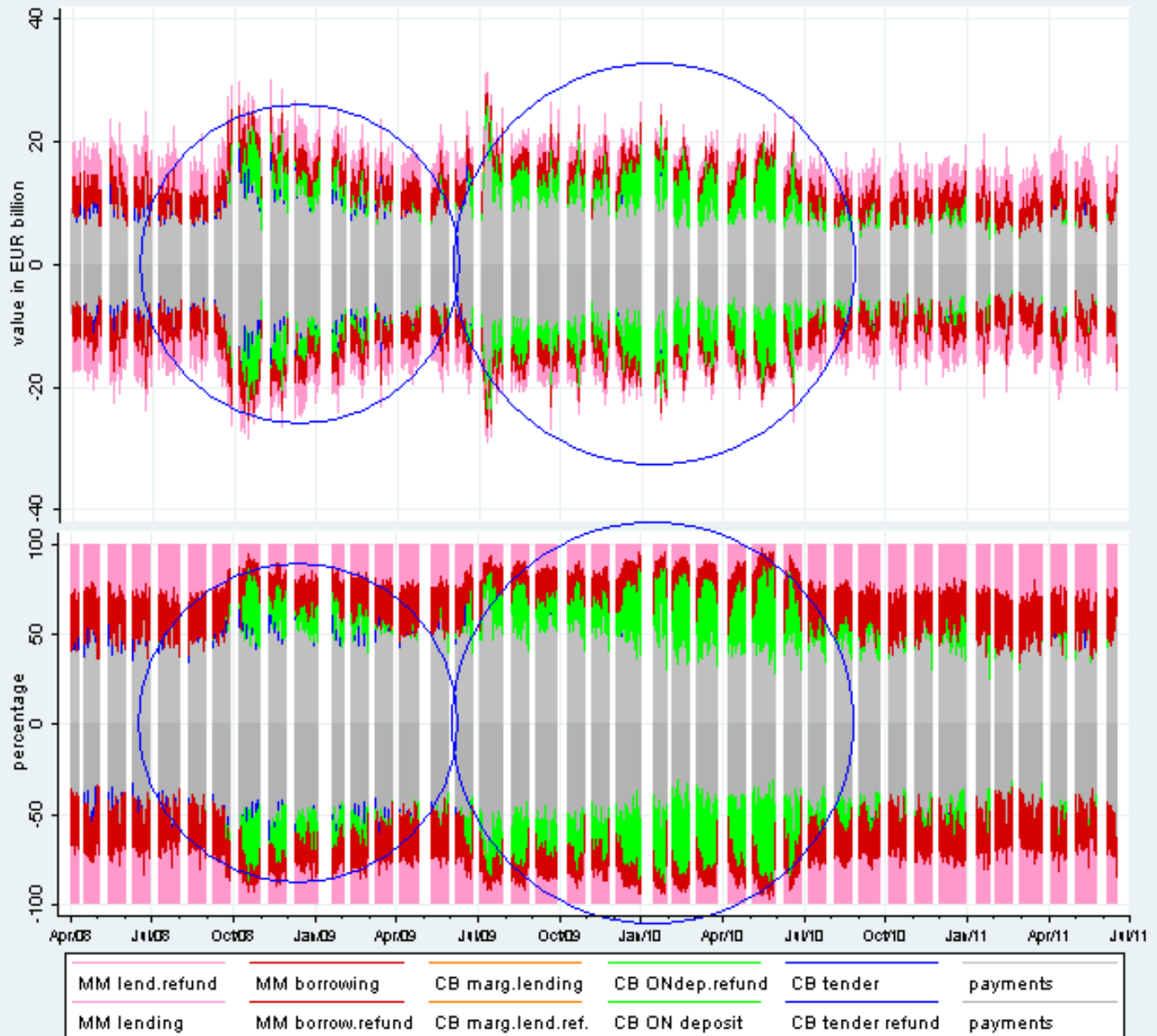
Identifying liquidity problems: Overview
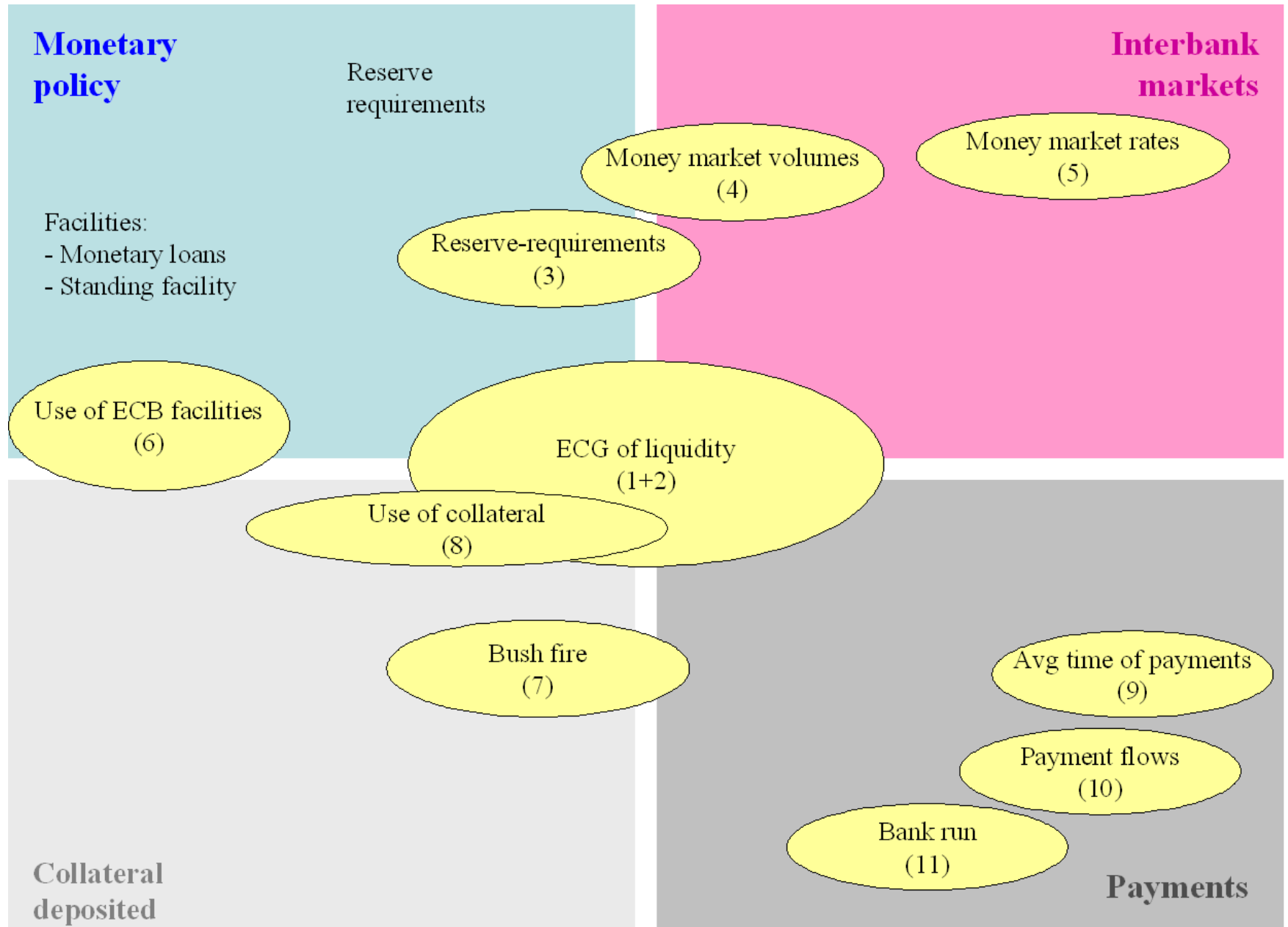
Day-to-day liquidity flows

- Outgoing and incoming payments often difficult to influence and/or predict

- Central bank requirement of average minimum reserve balances

- Steering of balance by using
  - Interbank money market
  - CB monetary loans
  - CB standing facility

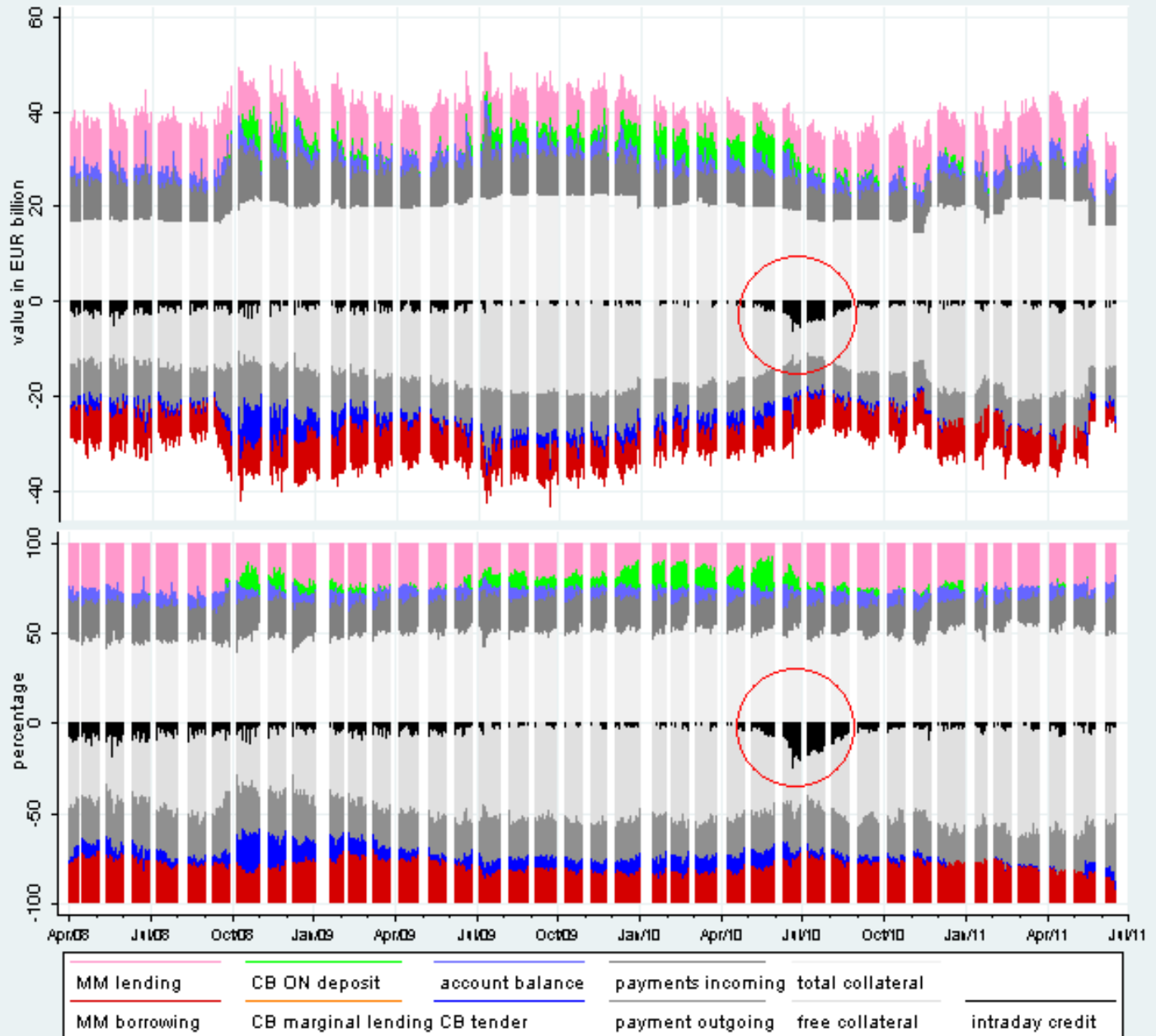# How to visualize daily liquidity flows
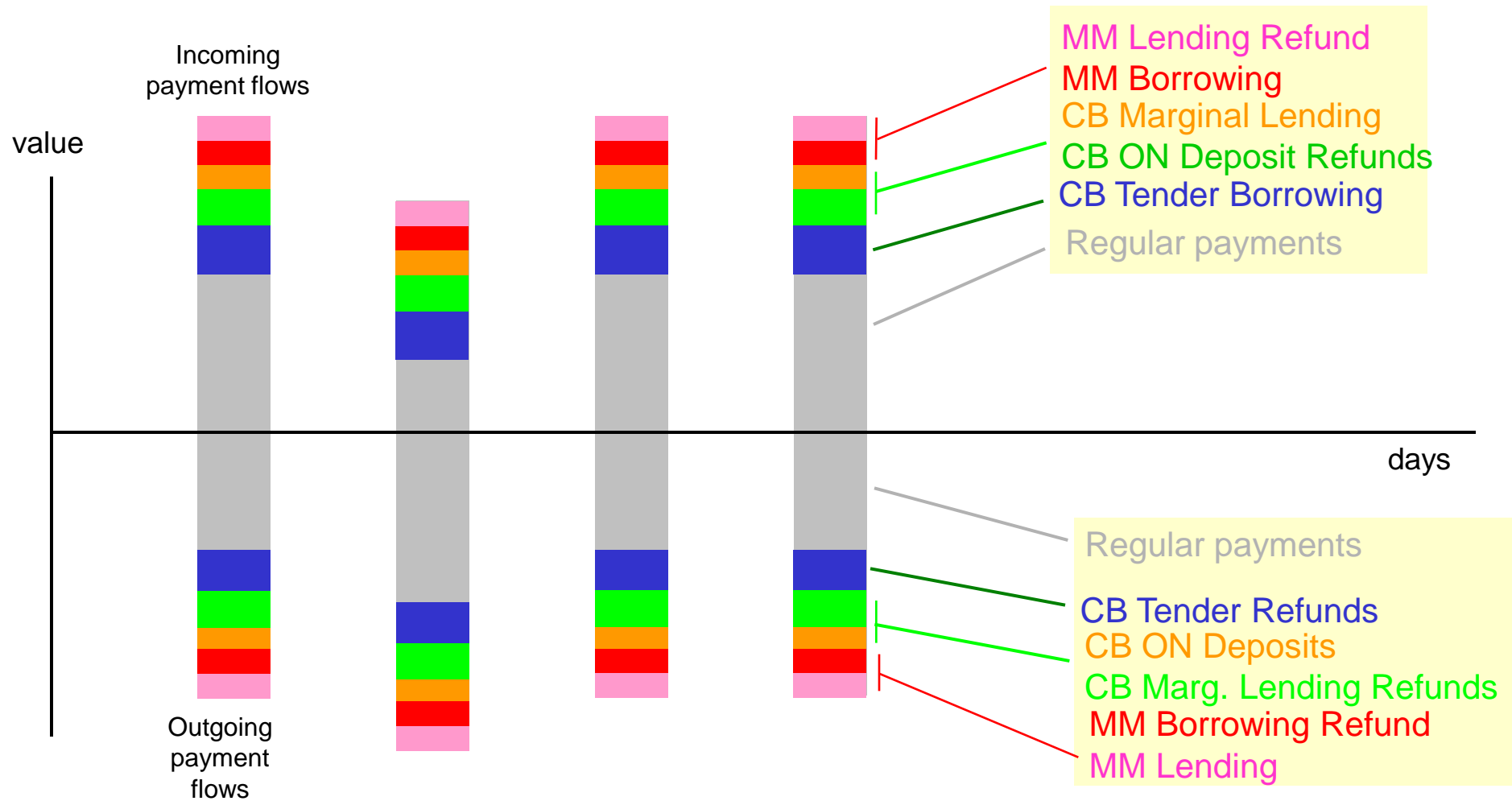
ECG: payment flows

What can be learnt from "ECG: payment flows"

- Overview most important payment flows
- Fluctuation in "real" payment transactions
- Lending/borrowing activity interbank money market
- Use of Central bank facilities

- Changes of above over time.

ECG: outstanding values

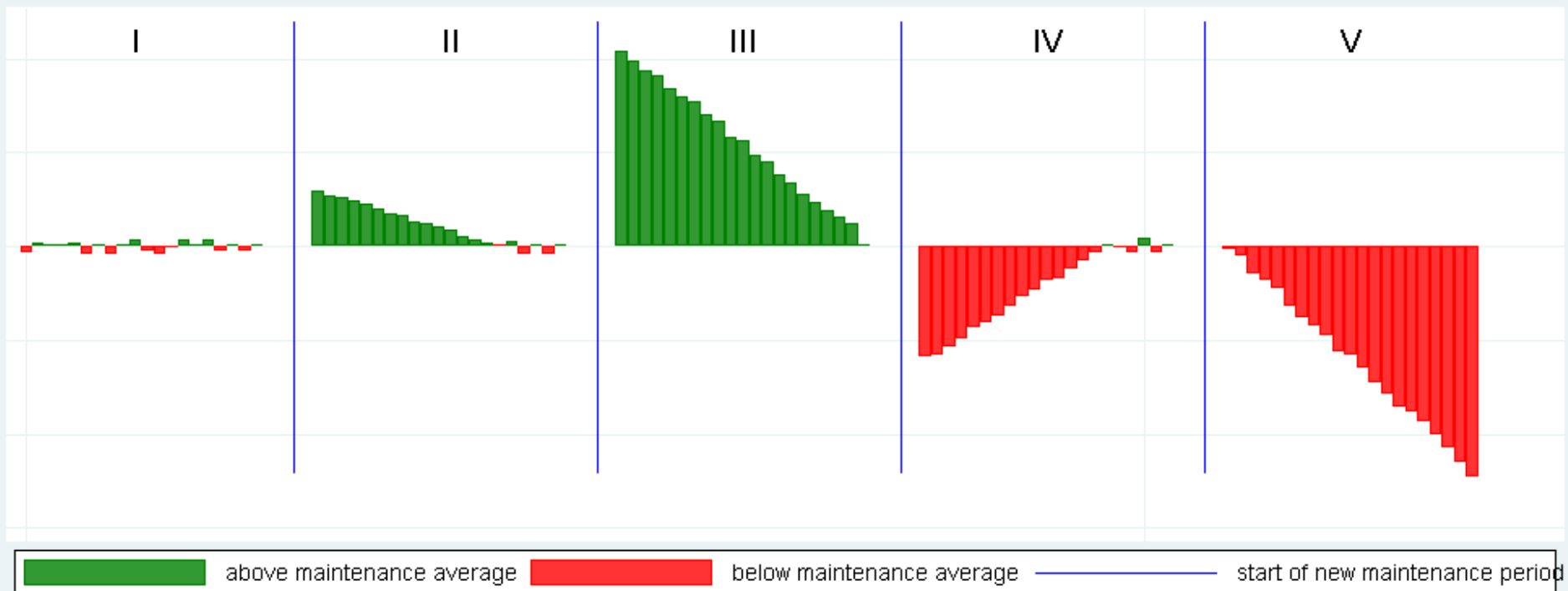# What can be learnt from "ECG: outstanding values"

- Funding: interbank and/or central bank

- Amount and use of collateral

- Changes of above over time.

How to identify liquidity shortages?

1. Minimum reserve requirements
2. Interbank money market
3. Central bank facilities
4. Timing of payments
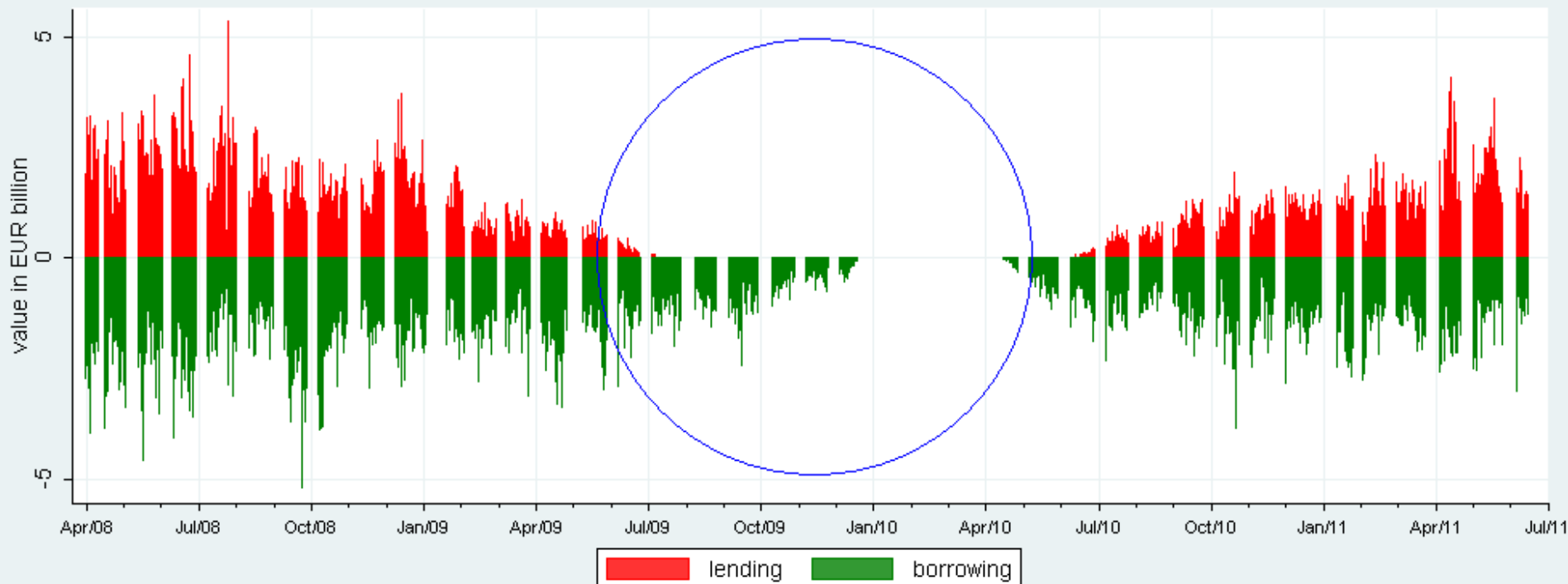5. Collateral amount and use
6. Bank run

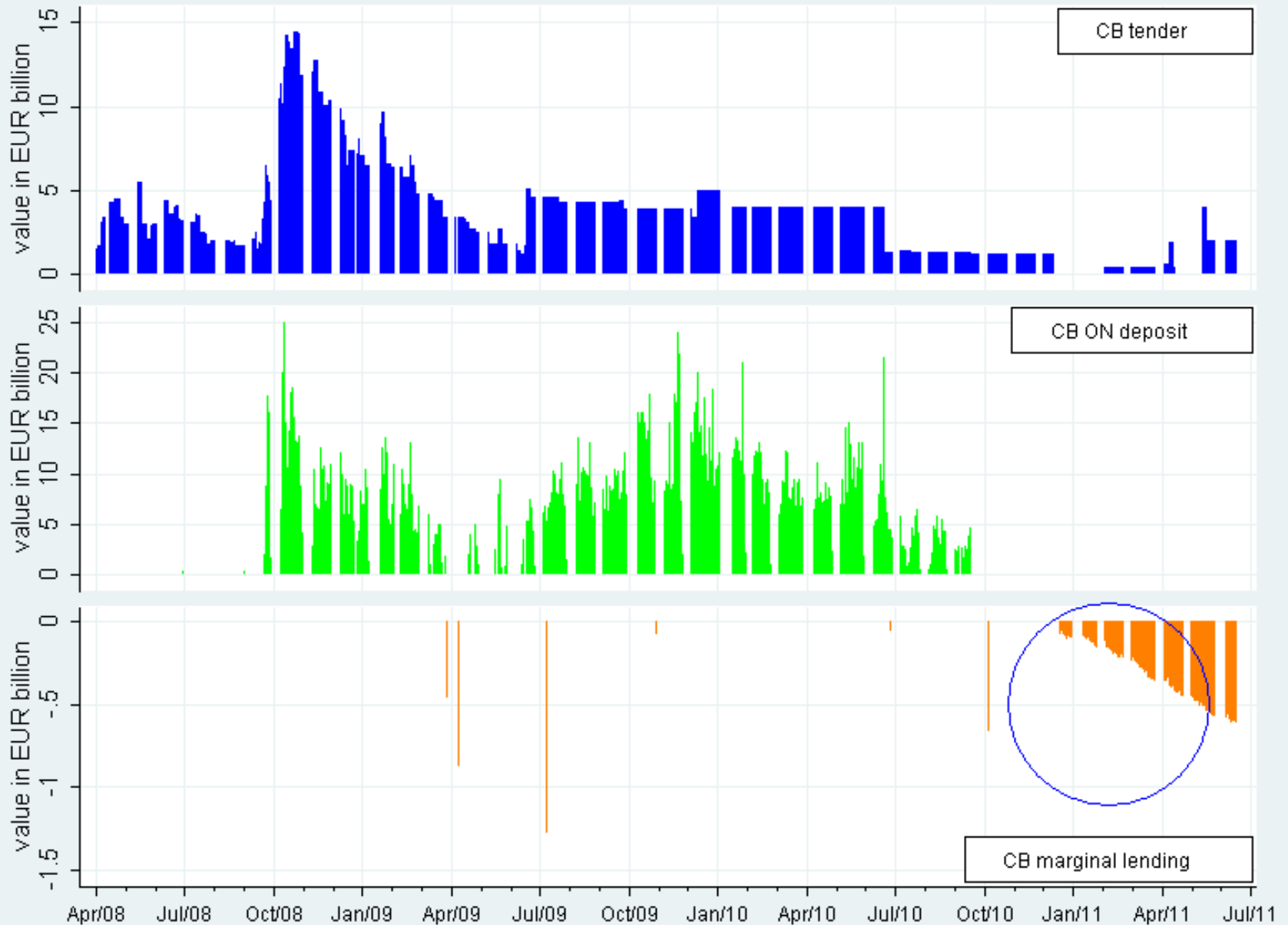# 1. Minimum reserve requirements

Chart showing maintenance periods I, II, III, IV, V with bars above and below maintenance average.

Legend: above maintenance average (green); below maintenance average (red); start of new maintenance period (blue line)

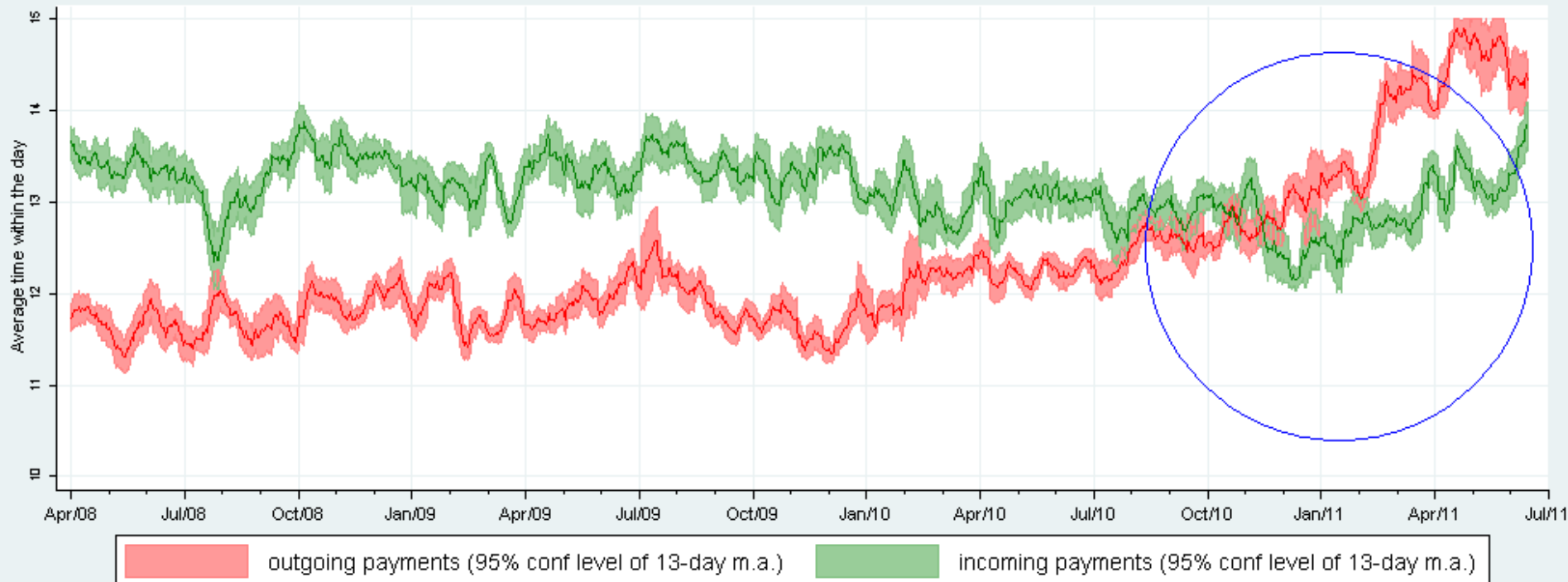# 2a. Interbank money market

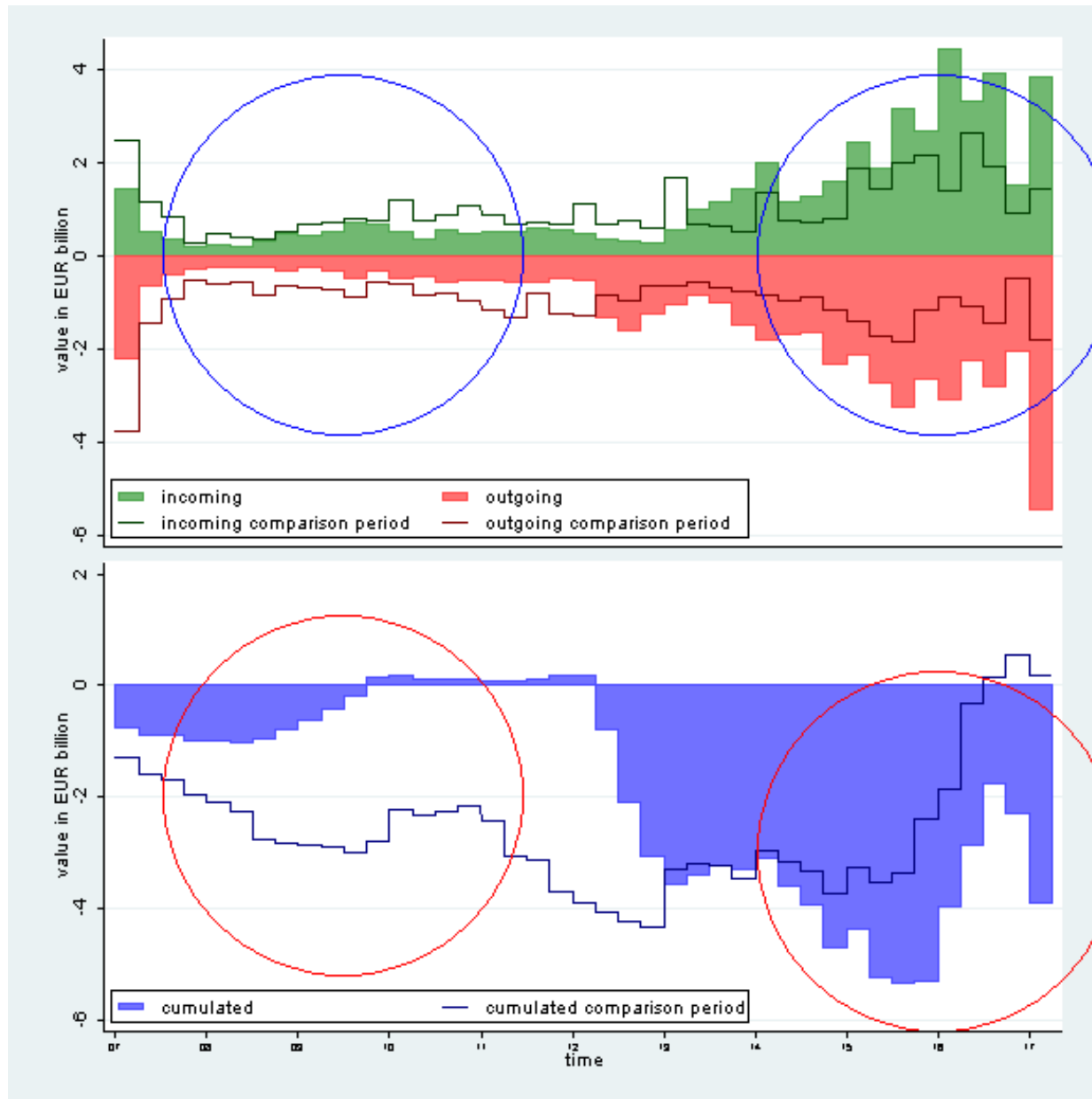# 2b. Interbank money market

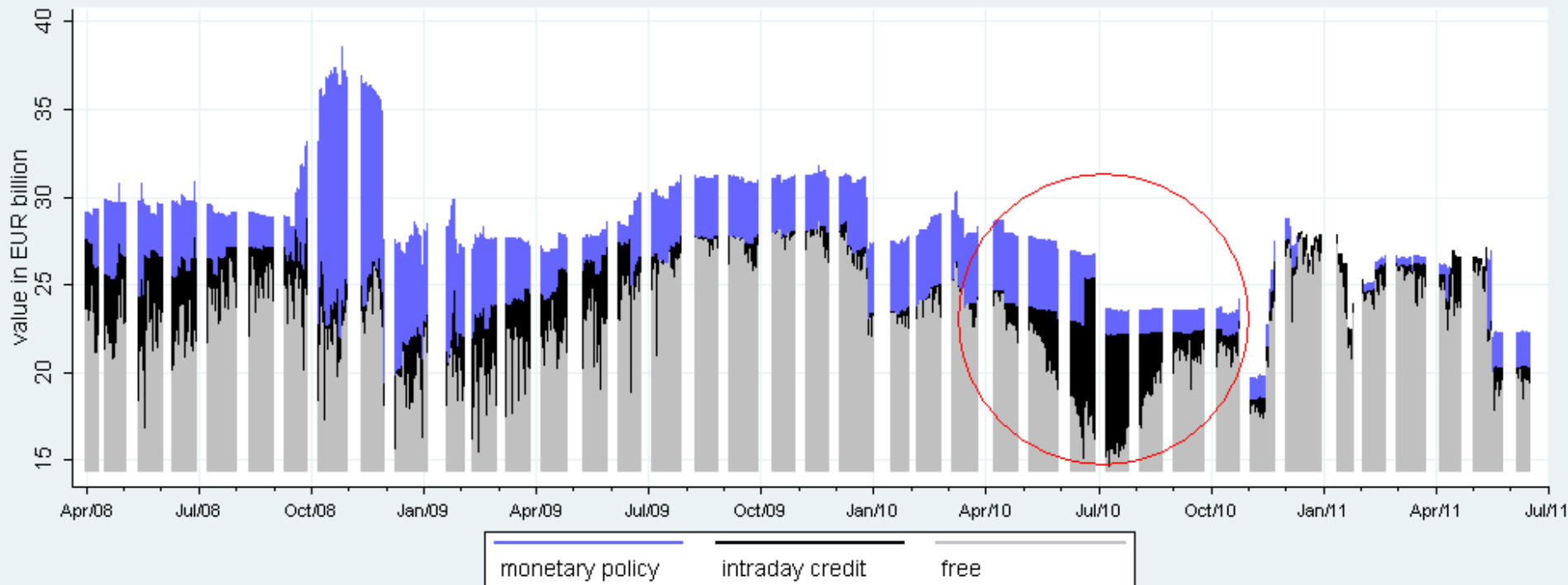# 3. Central bank facilities

4a. Timing of payments

4b. Timing of payments

5. Collateral

5b. Collateral
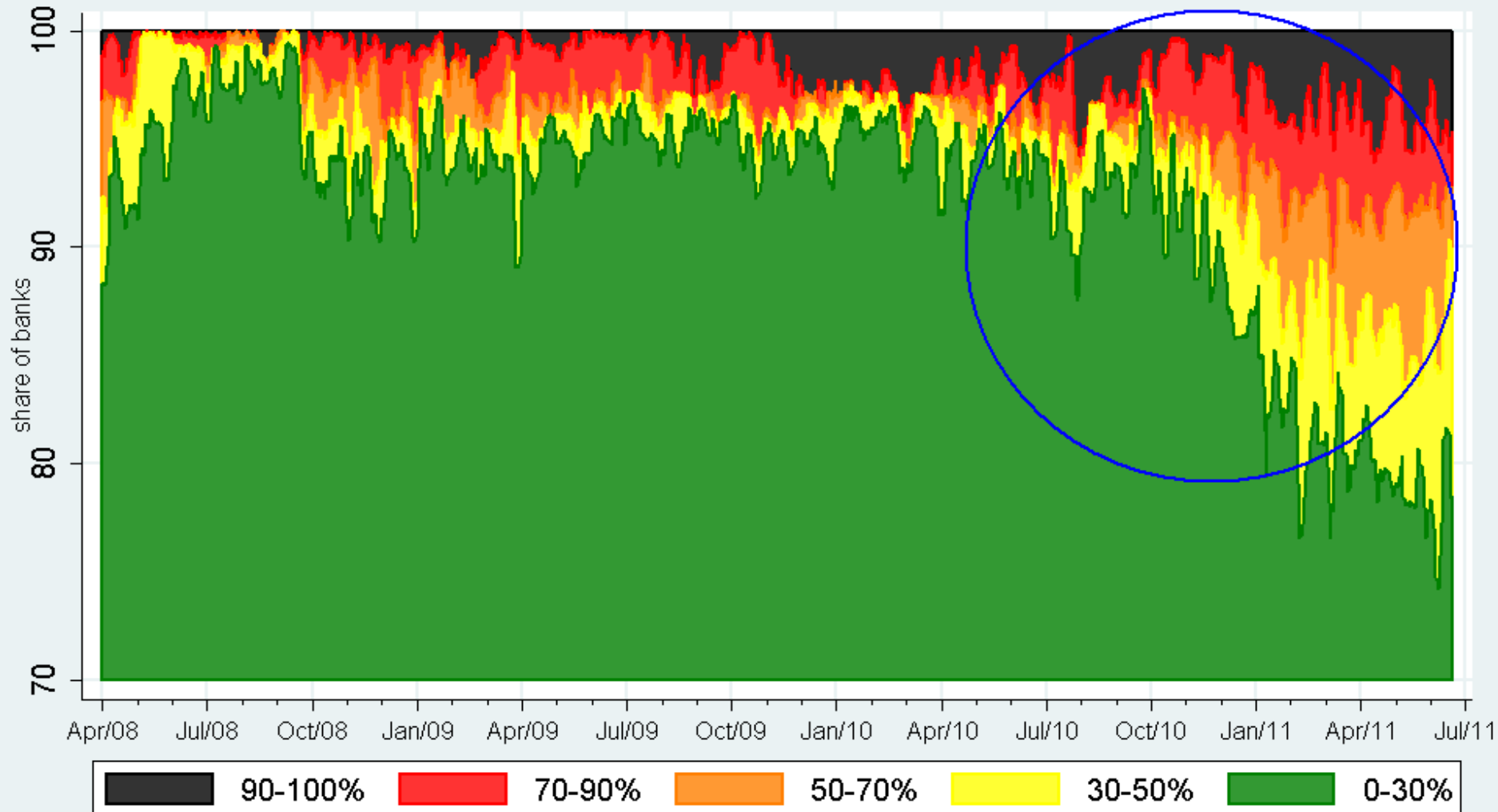
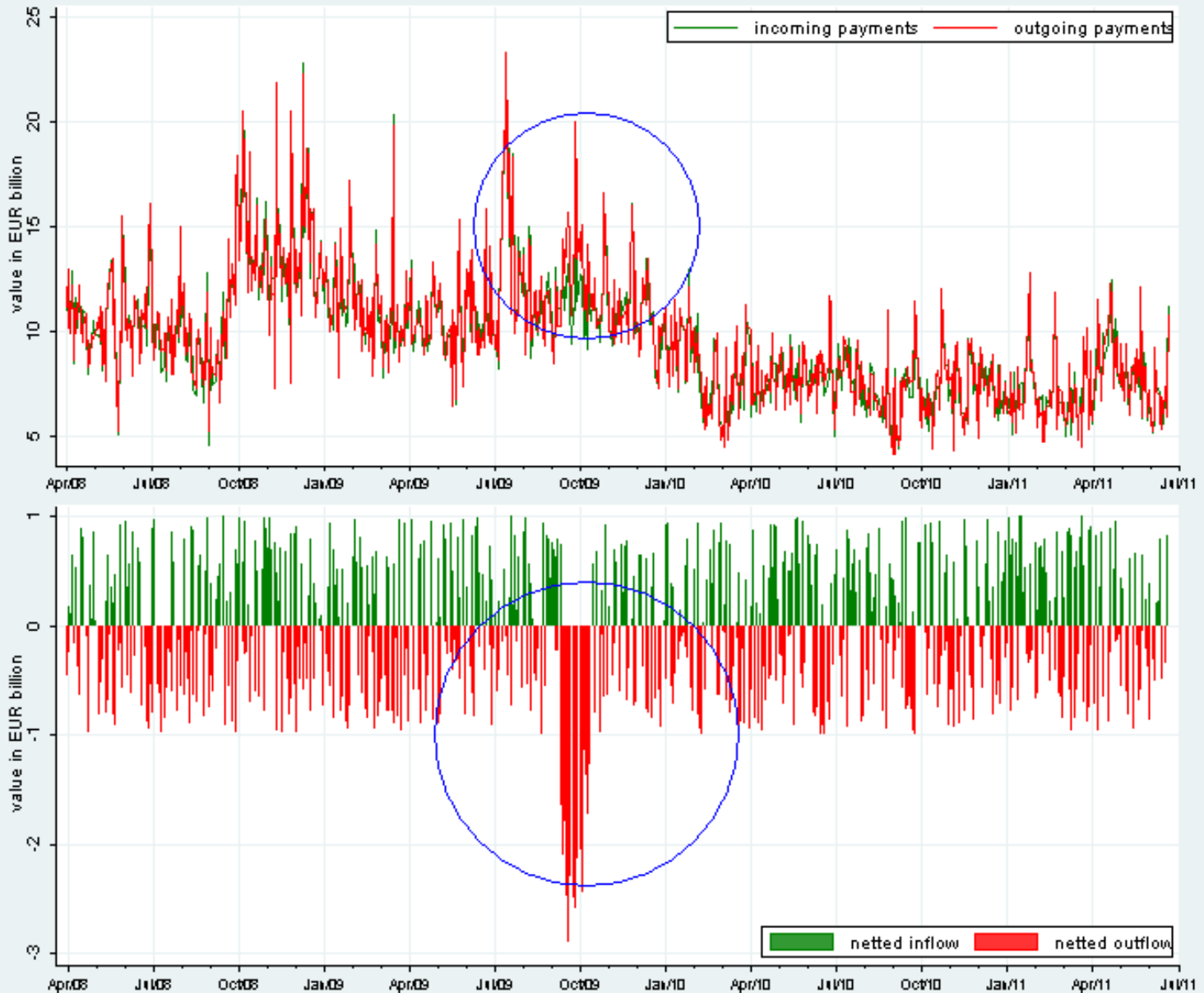# 6. Bank run

Behaviour found in the data (1/3)

- Changes in interbank market:
  - Changing interest rates
  - Changes in volume
  - In data found: rates increase and volumes decrease in times of stress
- Changes in timing:
  - A bank in trouble tends to delay at first, but soon realises that other banks will delay to him even more
  - Result: bank pays as soon as possible in case of problems

Behaviour found in the data (2/3)

- Changes in collateral use and amount
  - Some banks bring in more collateral to use for tenders and intraday credit
  - Some banks decrease their collateral amount (needed for their business) and use remaining more intensively
- Signs of a bank run:
  - When public becomes aware of problems a bank run is easily born (cash, client transactions in TARGET2, etc)

Behaviour found in the data (3/3)

- Existence of bilateral limits:

Set of behavioural rules

- Preparation rule 1:
  - Historical transaction data used for scenario analysis of payment systems can be cleaned for interbank loans, monetary policy transactions, marginal lending and ECB overnight deposit.

Actors in the payment market

A) Monetary policy: the central bank

B) (part of) the interbank market: banks that enter the market for lending and/of borrowing

C) Payments: banks and clients of bank (consumers and businesses).

D) Collateral: bank(s) depositing collateral for monetary and/or payment purposes. The central bank steers the eligibility and haircuts of the collateral, resulting in the collateral value.

A) Set of behavioural rules: central bank

- Increase/decrease the access to tenders
- decrease/increase cash reserve requirements

B) Set of behavioural rules: interbank market

- Decrease/increase the amount a bank can borrow in the interbank money market depending on the level of trust to this bank.

- Set bilateral limits depending on the type of bank.

C) Set of behavioural rules: Collateral

7) Decrease the collateral's amount, which can be used for intraday credit and tenders, when the stress scenario aims to simulate severe problems with a bank.

8) Decrease the collateral amount, caused by reduced eligibility and/or increased haircuts of collateral.

D) Set of behavioural rules: payments

3) Set bilateral limits depending on the type of bank.

4) Increase the outgoing payments' amount when the stress with respect to a bank continues.

5) Transactions in payment system's scenario analysis have to be divided into priorities e.g.: 1) very time critical, 2) time critical and 3) other payment transactions.

6) Change the timing of the outgoing payments.

conclusions

- When a bank is getting into liquidity problems often the following pattern will become visible in RTGS data
  - Problems funding in the market (higher rates, lower volumes)
  - Shift to central bank borrowing (tenders)
  - Increase intraday credit
  - Delay payments
  - Bank run