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Suomen Pankki

# How liquidity crisis has changed the monetary policy operations

Presentation at SUERF/BoF Conference

3.7.2015





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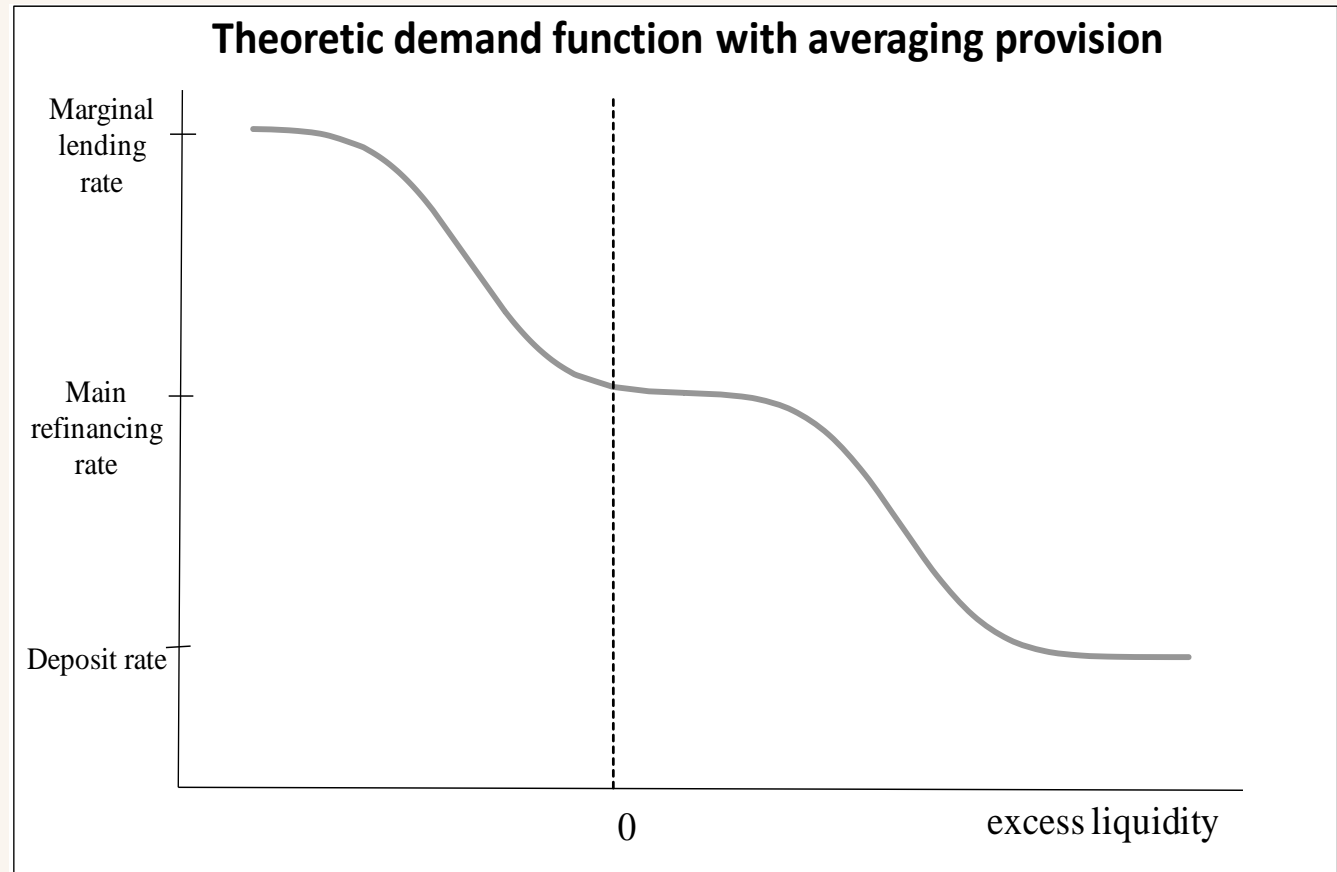
1. Pre-crisis monetary policy implementation
2. Changes in implementation during the crisis
  - Financial market crisis
  - Sovereign debt crisis
  - Risks of deflation
3. Future of the monetary policy implementation



# 1. Pre-crisis monetary policy implementation



## Demand for central bank reserves: interest rate corridor and reserves averaging





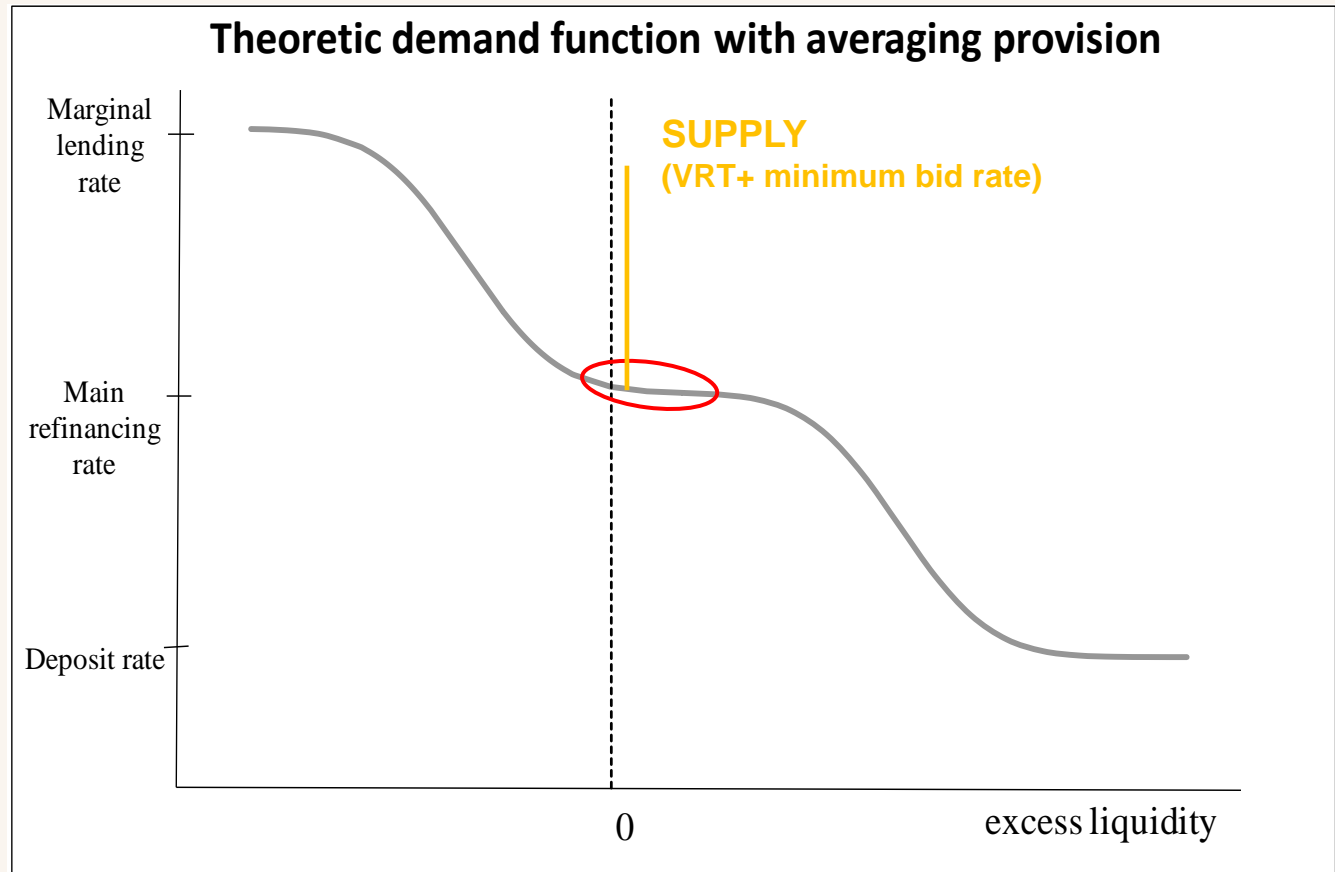
## Bank $i$ 's profit maximization problem:

Bank  $i$ 's profit maximisation problem at the interbank market at  $t$  is:

$$\begin{aligned}
 \max_{b_{i,t}} E[\Pi_t] = & r_t^m \int_{-\infty}^{-OB_{i,t}-b_{i,t}} (OB_{i,t} + b_{i,t} + \varepsilon_t) f(\varepsilon_t) d\varepsilon_t \quad (C.1) \\
 & + E[r_f^T] \int_{-OB_{i,t}-b_{i,t}}^{\infty} (OB_{i,t} + b_{i,t} + \varepsilon_t) f(\varepsilon_t) d\varepsilon_t \\
 & + (r_t^d - E[r_f^T]) \int_{IB_{i,t}-b_{i,t}}^{\infty} (-IB_{i,t} + b_{i,t} + \varepsilon_t) f(\varepsilon_t) d\varepsilon_t \\
 & + \sum_{j=t+1}^{T-1} \left( E_t[r_j^m - r_f^T] \left[ \int_{-\infty}^{-eOB_{i,j}^*} (eOB_{i,j}^* + \nu_j) g(\nu_j) d\nu_j \right. \right. \\
 & \left. \left. - \int_{-\infty}^{-eOB_{i,j}^{*'}} (eOB_{i,j}^{*'} + \nu_j) g(\nu_j) d\nu_j \right] \right) \\
 & + E_t[r_j^d - r_f^T] \left[ \int_{JB_{i,j}^*}^{\infty} (-JB_{i,j}^* + \nu_j) g(\nu_j) d\nu_j - \right. \\
 & \left. \int_{JB_{i,j}^{*'}}^{\infty} (-JB_{i,j}^{*'} + \nu_j) g(\nu_j) d\nu_j \right] \Big) - r_t^{om} b_{i,t},
 \end{aligned}$$

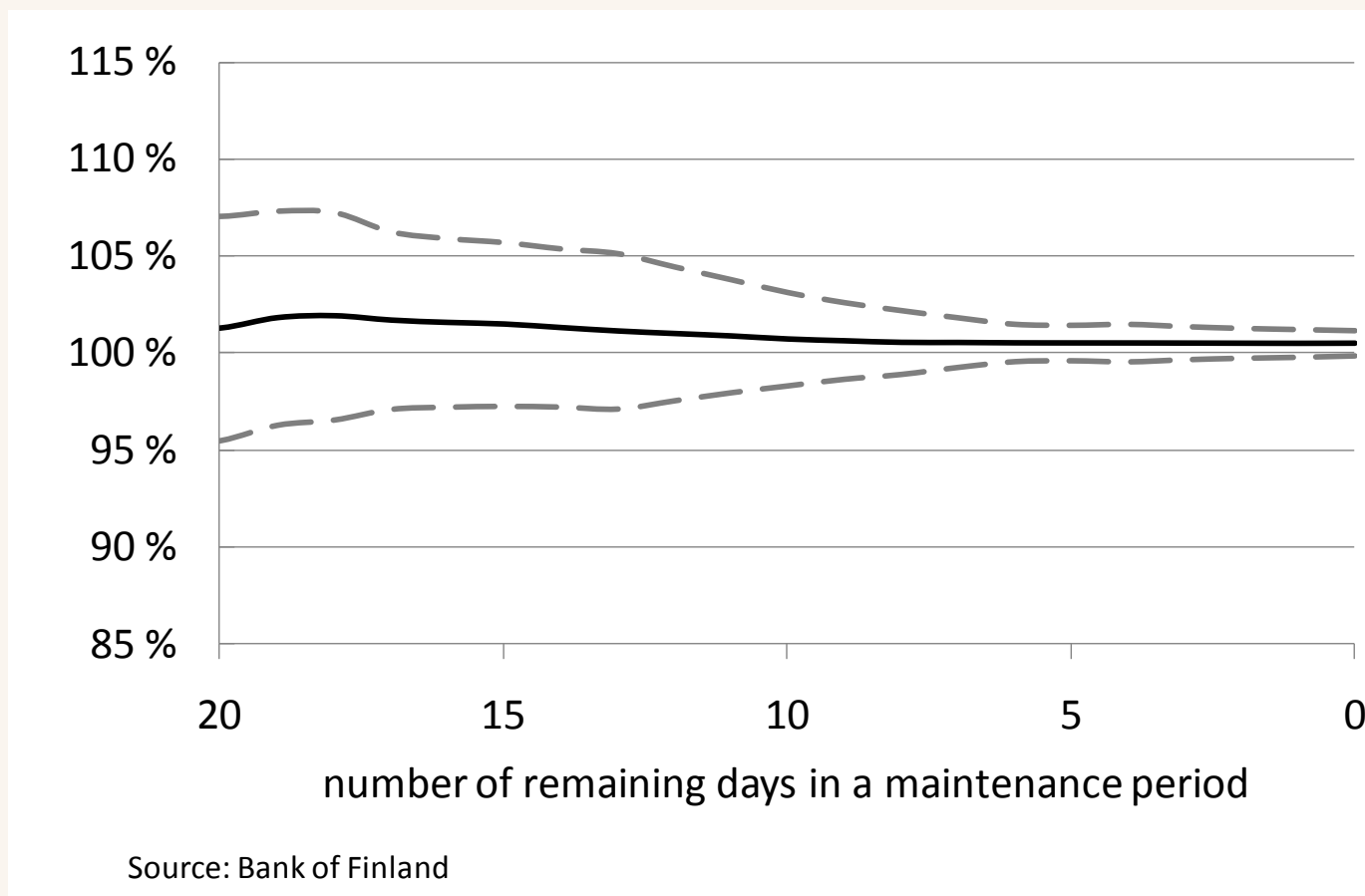


## Demand for central bank reserves: interest rate corridor and reserves averaging



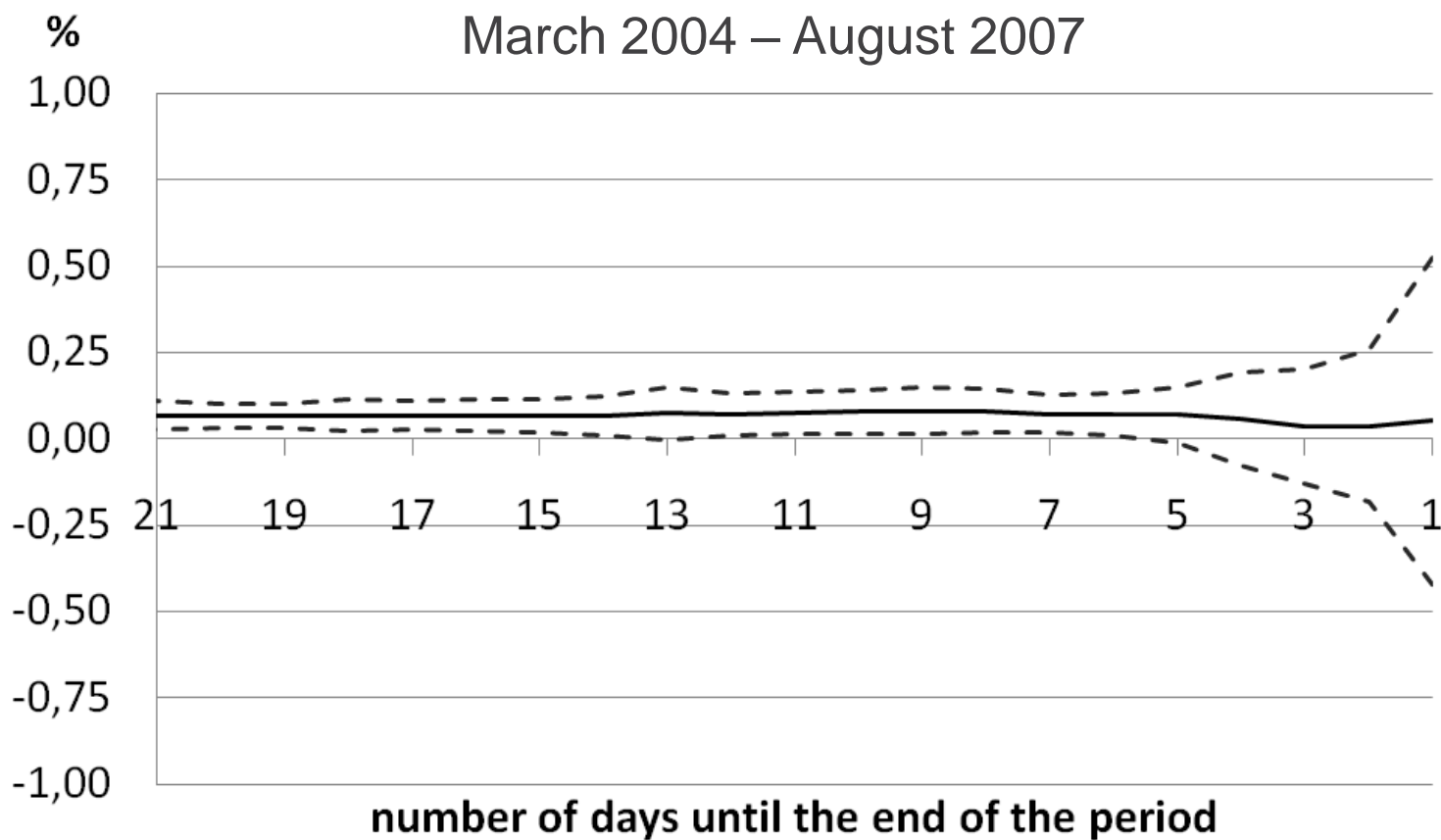


## Pre-crisis intra period liquidity provision: average reserve deposits / requirements in cumulative terms





## Precision of the monetary policy implementation: EONIA – minimum bid rate (average and +/- 2 standard deviations)

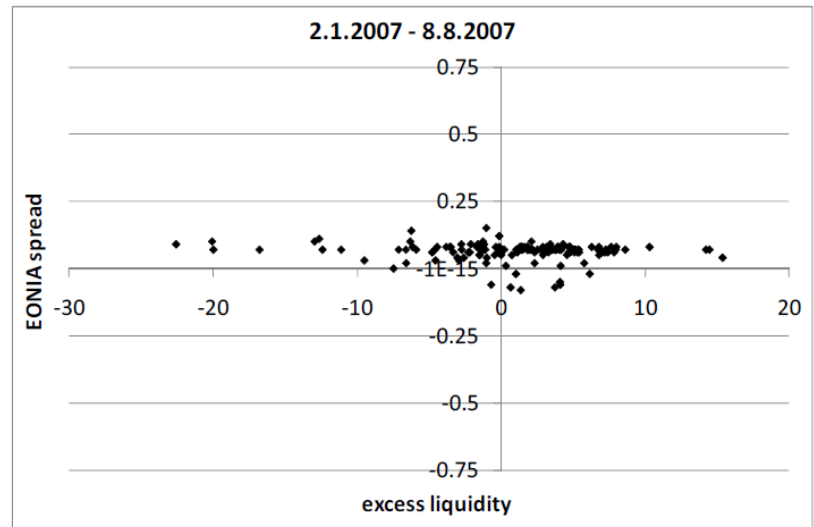
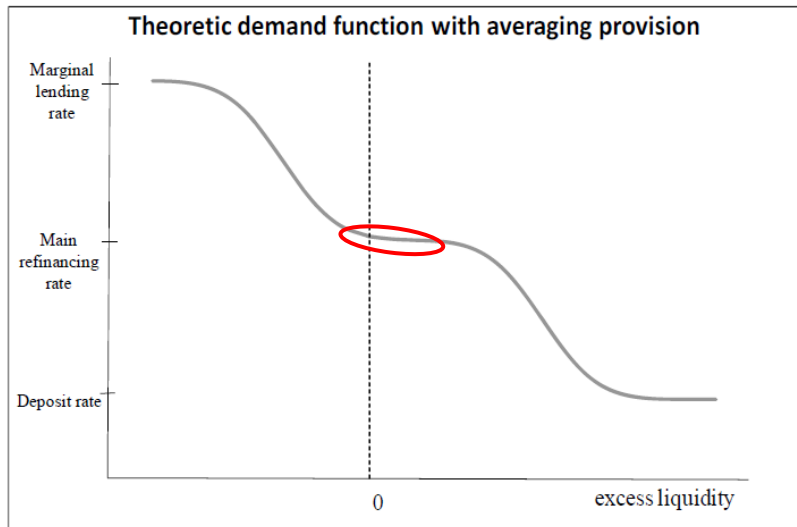


Source: Papadia & Välimäki : 2011



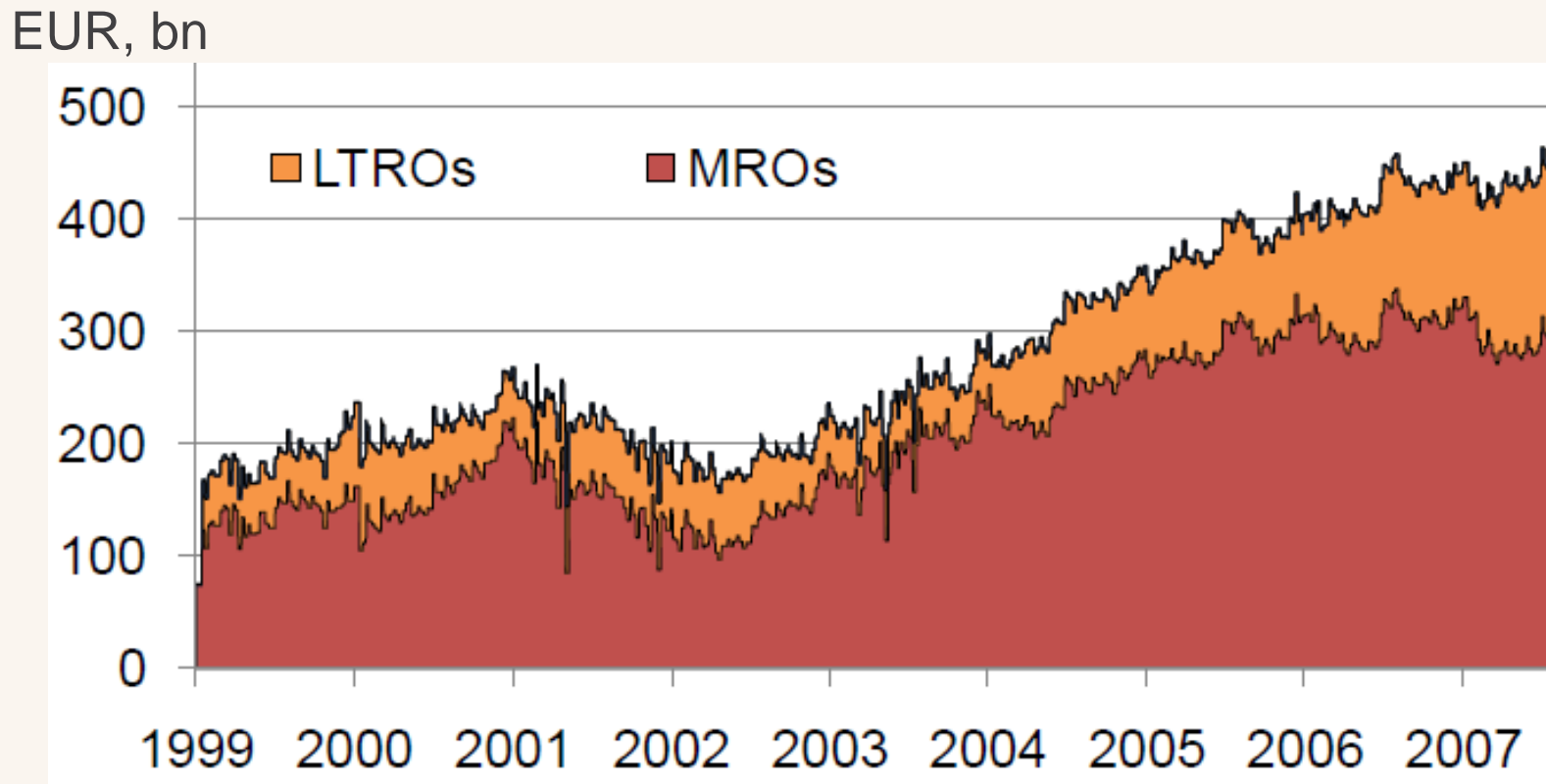


# Pre-crisis EONIA and liquidity:



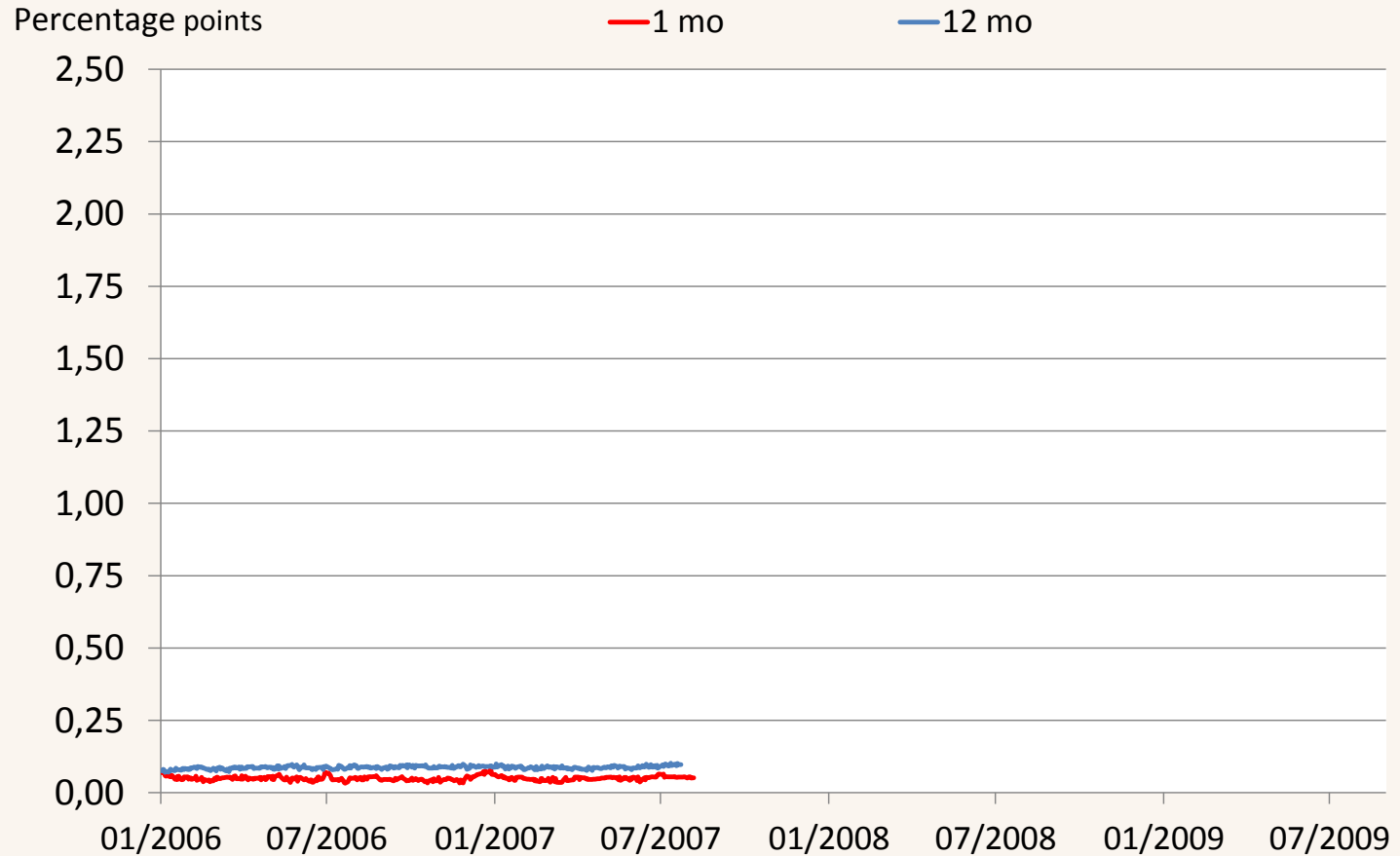


# Liquidity provision by regular operations: liquidity deficit EUR 150-450 billion





## Pre-crisis money market risk premia: EURIBOR - EUREPO



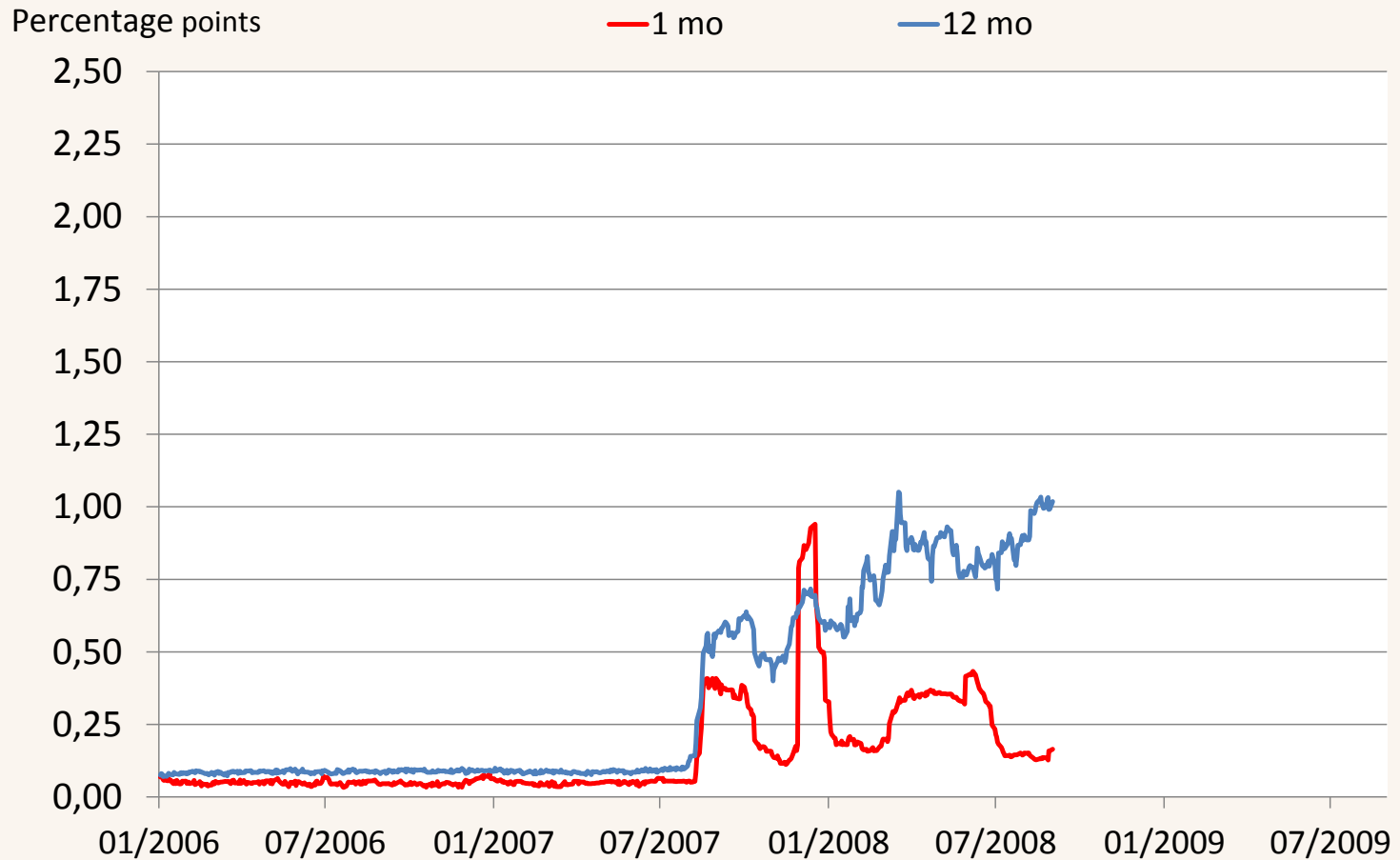
Source: Bloomberg.



## 2. Monetary policy implementation during crisis



# Market turmoil landed in euro area 9.8.2007: EURIBOR - EUREPO



Source: Bloomberg.

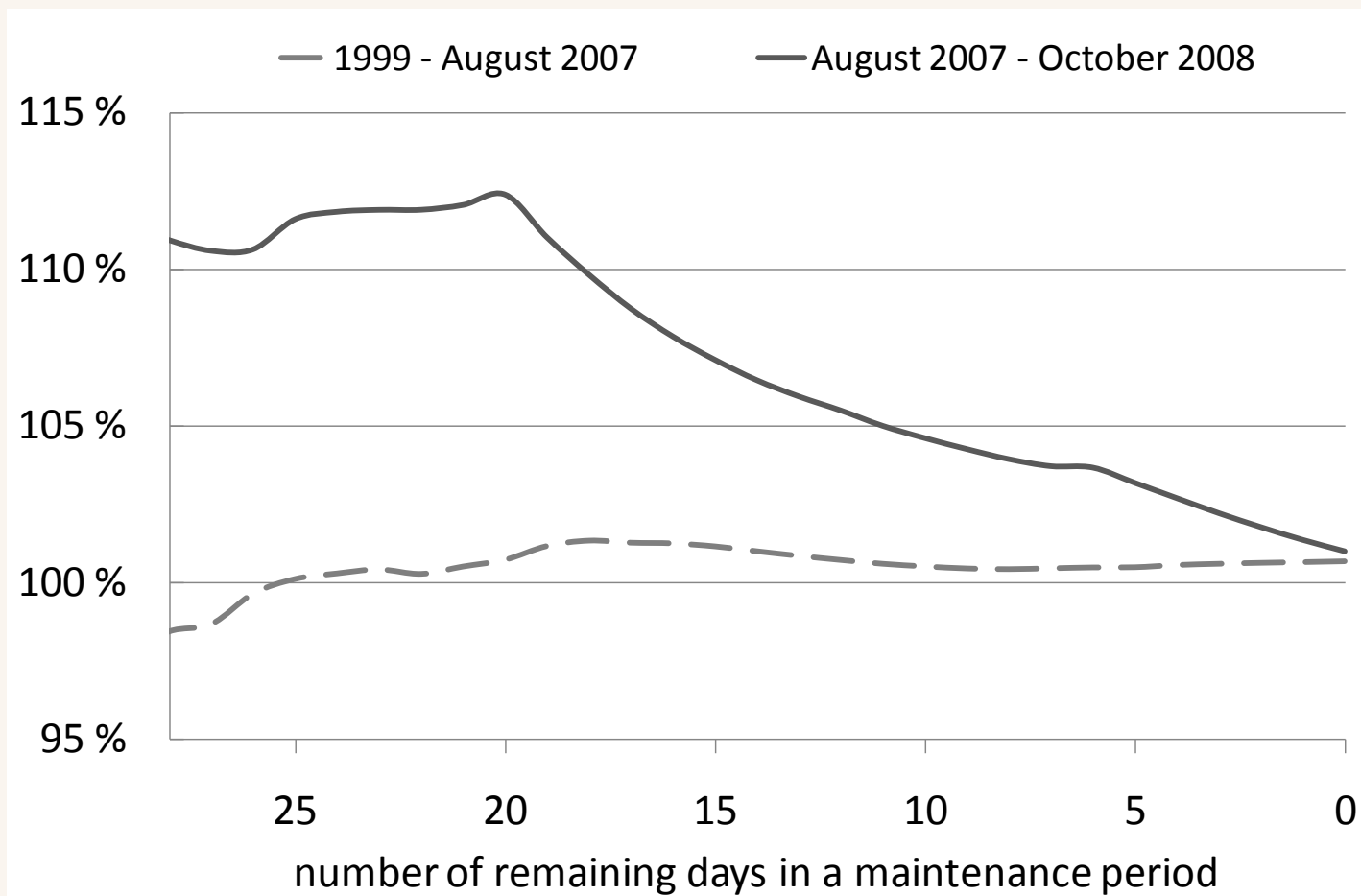


## How the liquidity crisis changed the Eurosystem monetary policy implementation:

1. As an early reaction: **a series of fine-tuning operations** from 9.8.2007 onwards, to guarantee banks' liquidity positions
2. Lengthening of the average maturity of the CB liquidity provision
3. Increased flexibility in the timing of the liquidity provision
4. Monetary policy stance (MRO or standing facility rates) was **not** adjusted



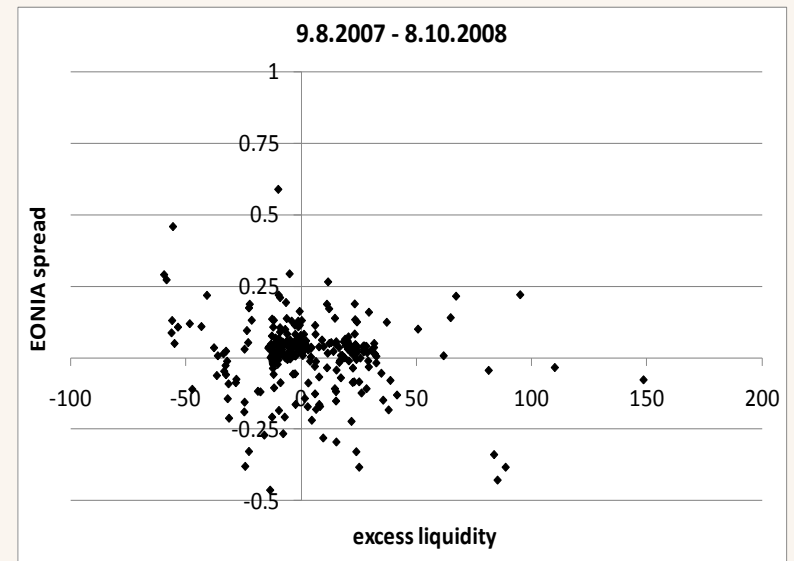
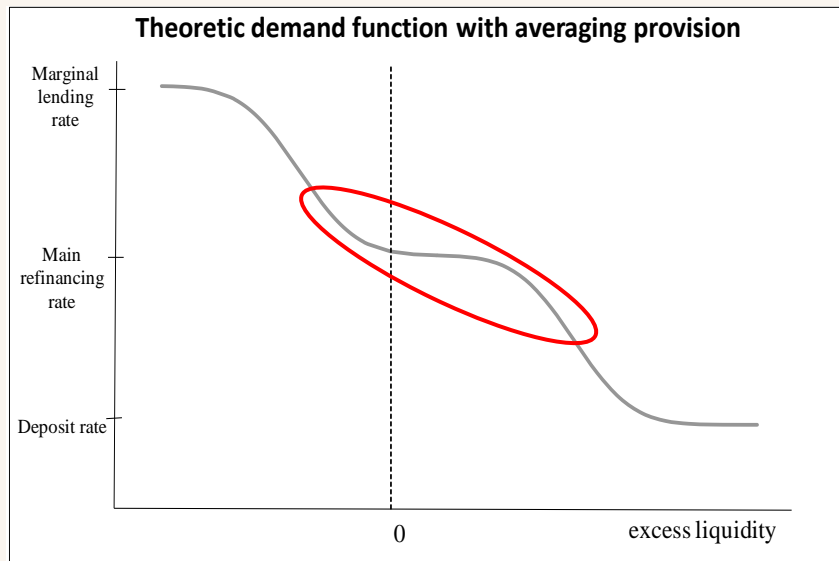
# Frontloading the reserve holdings: (cumulative) reserve deposits / reserve requirements



Source: Papadia & Välimäki 2011



# Demand for central bank reserves: frontloading



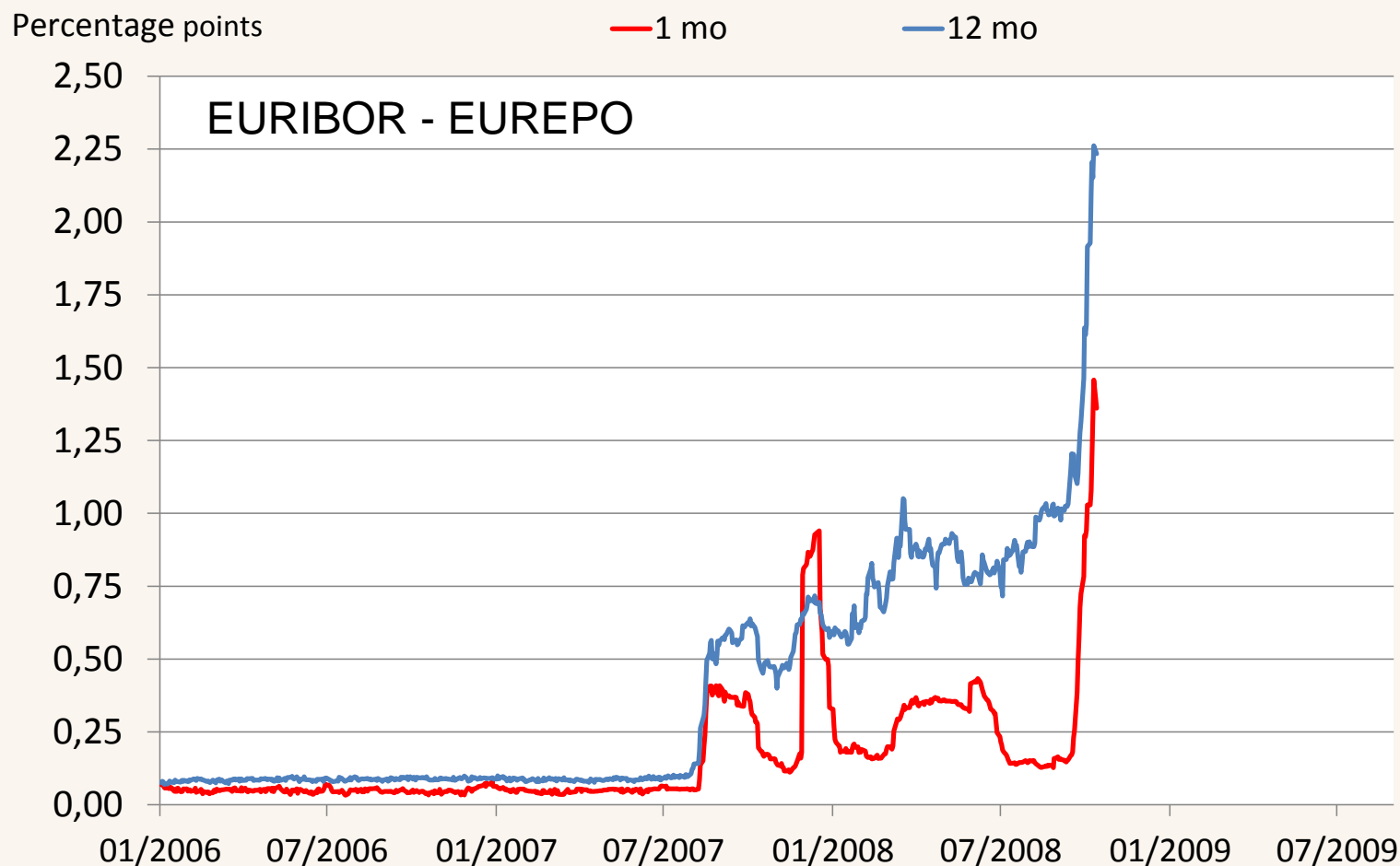




# From market turmoil to systemic crisis



## Lehman failure in September 2008 resulted in a dramatic jump in money market term premia



Source: Bloomberg.

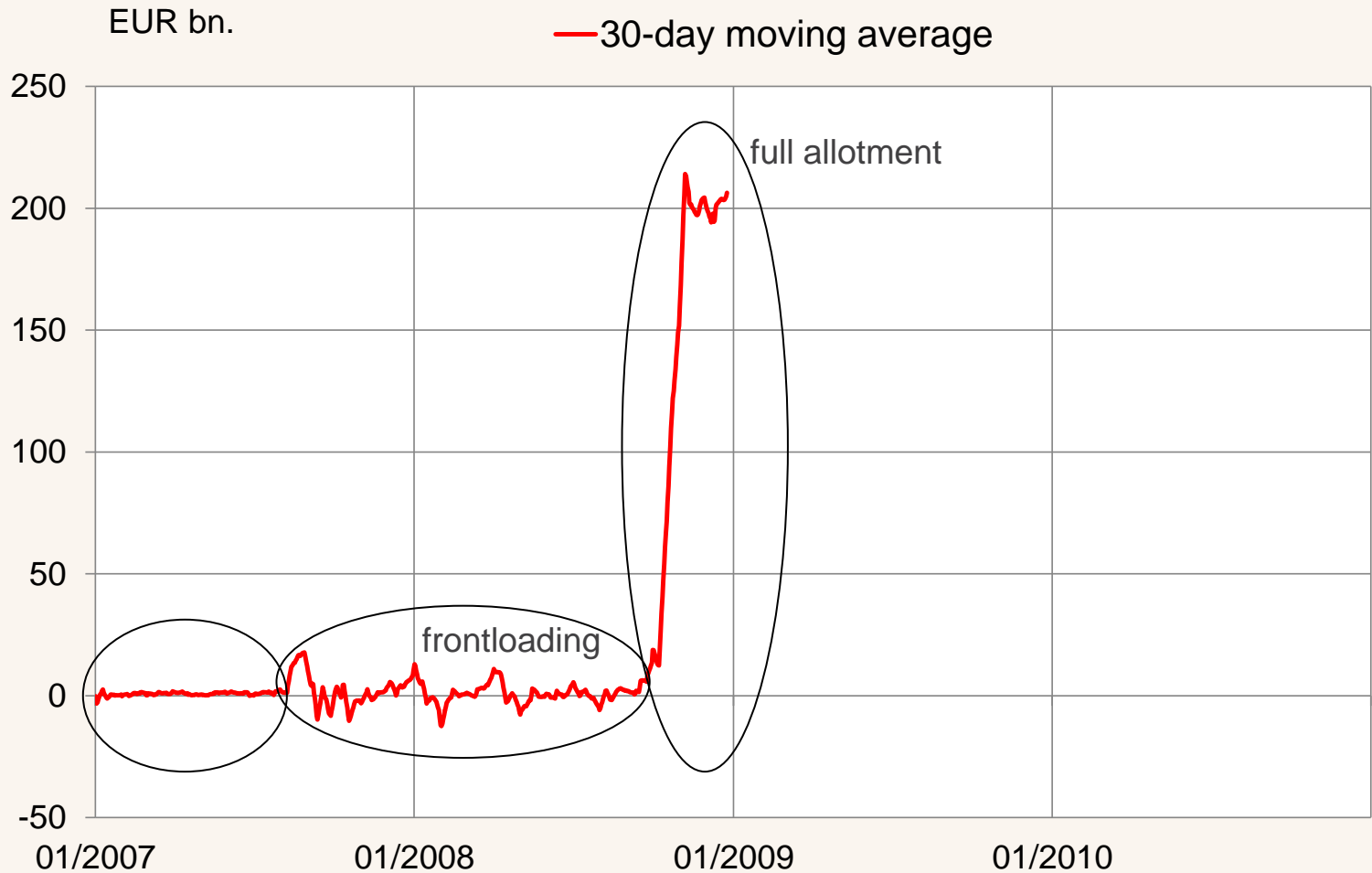


## Changes in Eurosystem monetary policy implementation during financial market crisis:

- Change in the tender procedure (Aug 2008):
  - from variable rate tenders (VRT) to fixed rate full allotment (FRFA)
- A series of rate cuts (2008-2009)
  - incl. a coordinated rate cut
- Provision of 1 year central bank liquidity (June 2009)
- Covered bond purchase programme, CBPP(1)
  - to unlock a major segment in European financial markets



# Surplus liquidity in the banking system

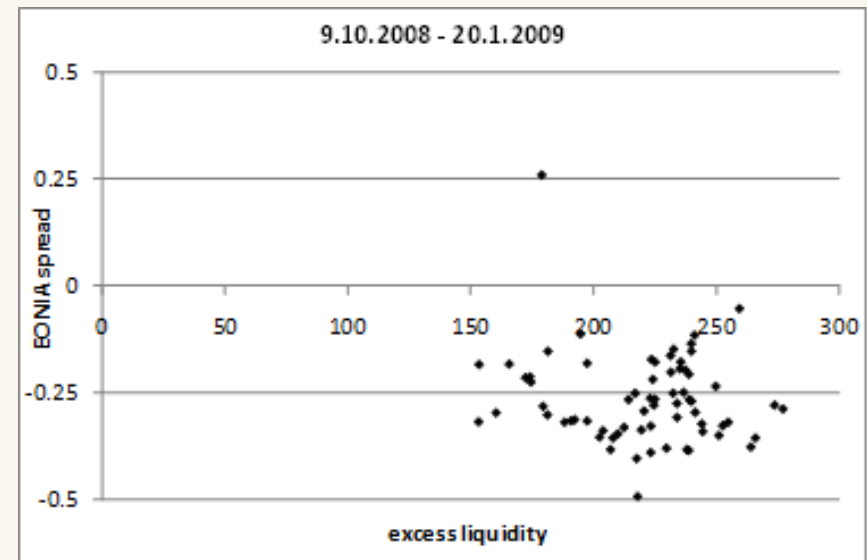
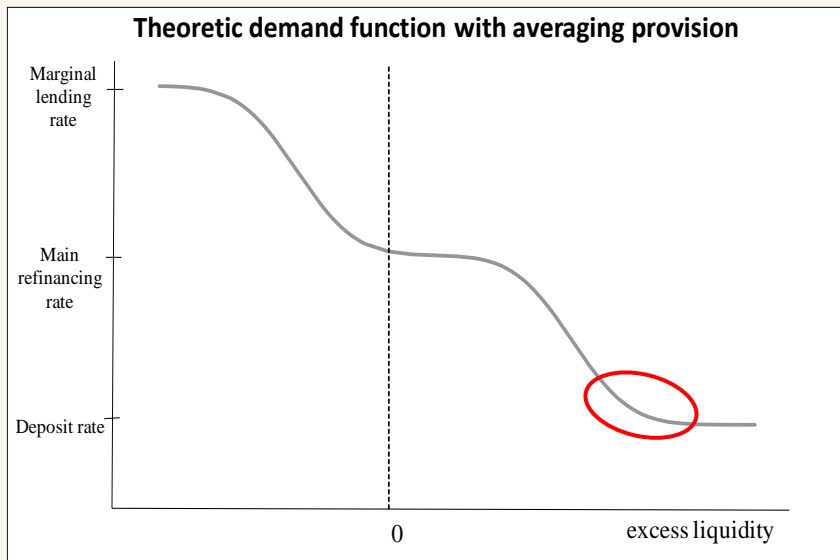


Source: Bank of Finland.

Current accounts - reserve requirements + the net use of standing facilities.

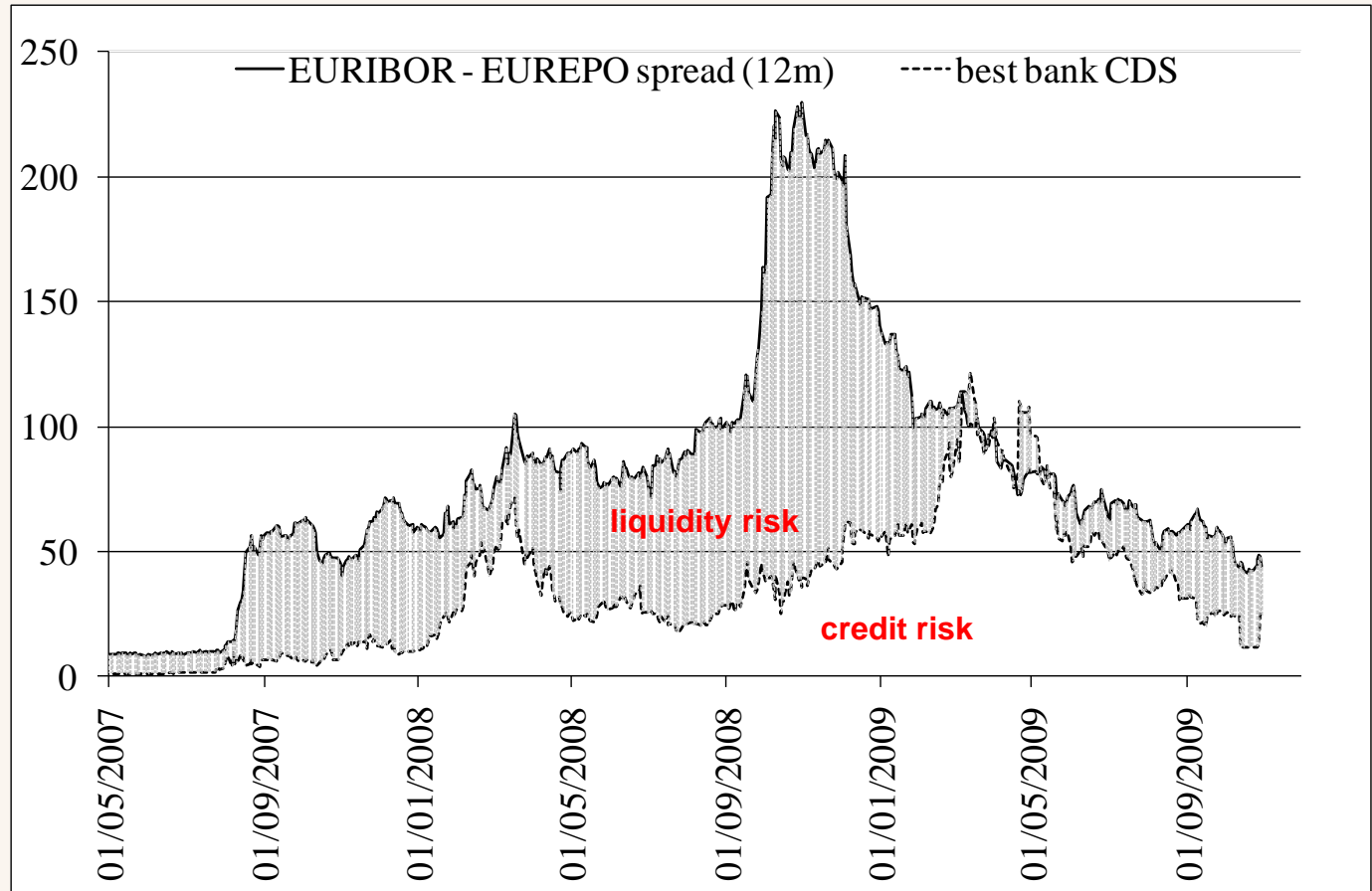


# Demand for central bank reserves: interest rate corridor and reserves averaging



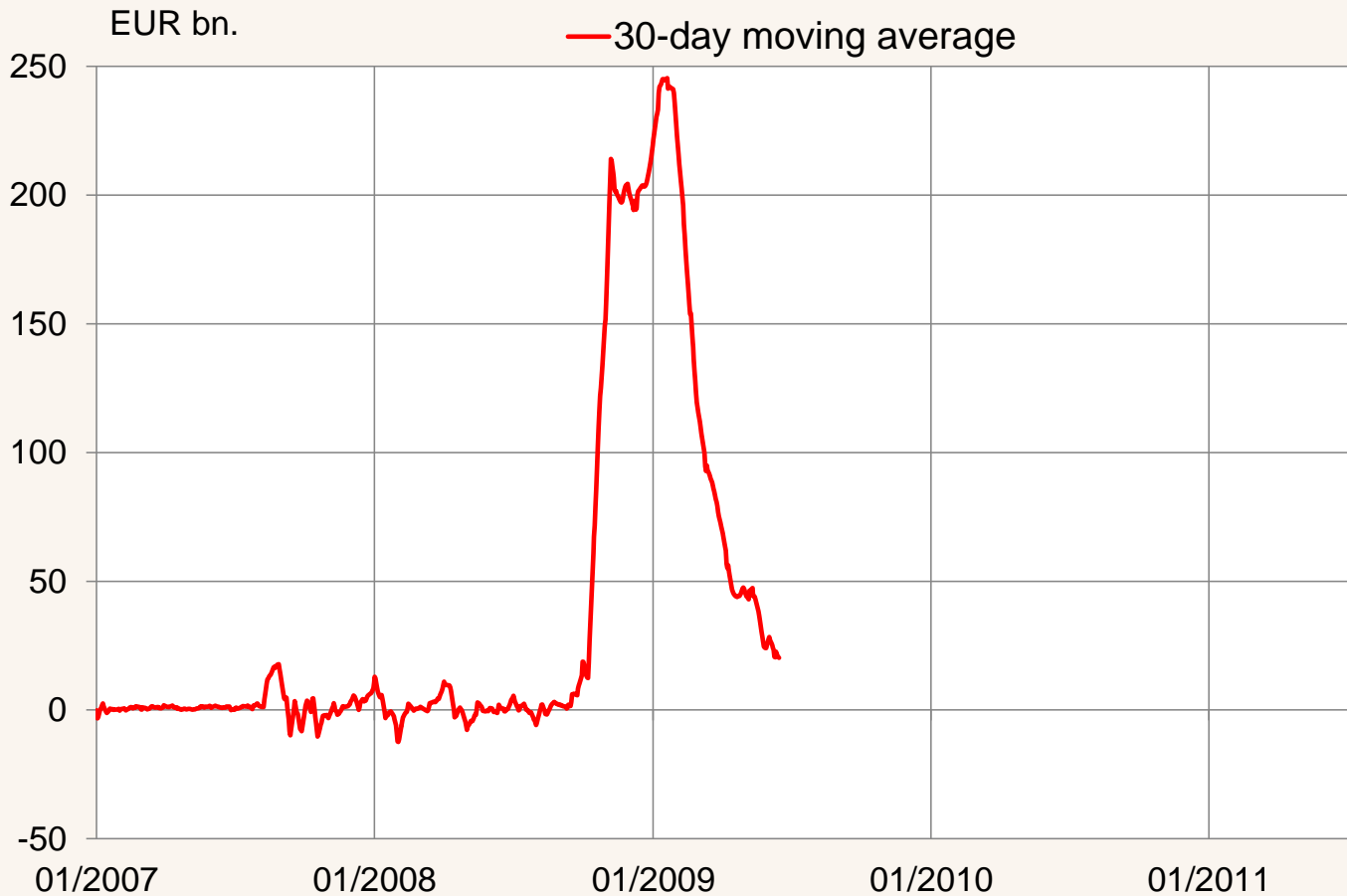


# FRFA's impact on money market risk premia





## Improved sentiment and money market functioning was reflected in the excess liquidity

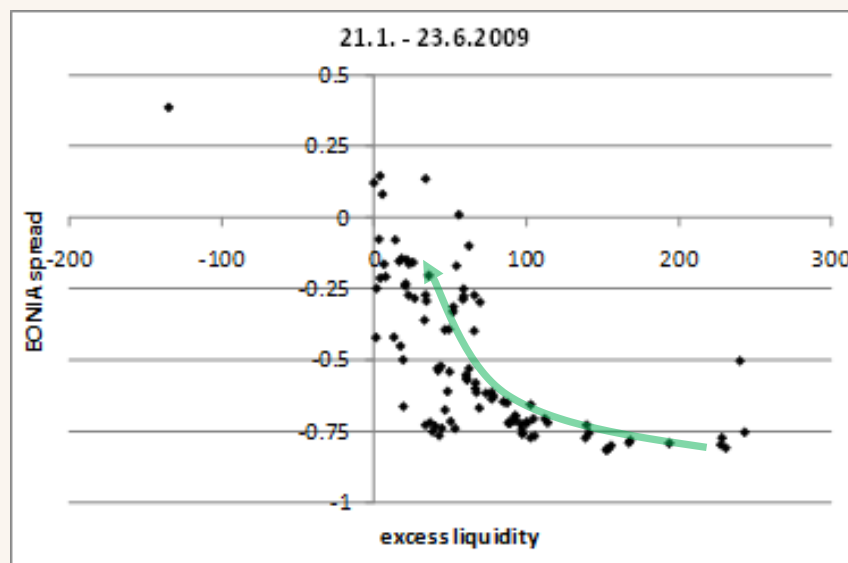
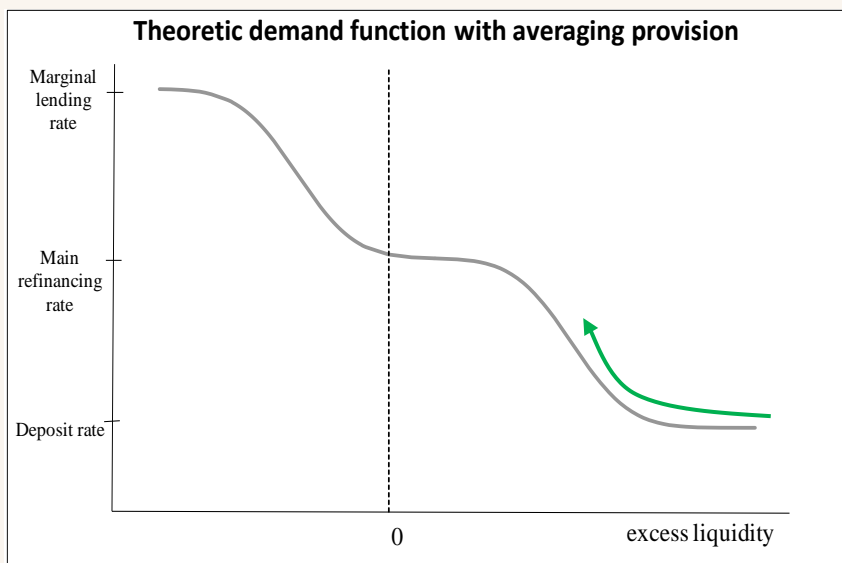


Source: Bank of Finland.

Current accounts - reserve requirements + the net use of standing facilities.



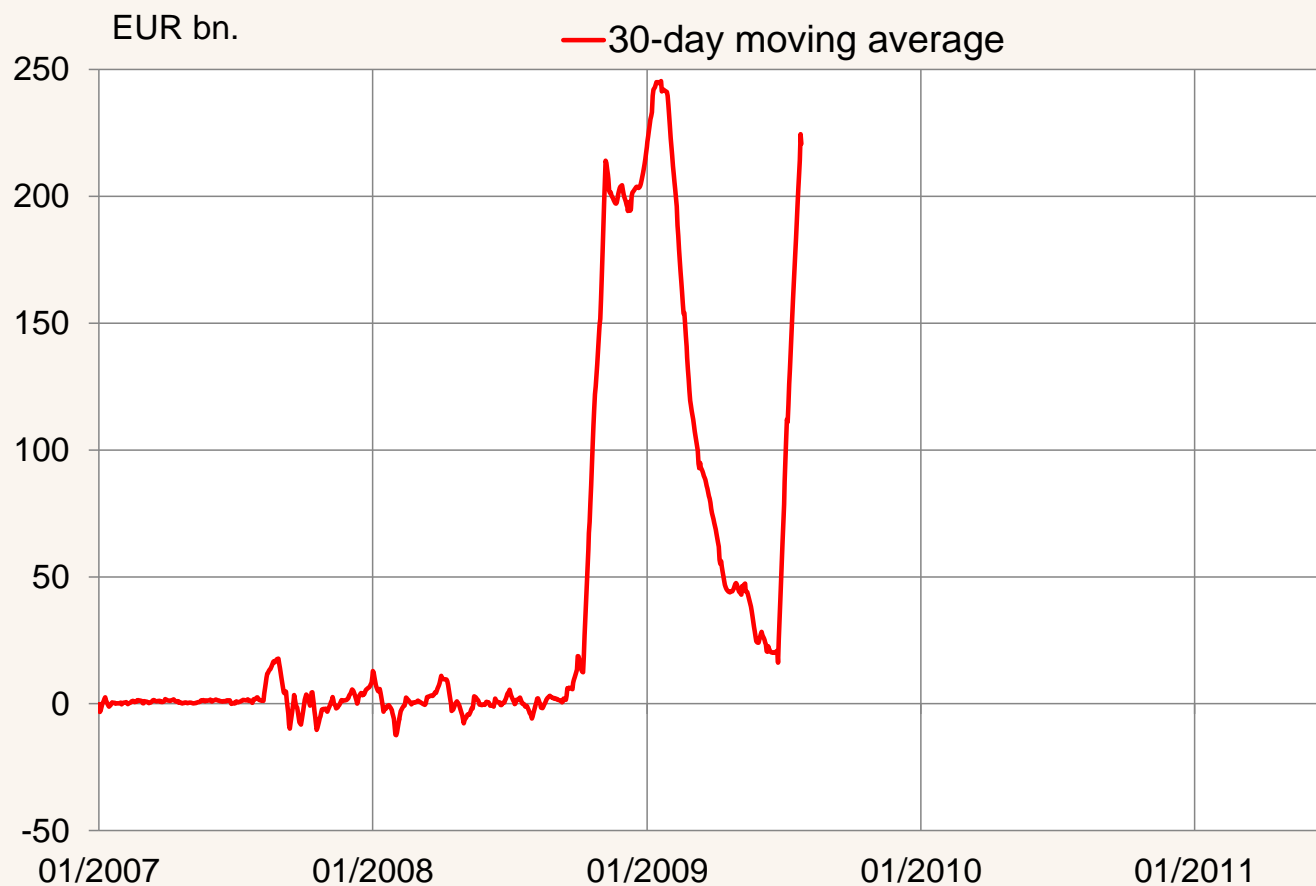
## Decreasing excess liquidity brings overnight rate from floor towards the policy rate:







## The 1-year lending operations resulted in significant excess liquidity, but this time to ease the monetary policy stance

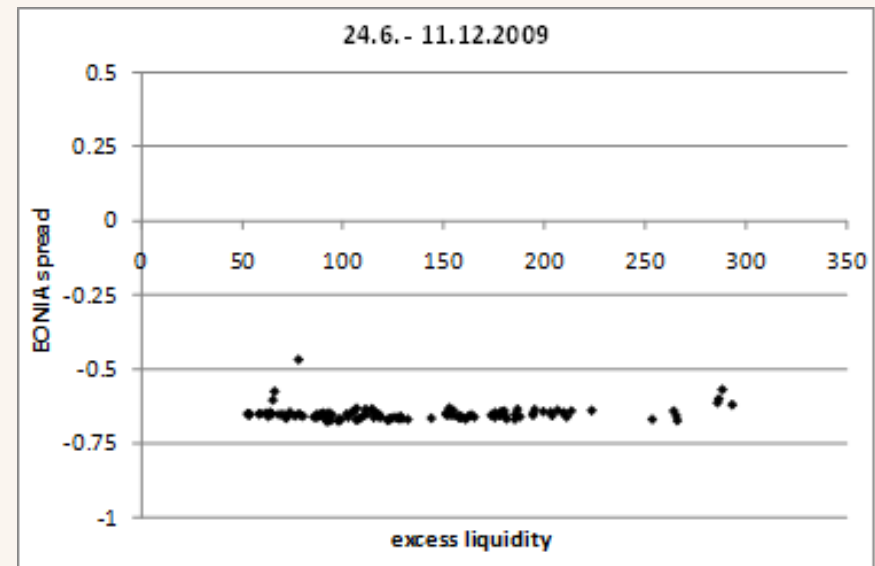
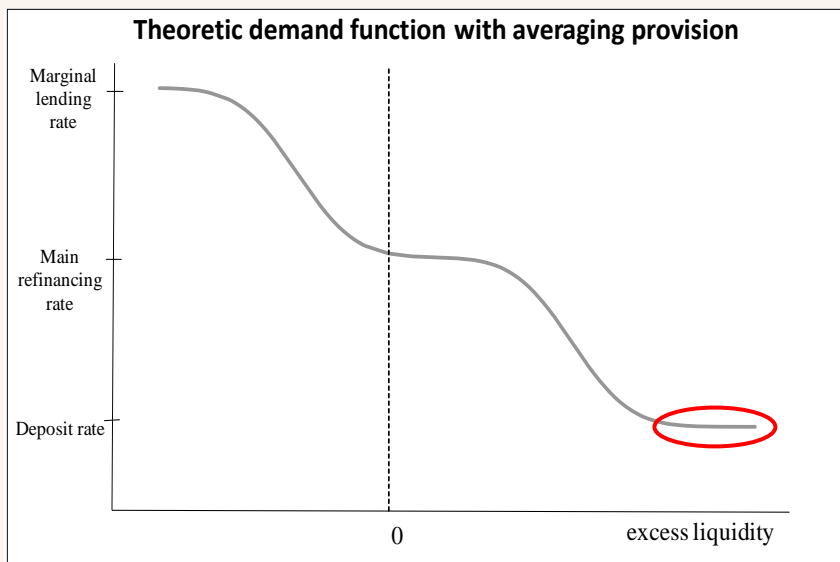


Source: Bank of Finland.

Current accounts - reserve requirements + the net use of standing facilities.

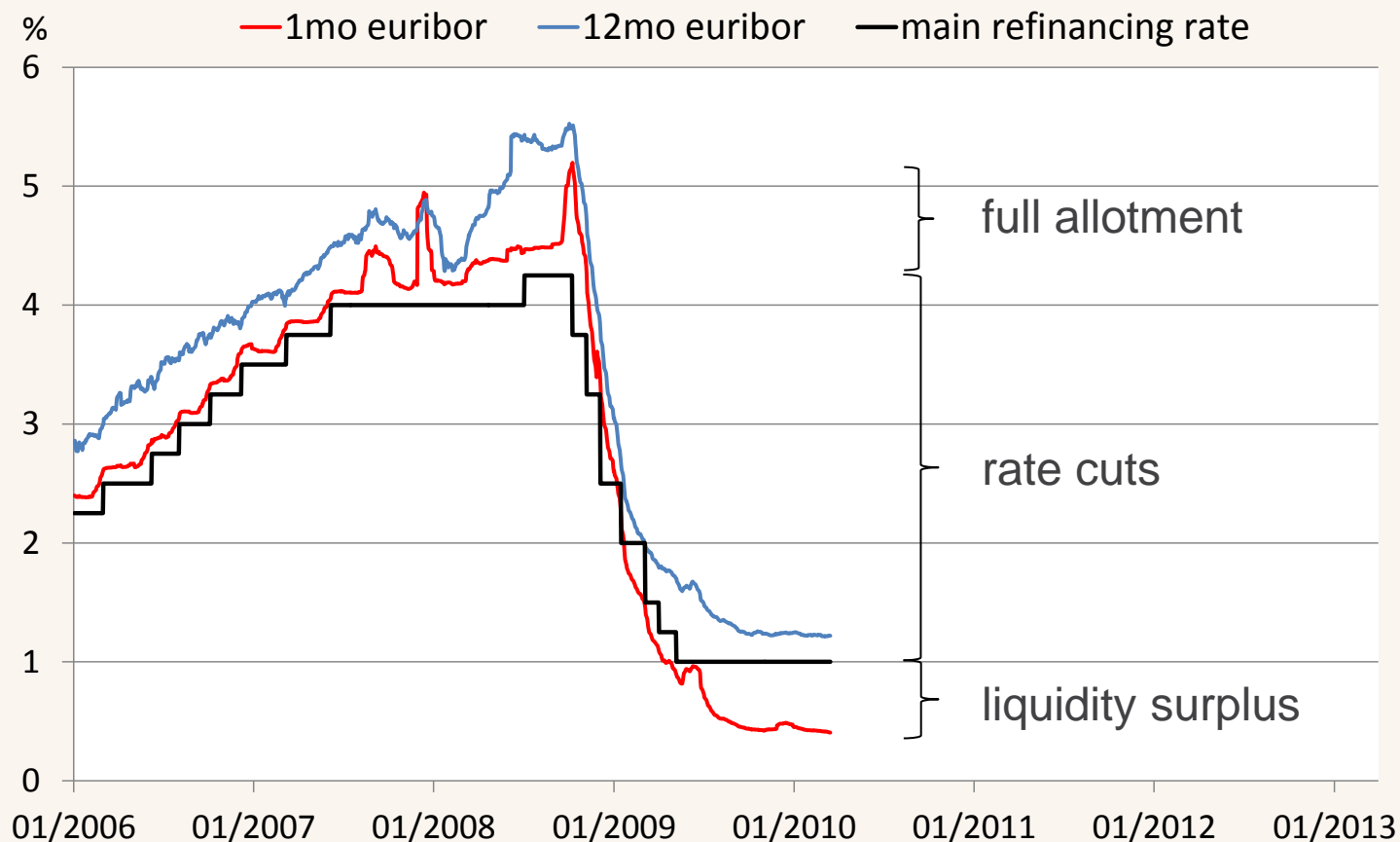


# Demand for central bank reserves: interest rate corridor and reserves averaging





## Changes in the policy and term market rates



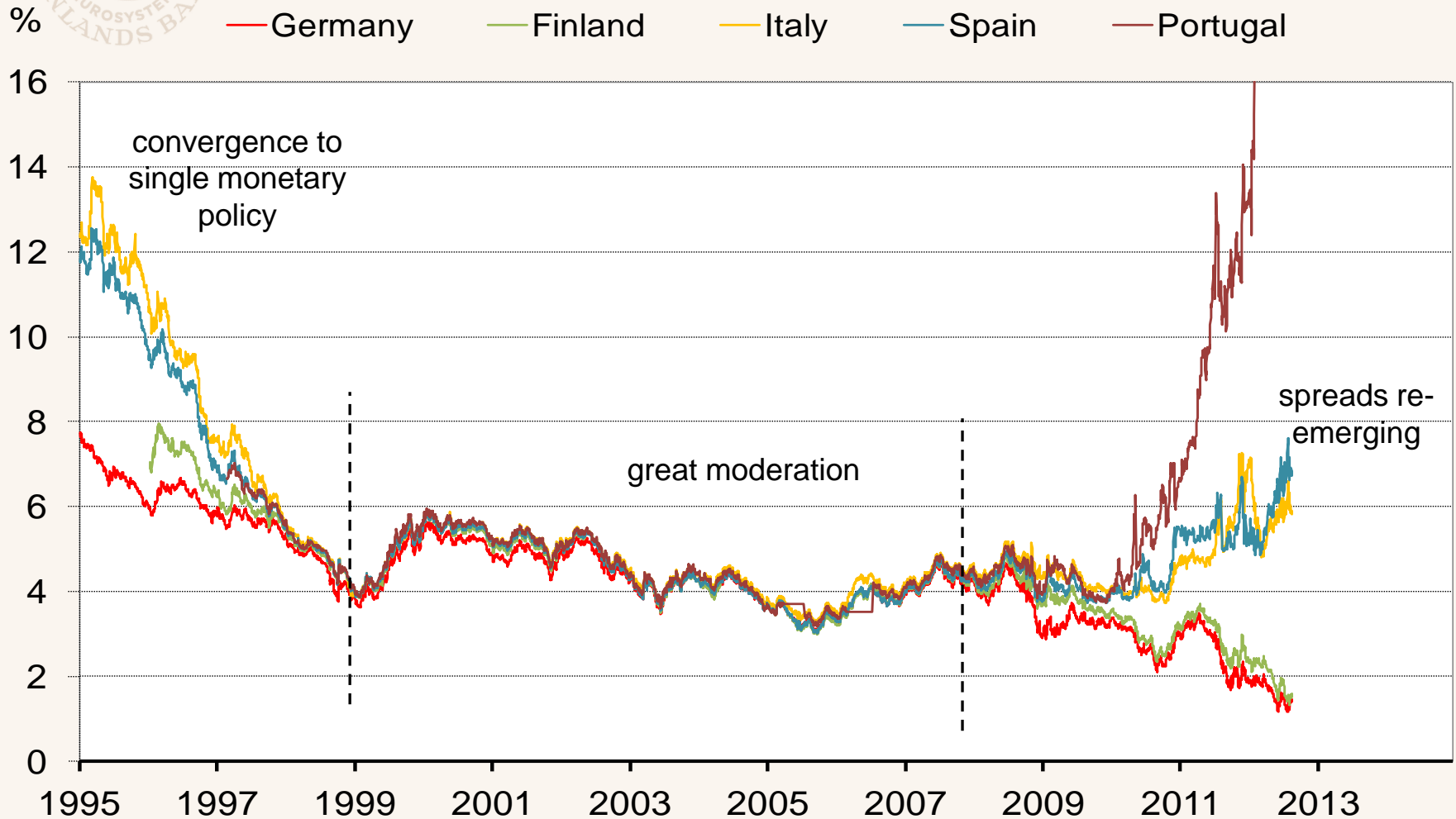
Source: Bloomberg.



## 3. Sovereign debt crisis



# Selected 10 year sovereign yields

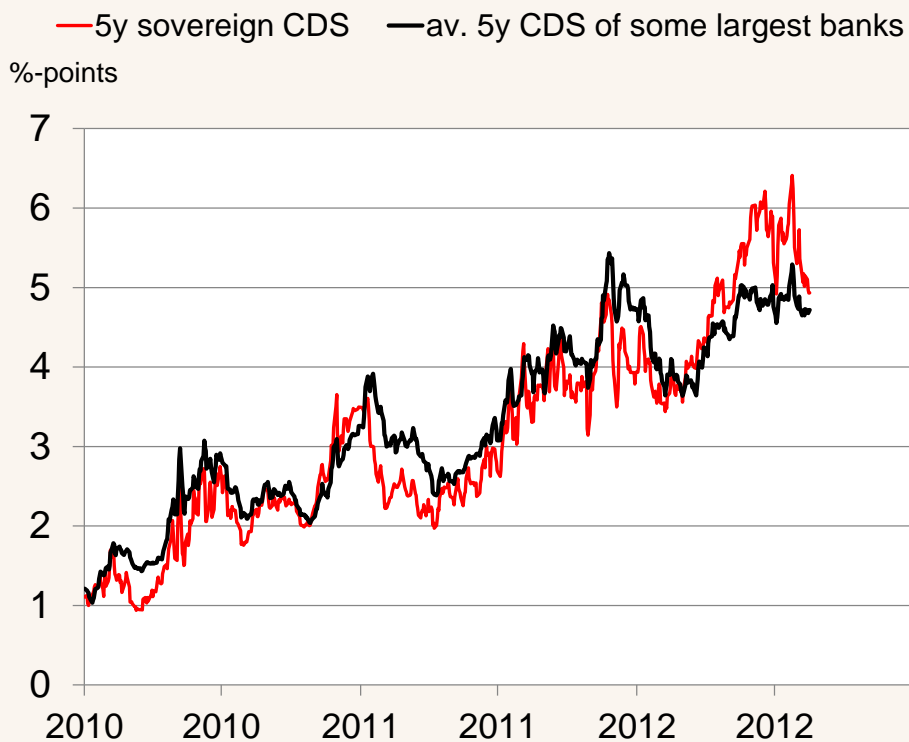


Source: Bloomberg.



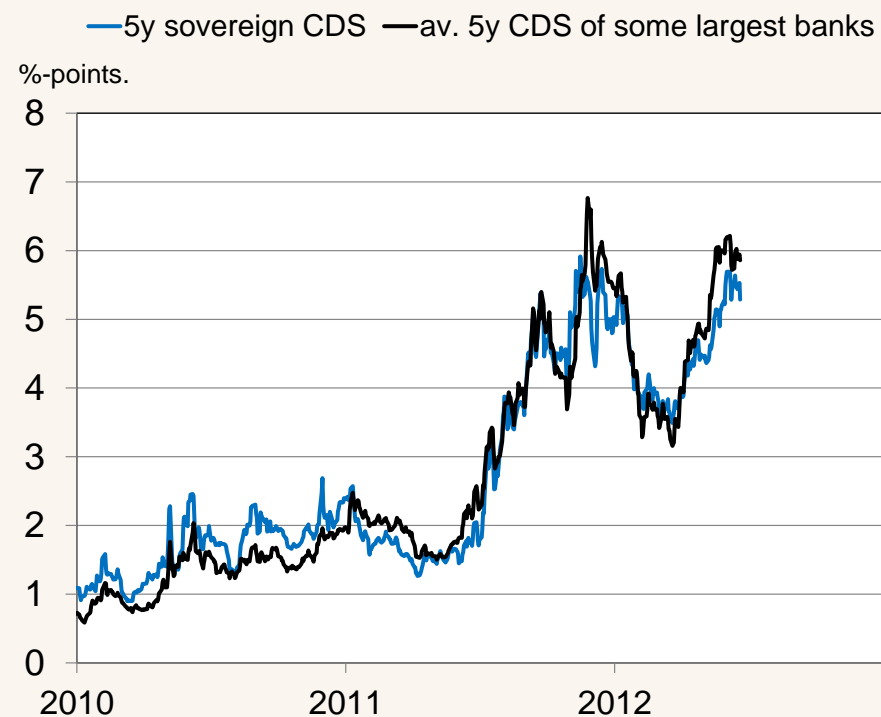
# Central banker's problem: bank/sovereign nexus

## Spain



Source: Bloomberg and Bank of Finland calculations

## Italy



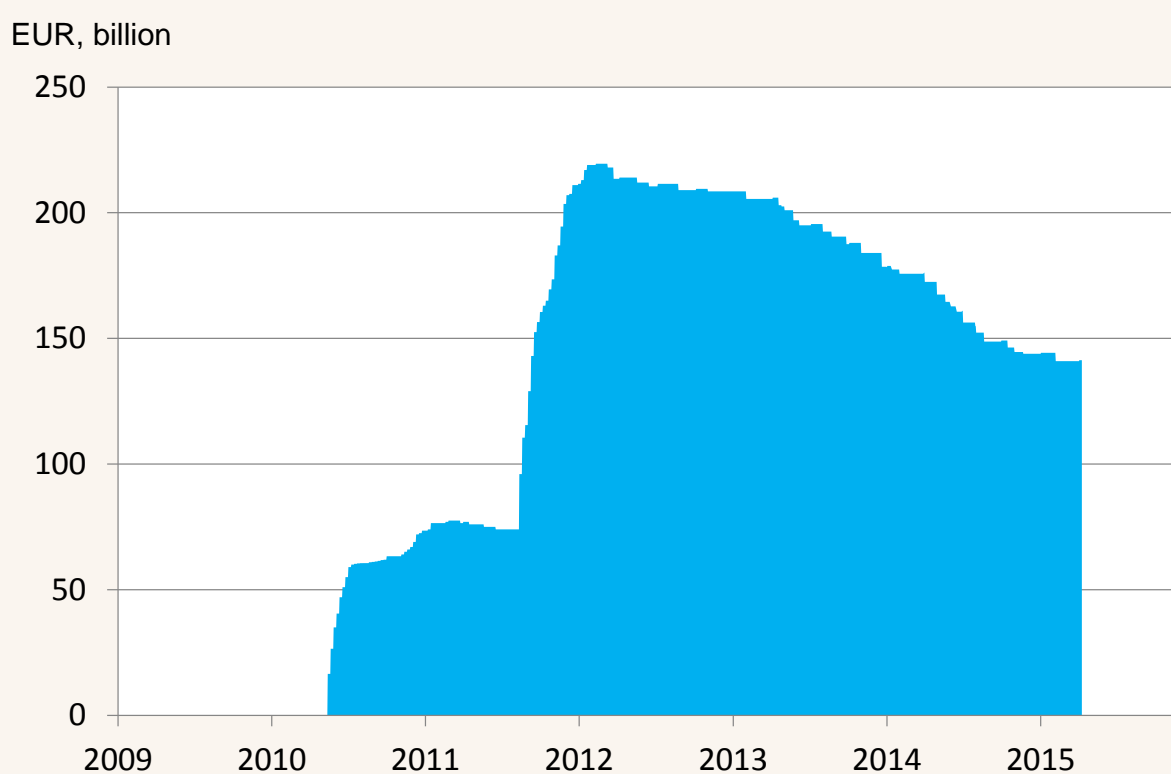


## Changes in the Eurosystem monetary policy implementation during sovereign debt crisis:

- Securities Markets Programme (2010 - 2012):
  - to facilitate the functioning of impaired market segments that were deemed essential for monetary policy transmission
- Provision of 3-year funding (2011)
  - CB funding for banks in order to facilitate bank lending
- Outright Monetary Transactions, OMT (2012-)
  - aim at safeguarding appropriate monetary policy transmission and the singleness of the monetary policy



## Securities Markets Programme:



Source: Bloomberg

- First monetary policy outright purchases of government debt
- Leaning against the wind intervention
- **Liquidity impact was sterilized**
- After Greek PSI, perceived preferred creditor status for the Eurosystem

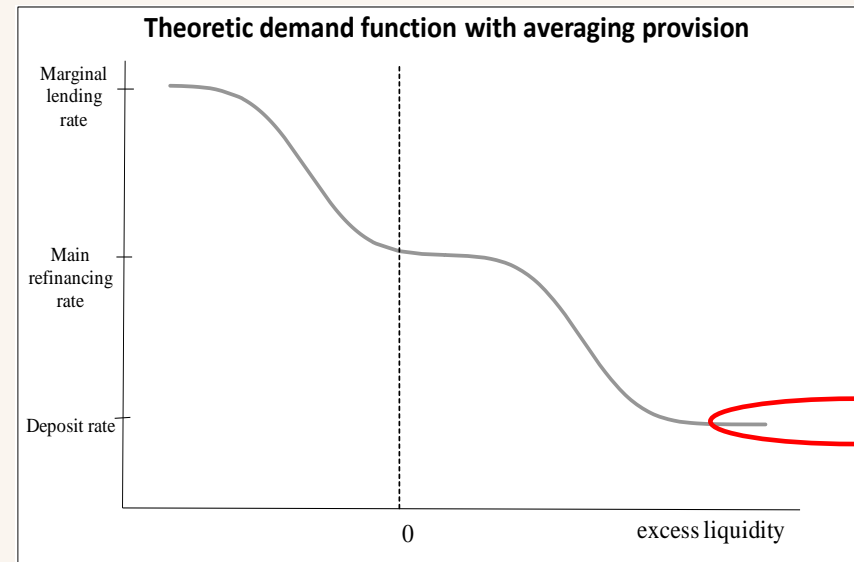




# 3-year operations and the surplus liquidity



Source: Suomen Pankki





# Outright Monetary Transactions

- ECB President Draghi in Lanchaster House, London, July 2012:
  - *”Within our mandate, the ECB is ready to do whatever it takes to preserve the euro. And believe me, it will be enough.”*
  
- In August 2012, the ECB Governing Council:
  - *ECB is ready undertake outright monetary transactions (OMT) in secondary sovereign bond markets*
  - N.b. strict and effective conditionality attached by an appropriate EFSF/ESM programme



# Spread between weighted Eurosystem\* average and German and 10-year yields



Source: Bloomberg, Bank of Finland calculations.

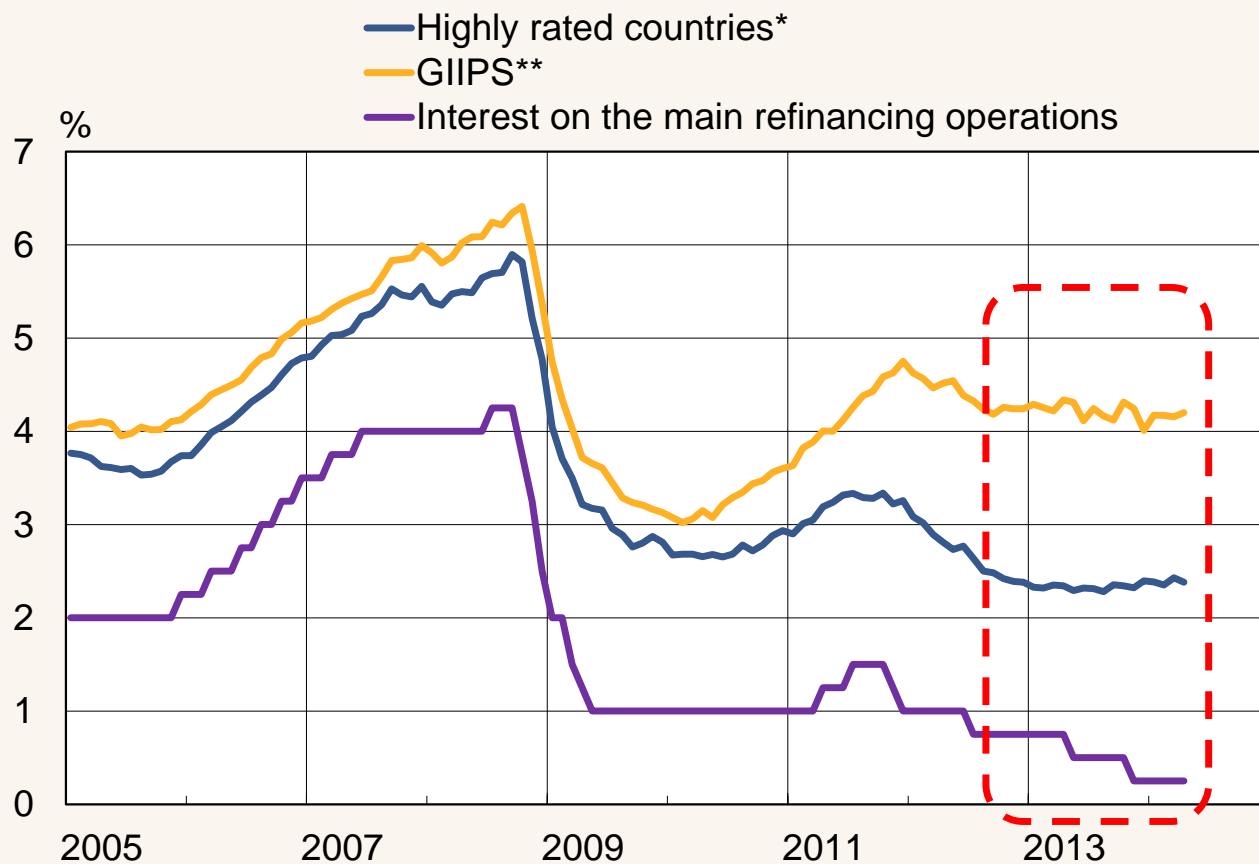


# Impaired monetary policy transmission and risk of deflation



# Impaired monetary policy transmission

## New corporate loan agreements, average interest



Source: European Central Bank.

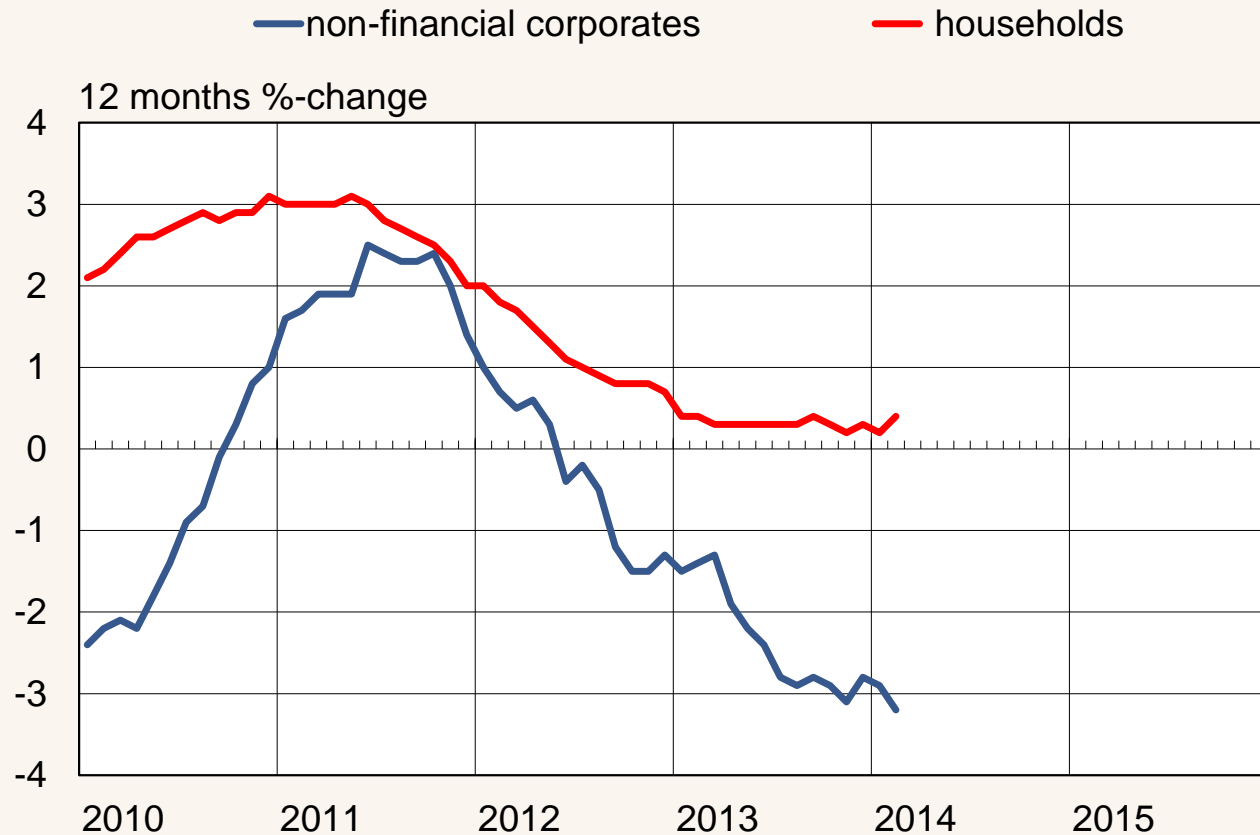
\* Germany, France, Netherlands, Belgium, Austria and Finland.

\*\* Greece, Ireland, Italy, Portugal and Spain.



# Strong deleveraging especially in corporate sector

## Growth rate of euro area loan stocks



Corrected for securitization.  
Source: ECB.



## Markets' inflation expectations fell sharply in late 2014



Source: Bloomberg.



## Latest changes to the Eurosystem monetary policy operational framework:

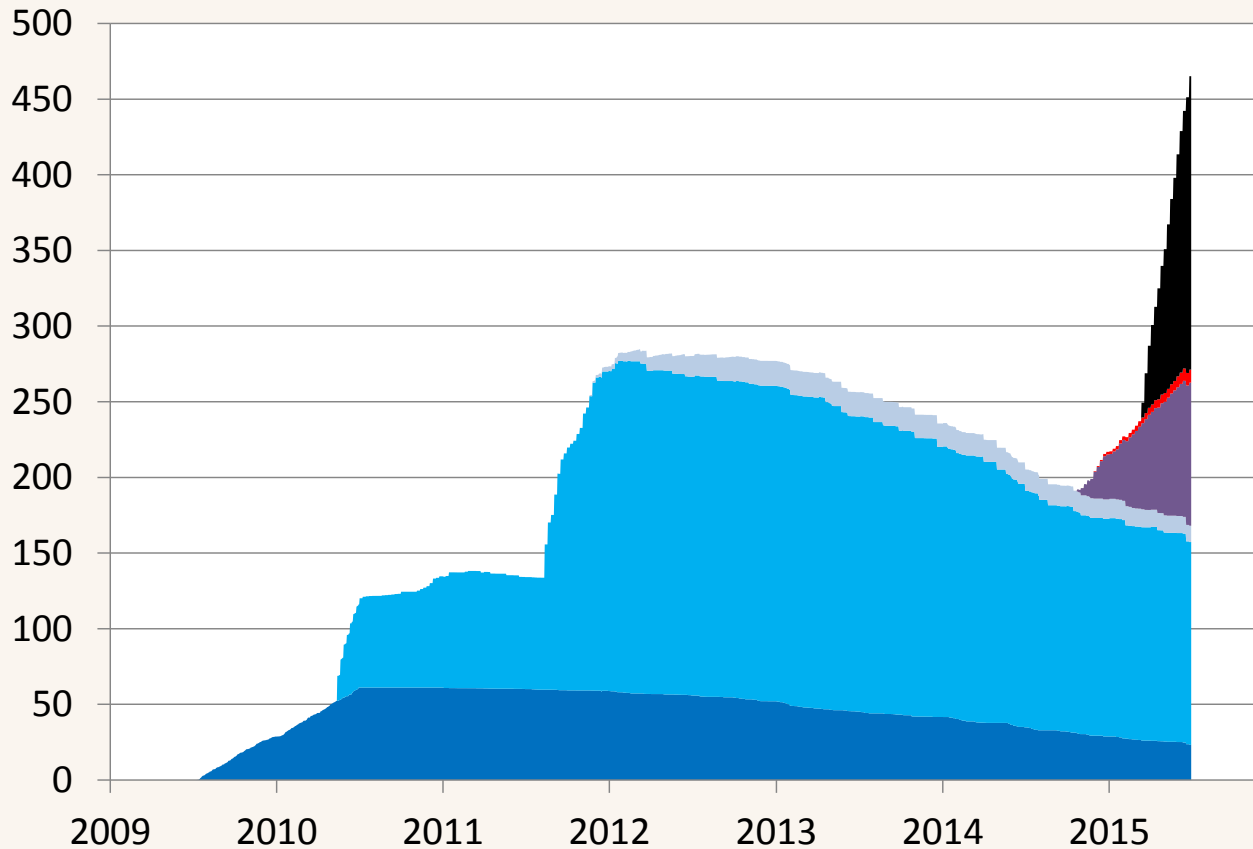
- Targeted longer term refinancing operations (2014-15):
  - to facilitate bank lending to non-financial corporates
- Asset backed securities purchase programme, ABSPP (2014-)
  - to facilitate lending to SMEs in particular
- Public sector purchase programme, PSPP (2015-16)
  - quantitative easing





# Eurosystem purchase programmes 2010-

EUR, billion    ■ CBPP 1   ■ SMP   ■ CBPP 2   ■ CBPP 3   ■ ABSPP   ■ PSPP

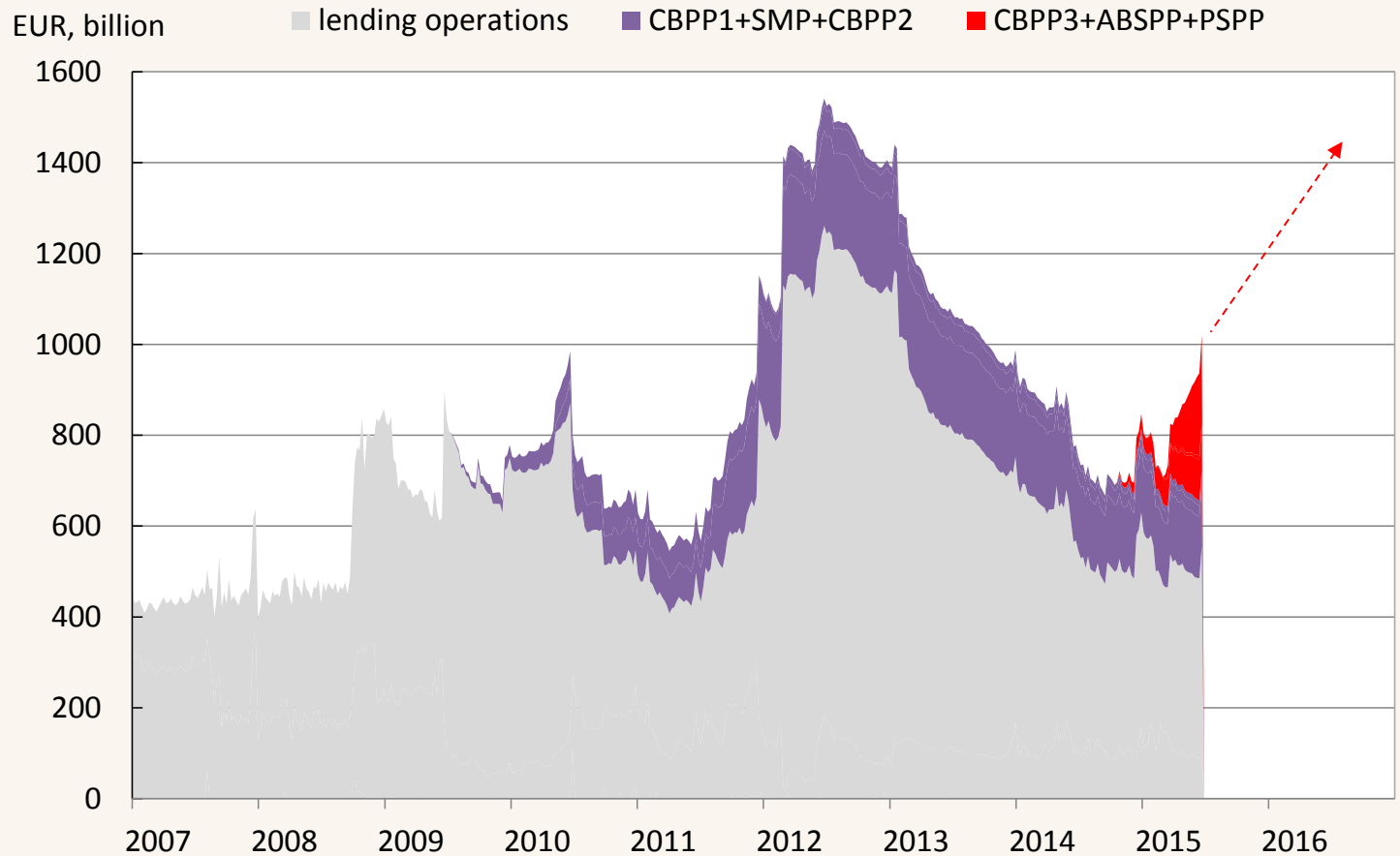


EUR 1140bn  
until September  
2016

Source: Bloomberg



# Credit operations and purchase programmes



Source: ECB.



## What was not changed:

- Counterparty framework:
  - Eurosystem accepted all financially sound banks as its counterparty for monetary policy operations even before the crisis
  
- Collateral framework:
  - Eurosystem accepted wide range of private and public assets even before the crisis (exception ACC framework)
  - Yet, credit rating rules were adjusted as a policy parameter
  - Some risk control measures were tightened during the crisis



### 3. Future of monetary policy implementation: **two myths on liquidity management**



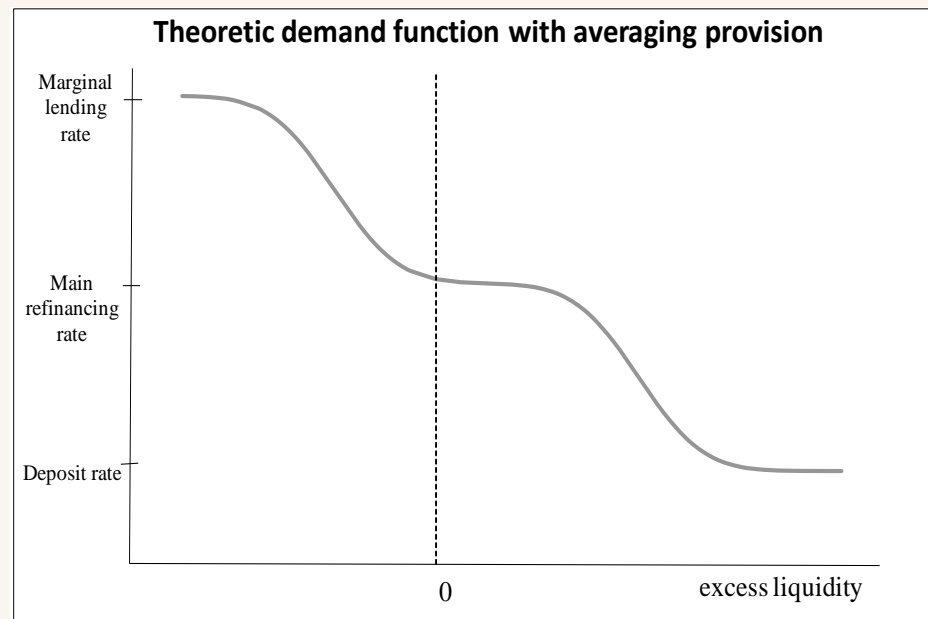
**Myth #1: CB's control over interest rates is tighter when operating in liquidity deficit**

**Myth #2: FRFA is a non-standard monetary policy measure**



## However, overnight rate depends on...

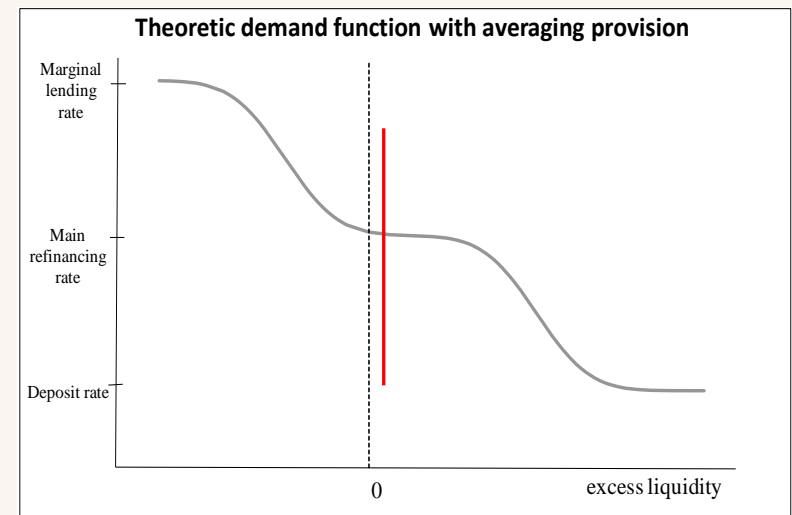
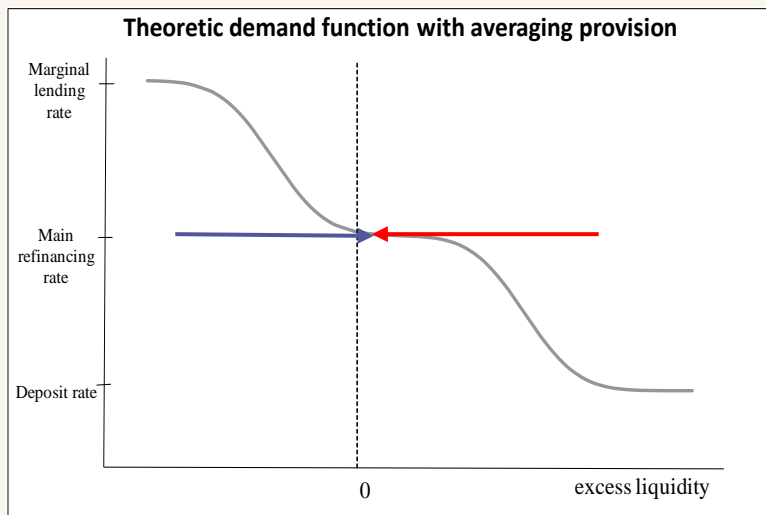
- ...the central bank rates and the probabilities at which the standing facilities will be used;
- These probabilities depend on the prevailing level of central bank reserves, not on the way the liquidity got into the system.





## On the tender procedure

- In case of FRFA, banks' optimum is to bid for an amount at which the o/n-rate (i.e. the probability weighted average of standing facility rates) equals the MRO rate (see e.g. Välimäki 2003)
- Similarly, in case of a VRT, the central bank (tries to) provides the banks with liquidity at which the SF-probabilities equals the MRO rate





## Precision of CB's control on short term rate with different tender procedures:

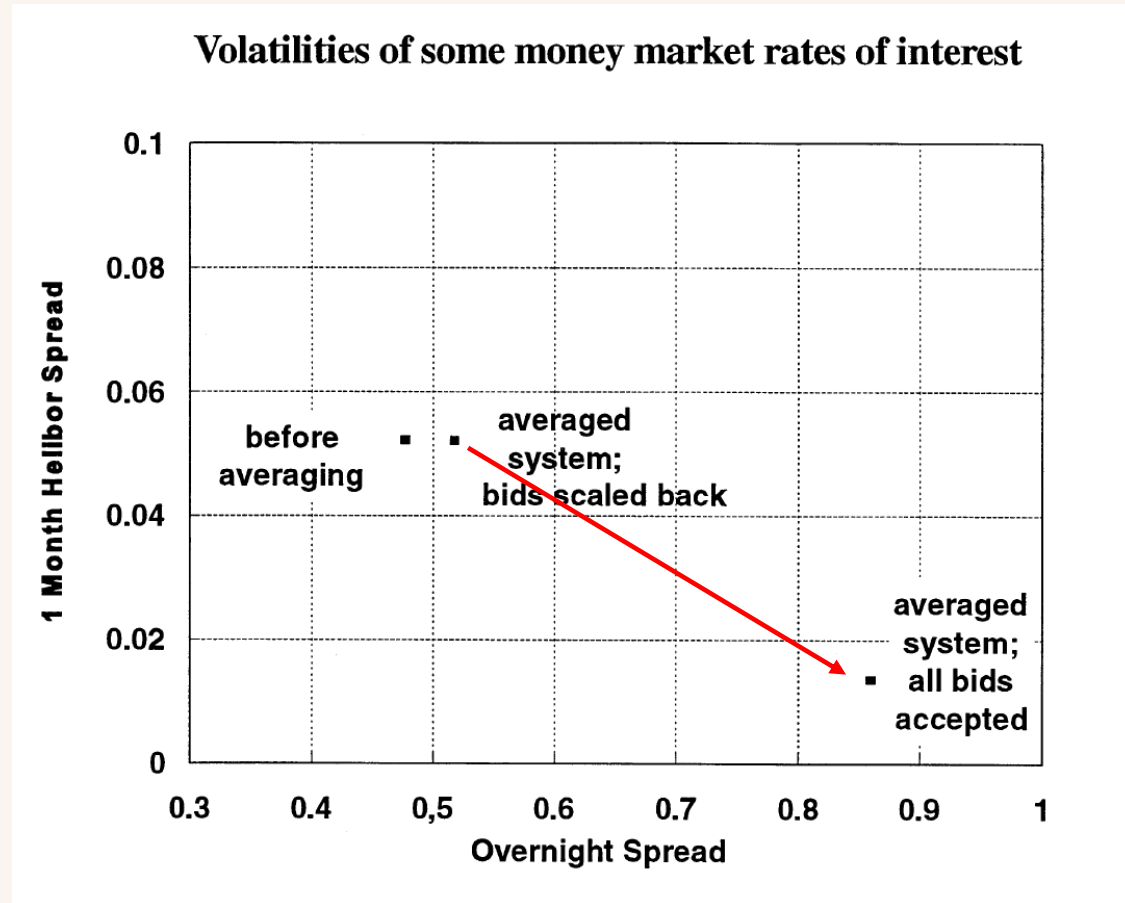
- The (stochastic) volatility of the o/n-rate can be larger with FRFA, if banks aggregate bids do not result in liquidity being at the flat part of the demand curve
- However, VRT can result in variations in o/n-rate, if the CB cannot project the neutral liquidity correctly, and more importantly
- whereas the deviations of the o/n-rate away from the policy rate resulting from central bank actions may be interpreted containing policy signals, it's clear that stochastic liquidity shocks and o/n-rate volatility do not contain any policy signals.

Hence, short term rate volatility under VRTs is more likely to transmit along the yield curve to maturities more relevant for monetary policy pass through.





# Suomen Pankki's experience from the 1990s





Myths #1: CB's control over interest rates is tighter when operating in liquidity deficit

Myths #2: FRFA is a non-standard monetary policy measure

**BUSTED**

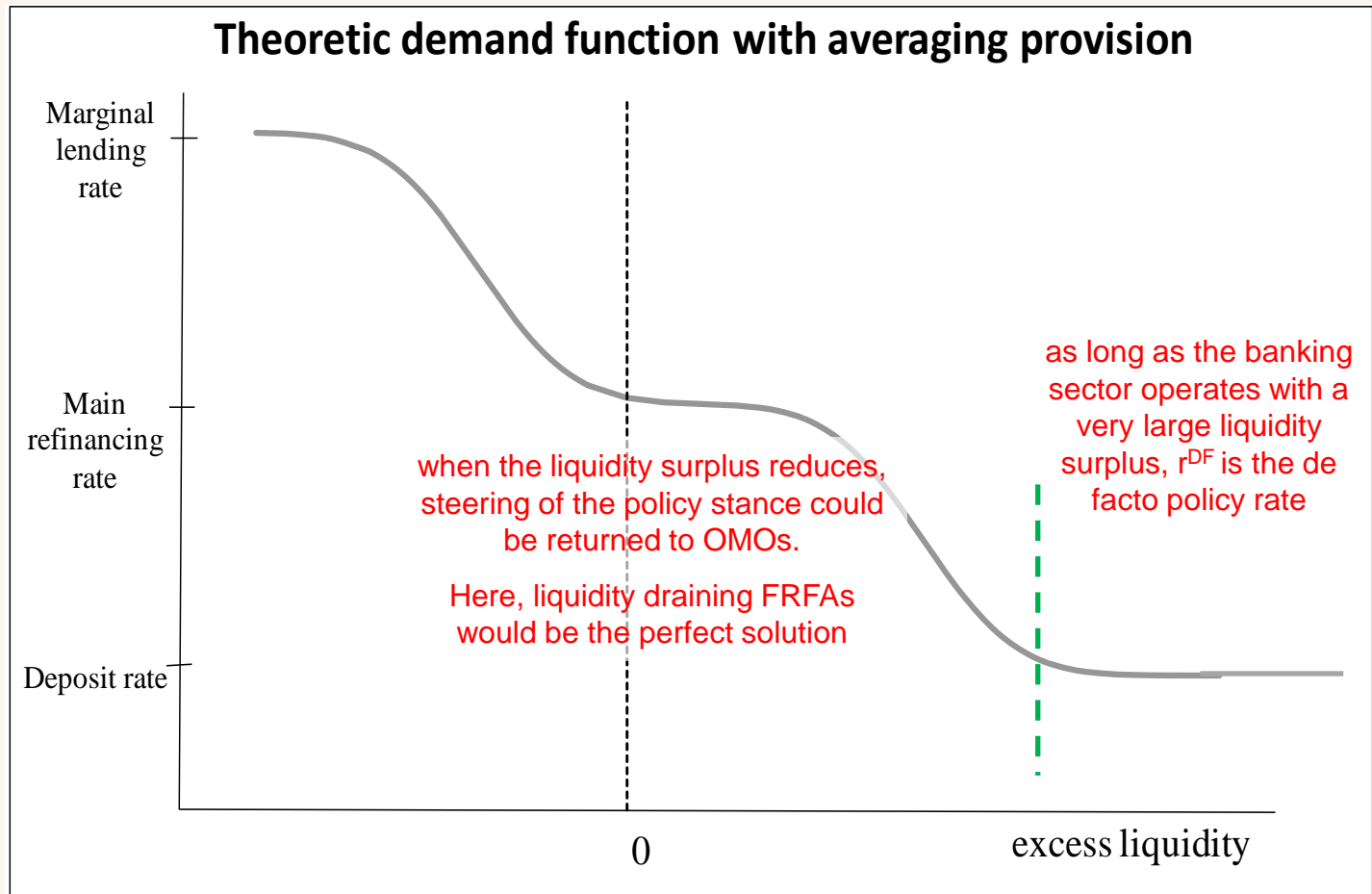


## Fixed rate full allotment -tender procedure as a standard monetary policy tool:

- CB's control over the market rates can be maximized by FRFA-operations in which terms and conditions are set to meet those of the operational target:
  - the maturity of the operation should be close to the maturity of the operational target
  - collateral eligibility rules applied by the CB should be similar to those applied in the secured interbank money market, or
  - in case of a liquidity surplus, liquidity could be drained by selling ECB's CDs or collecting fixed term deposits by FRFA -procedure.

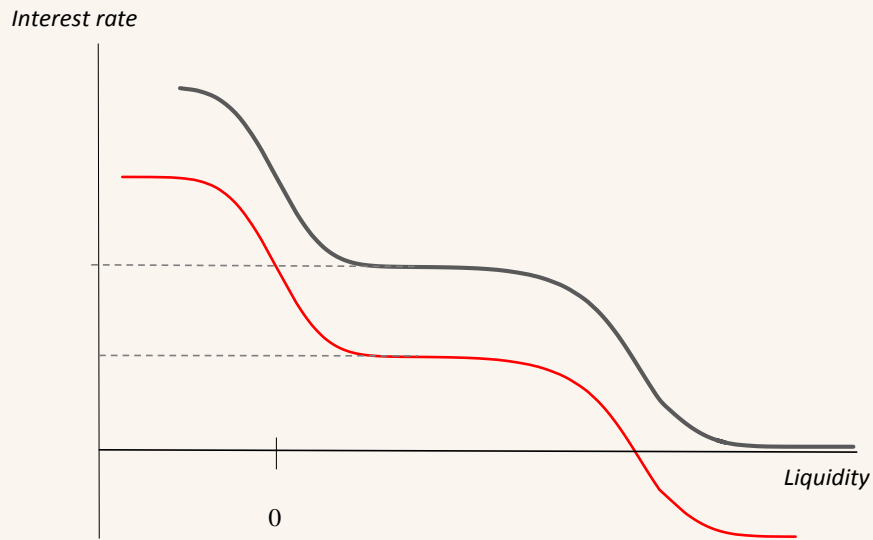


# Monetary policy implementation in liquidity surplus

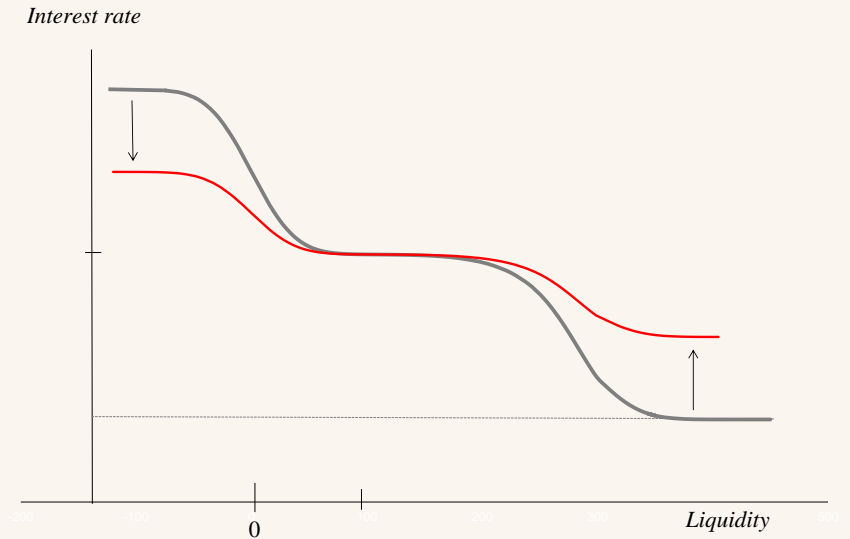




### Changing the stance by adjusting CB rates



### Controlling interest rate volatility by the width of the corridor





**Thank you!**