# Managing Monetary Policy Normalization

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*The opinions expressed are personal and do not necessarily reflect those of the BIS*

# The idea

- In the New-Wicksellian framework, size and composition of the central bank balance sheet (CBBS) are irrelevant
- This paper:
  - discusses conditions under which the CBBS becomes relevant
  - generalizes the standard New-Wickellian framework
  - characterises the optimal provision of liquidity in normal times and in a liquidity trap

# My discussion

- Model, mechanism and main results
- Comments:
  - Size of CBBS and effectiveness of liquidity provision
  - Speed of normalization
  - CBBS policy and household vs bank liquidity needs

# The ingredients

- Ingredients needed for CBBS to matter:
  1. Deposits as providing liquidity value to households
  2. Government as issuer of liquid assets (bonds/reserves)
  3. Banks as holders of liquid assets to collateralize deposits

# Scope for liquidity provision

- Deposits offer liquidity services and generate liquidity premium
- Return on illiquid assets (natural rate) affects saving choices
- Reserves enable backing more deposits, reducing the liquidity premium and the natural rate, and expanding consumption
- But lower liquidity premium increases cost of public debt and use of distortionary taxation, lowering demand

# Reserves and spreads

- Optimality condition household problem

$$\frac{1+i_t^D}{1+i_t^B} = 1 - \underbrace{\frac{\xi_{q,t} V_q(q_t)}{\xi_t U_c(c_t)}}_{\text{liquidity premium}}$$

- Bank zero profit condition and collateral constraint $B_t^g = \rho D_t$

$$\frac{1+i_t^B}{1+i_t^R} = \frac{\rho}{\rho - V_q\left(\frac{1}{\rho}\frac{B_t^g}{P_t}\right)}$$

# A novel framework for monetary policy

1. Equilibrium in money markets

$$\hat{q}_t = q_y \hat{Y}_t - q_i \left( \hat{i}_t^B - \hat{i}_t^D \right) + q_\xi \hat{\xi}_{q,t}$$

2. Standard AS

$$\tilde{\pi}_t = \kappa \left( \hat{Y}_t + \psi_\tau \tilde{\tau}_t \right) + \beta E_t \tilde{\pi}_{t+1}$$

3. AD affected by liquidity supply $\rightarrow$ role for CBBS via $\hat{i}_t^B$

$$\hat{Y}_t = E_t \hat{Y}_{t+1} - \sigma \left( \hat{i}_t^B - E_t \tilde{\pi}_{t+1} - \tilde{r}_t^n \right)$$

4. Intertemporal resource constraint

$$\hat{q}_{t-1} - \sigma^{-1} \hat{Y}_t + \hat{i}_{t-1}^R - \tilde{\pi}_t = b_y \hat{Y}_t + \rho \left( \tilde{\tau}_t - \tilde{T}_t \right) + b_\xi \hat{\xi}_{q,t} + b_q \hat{q}_t + \beta E_t \left[ \hat{q}_t - \sigma^{-1} \hat{Y}_{t+1} + \hat{i}_t^R - \tilde{\pi}_{t+1} - \tilde{r}_t^n \right]$$

# Optimal use of CB balance sheet

1. Optimal supply of reserves in steady state is below satiation
   $\rightarrow$ higher liquidity premia minimize use of distortionary taxes

2. In response to liquidity shocks that bring to the ZLB, OMP increases liquidity after reaching the ZLB
   $\rightarrow$ small impact: 1% higher liquidity raises output by 0.05pp

3. With large weight on $\pi$ stabilization, low liquidity provision and withdrawal before liftoff
   $\rightarrow$ policy rate stays low for longer

4. With large weight on $y$ stabilization, larger liquidity provision
   $\rightarrow$ policy rate stays low until shock disappears

# Optimal liquidity provision with large size of CBBS

- Ramsey problem subject to intertemporal resource constraint

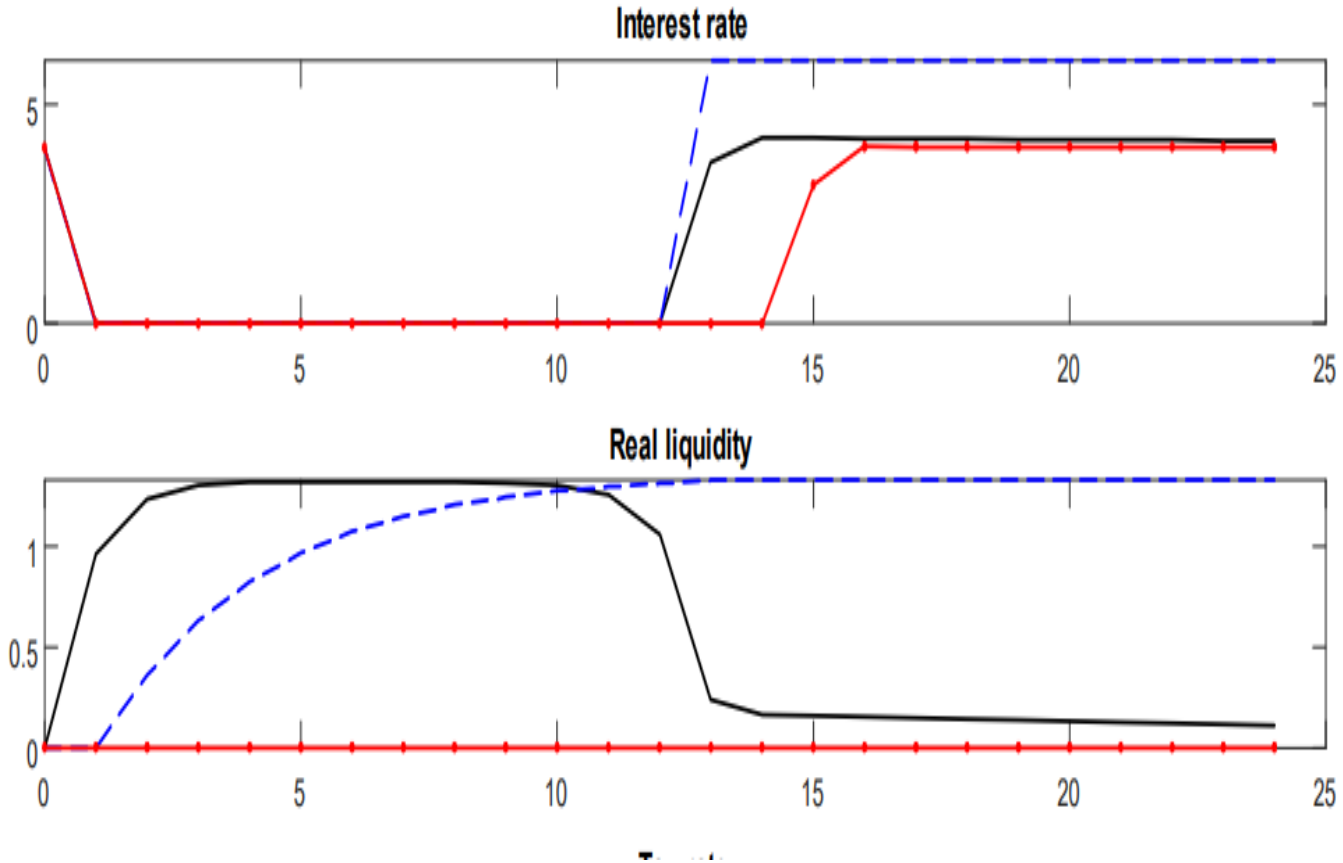
$$Z_{t_0} = \sum_{T=t_0}^{\infty} \beta^{T-t_0} \left[ Y_T^{-\sigma^{-1}} \left( \tau_T Y_T - \frac{T_T}{P_T} \right) + \frac{V_q(q_t) b_t^g}{\rho} \right]$$

- Stationary solution requires

$$Z_{t_0} \equiv Y_{t_0}^{-\sigma^{-1}} \frac{\left(1 + i_{t_0-1}^R\right) b_{t_0-1}^g}{\Pi} = \bar{Z}$$

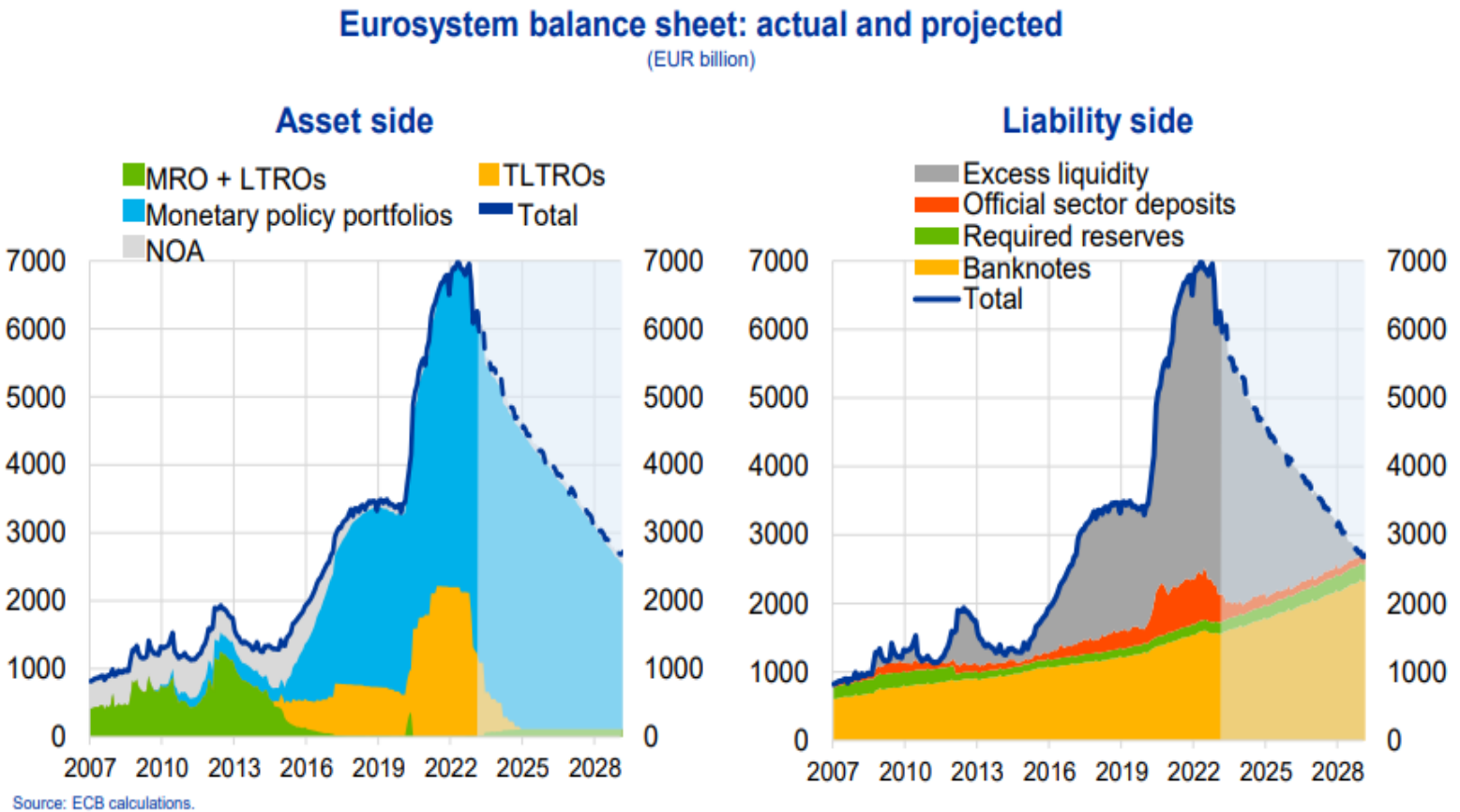
- $Z_{t_0} = \bar{Z}$ allows for different combinations of $i_{t_0-1}^R$ and $b_{t_0-1}^g$
- Large $b_{t_0-1}^g$ reduces liquidity value and raises necessary taxes
- Is liquidity provision less effective when the CBBS is large?

# Fast CBBS normalization in the model




- Liquidity provided since the start of the liquidity trap
- Withdrawal starts at around the end of the trap
- CBBS back to pre-trap levels once rates are normalized

# Projected CBBS normalization in the euro area




Source: speech by I Schnabel on "Back to normal? Balance sheet size and interest rate control", 27 March 2023

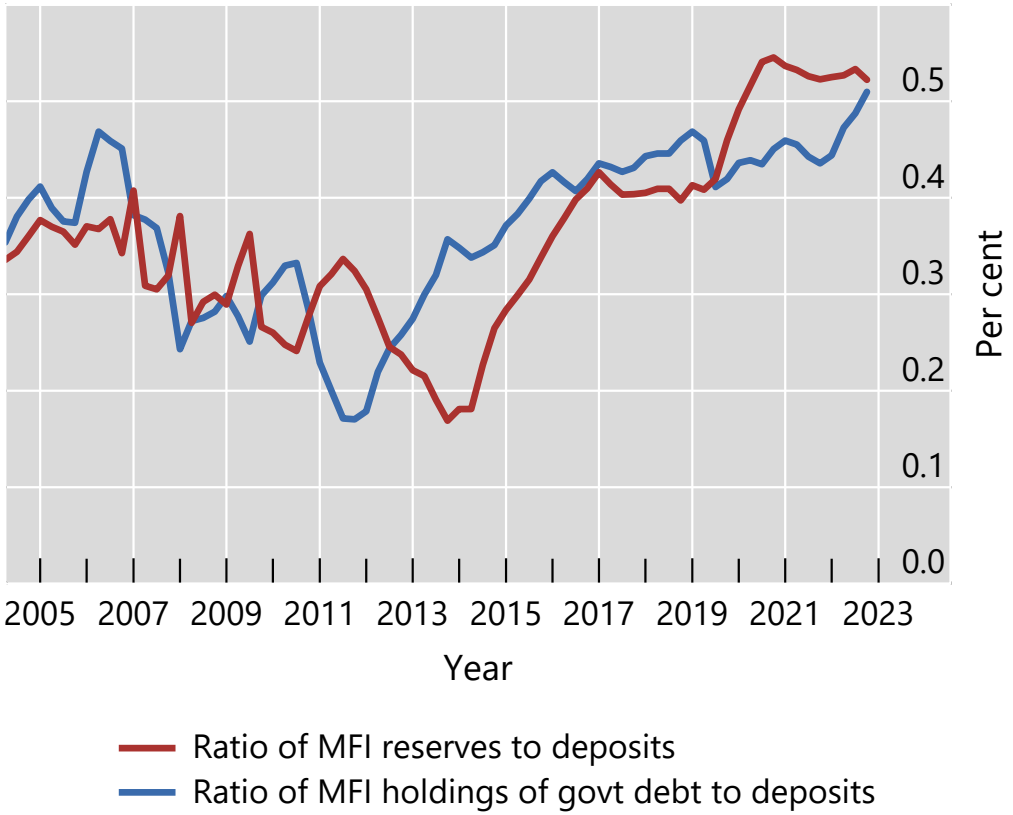
# Scope for slower CBBS normalization

- Is the observed slow pace of CBBS normalization suboptimal or is the model missing some important features?
- Banks are zero profits and channel liquidity into deposits
- In the presence of bank leverage constraints, liquidity provision would affect bank profitability by reducing $\frac{1+i_t^B}{1+i_t^D}$
- The slower the accumulation of bank profits, the slower the optimal pace of CBBS normalization to reduce the risk of a binding constraint in the future (Karadi-Nakov, 2021)

# Liquidity provision: households vs banks

- This model:
  - Constant ratio of reserves (bonds) to deposits
  - Govt bonds and reserves identical for liquidity purposes
- Evidence from EA suggests
  - Changing ratio of reserves (and bonds) to deposits
  - Fluctuations in bond liquidity value
  - Large liquidity provision to banks in periods of stable deposits
- Liquidity provision seems driven by changes in bank liquidity conditions rather than in household preference for deposits
- Does it matter?

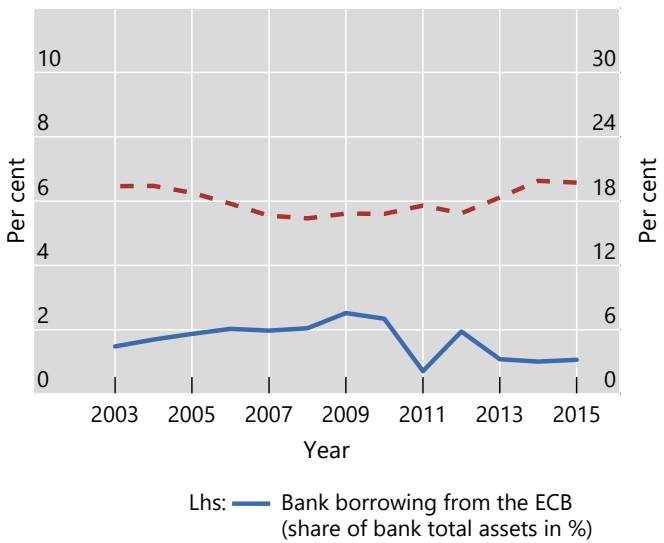
# EA: ratio of reserves (bonds) to deposits



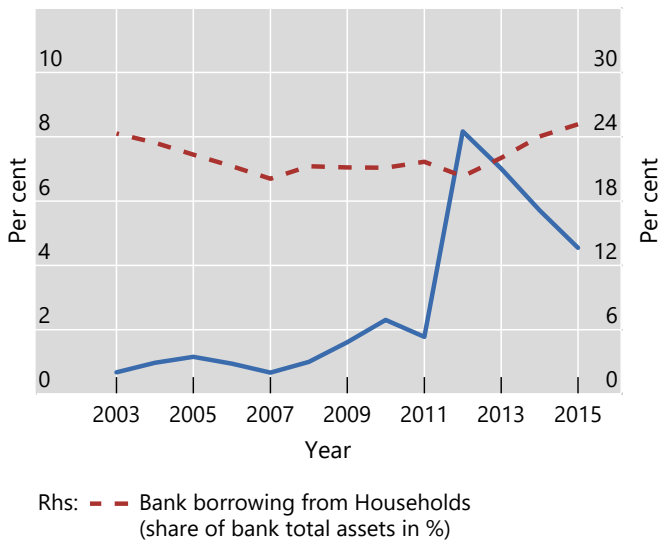

- Variable ratios of reserves (and bonds) to deposits
- Opposite dynamics of bonds and reserves after sovereign crisis

# Liquidity provision unrelated to deposits

(a) DE, FR

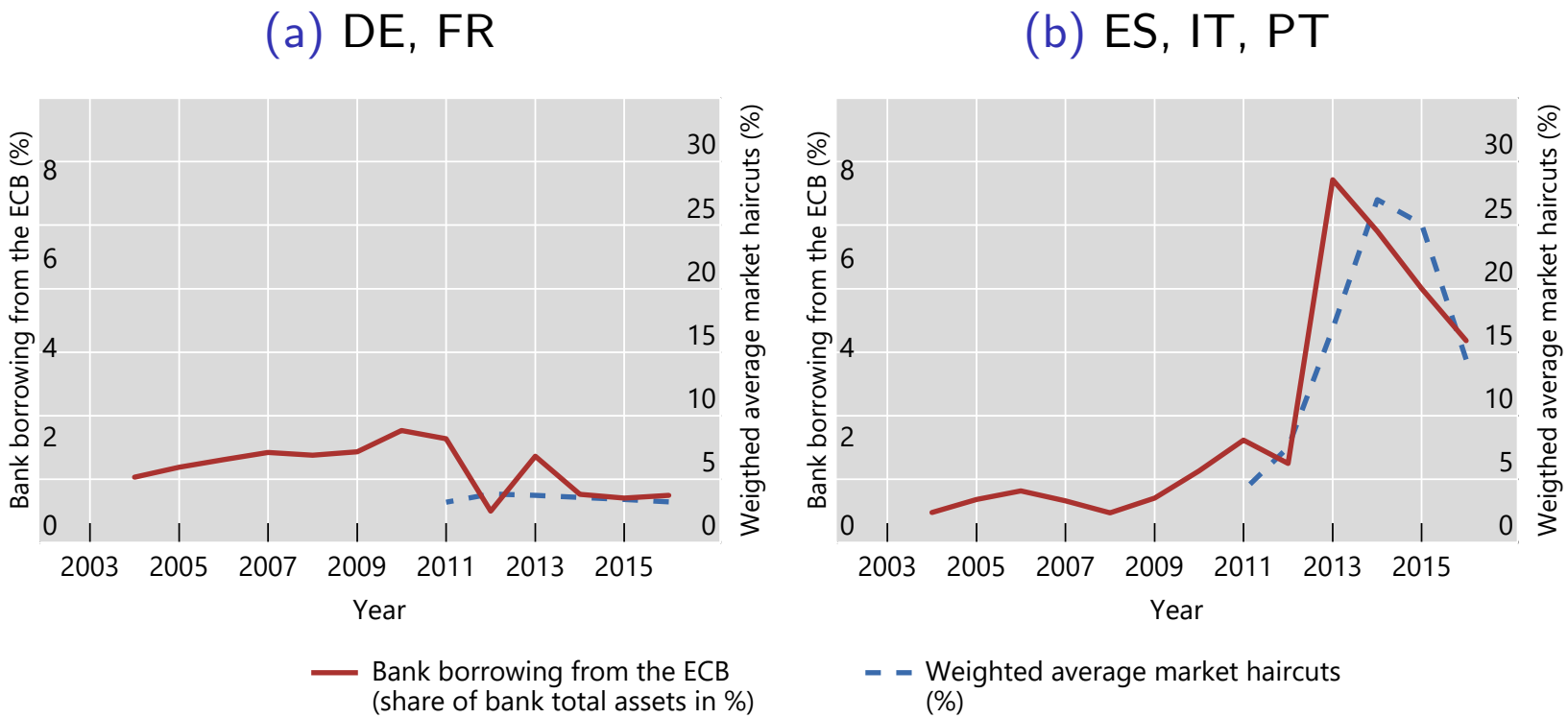



(b) ES, IT, PT




- Large increase in liquidity provision in 2011, only to the South
- Stable deposits in both regions

# Liquidity provision linked to money market disruptions




- Increase in average haircuts on govt bonds from 5% to 27%
- Large increase in liquidity provision to South

# Model of bank leverage and liquidity constraints

- Need a model with bank leverage and liquidity constraints to replicate evidence (DeFiore-Hoerova-Rogers-Uhlig,2023)
- Implications for CBBS policy
  - CB reserves are effective to satisfy bank liquidity needs, reduce the liquidity premium and raise activity by reallocating resources from unproductive collateral to productive capital
  - In addition, higher return on assets benefit bank value, relax the leverage constraint and further expand lending and output
  - The fiscal cost of CBBS policy arises here as well, but the benefit of liquidity provision might be larger

# Conclusions

- Very interesting paper, lots of food for thought
- Opens up several possible avenues to improve our understanding of the role of the CBBS for monetary policy