Effectiveness and Transmission of the ECB's Balance Sheet Policies

Jef Boeckx
NBB

Maarten Dossche
NBB

Gert Peersman
UGent

Motivation

- **There is a large literature that has used SVAR models to examine the macroeconomic effects of changes in policy-controlled interest rates**

  - **E.g. Bernanke and Blinder (1992), Bernanke and Mihov (1995), Christiano et al. (1999), Peersman and Smets (2003)**

  - **Decline in policy rate leads to hump-shaped temporary rise in economic activity, while prices increase persistently**

  - **Effects are typically used as benchmark for construction of monetary general equilibrium models of business cycle**

- **In contrast, little is known about macroeconomic effects of monetary policy measures that expand central bank balance sheet for given policy rate**

This paper

- Applies SVAR methodology to estimate the macro effects of exogenous shocks to ECB balance sheet that are orthogonal to the policy rate

- Focuses exclusively on the period since the onset of the financial crisis: 2008M1–2013M12

- Examines the transmission channels to the real economy and the effects in individual euro area countries

Balance sheet of the ECB and the financial crisis

- **Identifying changes in the balance sheet that could be interpreted as exogenous monetary policy decisions is main challenge of the paper**

  - Fixed interest rate with full allotment (FRFA) since October 2008: fluctuations in volume of liquidity distributed to banking sector are essentially demand-driven

- **Shifts in the volume of lending that are consequence of deliberate policy decisions are nevertheless possible and did happen during sample period**

  - Alterations to collateral requirements, extending maximum maturity of LTRO's, lending to banks in foreign currency: policy induced shifts to liquidity demand

- **Outright asset purchases of ECB: Covered Bond Purchase Programs (CBPP), and Securities Markets Program (SMP)**

# Balance sheet of the ECB and the financial crisis
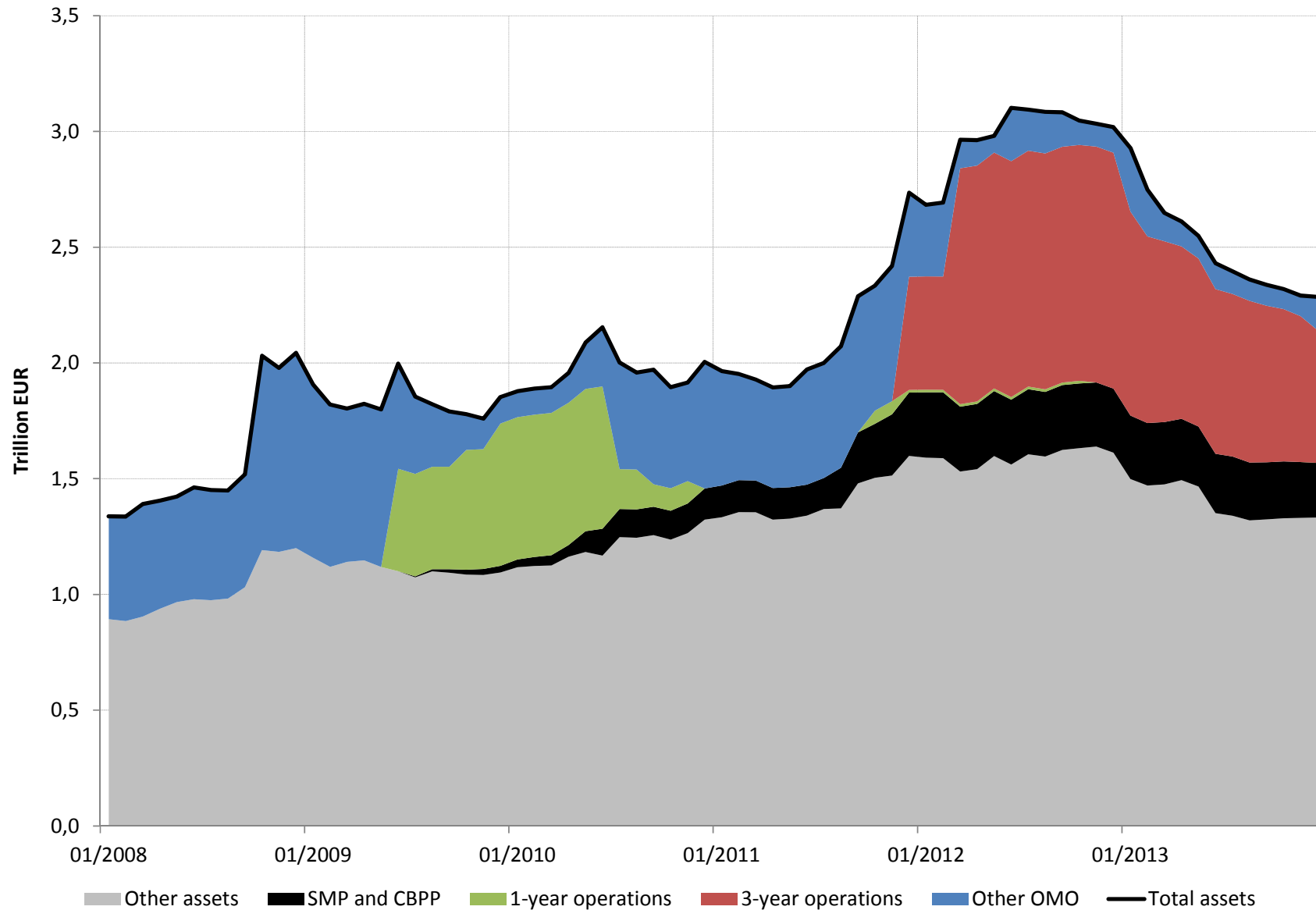
Benchmark VAR model for the euro area during crisis

$$Y_t = c + \sum_{i=1}^{n} A_i Y_{t-i} + B \varepsilon_t$$

- **Endogenous variables (4 lags, 2008M1-2013M12):**

    - **log real GDP (interpolated using industrial production)**

    - **log HICP**

    - **(MRO) policy rate**

    - **log central bank total assets**

    - **EONIA-MRO spread**

    - **CISS economic risk and financial stress indicator of Holló et al. (2012)**

ECB Balance sheet and financial stress in euro area

Legend: ECB total assets (yoy percentage change; lhs) — CISS (rhs)
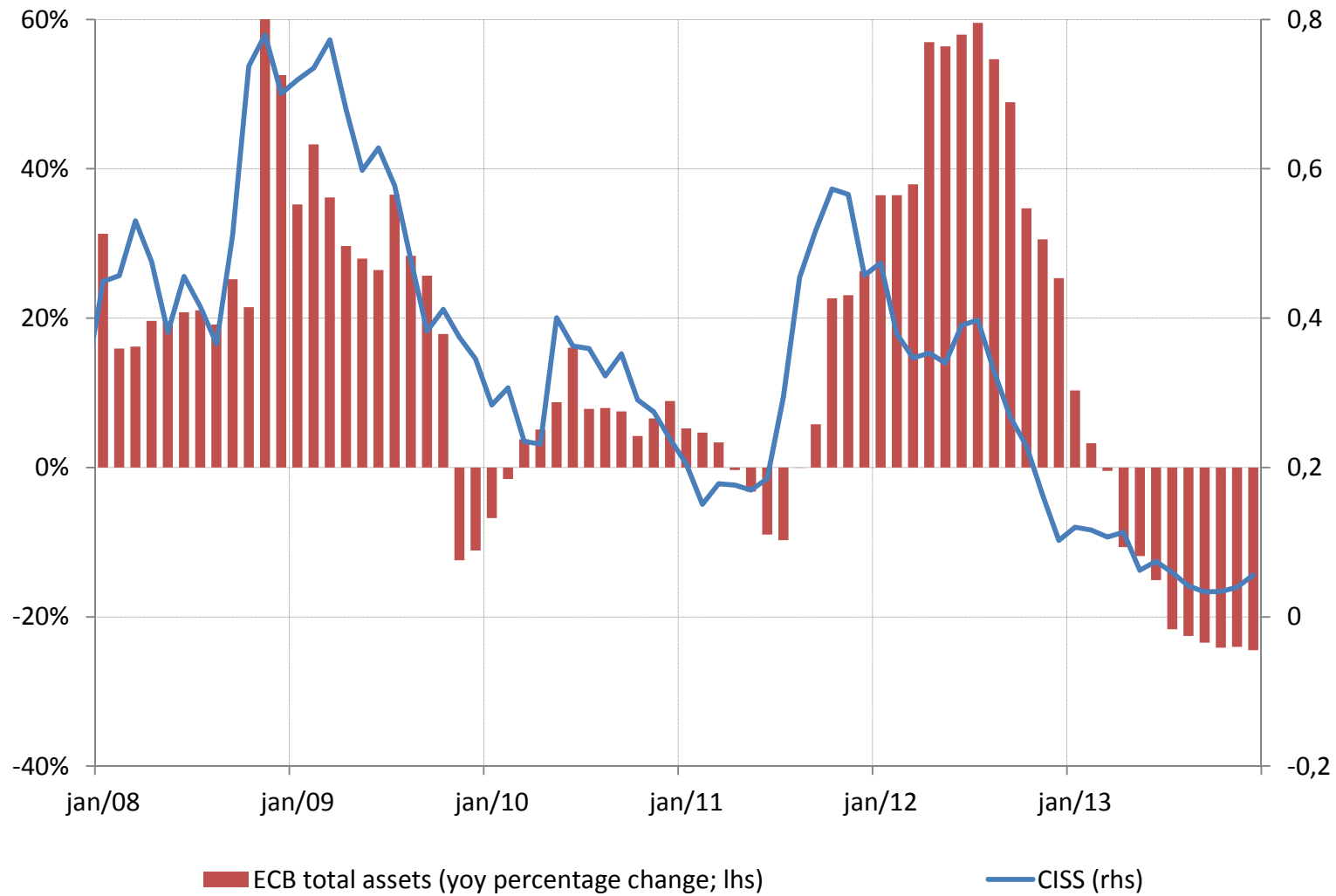
Identification of ECB balance sheet shocks

Output	Prices	CB Total Assets	CISS indicator	EONIA-MRO spread	MRO-rate
0	0	≥ 0	≤ 0	≤ 0	0

- **Lagged impact balance sheet shocks on output and prices: to disentangle from innovations to output and prices**

- **Balance sheet shocks do not increase CISS indicator: to disentangle from endogenous (+ demand-driven) response of balance sheet to financial stress**

- **Balance sheet shocks do not increase EONIA-MRO spread: to disentangle from (non-policy-induced) liquidity demand shocks**

- **Balance sheet shocks are orthogonal to shifts in policy rate**

- **(weak) sign restrictions imposed on impact and first month after shock**

Identified balance sheet shocks

ECB offered US dollar funding to European banks

full allotment decision + easing of collateral

1-year LTROs + start first covered bond purchase progam

1-year LTROs

Extension of full-allotment tenders

More restrictive collateral rules + lack interventions sovereign debt crisis

3-year LTROs + easing collateral requirements

Continuation full-allotment "for as long as necessary" + easing collateral requirements

Several modifications to risk control framework

lack of policy interventions + communication that measures will be unwound as soon as possible

Maturing 1-year LTROs and completion first covered bond purchase program

start second covered bond purchase progam

Early repayments 3-year LTROs (desire of banks to show repayment capacity)

Cumulative shocks (standard deviation)

(100%) Lower + upper bound cumulative shocks

Median of cumulative shocks

Macroeconomic effects of balance sheet shocks
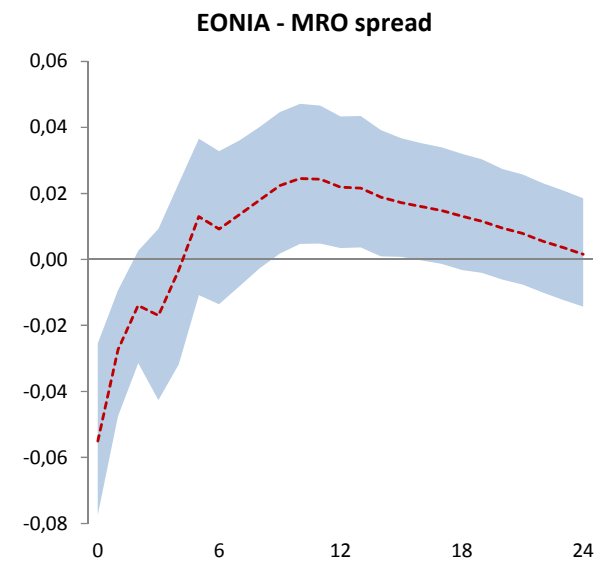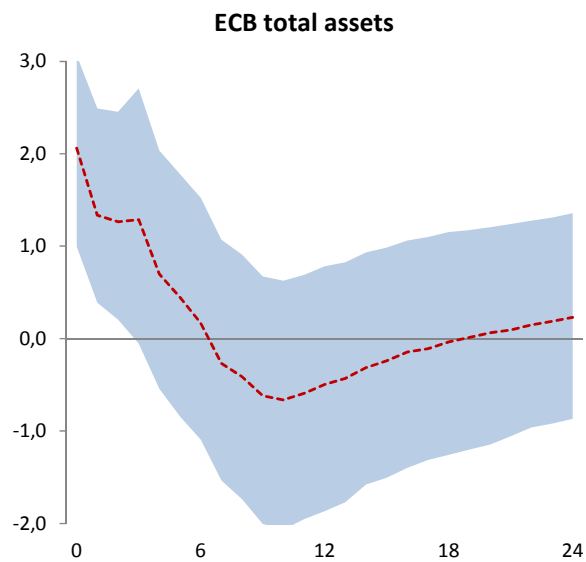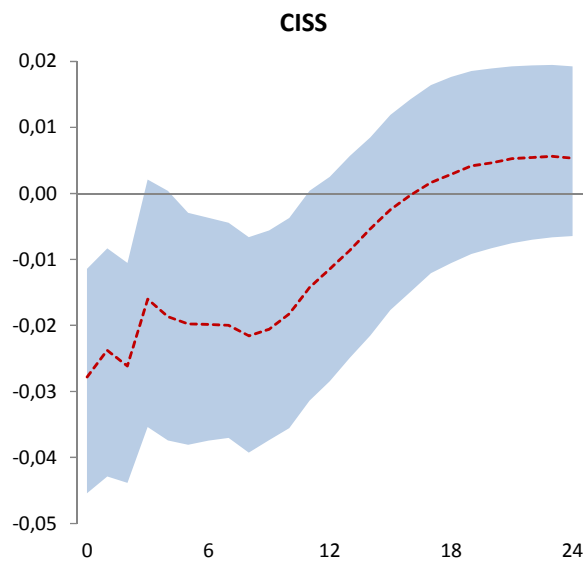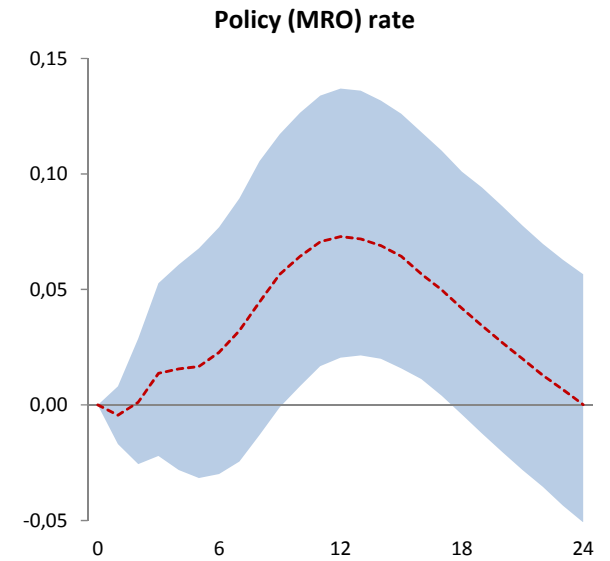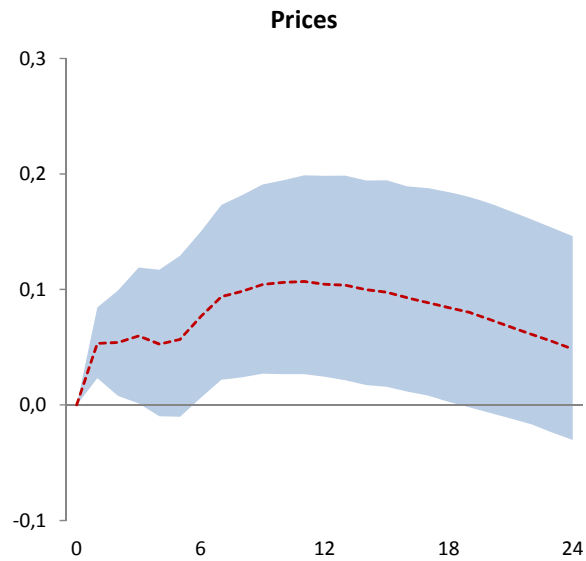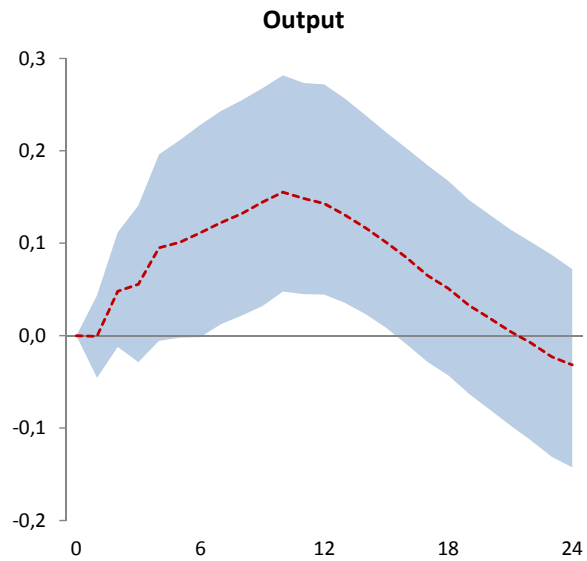
Transmission channels

- **How do balance sheet shocks affect bank lending and financial market variables?**

$$\begin{bmatrix} Y_t \\ Z_t \end{bmatrix} = \begin{bmatrix} c \\ \gamma \end{bmatrix} + \begin{bmatrix} A(L) & 0 \\ C(L) & D(L) \end{bmatrix} \begin{bmatrix} Y_{t-1} \\ Z_{t-1} \end{bmatrix} + \begin{bmatrix} B & 0 \\ E & F \end{bmatrix} \begin{bmatrix} \varepsilon_t \\ v_t \end{bmatrix}$$

  - **Near-VAR system with block diagonal structure: identified shocks are the same across specifications (comparability)**

  - **Z is vector containing the banking or financial variables of interest (included two by two)**

Impact on loans to non-financial corporations

Volume of loans to non-financial corporations

Interest rate loans to non-financial corporations

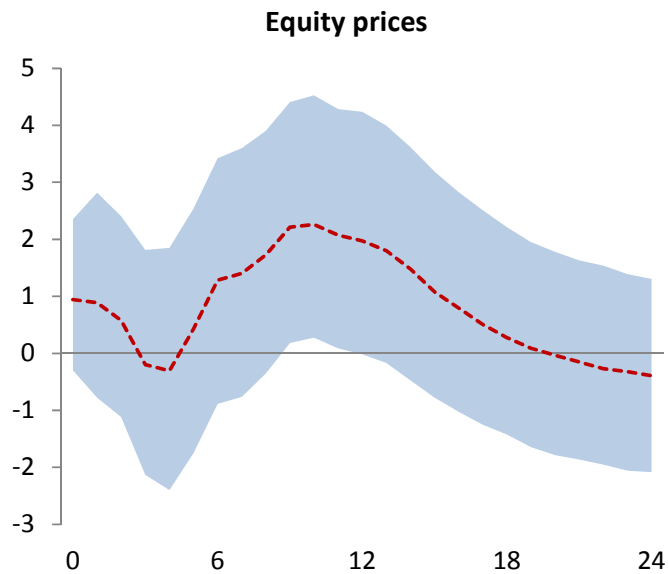### BLS survey - supply non-financial corporations

BLS survey - demand non-financial corporations

Impact on loans to households

Volume of loans to households

Interest rate loans to households

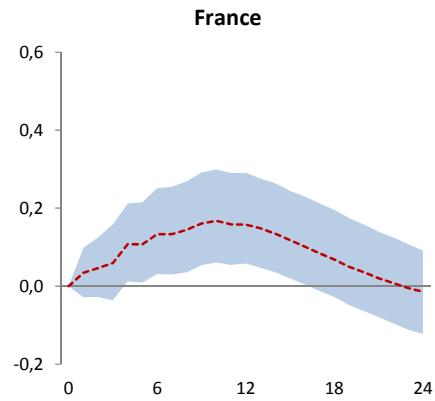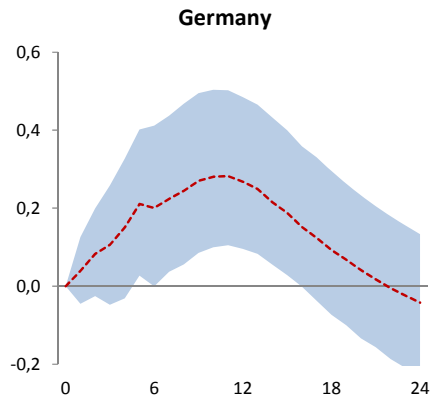**BLS survey - supply households**
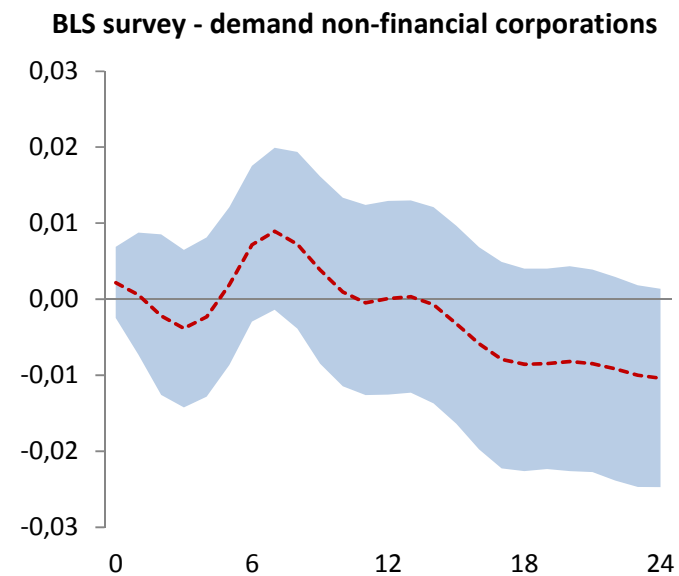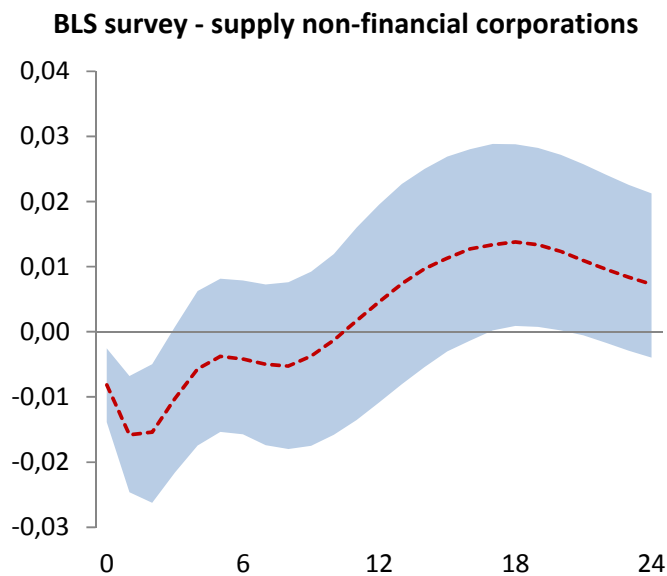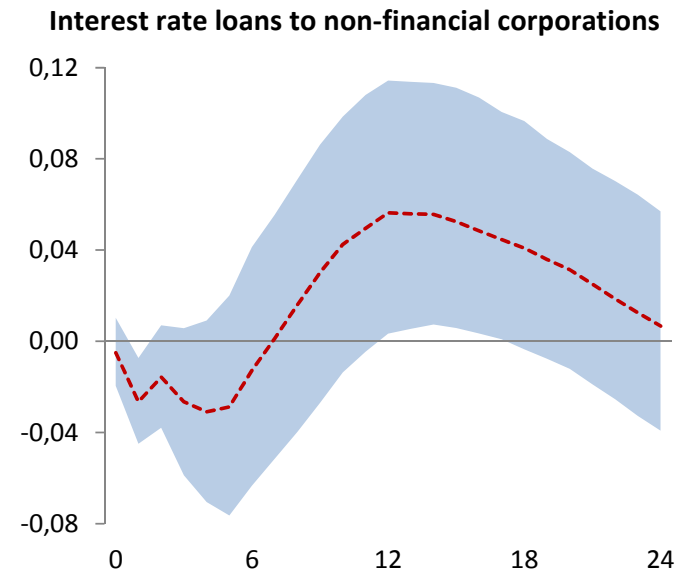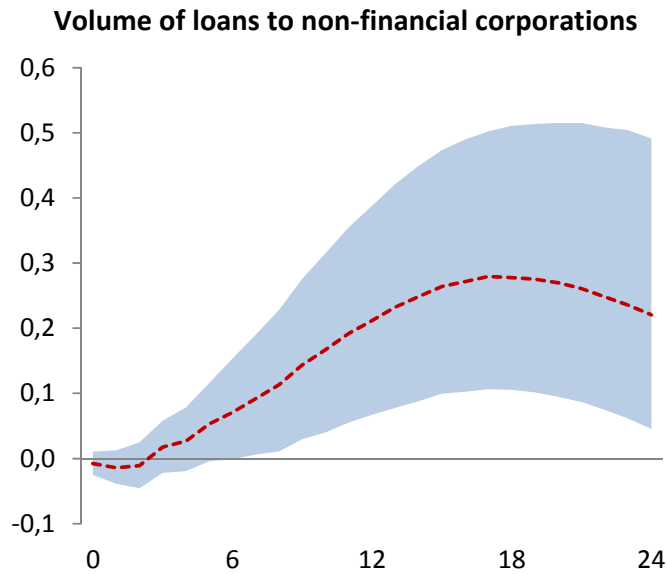
BLS survey - demand households
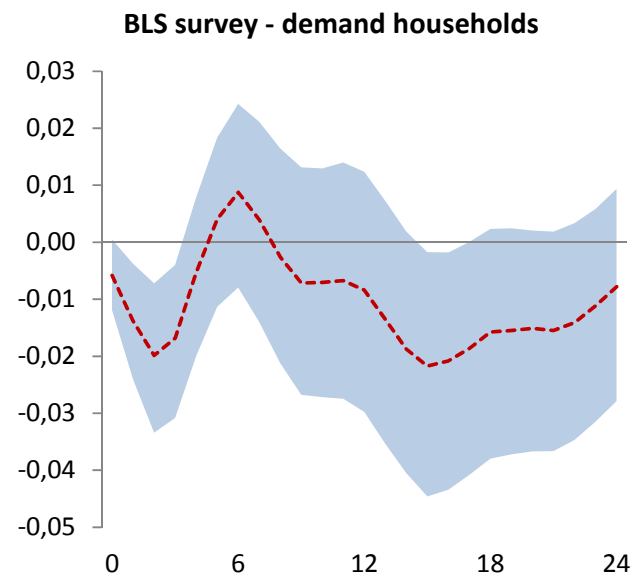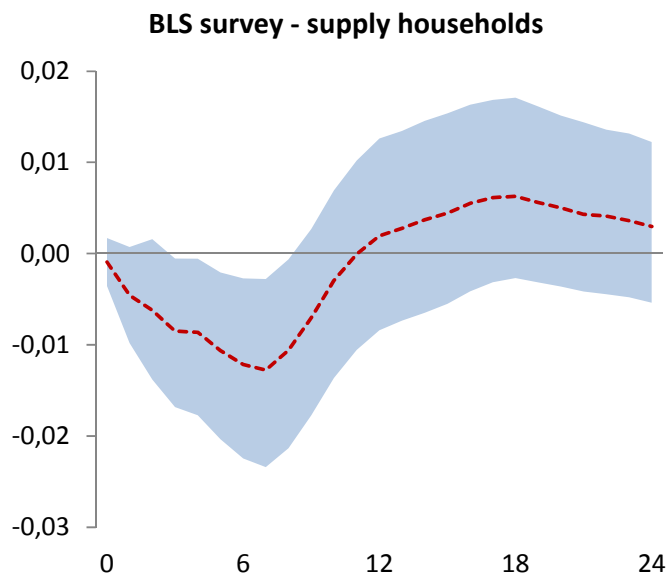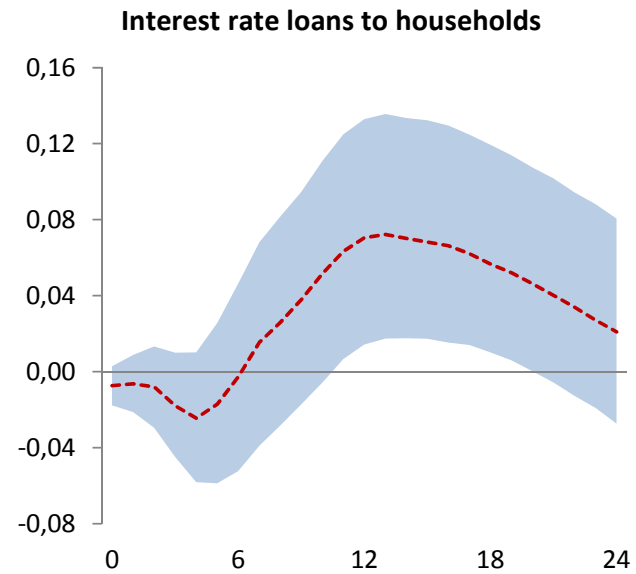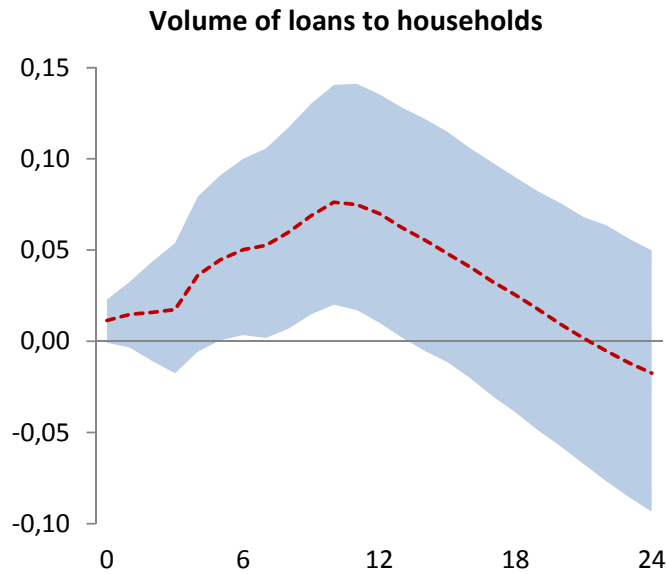
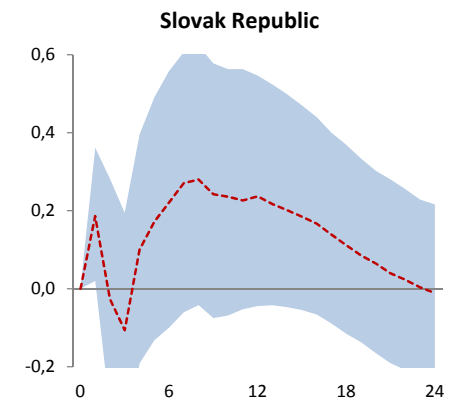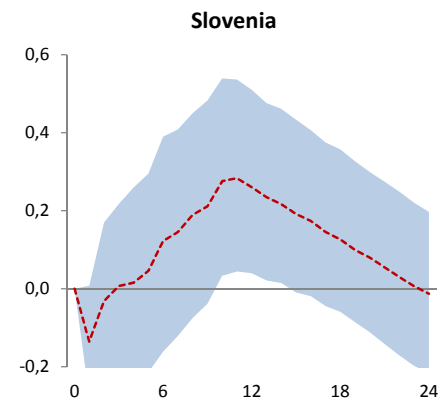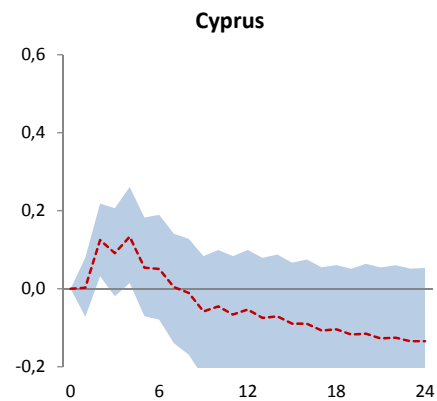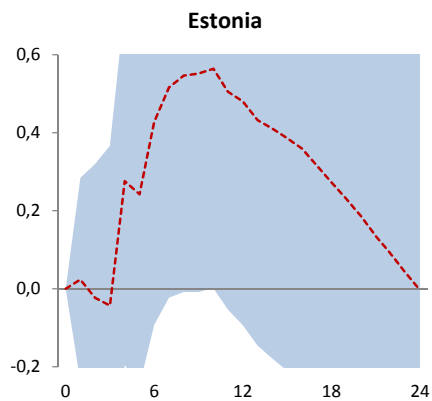# Impact on bank market variables
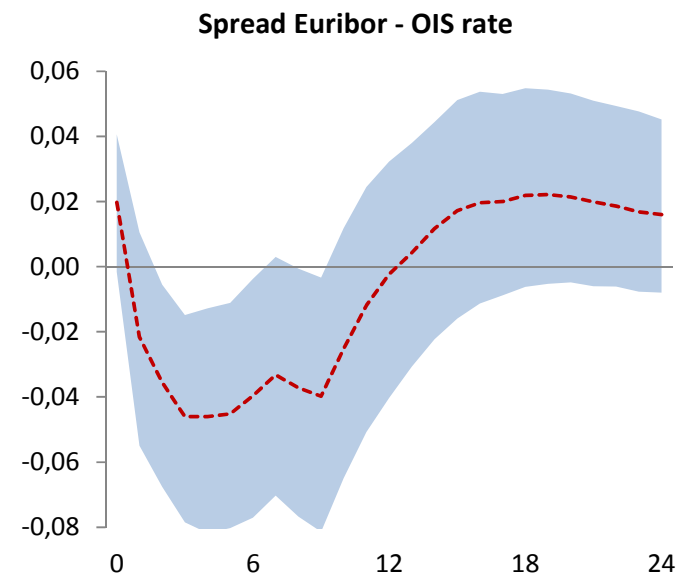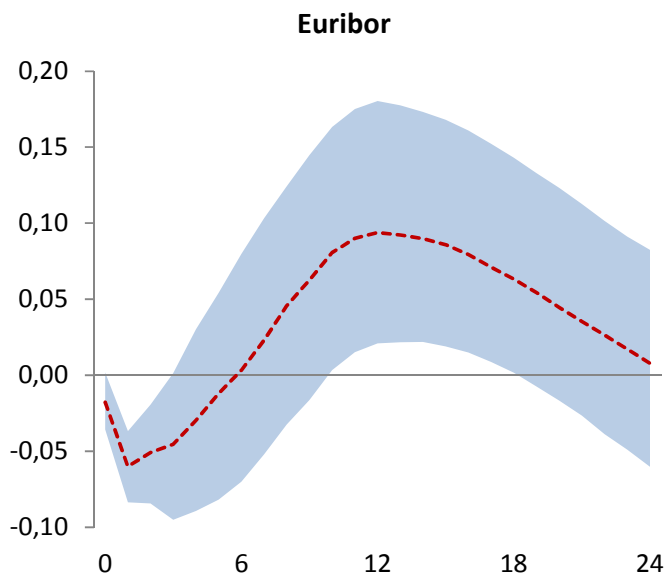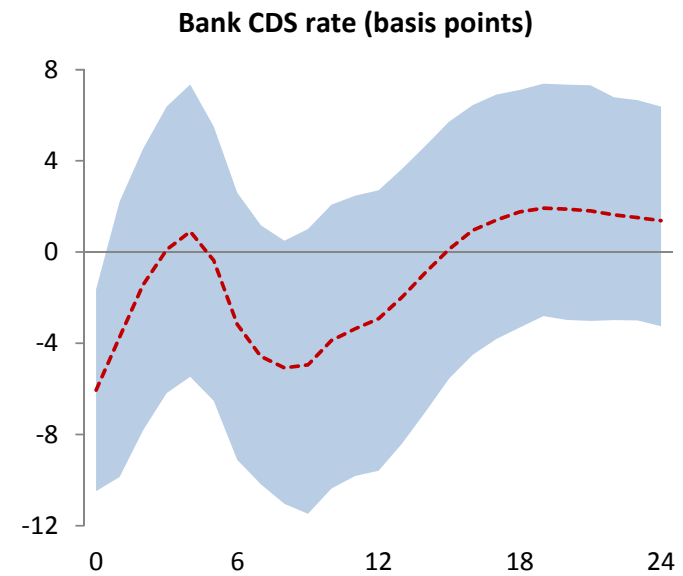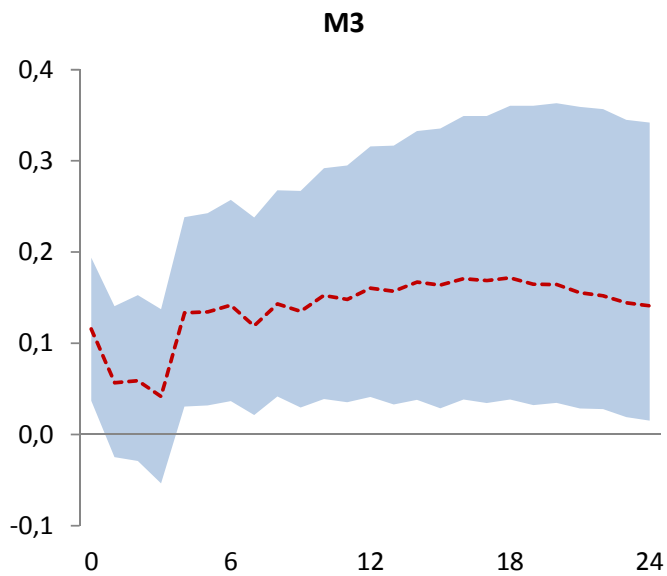
Impact on financial market variables

Equity prices

Nominal effective exchange rate
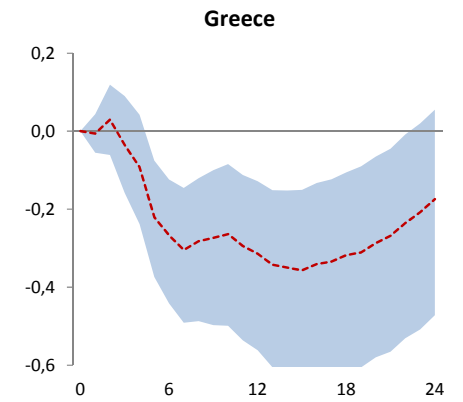
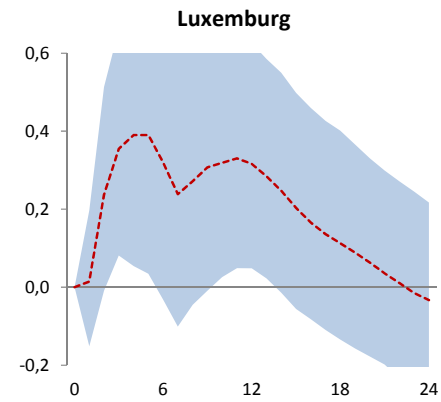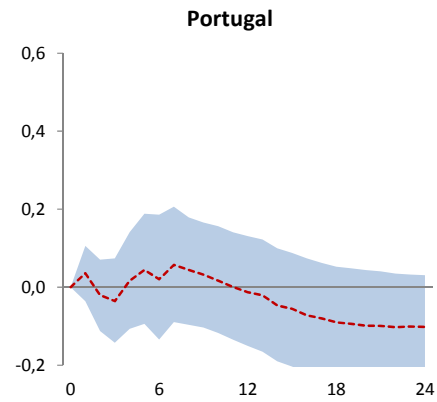Euro area sovereign bond yield
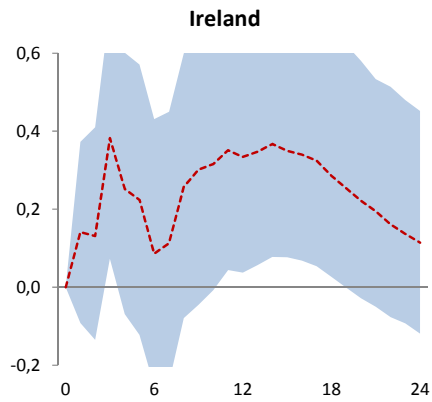
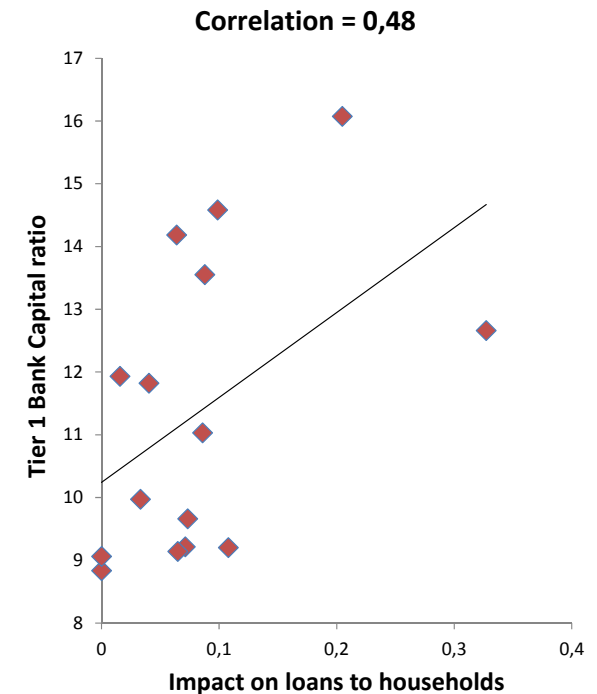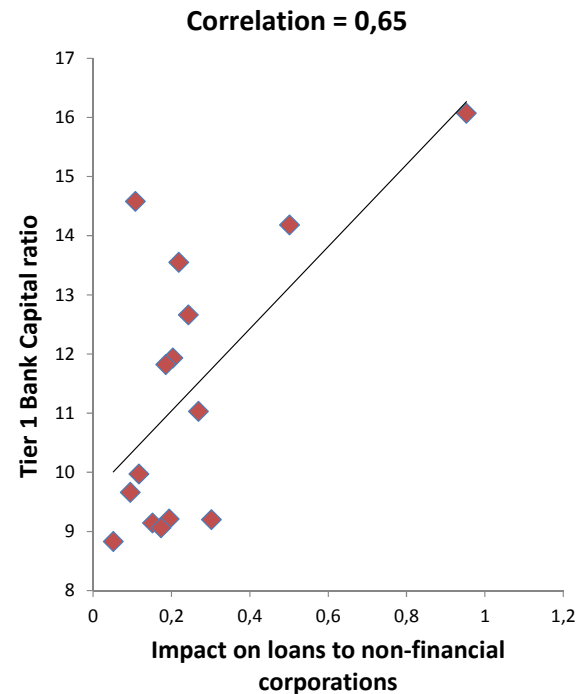Spread euro area - German sovereign bond yield
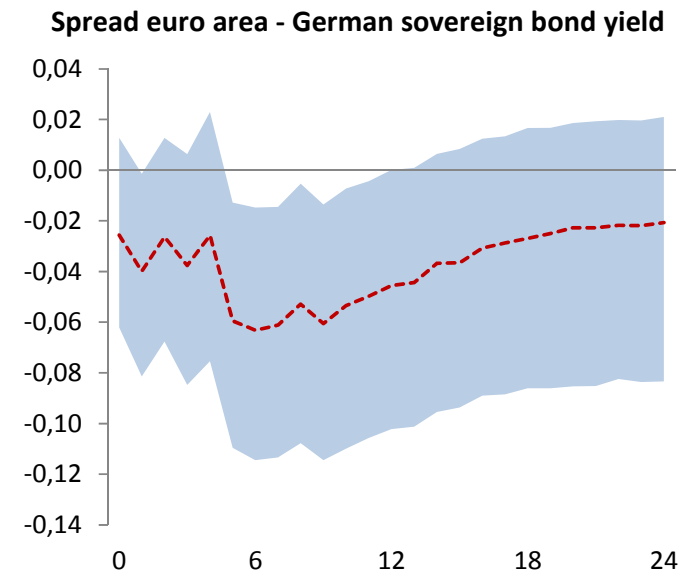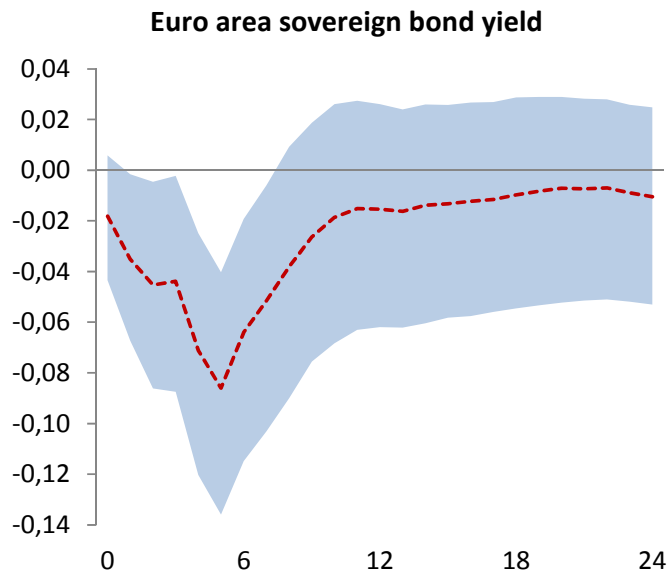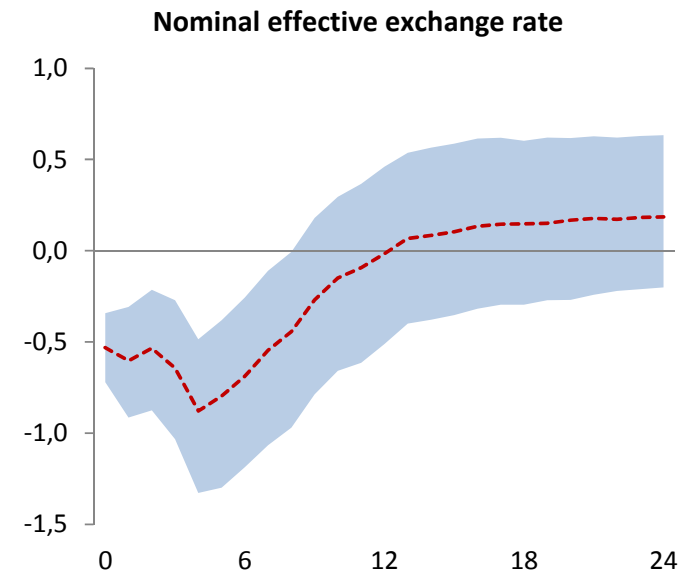
Impact on output in individual member countries
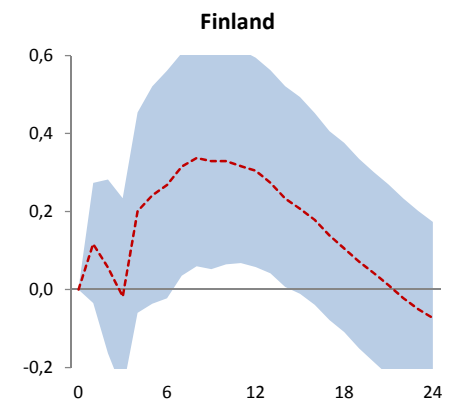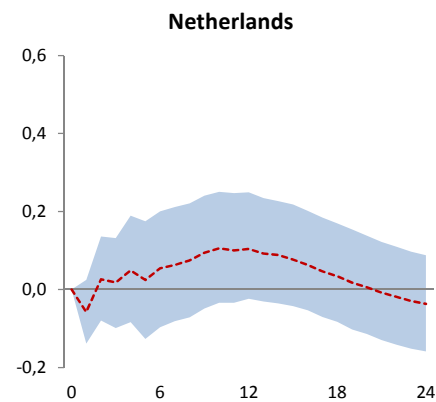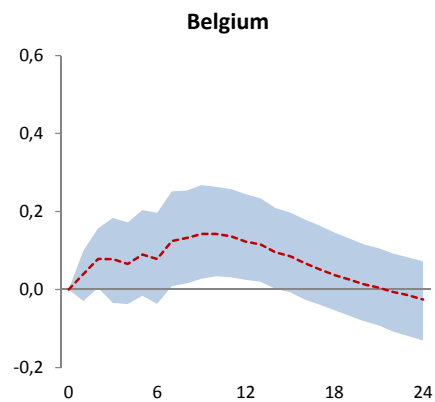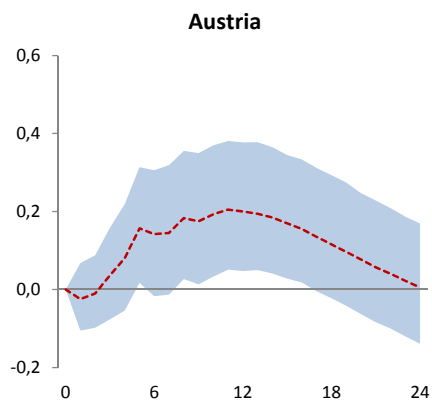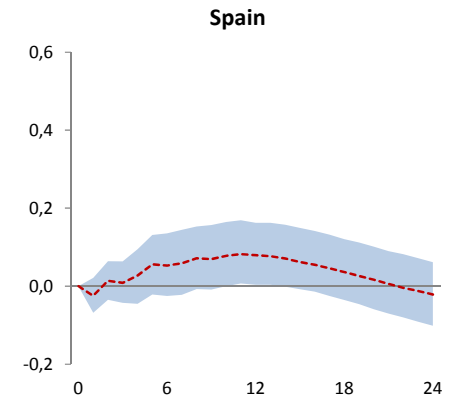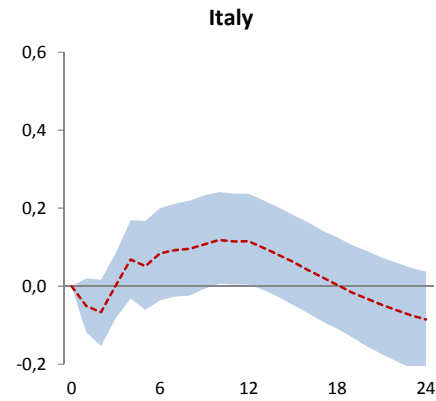
Impact on output in individual member countries

Bank capital and impact of balance sheet shocks

Correlation = 0,78 — Tier 1 Bank Capital ratio vs Impact on output

Correlation = 0,65 — Tier 1 Bank Capital ratio vs Impact on loans to non-financial corporations

Correlation = 0,48 — Tier 1 Bank Capital ratio vs Impact on loans to households
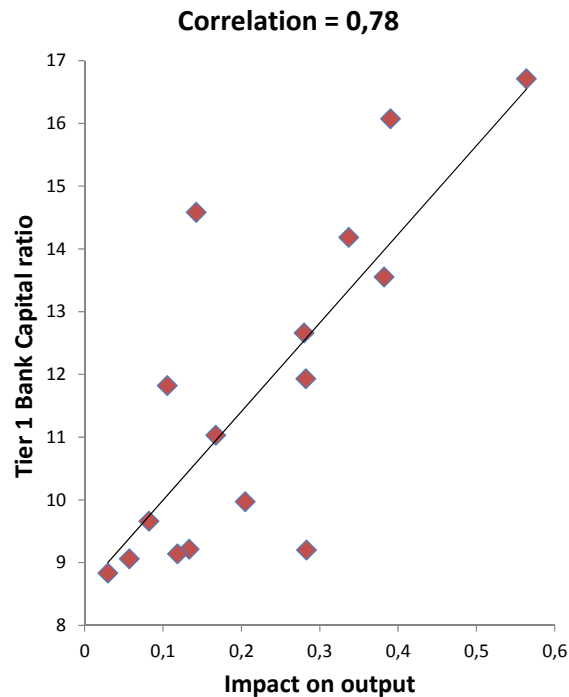
- **There seems to be correlation between (maximum) impact of ECB balance sheet shocks on output (bank lending) and Tier 1 Bank Capital ratio's**

Conclusions

- **Exogenous expansion in ECB's total assets leads to a significant but temporary rise in economic activity and prices**

  - **Effects are very similar to conventional interest rate innovations**

- **Expansionary balance sheet shock stimulates bank lending, stabilizes financial markets and leads to a depreciation of the euro**

- **Effects on bank lending and output are smaller in member countries where banking system is less well-capitalized**

  - **Next step: do we observe similar story for individual banks within countries?**