The international effects of euro area monetary policy – A focus on emerging Europe

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Agenda

- Through **strong trade and financial integration** with the euro area, **spillovers** might be **of particular importance** for countries from Central, Eastern and Southeastern Europe (CESEE).

- **Research questions**:
  1. What are the **macroeconomic effects of a monetary policy (MP) loosening in the euro area on** neighboring countries from CESEE?
  2. Through **which channels** do spillovers transmit?
  3. Do we find evidence for **spillbacks**?

Spillovers to output: Main transmission mechanism

Monetary policy (MP) expands and country A's currency depreciates ($er_{A,B} \downarrow$)

Sending country A

Producer pricing: $\overline{PX}_A$

$\Longrightarrow$

Export volume $\uparrow$

Receiving country B

$PM_B = \overline{PX_A} \cdot er_{A,B} \downarrow$

expend. switching:

$+$ imports, $-$ dom. prod.

Sending country A

$PM_A = \frac{\overline{PX_B}}{er_{A,B}} \uparrow$

expend. switching:

$-$imports, $+$ dom. prod.

$\Longleftarrow$

Import volume $\downarrow$

Receiving country B

Producer pricing: $\overline{PX}_B$

- $-$ **Spillover receiving economy**: Through **expenditure switching** at home and abroad $\Rightarrow$ **deterioration** in the trade balance and output.
- $+$ Could be **offset** through an MP induced rise in overall dom. demand in the sending economy (income absorption / **demand channel**).

Strength of transmission channel varies over time

- **Expenditure switching**.
  - Dampening:
    - **Euro as a regionally dominant currency** (Boz et al., 2020).
    - **Participation in global value chains**: higher share of intermediate imported goods in exports smaller pass-through to export volumes (see among others, Ahmed et al., 2017).
    - **Market structure**: More competition $\Rightarrow$ both domestic and foreign firms vary their markups more frequently (Cwik et al., 2011, Gust et al., 2010).
  - Strengthening:
    - Higher fin. globalization $\rightarrow$ **currency values** ($e_{A,B}$) **more responsive to interest rate differentials** (Kamin, 2010, Mishkin, 2007).
- + **Demand channel**:
  - MP effectiveness (e.g., zero lower bound).
- + **Financial channel**: Cross-border financial flows, intra-group parent bank funding (Ciarlone and Colabella, 2016, Fadejeva et al., 2017, Feldkircher et al., 2020).

What do we know from the literature I

Main findings

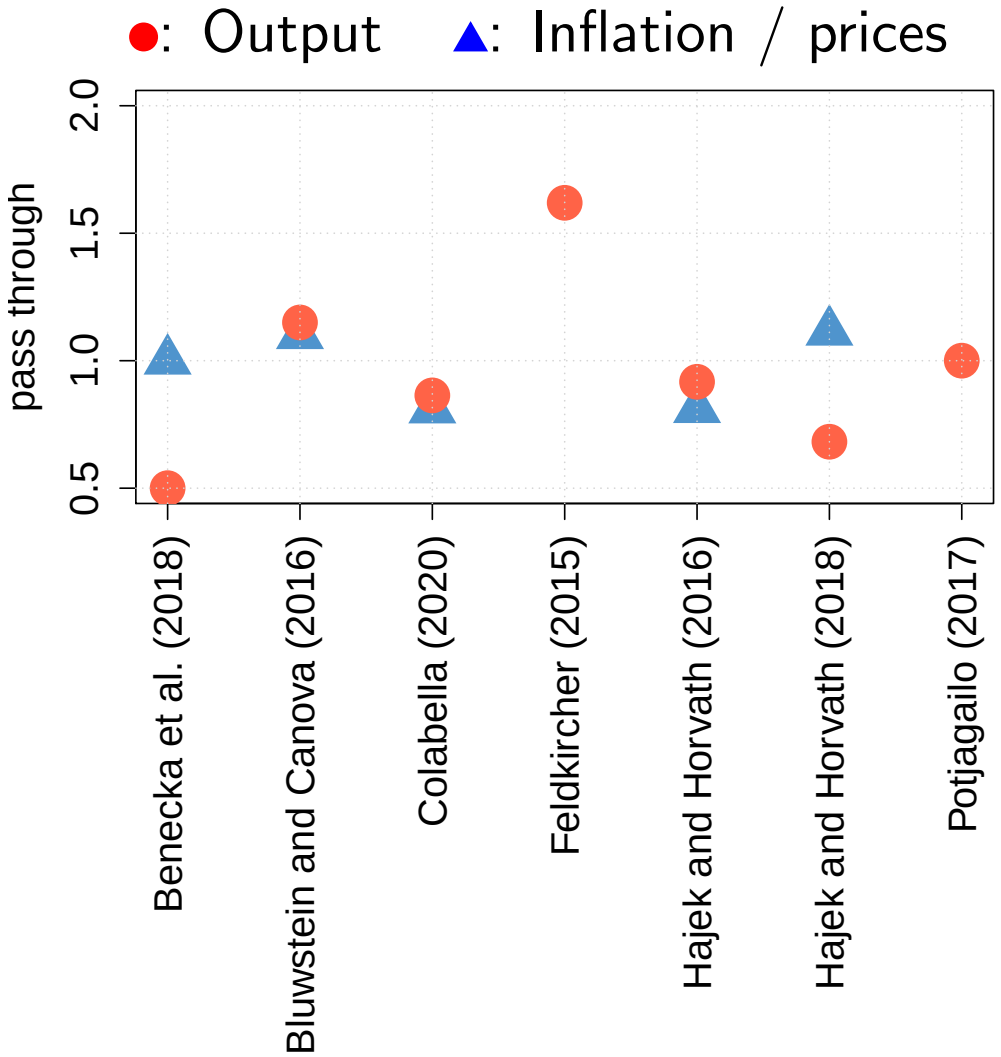
- **Positive spillovers** to **output** and **upward effects on prices** in CESEE (Benecká et al., 2020, Feldkircher 2015, Feldkircher et al., 2020, Hájek and Horváth, 2018, Horváth and Voslařová, 2017 for CESEE, Moder, 2020 for SEE).

- Spillovers tend to be **similar in size to domestic euro area effects** (Babecká Kucharčuková et al., 2016, Colabella, 2019, Hájek and Horváth, 2016, 2018, Potjagailo, 2017, Feldkircher et al. 2020), but some cross-country variation.

- **Second-round effects** through third-countries account for large fraction of overall size of spillovers (Burriel and Galesi, 2018); these are especially important for the Baltics (Benecká et al., 2020).

What do we know from the literature II

Elasticities: Spillover effect over domestic effect



Results difficult to compare:

- Ind. prod. vs. GDP
- Results in levels / growth rates
- Different countries covered
- Different methodologies

Spillovers & spillbacks: Empirical assessment

Roadmap

- Collect monthly **macroeconomic and financial data** for the euro area (EA) and ten CESEE countries: SI, SK, CZ, HU, PL, BG, HR, RO, RU, TR.
- Use the **high-frequency data external instrument** of Altavilla et al. (2019) to **measure EA monetary policy**.
- For each country, estimate a latent time-varying parameter vector autoregression with **euro area variables ordered first** and **individual CESEE country variables** ordered **second**.
- Control for intra CESEE connectivity by including **trade-weighted, regional output**.

$\Rightarrow$ Estimate spillovers, spillbacks and assess the strength of transmission channels.

Econometric approach

We estimate $i = 1, \ldots, 10$ two-country models using a latent **threshold vector autoregressive model with stochastic volatility** (TTVP-SV, Huber et al., 2019):

$$\boldsymbol{Q}_{i0,t}\boldsymbol{x}_{i,t} = \sum_{p=1}^{\tilde{P}} \boldsymbol{A}_{ip,t}\boldsymbol{x}_{i,t-p} + \varepsilon_{it}, \quad \varepsilon_{it} \sim \mathcal{N}(0, \boldsymbol{D}_{i,t})$$

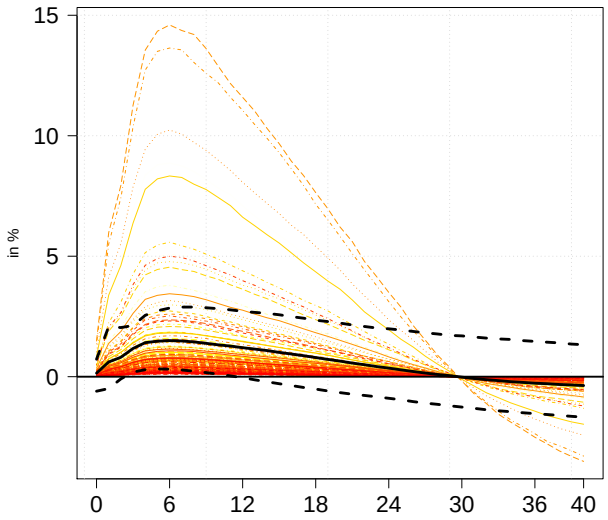
- $\boldsymbol{Q}_{i0,t}$ is a lower triangular $k_i \times k_i$ matrix of structural coefficients.
- ε_{it} is a heteroskedastic vector error term

$$\boldsymbol{x}_t = \begin{bmatrix} (\mathbf{mp}, pcom, vix)' \\ (output_{ea}, cpi_{ea}, \ldots)' \\ output_{\overline{cesee},i} \\ (\mathbf{output}_i, \mathbf{cpi}_i, er_i, \ldots)' \end{bmatrix} \begin{matrix} \text{MP \& global control variables} \\ \text{EA variables} \\ \text{Aggr. CESEE demand} \\ \text{CESEE variables} \end{matrix}$$

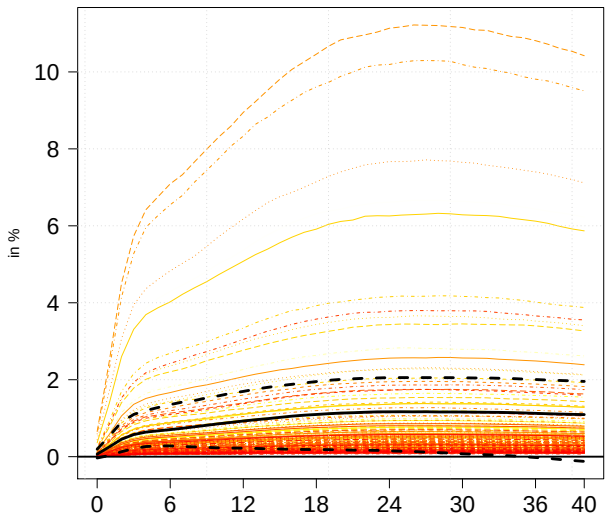
Spillovers I: Regional CESEE mean effects

68% credible intervals of time-averaged responses, beginning (2003m1) / end (2018m9) of sample period

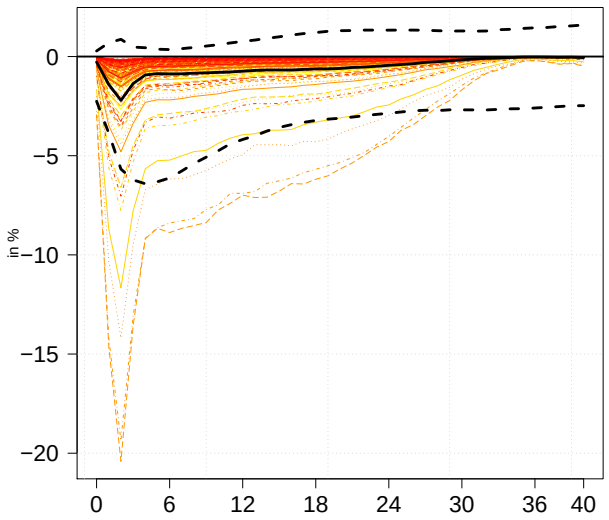
Output



CPI



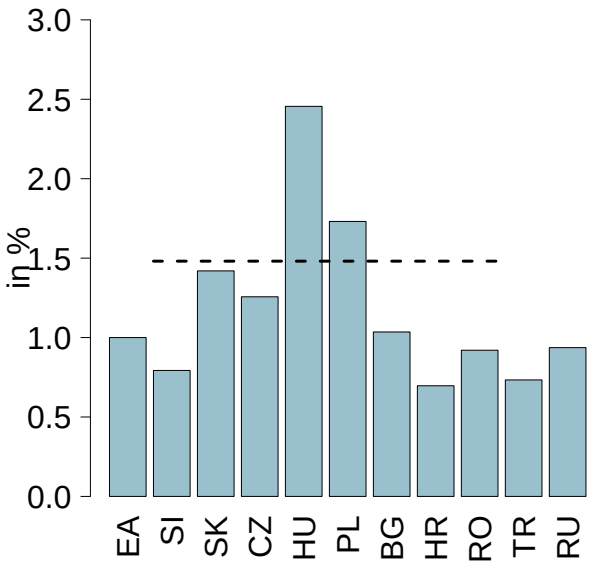
Exchange rate
decline = depr. of euro



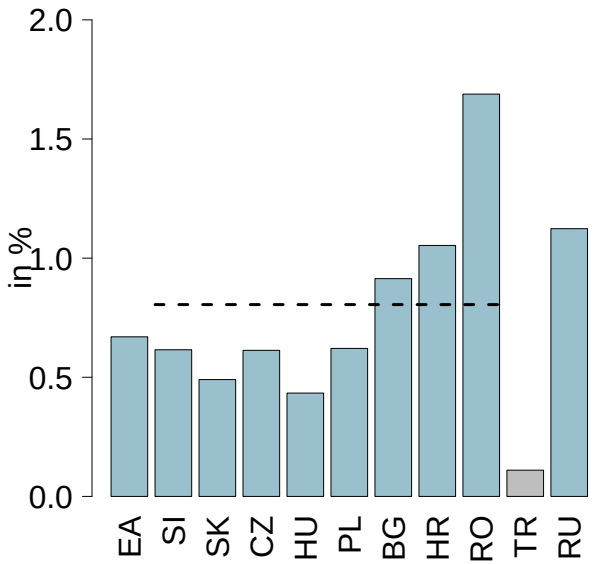
Spillovers II

Peak effects of time-averaged responses

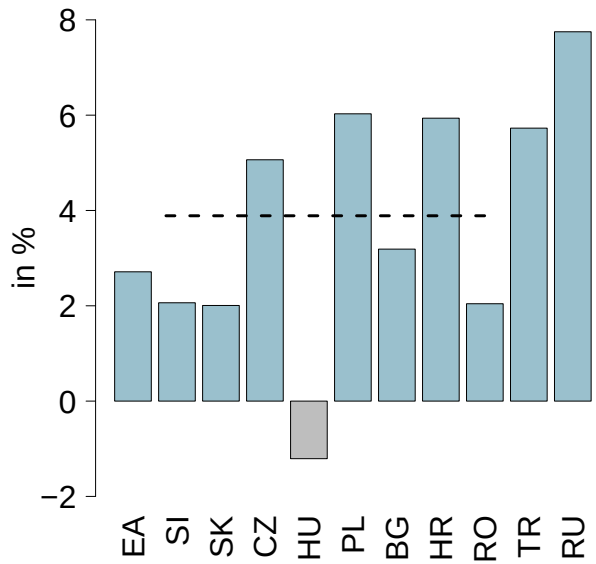
(a) Output



(b) Prices



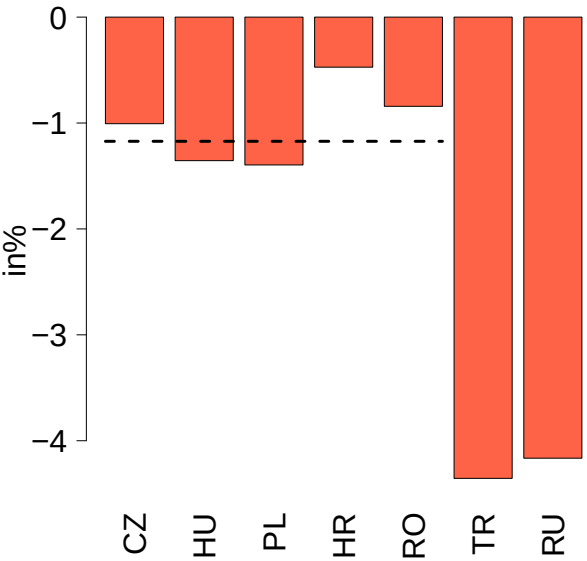
(c) Equity prices



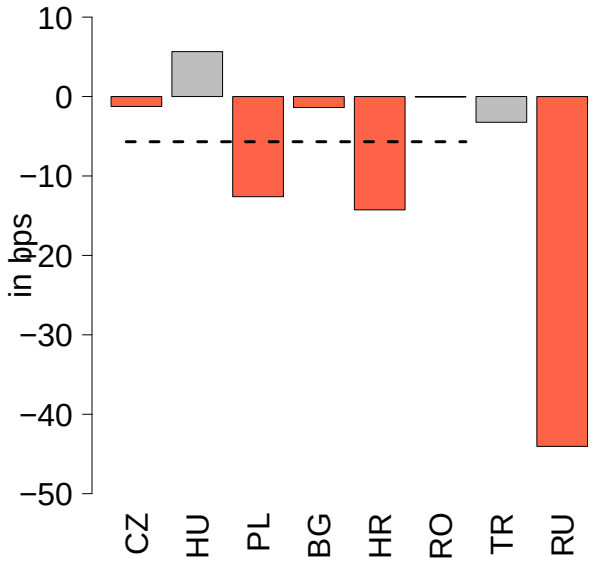
Spillovers III

Trough effects of time-averaged responses, exchange rate decline implies an appreciation of the local currency against the euro

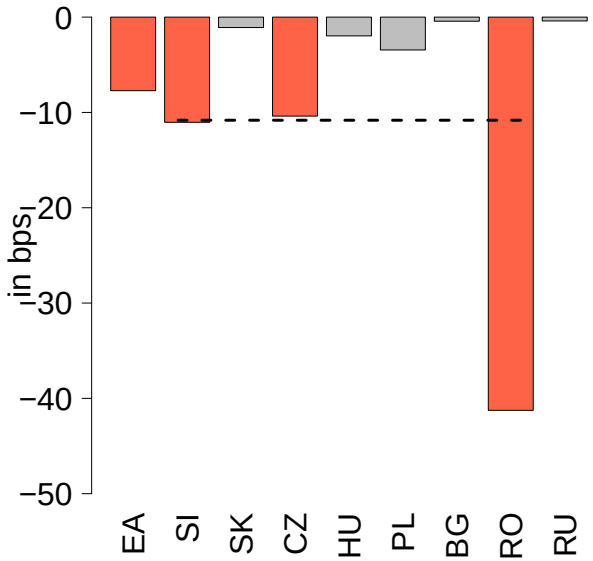
(a) Exchange rate



(b) Short-rates



(c) Long-rates



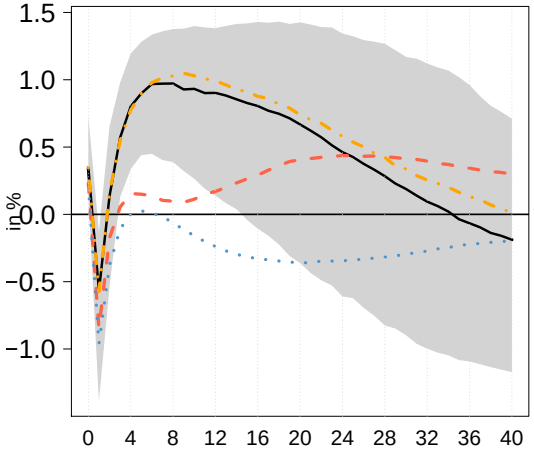
Transmission channels through counterfactuals

- Monetary policy can affect a variable of interest directly (**direct effect**) or through its effect on other variables (**indirect effect**).
- We can construct **a counterfactual response** that **shuts down the indirect effect** through a particular channel (Bachmann and Sims, 2012, Wong, 2015).
- In case the **unconditional response** (direct + indirect) is **close to the counterfactual response**, the channel can be regarded as less important.
- We look at **output in CESEE** and shut down effects through
  1. euro area output (proxy for demand / income absorption channel)
  2. exchange rate (proxy for expenditure switching)
  3. output from other CESEE economies (proxy for second-round effects)

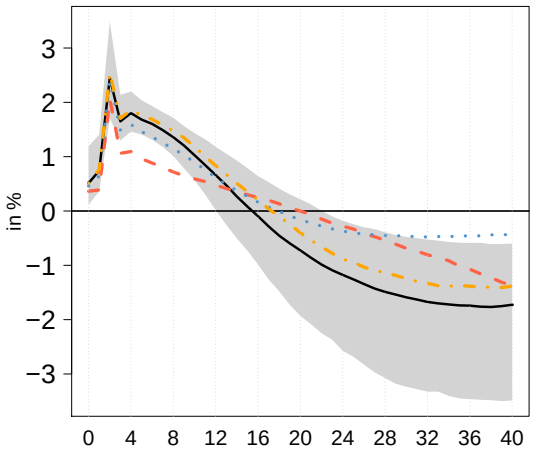
Selected counterfactuals on CESEE output

Time-averaged responses

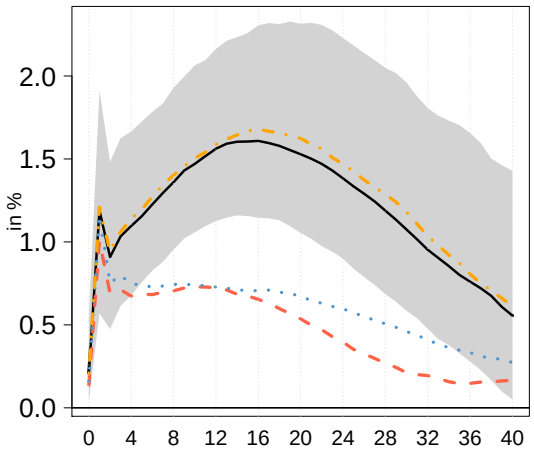
Czechia



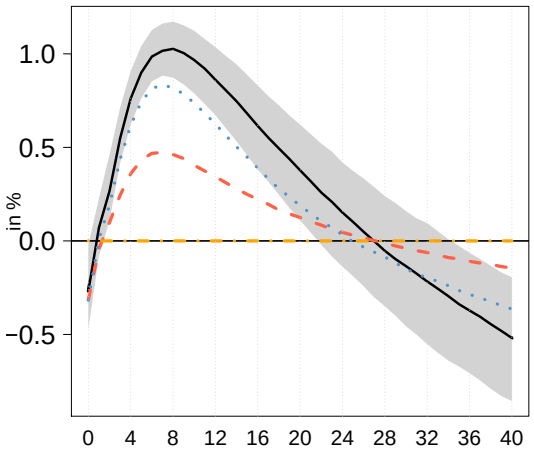
Hungary



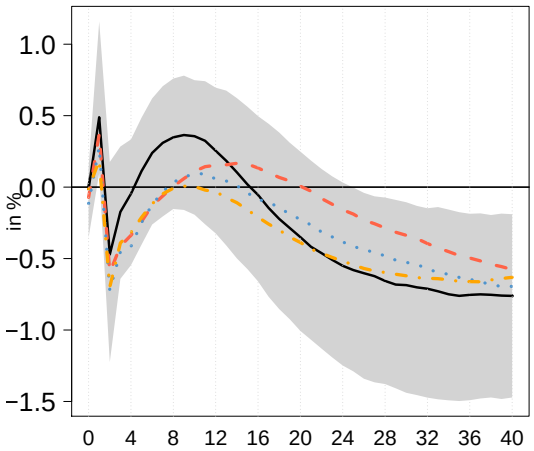
Poland

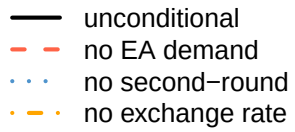


Bulgaria



Croatia

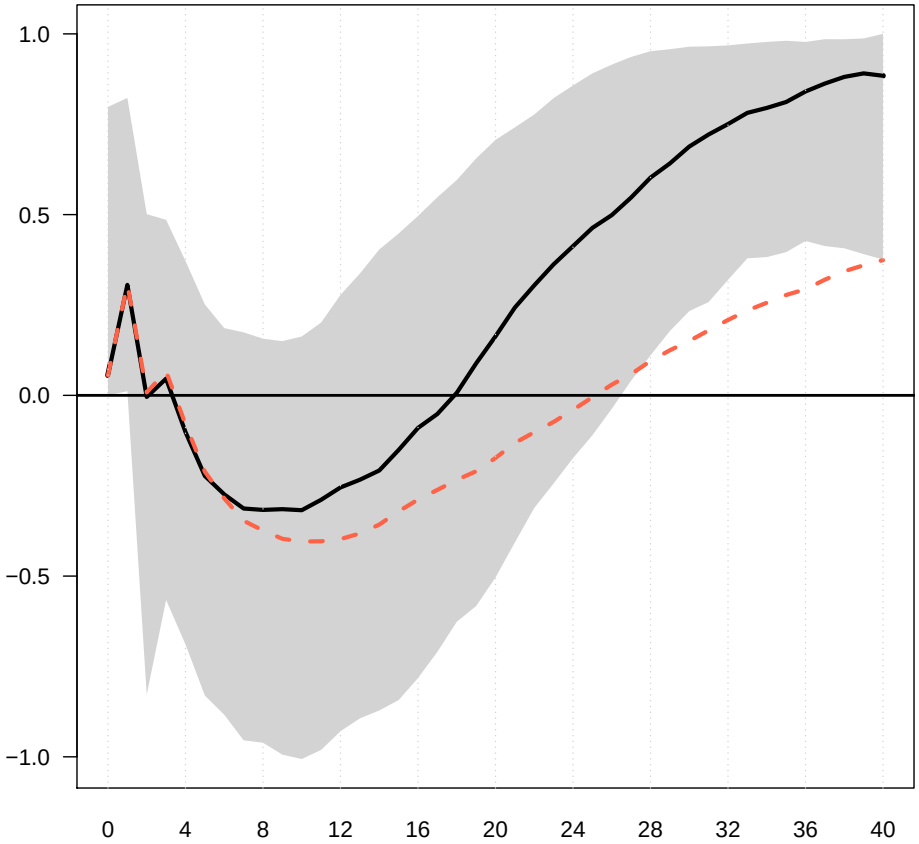




Spillbacks: Counterfactuals on EA output

EA output time-averaged responses

— unconditional; - - no CESEE demand



- We can use the **same methodology** to examine spillbacks to the euro area.
- For that purpose, we estimate a model using EA and **aggregated** CESEE data.
- We then estimate **responses of euro area output** where we shut down CESEE output and the exchange rate.

Conclusions & policy implications

- We find **significant spillovers** of euro area MP to neighboring countries from CESEE. These effects are **stronger** during periods of **financial stress**.
- The international transmission of EA MP works mainly through an **increase in EA demand**, which partly falls on CESEE exports.
- We also find that the original effects **get amplified through second-round effects** that arise from CESEE countries' trading partners.
- By contrast, the **exchange rate channel plays a minor role**, which could be explained by noting that the euro acts as a regionally dominant currency in Europe (no drag on CESEE exports from exchange rate appreciation).
- We also find evidence for **significant spillbacks**. Implications?

Monetary policy and VARs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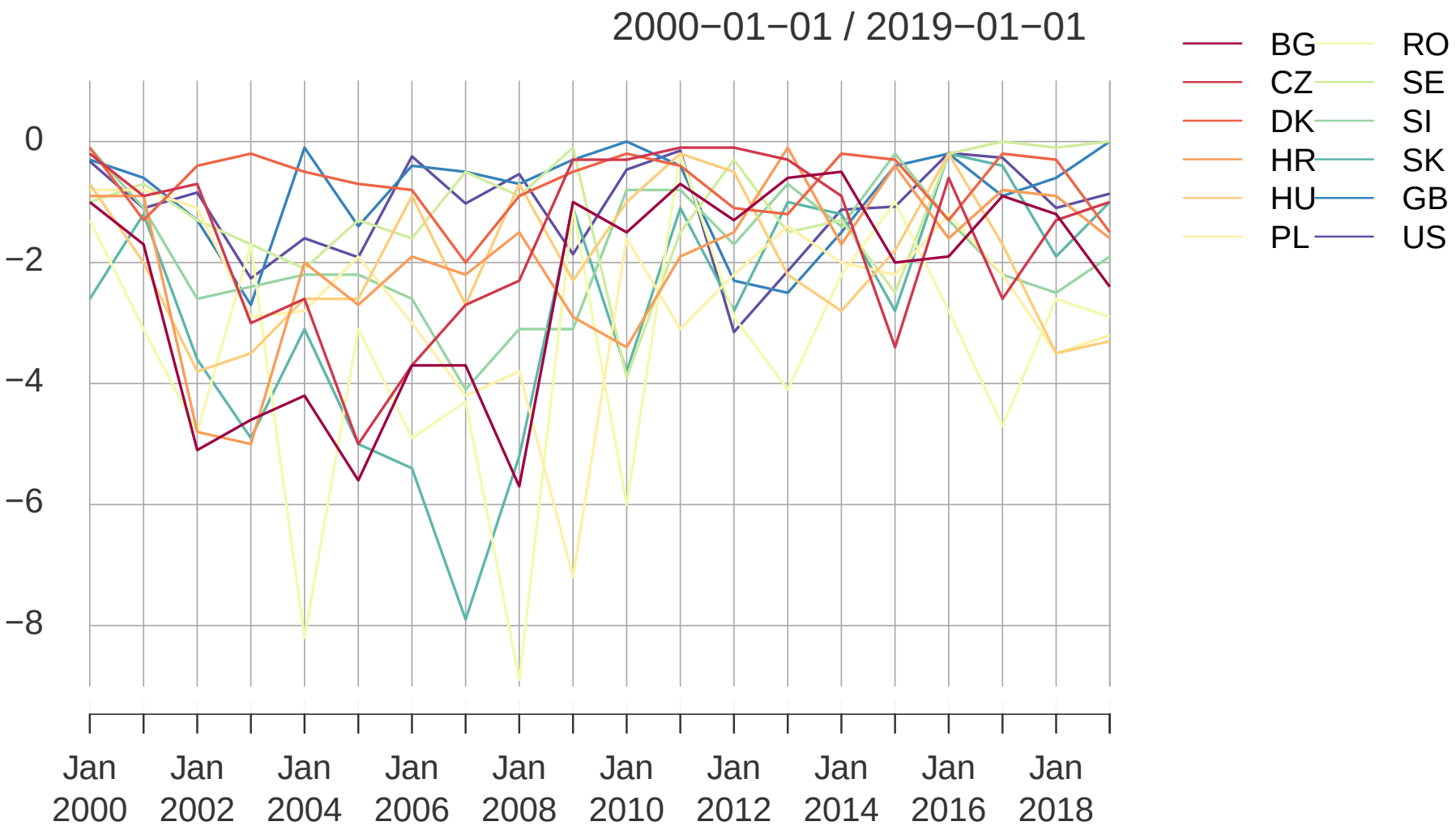
Data: 2003m1 to 2018m9

mp	MP instrument (Altavilla, et al., 2019).
$pcom$	Commodity price index.
vix	Volatility index, US stock markets.
y_t	Industrial production.
p_t	Consumer prices.
i_t^s	Short-term interest rates (3 months).
i_t^l	Long-term interest rates (10 years).
er_t	Nom. exch. rate against the euro (+= depr. of local currency).
eq_t	Equity price index.
$ciss_t$	SovCISS, sovereign stress indicator, Garcia-de-Andoain and Kremer (2018).

Country sample: Euro area, advanced neighboring economies (DK, GB, SE) and CESEE economies (SI, SK, CZ, HU, PL, BG, HR, RO, RU, TR).

Business cycle synchronization with the euro area

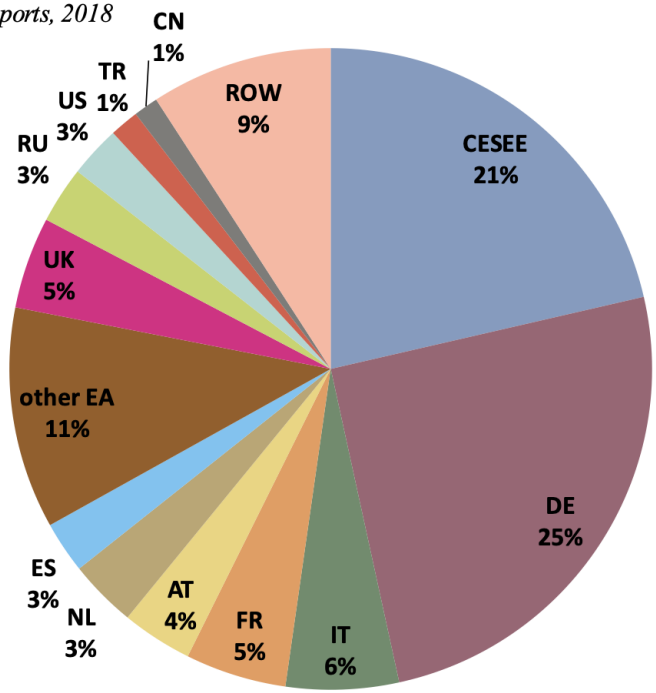
Opposite of absolute annual real GDP growth rate differential to the euro area, in percentage points



Connectivity via trade

Export structure of CESEE-11

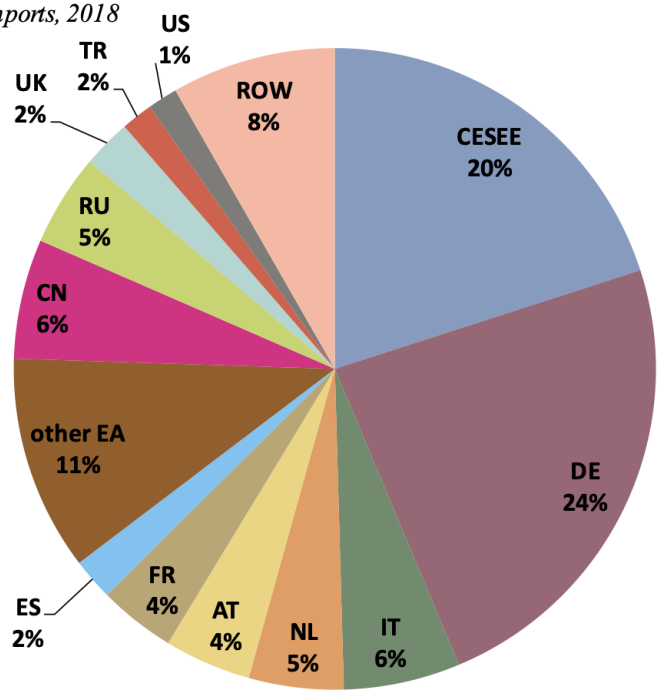
in % of total exports, 2018



Source: Eurostat.

Import structure of CESEE-11

in % of total imports, 2018

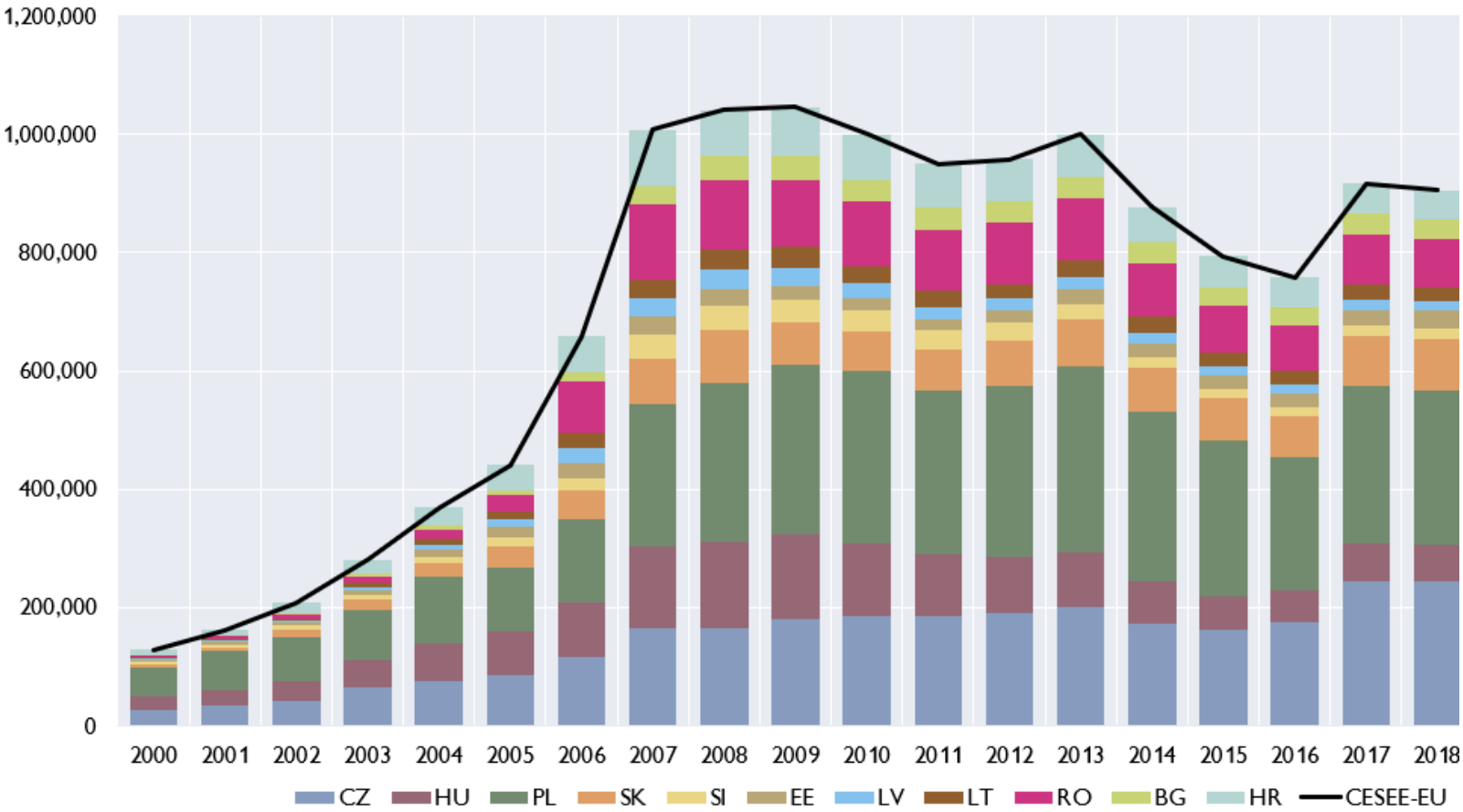


Source: Eurostat.

Connectivity via the banking sector

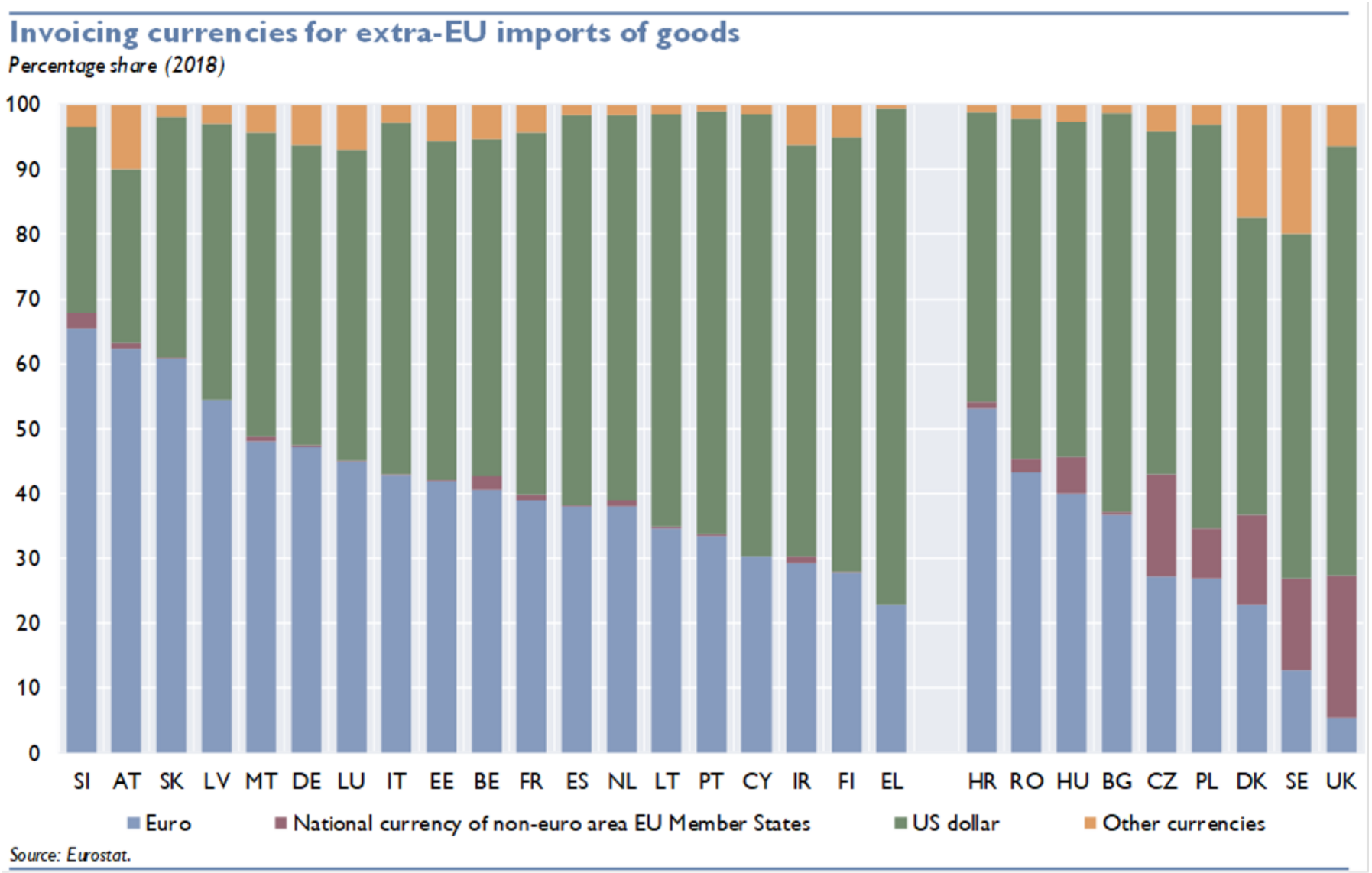
Consolidated exposure of BIS reporting banks vis-a-vis CESEE EU Member States

in USD mn, immediate borrower basis



Source: BIS.

Invoice currency



Short-term rates in CESEE