

# Transmission of Monetary Policy in an Abundant Reserves Environment

Philipp Ulbing\*, Helmut Elsinger†, Paul Pichler\*

\* University of Vienna, † Oesterreichische Nationalbank  
philipp.ulbing@univie.ac.at



## Introduction/Research Question

### Transition to an Abundant Reserves Environment in the Euro Area

- Started in mid 2014 with the introduction of unconventional monetary policy measures
- Characterized by a large amount of (excess) liquidity in the financial system
- Unprecedented situation since policy rates started to increase in July 2022

### Implications for Monetary Policy

- Banks' differential reserve holdings affect their exposure to monetary policy
- Highly remunerated reserves provide a cushion for bank profitability, shielding them from adverse effects after policy rate increases

### Research Questions

- Does monetary policy have differential effects across Euro Area countries depending on their reserve exposure?
- What are the policy implications of the heterogeneous transmission of monetary policy across the Euro Area?

## Literature

De Grauwe, P., & Ji, Y. (2023). Fighting inflation more effectively without transferring central banks' profits to banks. CESifo Working Paper No. 10741.

Fricke, D., Greppmair, S., & Paludkiewicz, J. (2024). Excess reserves and monetary policy tightening. Deutsche Bundesbank Discussion Paper No 05/2024.

Jobst, C., Handig, M., & Holzfeind, R. (2012). Understanding target2: The eurosystem's euro payment system from an economic and balance sheet perspective. Monetary Policy & the economy Q,1, 81-91.

Keister, T., Martin, A., & McAndrews, J. (2008). Divorcing money from monetary policy. Economic Policy Review, 14(2).

## Motivation and Stylized Facts

### Liquidity in Euro Area

- Amount of liquidity increased significantly since the implementation of unconventional monetary policy measures in mid-2014
- Reached its peak at about €7,000 billion at the end of 2022
- Excess reserves are remunerated at the deposit facility rate (4% in 2023)

### Heterogeneous Distribution of Liquidity

- Highly unequal distribution of liquidity across the Euro Area
- Ratio of liquidity - defined as excess reserves and deposit facility holdings - relative to required reserves ranges from 7 to 25 across countries

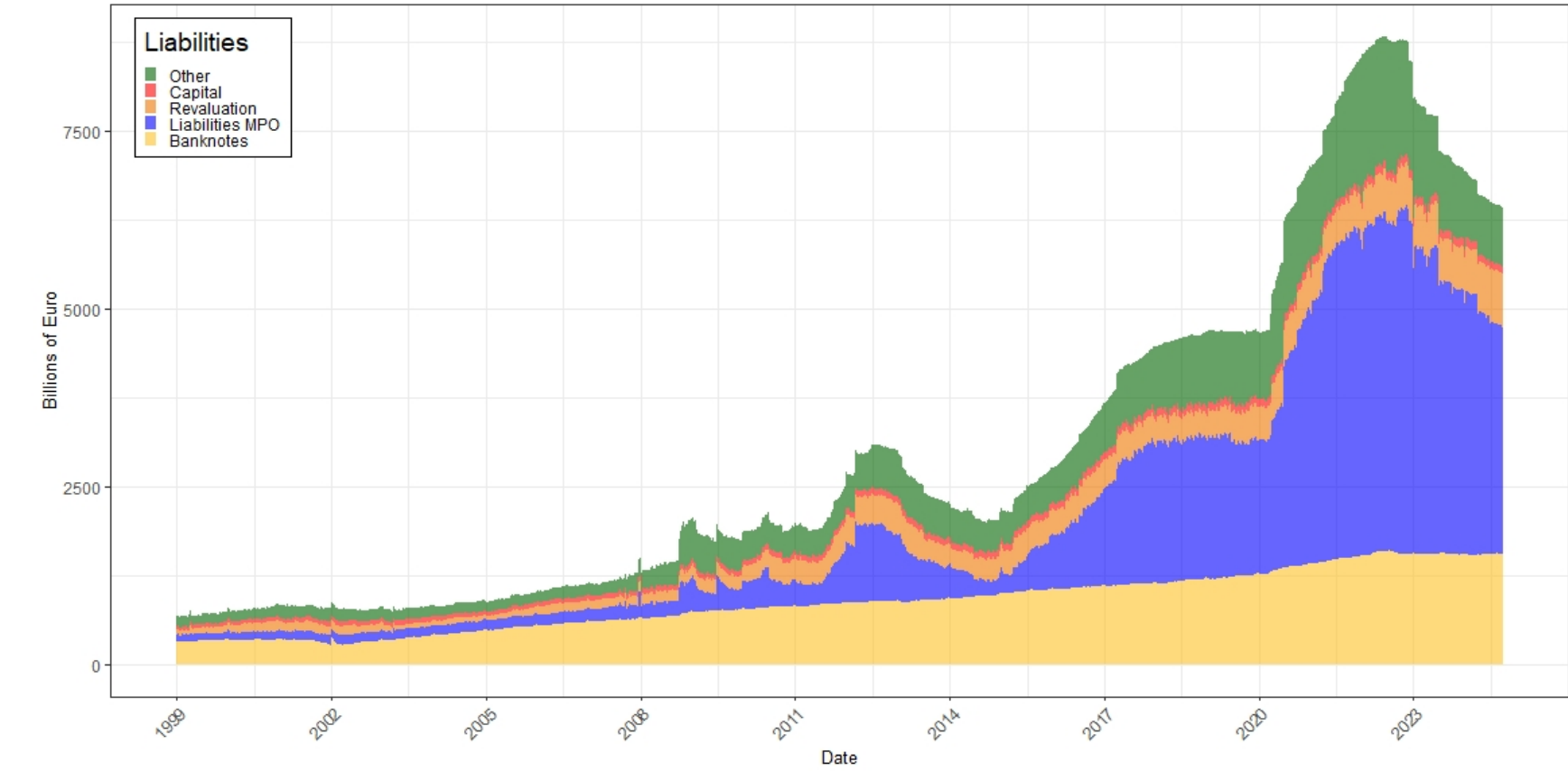


Figure 1: Development of the Eurosystem's Consolidated Balance Sheet

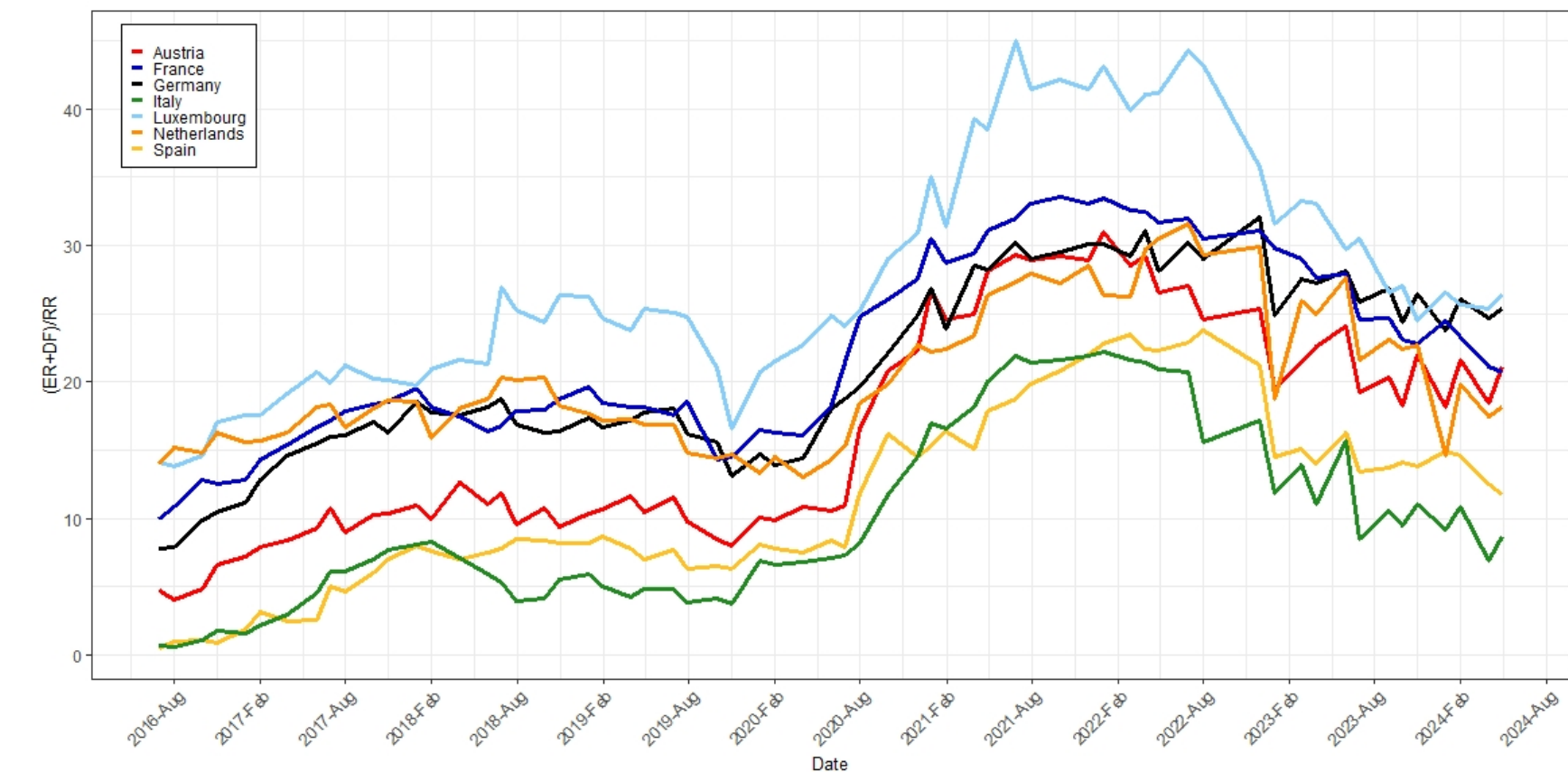


Figure 2: Distribution of Liquidity across Euro Area Countries

## Causes of the Heterogeneous Liquidity Distribution

### Conduct of Monetary Policy:

- Security purchases within APPs according to national central banks' capital key at ECB result in different amount of liquidity in national banking systems
- Potentially aggravated by dynamics on secondary market (e.g Italian investor buying German government bonds)
- Reduction of liquidity driven by LTRO repayment, increasing heterogeneity (see Table 1)

### Structure of National Banking Systems:

- National banking systems in the Euro Area have different purposes, which can be seen in their central bank's balance sheet
- For example, Luxembourg's banking system serves as an investment hub (see Figure 3)
- All cross-border transactions affect national central banks through Target2

(a) With LTROs				(b) Without LTROs			
Country	2022-06-30	2023-06-30	2024-04-30	Country	2022-06-30	2023-06-30	2024-04-30
AUT	27.0	19.2	21.1	AUT	8.8	13.7	19.9
BEL	32.3	26.3	24.4	BEL	20.9	24.8	24.2
CYP	43.4	45.6	40.3	CYP	30.8	36.4	34.9
GER	30.2	25.8	25.4	GER	20.9	22.9	24.9
EST	29.9	28.2	33.4	EST	23.2	28.0	33.4
ESP	22.9	13.4	11.7	ESP	4.1	11.1	11.6
FIN	37.7	37.3	36.0	FIN	29.6	35.3	35.9
FRA	32.0	24.6	20.8	FRA	18.1	20.4	19.8
GRE	24.7	13.3	11.5	GRE	-1.1	5.3	6.5
IRE	28.5	21.3	21.9	IRE	22.9	21.3	21.9
ITA	20.7	8.5	8.7	ITA	-2.2	-0.9	5.3
LIT	34.9	18.2	20.2	LIT	30.1	14.9	19.1
LUX	44.3	30.5	26.4	LUX	40.0	29.5	25.6
LAT	28.9	23.9	28.0	LAT	25.7	23.4	27.6
MAL	22.5	20.6	15.2	MAL	20.3	20.4	15.2
NET	31.6	21.6	18.1	NET	18.6	19.8	17.9
POR	22.8	12.3	15.7	POR	7.1	10.4	15.2
SLO	23.4	25.9	21.3	SLO	19.3	25.6	21.3
SLV	17.5	17.0	17.5	SLV	1.8	10.1	16.7

Table 1: Liquidity Distribution with and without LTROs

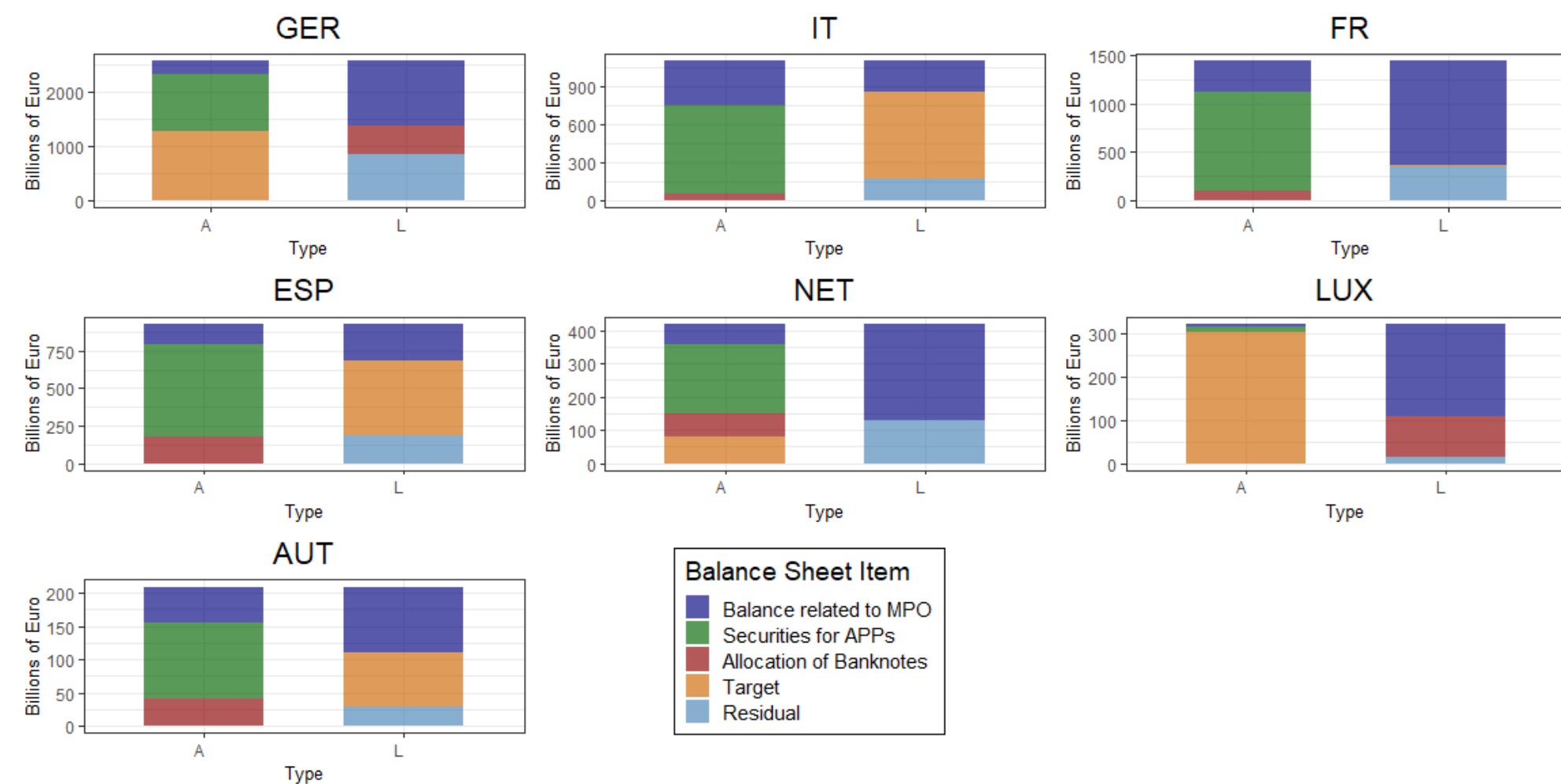


Figure 3: National Central Banks Balance Sheet 2022

## Methodology and Data

### Empirical Strategy

- Baseline regression model, following the empirical banking literature:

$$y_{b,f,m} = \beta_c [\mathbb{1}_c \times RR_b \times (DFR_t \geq 0)] + \gamma \mathbf{X}_{b,t} + \alpha_{f,t} + \alpha_{b,f} + \alpha_{c,t} + \epsilon_{b,f,t}.$$

- $RR_b$ : banks' average reserve ratio before July 2022 (date of initial rate hike)
- $DFR_t$ : dummy variable, taking on a value of one from July 2022 onward
- $\beta_c$ : measures the country-specific effect of an interest rate hike on credit creation for a bank that experiences a one standard deviation increase in its reserve ratio

- Experiment with alternative specifications for banks' reserve exposure (e.g. threshold dummy)
- Exploit additional variation in the policy rate with a multi-valued discrete treatment variable

### Data Sources

- Monthly loan-by-loan data from *Analytical Credit (AnaCredit)* database
- Balance sheet data at bank level from *Individual Balance Sheet Indicators (IBSI)* dataset
- Other control variables from *Refinitive-Eikon* and from the ECB's *financial reporting (FINREP)* database

## Outlook/Policy Conclusions

Should we stay in an abundant reserves environment?

- If monetary policy effects were heterogeneous, it could be beneficial to abandon it
- Reducing liquidity too extensively could lead to financial stability concerns
- Disentangling the policy rate from the amount of reserves provides another policy tool

### Political economy considerations

- Currently, the central bank subsidizes the banking sector (quite heavily)
- Are central bank losses posing a real problem down the line?