



OESTERREICHISCHE NATIONALBANK

EUROSYSTEM

# Exporting stability in the European neighborhood the role of deposit euroization in CESEE revisited after 25 years of EMU

EMWS Saariselkä, November 27, 2023

OeNB, Economic Analysis and Research, CESEE Section

Thomas Scheiber

[www.oenb.at](http://www.oenb.at)



## Motivation

**Aim:** present updated evidence on deposit euroization in CESEE

...short study will be published in a special issue of the MOP on “EMU at 25Y”

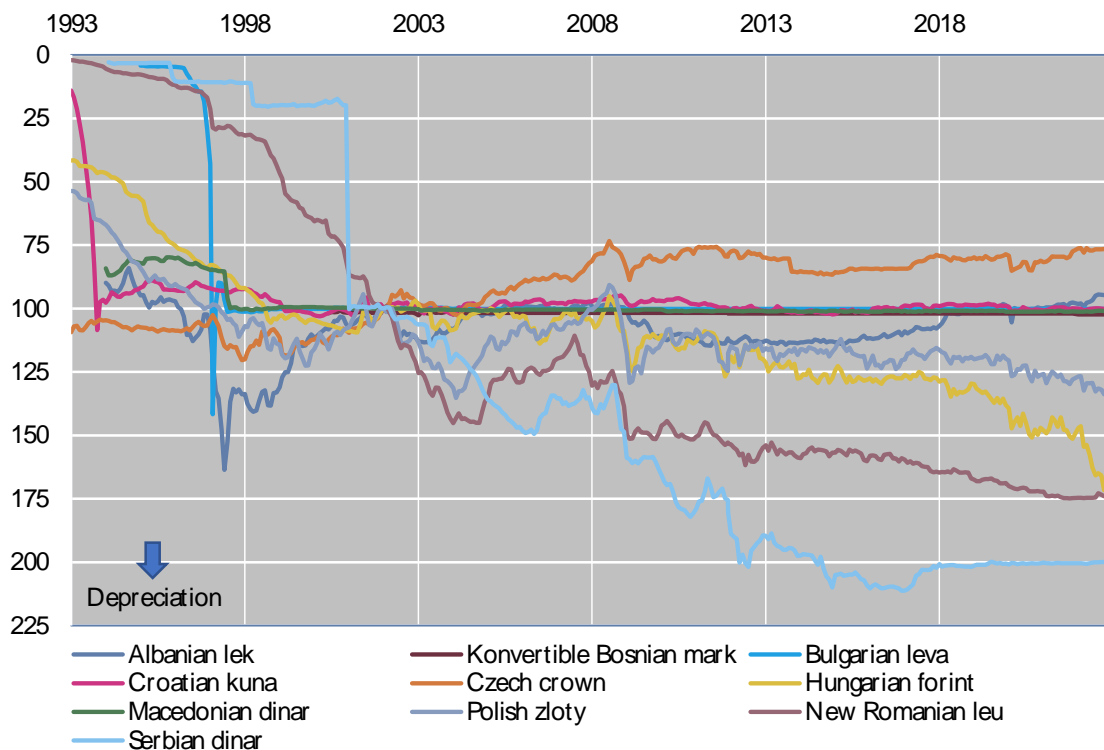
**Approach:** combining the macro- and microeconomic perspective

- On the macroeconomic level we will describe developments over time on a sector basis and **review the importance of the main determinants** of short-run of deposit substitution for different episodes for ten CESEE countries since 1998 (e.g. MVP and IRD)
- On the microeconomic level we will explore heterogeneity in the ownership of foreign currency deposits. Based on OeNB Euro Survey data for the same set of countries since 2007.
- We use data for 10 CESEE economies over the last 25 years and build on existing literature for our econometric framework.

# Episodes of macroeconomic instability lead to persistent demand for a safe-haven asset in CESEE

## Bilateral nominal exchange rate vis-a-vis the EUR

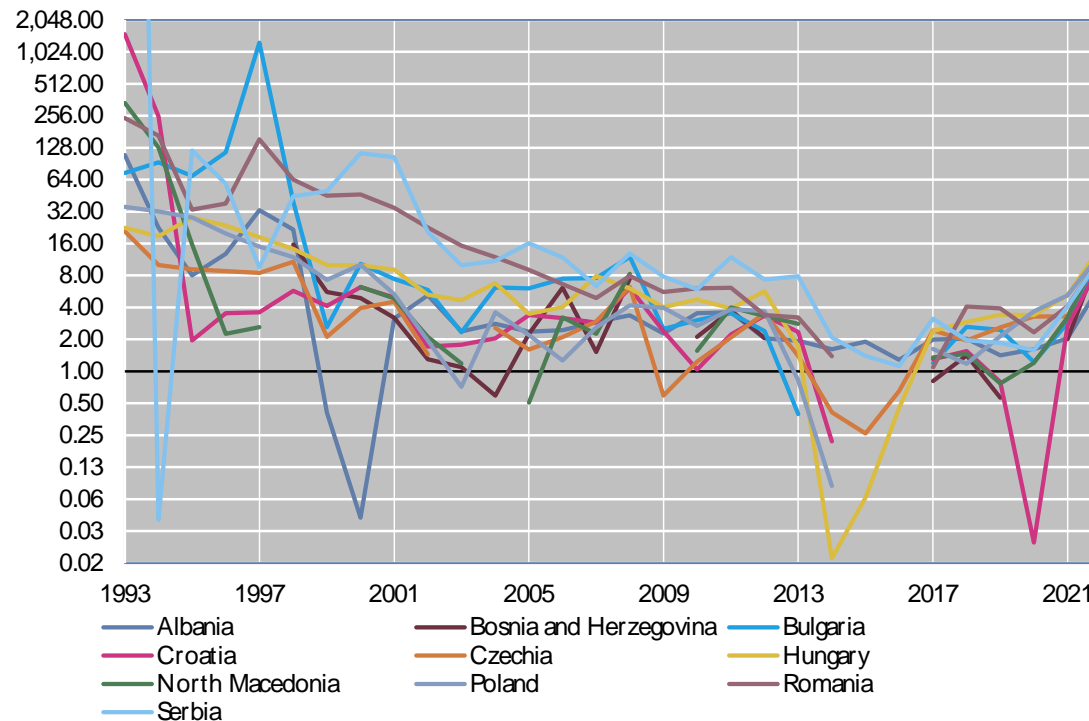
Local currency/EUR, Index 2002 January=100 (monthly average)



Source: wiw database, Eurostat, Macrobond, National Bank of Yugoslavia.

## Consumer price inflation

% average annual rate of change (logarithmic scale, base=2)



Source: Eurostat, wiw database, National Bank of Yugoslavia, NBRM.

Note: Negative inflation rates cannot be displayed. Inflation rate in Serbia in 1993:  $3,52 \cdot 10^{14}$

## Defining euroization

### Three dimensions of unofficial euroization (Manjani, 2015)

- Monetary euroization: use of foreign currency for transactions
- Financial euroization: holding foreign currency assets and liabilities
- Real euroization: indexation of wages, real estate or durable goods prices in foreign currency

### Feige and Dean (2004): **by functions of money**

- Asset substitution: holding foreign currency assets as a store of value
- Currency substitution: using foreign currency as a means of payments

OeNB Euro Survey (Bittner and Scheiber, 2022): CESEE residents' demand for a safe-haven asset comprises both, euro cash and euro deposits. In this study we zero in on deposit substitution = financial euroization of deposits of NFCs and households

→ keeping substitutability between euro cash and euro deposits in mind

# MACROECONOMIC PERSPECTIVE

## Macroeconomic models explaining Euroization

### Minimum Variance Portfolio approach (MVP)

Ize and Levy Yeyati (2003): workhorse model on the determinants of dollarization

$$x_t^{F*} = \frac{E_t(r_{t+1}^F - r_{t+1}^L)}{c\sigma_{e_{t+1}}^2} + \frac{\rho \pi_{e_{t+1}} \sigma_{\pi_{t+1}}}{\sigma_{e_{t+1}}}$$

- **If the UIP holds**, then the interest rate differential between local and foreign currency deposits drops out of the equation → turned out to be reasonable in long-run
- **If the UIP is relaxed**, then UIP becomes an important determinant in the short-run (e.g. Basso et al. 2011)
- MVP confirms that financial dollarization display high persistence whenever the expected volatility of inflation remains high in relation to that of the real exchange rate and whenever there is a high pass-through of exchanges rate changes to the inflation rate as it is typical the case in small and open economies

## Macroeconomic models explaining Euroization dynamics

### **Tkalec (2013)**

uses a threshold VAR for 12 CESEE countries to confirm that there are nonlinearities in the dynamics of deposit substitution wrt changes in exchange rate and IRD → finding a cointegration relationship between exchange rate, IRD and deposit euroization

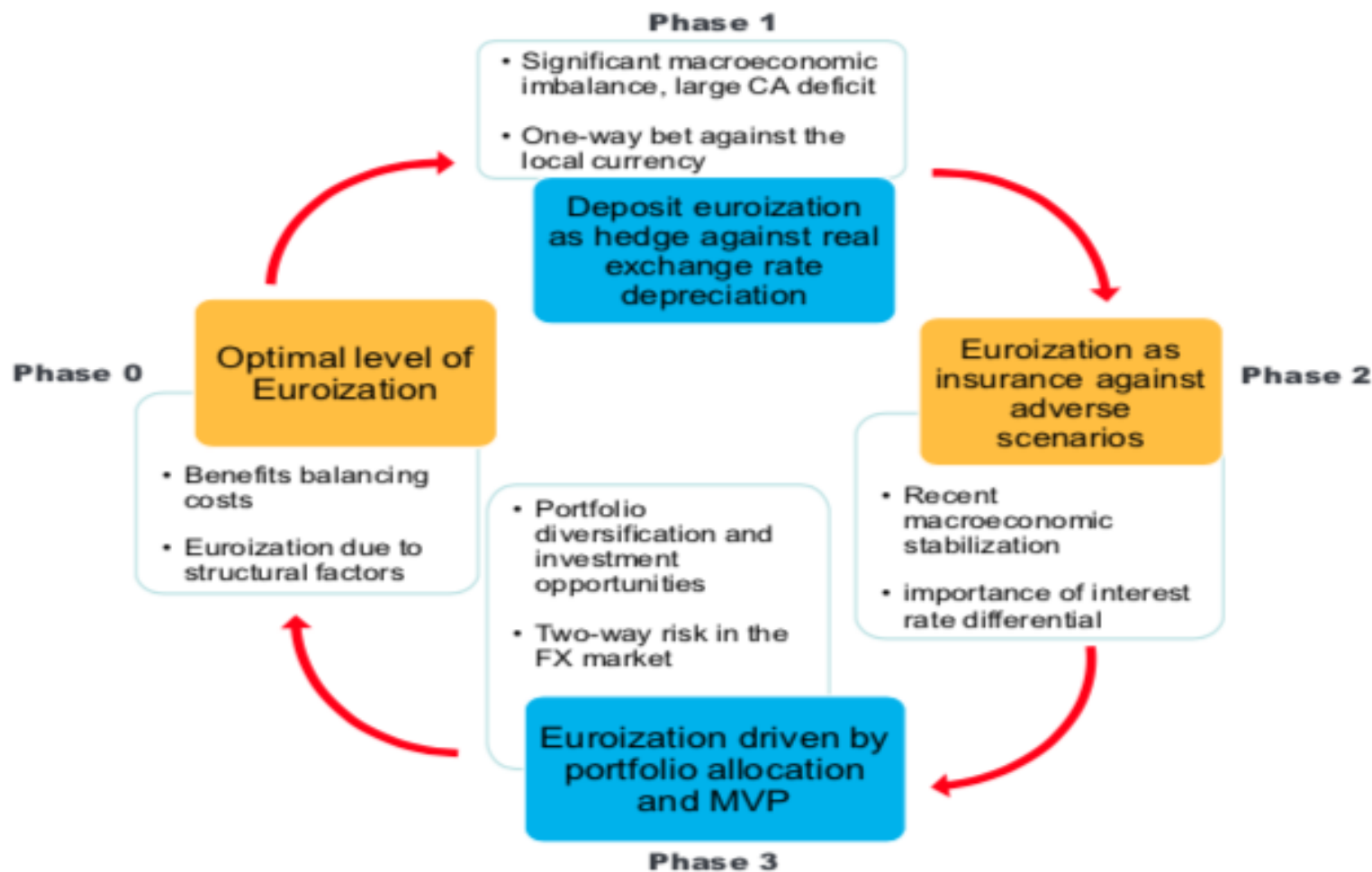
### **Rajkovic and Urosevic (2017)**

test the MVP model for a set of 5 floaters in CESEE.

- Distinguish between a permanent and a transitory component of FX deposits
- Positive cointegration relationship between permanent euroization and MVP
- Transitory component is influenced by MVP and IRD

# Three-phase model of unofficial euroization of the IMF

Figure 1. Causes of Euroization



**Della Valle et al. 2018**

Insurance premium = function of the IRD and perceived likelihood of adverse events

If structural shortage of local currency funding → increase of FX liabilities and associated cluster risks

Choice: Inflation targeting vs. FX rate stabilization



## Macro data: deposit substitution by sector

Earlier literature...

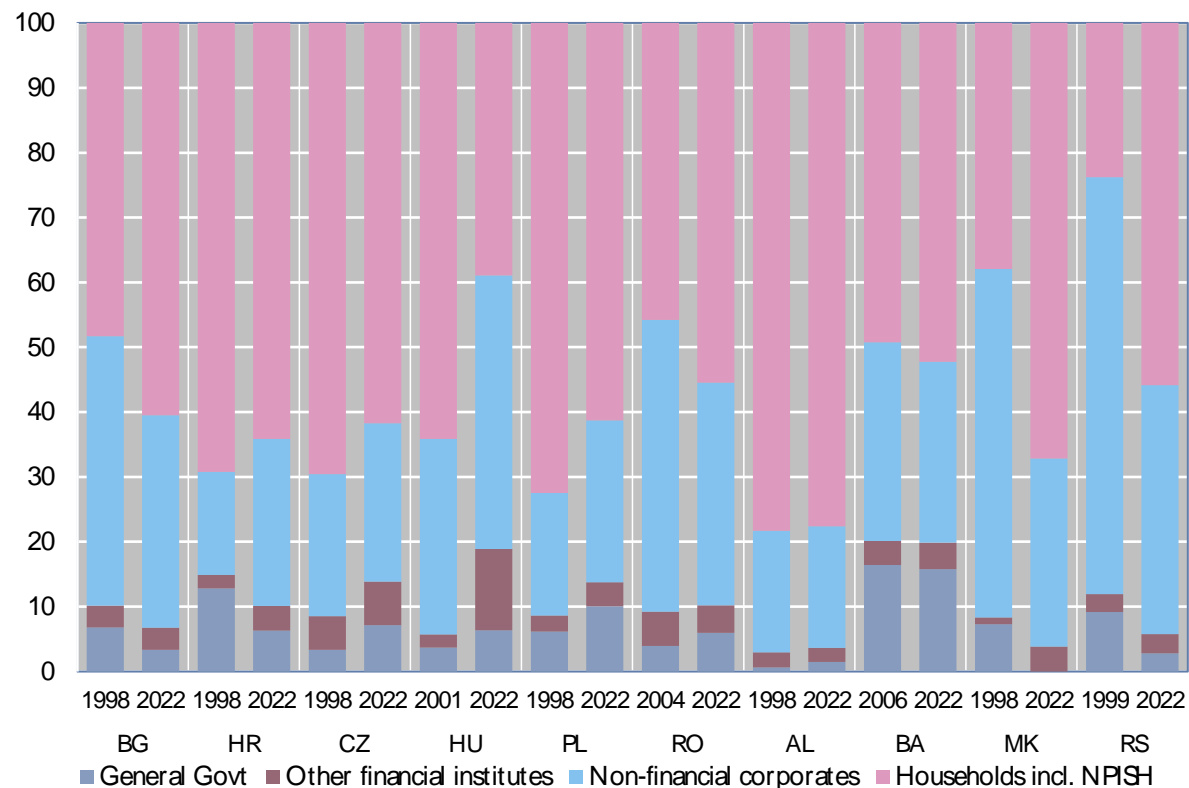
**Deposit substitution = FX deposits / total deposits** i.e., resident non-MFI

- Focus on NFC and Households incl. NPISH
- Excluding general gov't and OFI
- Caveat: transactional deposits are included (subject to regulatory requirements), which inflates the local currency share
- BA, HU: missing sectorial data for early years: applying backward rates of change for the aggregate NFC + HH using monthly series on currency structure of resident non-MFI
- MK, RS: only annual data for early years: linear interpolation of monthly entries
- HR, BA change in the definition: FX deposits include indexed deposit as of 2006 (2019)

## Sectorial break down of resident non-MFI deposits: NFC + HH dominate

**Sectorial share of total deposits (resident non-MFI) 1998 vs. 2022**

*% of total deposits*



*Source: National central banks, authors' calculation.*

# Deposit substitution NFC and HH

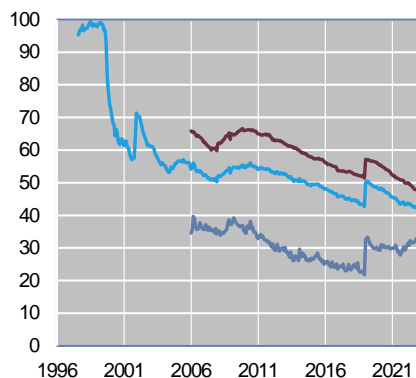
CEE: declined to low levels for HH

SEE: persistent high HH deposit euroization

## Deposit substitution per sector

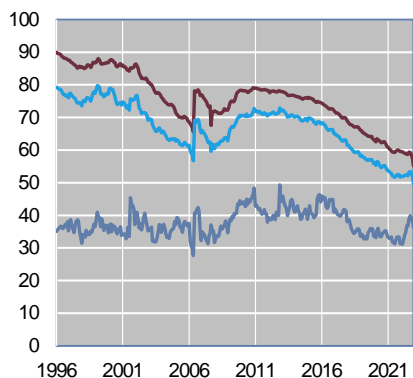
### Bosnia and Herzegovina

% of deposits denominated in foreign currency



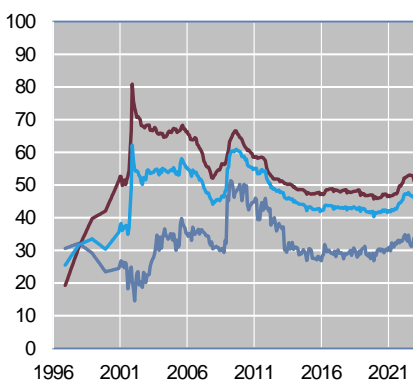
### Croatia

% of deposits denominated in foreign currency



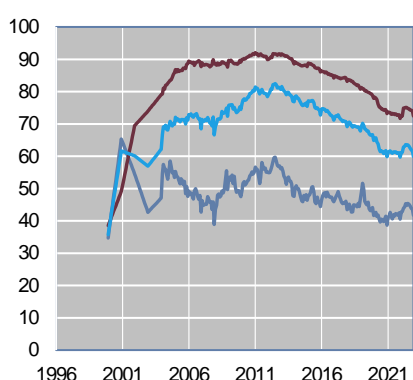
### North Macedonia

% of deposits denominated in foreign currency



### Serbia

% of deposits denominated in foreign currency



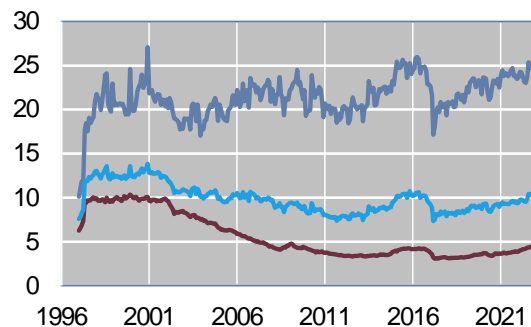
— NFC — HH incl. NPIH — NFC + HH

Source: National central banks, authors calculation.

## Deposit substitution per sector

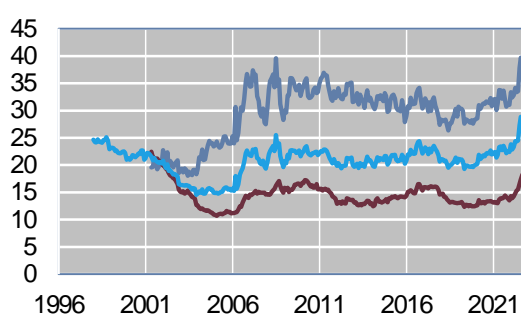
### Czechia

% of deposits denominated in foreign currency



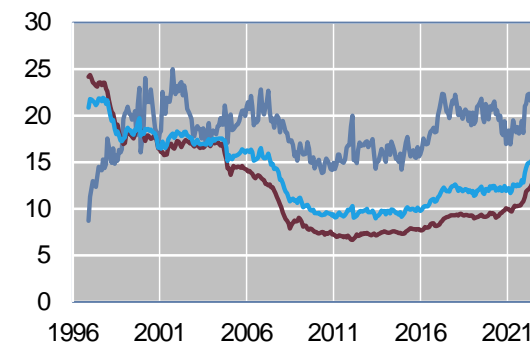
### Hungary

% of deposits denominated in foreign currency



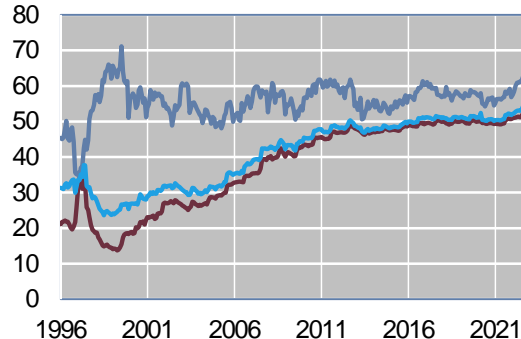
### Poland

% of deposits denominated in foreign currency



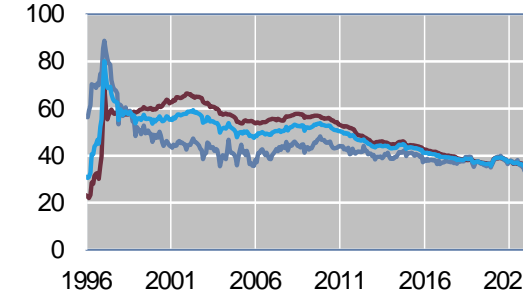
### Albania

% of deposits denominated in foreign currency



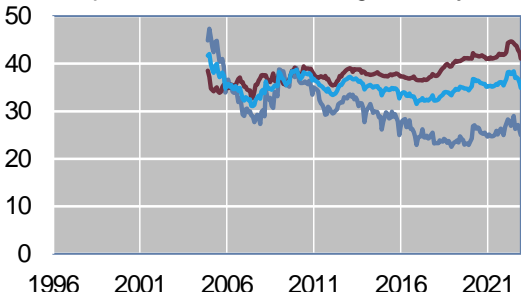
### Bulgaria

% of deposits denominated in foreign currency



### Romania

% of deposits denominated in foreign currency

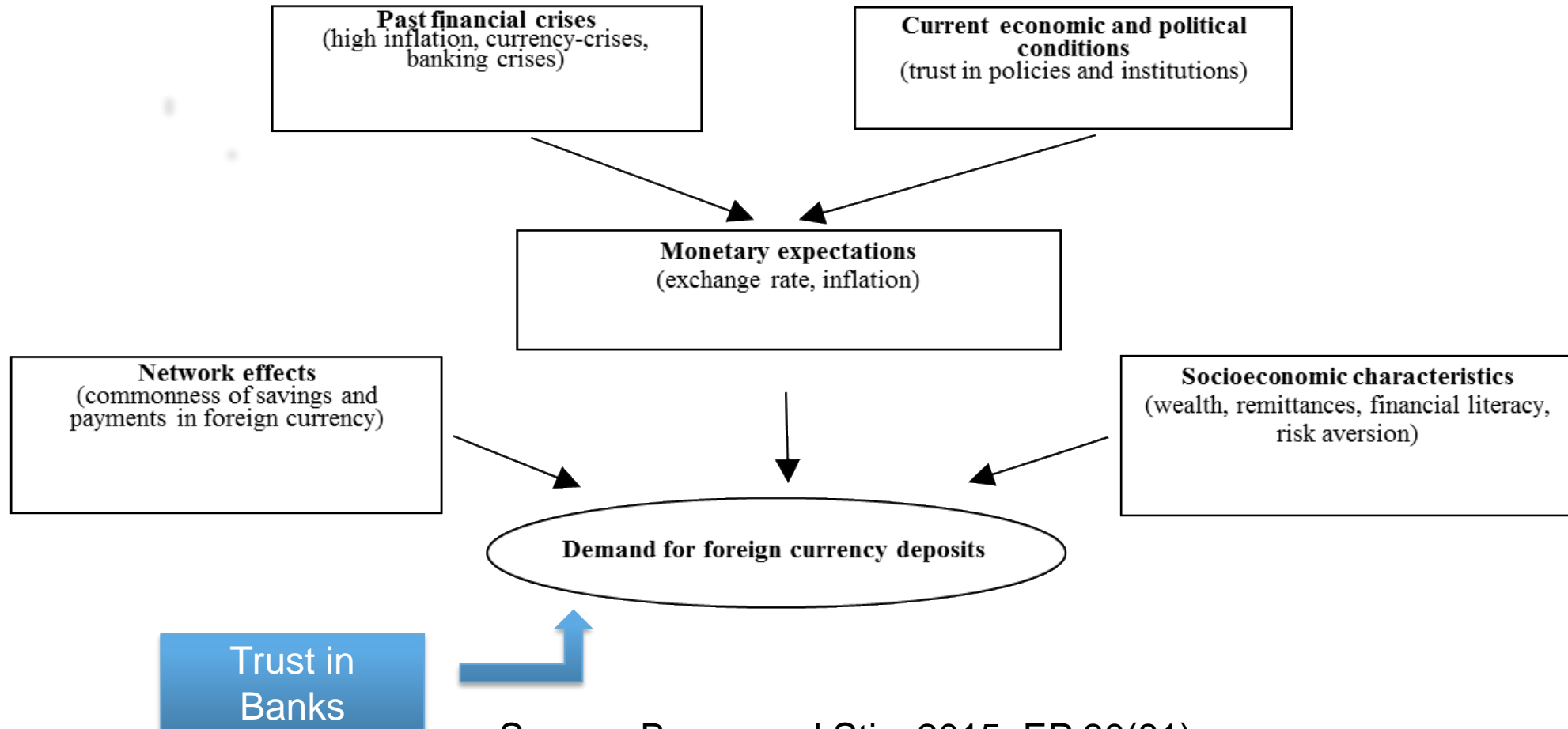


— NFC — HH incl. NPIH — NFC + HH

Source: National central banks, authors calculation.

## MICROECONOMIC PERSPECTIVE

# Microeconomic determinants of deposit euroization



Source: Brown and Stix. 2015. EP 30(81)

Extension for trust in banks: Cash vs. deposits, see Stix. 2013. JBF 37(11)

## OeNB Euro Survey

Regular international survey among individuals (not HH) on euroization, trust, saving and borrowing behavior

- Since 2007 at least once a year
- Covering 10 CESEE countries
- Multi-stage stratified random route sample of 1000 persons aged (15+) 18+ years
- Representative for the country's population with regard to age, gender and region and, where available, education and ethnicity
- Face-to-face interviews at respondent's home
- Common questionnaire with harmonized socioeconomic information and meta data



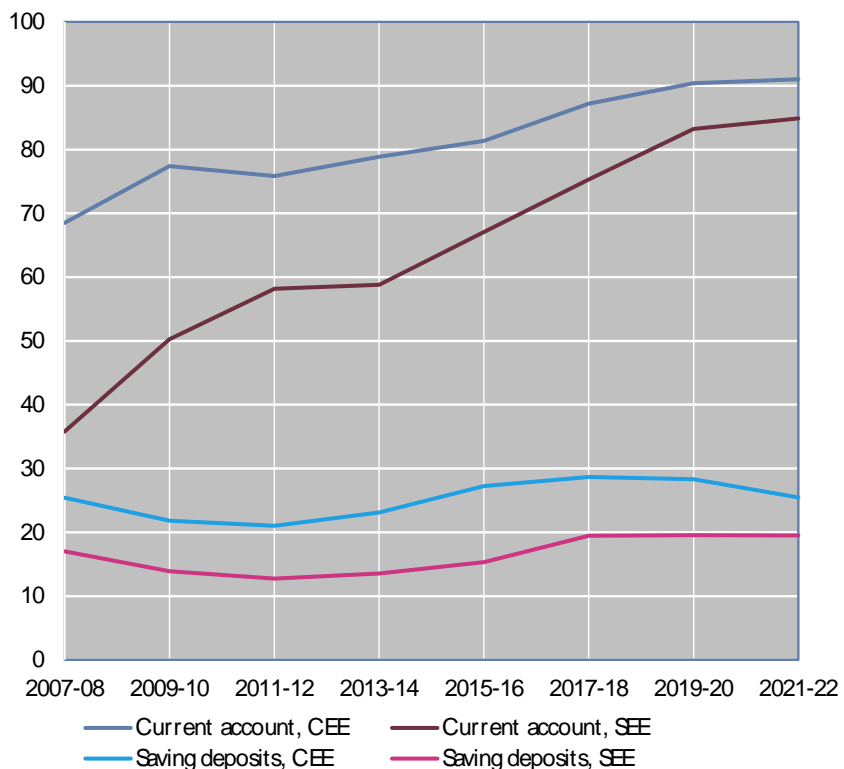
# Despite progress in financial inclusion, only few hold deposits

## Share of FX deposits (rather) stable over the last 15 years in CEE (SEE)

### Bank deposits: extensive margin

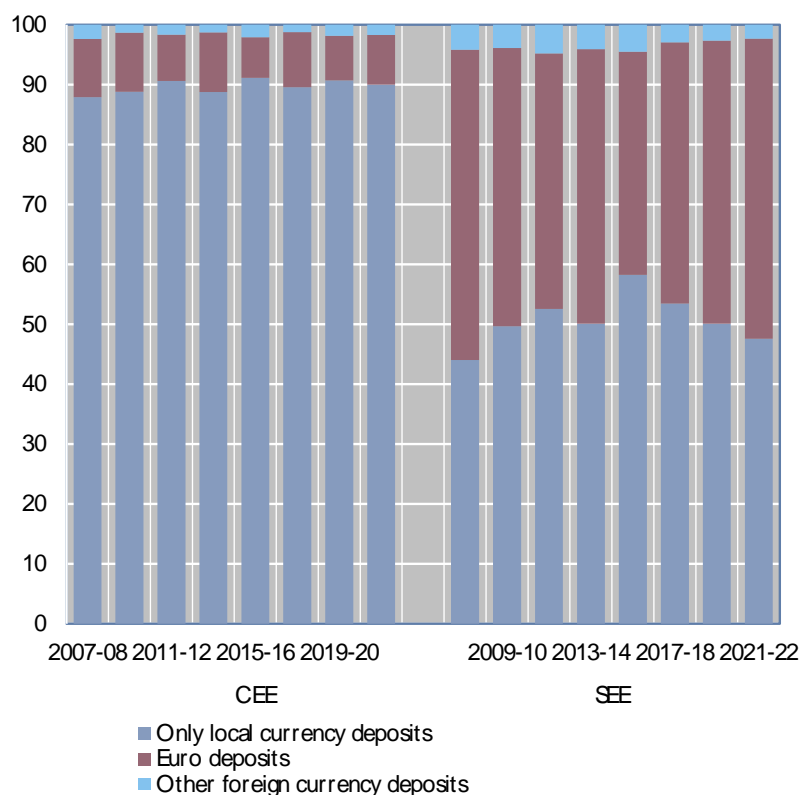
**Ownership of current accounts and saving deposits by region**

% of individuals



**Currency denomination of savings deposits in CEE**

% of depositors



Source: OeNB Euro Survey.

Note: Weighted averages based on pooled data from survey waves in the period indicated in the legend, excluding respondents who answered "don't know" or refused to answer. The weights used are calibrated on census population statistics for age, gender, region and, where available, education and ethnicity (separately for each country). Current accounts in the left-hand panel include debit cards and/or wage cards. Right-hand panel data refer to a multi-punch question, so respondents reporting euro or other foreign currency deposits may also have local currency deposits.

# Survey data reveal remarkable heterogeneity across and within countries

## Dissemination of savings, current accounts and deposits

	Has savings	Has current account	Has deposits	Only local currency	Euro <sup>1</sup>	Other foreign currency <sup>1</sup>	Agreement: "It's common to hold FCD in my country" <sup>2</sup>	Has other financial assets <sup>3</sup>
	% of individuals		% of depositors			% of individuals		
Bulgaria	43.0	87.3	25.4	65.9	30.8	3.2	34.0	23.3
Croatia	53.4	95.8	33.3	38.3	61.0	0.9	47.6	40.0
Czechia	68.9	92.8	35.8	94.7	5.2	0.1	15.0	55.6
Hungary	40.5	88.0	19.6	87.0	11.2	1.8	13.9	32.1
Poland	52.3	92.3	21.0	85.0	11.0	4.0	15.3	34.2
Romania	26.7	71.6	11.5	70.9	26.5	2.6	40.6	14.4
Albania	33.9	59.1	35.5	63.9	35.6	0.4	55.4	31.3
Bosnia and Herzegovina	30.8	78.2	5.8	56.9	37.9	4.3	30.9	14.2
North Macedonia	46.9	94.3	27.1	34.9	61.9	3.1	54.8	27.6
Serbia	25.2	90.2	9.8	13.8	82.7	3.1	68.1	15.4

Source: OeNB Euro Survey.

Note: Weighted averages based on pooled data from the 2021 and 2022 survey waves, excluding respondents who answered "don't know" or refused to answer. Averages for Albania use data from 2019 and 2022. The weights used are calibrated on census population statistics for age, gender, region and, where available, education and ethnicity (separately for each country).

<sup>1</sup> The responses refer to a multi-punch question, so euro depositors or other foreign currency depositors may also hold local currency

<sup>2</sup> Percentage of individuals who agreed with the statement on a 6-point Likert scale.

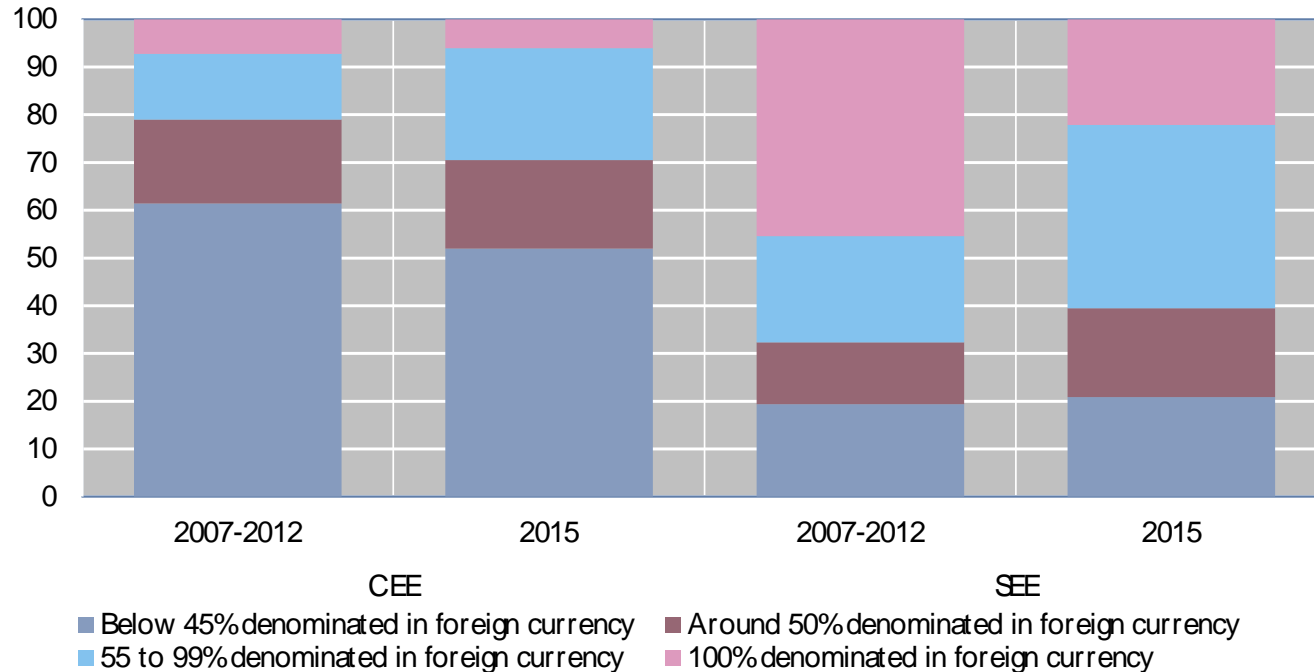
<sup>3</sup> Other financial assets include life insurance, mutual funds, equities, bonds, pension funds, a savings plan with a building society, and other assets. Figures refer to 2021 and in Albania to 2019.



# Intensive margin: significant shift to lower average FX shares over time in SEE

## Self-reported share of foreign currency deposits in total deposits by region and period

% of foreign currency depositors



Source: OeNB Euro Survey.

Note: Weighted averages based on pooled data from survey waves in the period indicated in the legend, excluding respondents who refused to answer whether they own (foreign currency) deposits. The weights used are calibrated on census population statistics for age, gender, region and, where available, education and ethnicity (separately for each country).

## Econometric approach (work in progress)

**Hypothesis:** Parameters for MVP and IRD vary systematically across different time episodes

### Episodes

- 1999-2004/07: recovery from crisis and catching-up boom phase around the EU accession 2004/07 (e.g. macro stabilization, disinflation, appreciation, better institutions)
- 2008-2012: GFC and euro area sovereign debt crisis (e.g. depreciations, widening IRD, declining trust in the euro)
- 2015-2019: negative interest rates in EA (e.g. narrowing IRD, MVP)
- 2021-2022: high inflation episode (e.g. change in IRD and MVP, trust in institutions)

## Econometric approach: country-by-country

Model 1: Cochrane-Orcutt estimation or Prais and Winsten transformation to retain the first observation.

$$1a) DS_t = \alpha_0 + \beta_1 IRD_t + \beta_2 MVP_t + \beta_3 NER_t + \beta_4 INF_t + \varepsilon_t$$

$$1b) DS_t = \alpha_0 + \beta_1 IRD_t + \beta_3 MVP_t + \beta_2 E[NER_t] + \beta_4 E[INF_t] + \beta_5 SOV_t + \varepsilon_t$$

Model 2: OLS with lagged dependent variable

$$2a) DS_t = \alpha_0 + \alpha_1 DS_{t-1} + \beta_1 IRD_t + \beta_2 MVP_t + \beta_3 NER_t + \beta_4 INF_t + \varepsilon_t$$

$$2b) DS_t = \alpha_0 + \alpha_1 DS_{t-1} + \beta_1 IRD_t + \beta_3 MVP_t + \beta_2 E[NER_t] + \beta_4 E[INF_t] \\ + \beta_5 SOV_t + \varepsilon_t$$

DS = deposit substitution (HH, NFC, sum); IRD = interest rate differential 3M-MM rates or deposit rates;

NER = monthly average vs. EUR (fixed FX: RER); INF = VPI;

MVP =  $\text{cov}(\text{expected } NER_{t+1} \text{ and expected } INF_{t+1}) / \text{variance}(\text{expected } NER_{t+1})$ ;

SOV = sovereign spread in benchmark bonds vs. EA (proxy for idiosyncratic interest rate risk)

## Econometric extension: panel estimation

Model: Arellano Bond dynamic panel GMM estimator (w/o inflation)

$$DS_{it} = \alpha_{0i} + \beta_1 DS_{i,t-1} + \beta_2 IRD_{it} + \beta_3 NER_{i,t-1} + \beta_4 MVP_{it} + \beta_5 INF_{it} + \varepsilon_{it}$$

## Access to OeNB Euro Survey data



Link: <https://www.oenb.at/en/Monetary-Policy/Surveys/OeNB-Euro-Survey/data-sharing.html>

**Danke für Ihre Aufmerksamkeit**

**Thank you for your attention**

[www.oenb.at](http://www.oenb.at)

[oenb.info@oenb.at](mailto:oenb.info@oenb.at)

 [@oenb](https://twitter.com/oenb)

 [@nationalbank\\_oesterreich](https://www.instagram.com/nationalbank_oesterreich)

 [OeNB](https://www.youtube.com/OeNB)

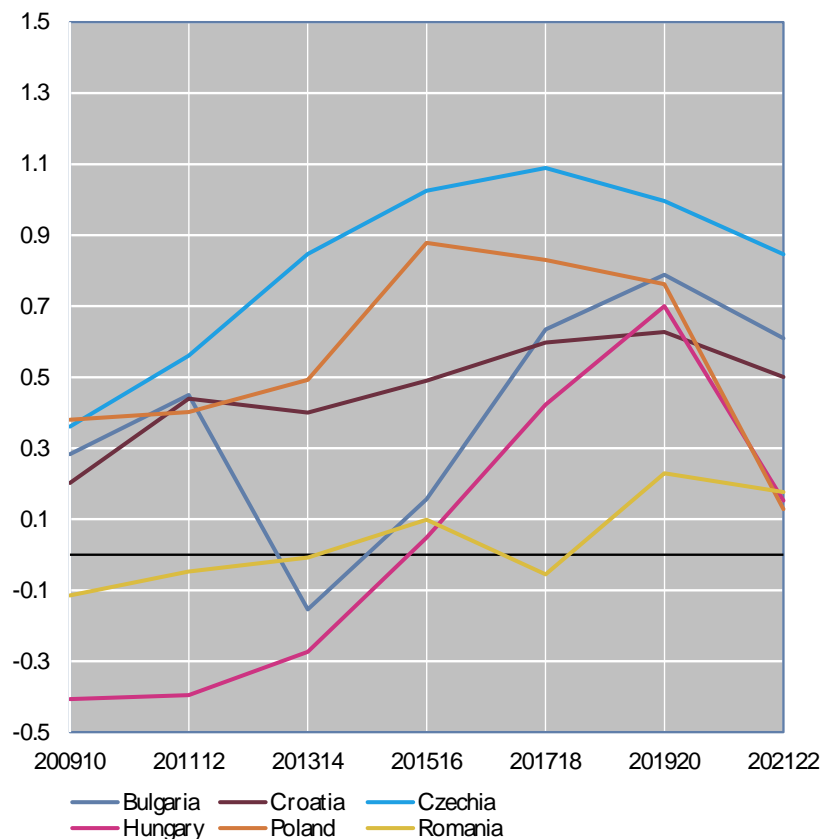
 [Oesterreichische Nationalbank](https://www.linkedin.com/company/Oesterreichische-Nationalbank)



## Agreement with the statement: Currently, banks and the financial system are stable in my country

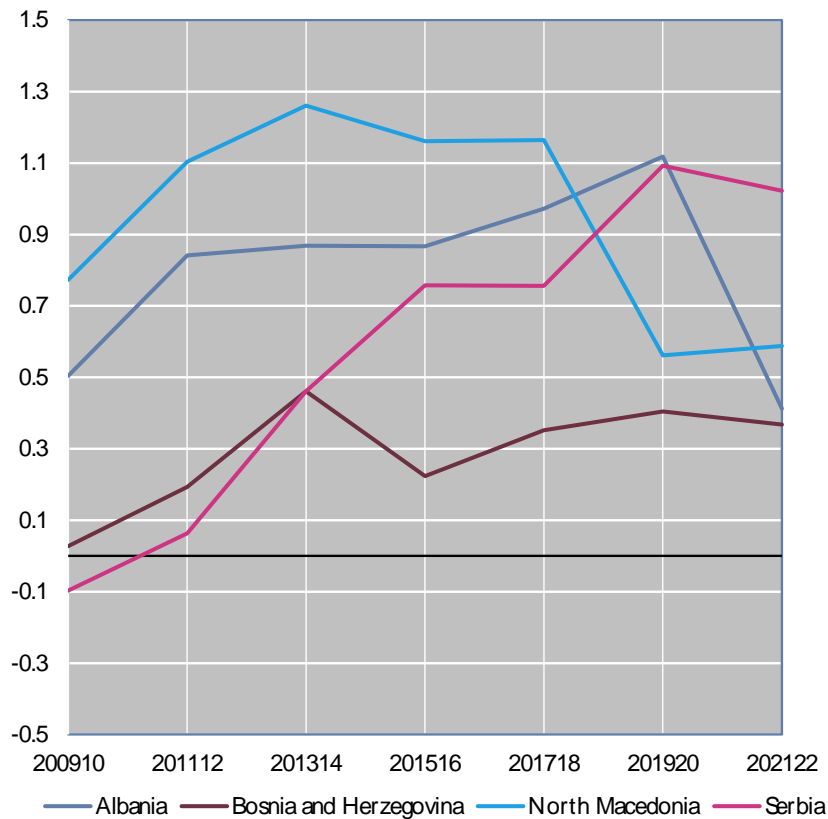
### EU members

Normalized sample means (-2.5 strongly disagree, 0 neutral, +2.5 strongly agree)



### EU candidates

Normalized sample means (-2.5 strongly disagree, 0 neutral, +2.5 strongly agree)



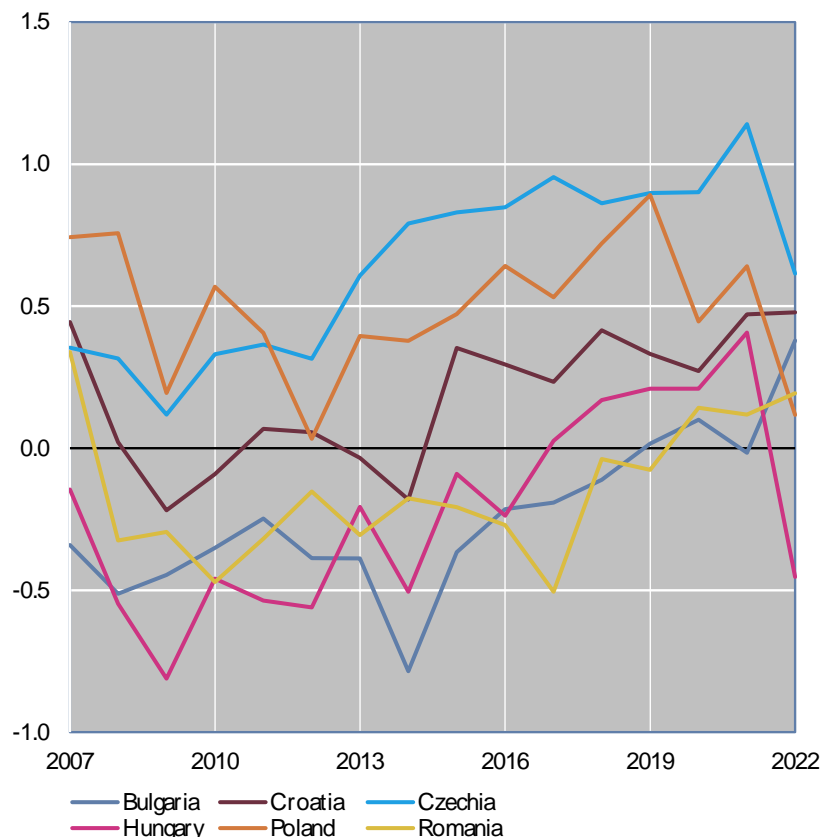
Source: OeNB Euro Survey.

Note: Respondents were asked whether they agree or disagree on a scale from 1 (strongly agree) to 6 (strongly disagree) with the above statement. Don't know was included as an allowable response of 3.5; excluding respondents who refused to answer.

## Agreement with the statement: Currently, depositing money at banks is very safe in my country

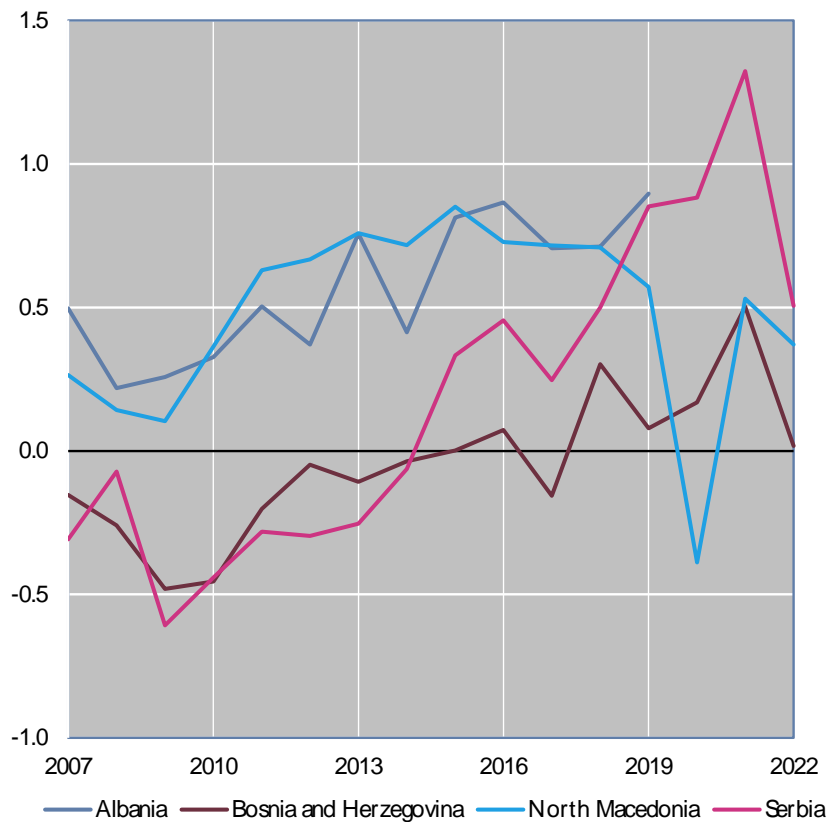
### EU members

Normalized sample means (-2.5 strongly disagree, 0 neutral, +2.5 strongly agree)



### EU candidates

Normalized sample means (-2.5 strongly disagree, 0 neutral, +2.5 strongly agree)



Source: OeNB Euro Survey.

Note: Respondents were asked whether they agree or disagree on a scale from 1 (strongly agree) to 6 (strongly disagree) with the above statement. Don't know was included as an allowable response of 3.5; excluding respondents who refused to answer.