



# On Optimal Currency Areas and Common Cycles: Are the Acceding Countries Ready to Join the Euro?

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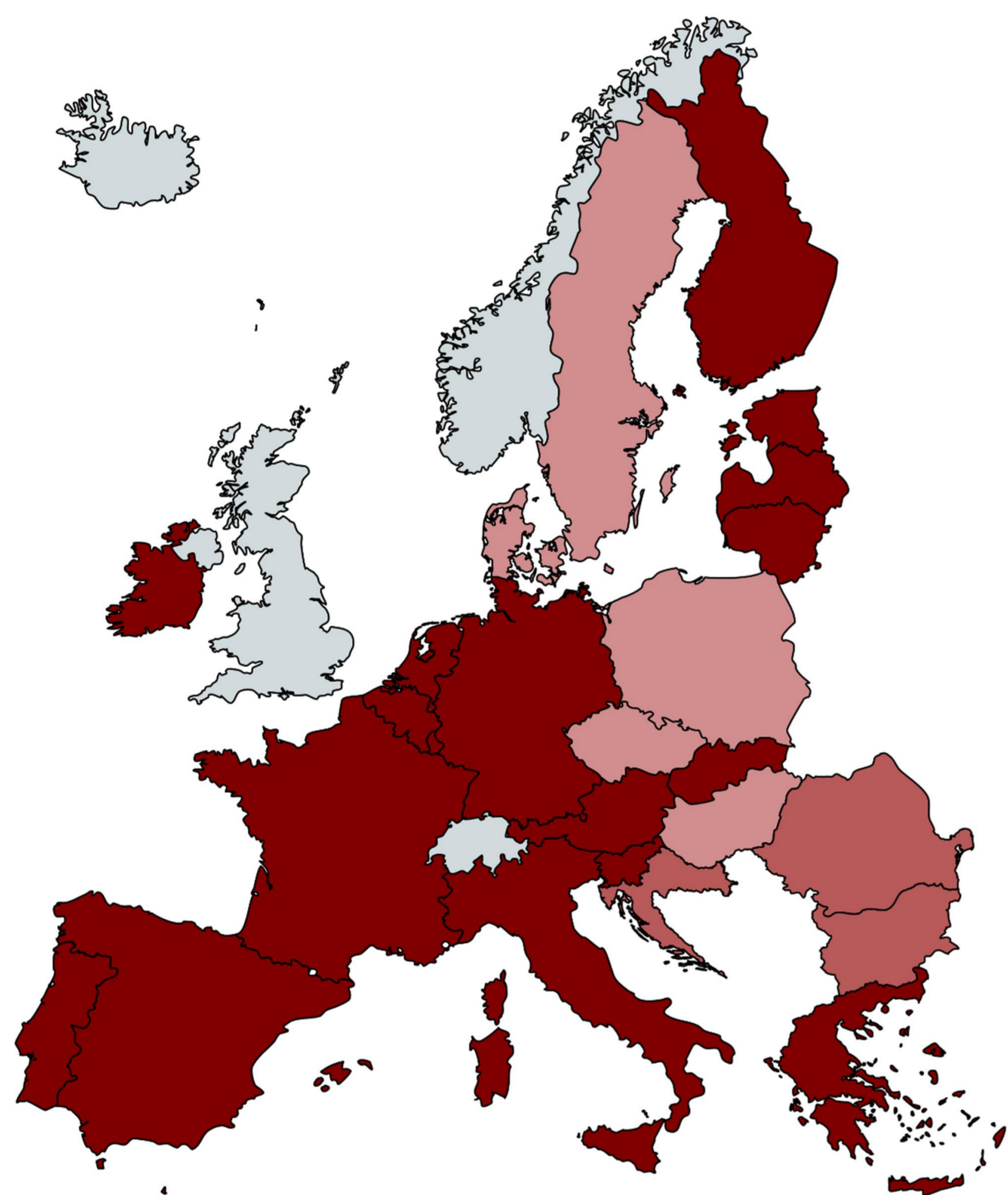
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## Summary

The motivation is a policy question - Should the acceding countries adopt the euro?

- In 2017, Jean-Claude Juncker (president of the European Commission 2014-2019) claimed in his state of the union speech that the euro should be the common currency of all European countries to foster unification.
- Some countries do not force to adopt the euro
  - Bulgaria, Croatia and Romania want to adopt the euro. Since July 2020, Croatia and Bulgaria join the exchange rate mechanism 2 and plan to adopt the euro in 2023 and 2024 respectively.
  - Czechia, Hungary, Poland and Sweden do not want to adopt the euro.
- A recent study finds that shocks are correlated and concludes that indeed the OCA criterion is fulfilled. (Deskar-Škrbić, et al. (2021)).
- We come to a different policy conclusion and argue that while shocks may be common, the response to shocks could be different.



## Contribution

- We extend Berger et al.'s (2001) model on exchange rate regime choice by adding auto-correlated shocks and formally show that a common response to shocks is part of a set of OCA criteria.
- Using a „Serial Correlation Common Feature Test“ (SCCF), we find only very limited evidence of common response patterns.
- Common feature tests have been used in the OCA literature by Beine et al. (2000), Candelon et al. (2005), Hecq et al. (2006), Trenkler and Weber (2020) and others, but not for the acceding countries to the Euro Area.

## Model

- A simple model on exchange rate regime choice by Berger et al. (2001) is extended for autocorrelation. We derive the following proposition:

→ Proposition 1: When joining a monetary union, there is an additional welfare gain/loss from asymmetric persistence.

$$Proof: E[L^{\delta \neq \gamma}] - E[L^{\delta = \gamma}] = VAR(\theta_t)(\delta^2 - \gamma^2),$$

$$with VAR(\theta_t) = \frac{\sigma_{\theta}^2}{(1-\delta^2)}.$$

Where  $\delta$  and  $\gamma$  are the persistence parameters in the foreign and home country.

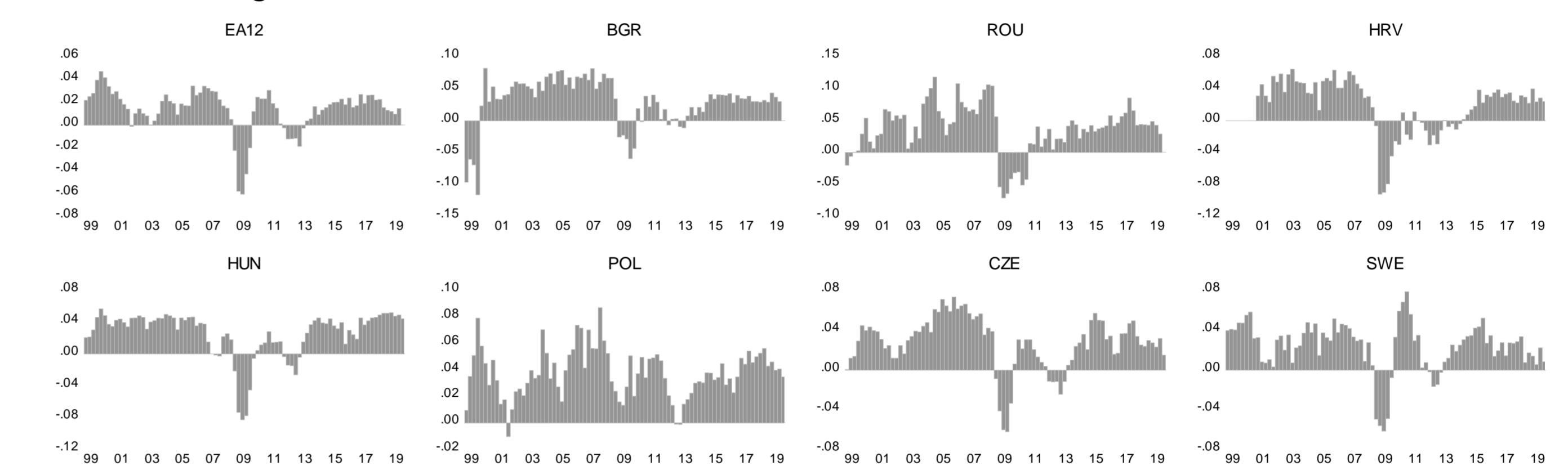
The expression is zero if, and only if,  $\delta = \gamma$ .

## From model to data

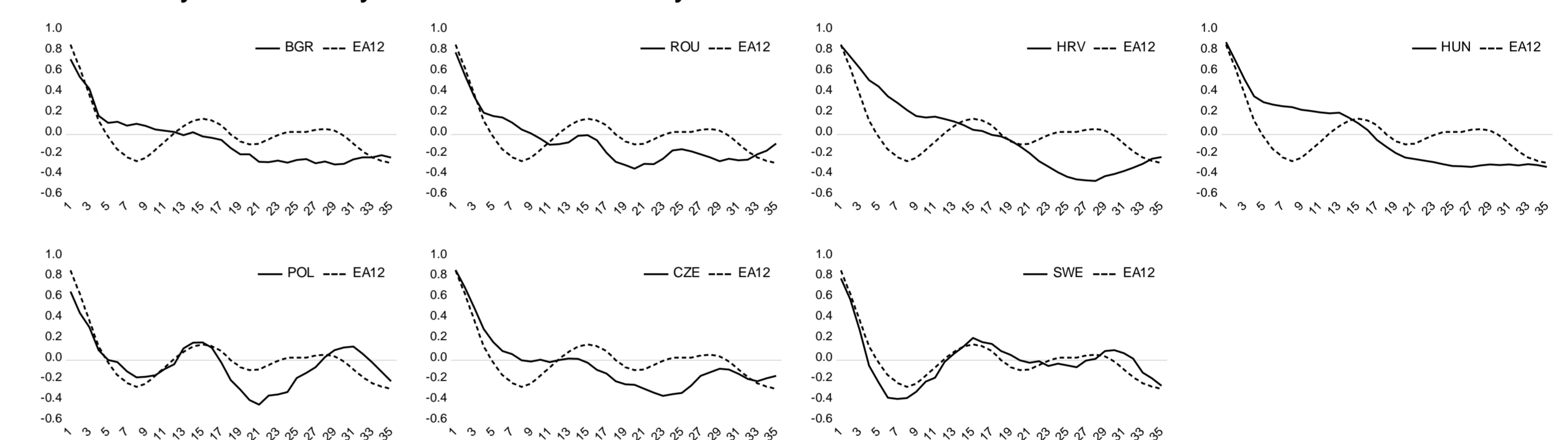
- Our model implies that the autoregressive parameters should be identical.
- In the literature, the serial correlation common features (SCCF) test is used to test this proposition and it is indeed appropriate. It was initially developed by Engle and Kozicki (1993).
- The null hypothesis of the SCCF-test is that a linear combination of the two time series will be AR(0).
- As our data exhibits strong seasonality, we use Cubbada's (2001) version of the SCCF test that jointly models the seasonal and the cyclical component in the data.

## Descriptive statistics and preliminary analyses

- The real GDP growth rates immediately reveal some commonalities between the EA12 and the acceding countries to the euro area.



- Estimating the formal correlation coefficients, we found a sizable degree of correlations between the growth rates of the GDP of the EA12 and the other individual EMU candidate countries.
- The visual inspection and comparison of correlograms of the EA12 and the acceding countries to the euro area does not support for most of the countries (except for Sweden and Poland) that they individually share a common cycle with the EA12.



- To appropriately model the SCCF test, we perform a Seasonal Unit Root Test (HEGY) and a Seasonal Cointegration Test.

## Results

Serial Correlation Common Feature Test

Cointegration at Frequency	Lags		Codependence of order								
			0		1		2		3		
			Null	Stat.	Prob.	Stat.	Prob.	Stat.	Prob.	Stat.	Prob.
BGR 0, π	7	GMM	46.26	0.000	39.02	0.001	32.24	0.006	24.79	0.053	
		2SLS			28.59	0.018	26.41	0.034	13.07	0.597	
ROU -	5	GMM	72.60	0.000	56.05	0.000	44.22	0.000	32.63	0.000	
		2SLS			34.80	0.000	33.56	0.000	12.63	0.180	
HRV 0	6	GMM	31.70	0.002	27.26	0.007	24.67	0.016	19.12	0.086	
		2SLS			18.75	0.095	16.59	0.166	9.94	0.621	
HUN -	6	GMM	43.42	0.000	34.26	0.000	28.20	0.003	16.08	0.138	
		2SLS			21.14	0.032	19.93	0.046	7.73	0.737	
POL 0, π	5	GMM	77.16	0.000	62.86	0.000	45.12	0.000	28.88	0.002	
		2SLS			42.15	0.000	39.28	0.000	11.66	0.390	
CZE -	5	GMM	19.35	0.022	10.41	0.319	5.92	0.747	4.75	0.855	
		2SLS			7.61	0.574	7.60	0.575	2.70	0.975	
SWE 0	7	GMM	17.24	0.244	12.85	0.538	9.82	0.775	10.11	0.754	
		2SLS			9.75	0.780	7.60	0.909	7.77	0.901	

Notes: Optimal GMM/2SLS  $\chi^2$  test statistics and relative p-values. Lag order selection, see Cointegration Test.

- OCA theory would require a common feature of order zero which captures the strict form of identical impulse response patterns if countries fulfill this OCA criterion.
- Only for Sweden, the Null Hypothesis of a common cycle with the EA12 cannot be rejected.
- When we consider higher codependence orders up to three, all countries show some similarities with the EA12 for at least one of the two testing procedures.
- To explore the robustness of our results, we consider three points: the definition of the euro area aggregate (EA12 vs. EA19), the lag choice and an alternative common features test (Tiao and Tsay, 1989).

## Conclusion

- Three acceding countries to the Euro have been shown to form an optimal currency area by Deskar-Škrbić, et al. (2021).
- Our findings suggest that Deskar-Škrbić, et al. (2021) do not provide sufficient evidence.
- In a simple model, we illustrate that asymmetric persistence of shocks will lead to welfare losses.
- We use the SCCF test to illustrate that shocks of acceding countries have an asymmetric persistence to EA12.
- The acceding countries should be aware that joining the Euro Area is associated with welfare losses that arise from asymmetric persistence of shocks.