OESTERREICHISCHE NATIONALBANK
EUROSYSTEM

Business cycle convergence between the Western Balkans and the euro area

Isabella Moder
Oesterreichische Nationalbank
Foreign Research Division

The Western Balkans: 15 Years of Economic Transition
Vienna, March 10, 2015

This presentation is based on joint work with Antje Hildebrandt (OeNB).
The views expressed in this presentation are exclusively those of the authors and do not necessarily reflect those of the OeNB or the Eurosystem.

Motivation

- Western Balkans have limited or no scope at all for independent monetary policy
  - Euro legal tender in Kosovo and Montenegro
  - Euro-based CBA in Bosnia and Herzegovina, fixed peg to the euro in Macedonia
  - Flexible exchange rate regimes but unofficial euroization is high in Albania, Croatia and Serbia
- OCA theory: degree of business cycle synchronization matters
  - important for evaluating the costs of a lack of independent monetary policy

→ To what extent are the business cycles of the Western Balkans synchronized to the business cycle of the euro area?

→ What factors drive business cycle convergence between the two regions?

Measuring business cycle synchronization

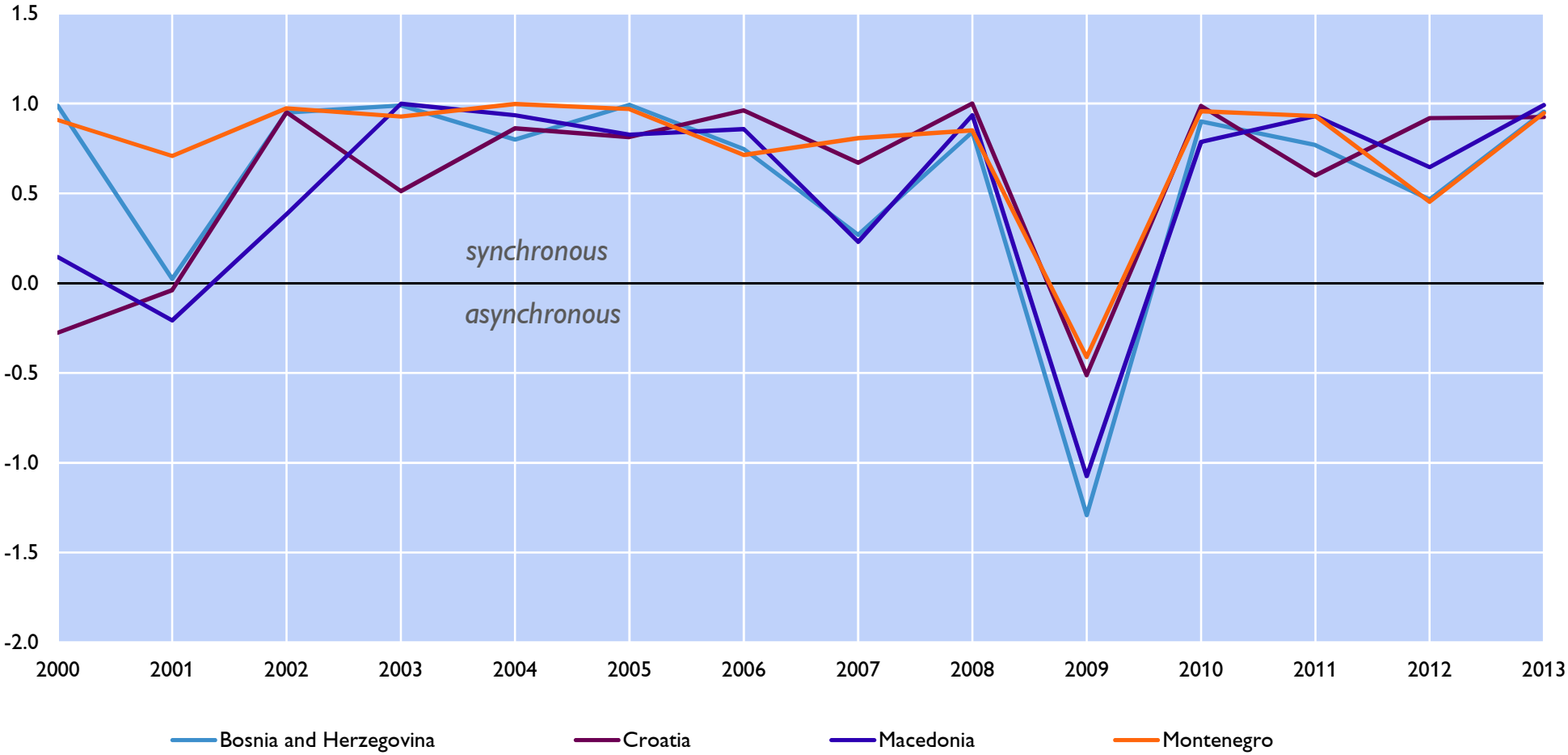
1. Identify business cycles for each country
   - Decompose cyclical component from trend component
   - Statistical method: HP-filter
   - Use annual GDP as a measure of economic activity

2. Calculate bilateral correlation index
   - Measure of correlation between two countries
   - New approach: at each point in time (developed by Cerqueira and Martins, 2009)
   - Asymmetric index between 3-2T (minimum) and 1 (maximum)

Results: Western Balkans broadly fall into two groups

Countries with a high degree of synchronization vis-à-vis the euro area

Bilateral correlation index



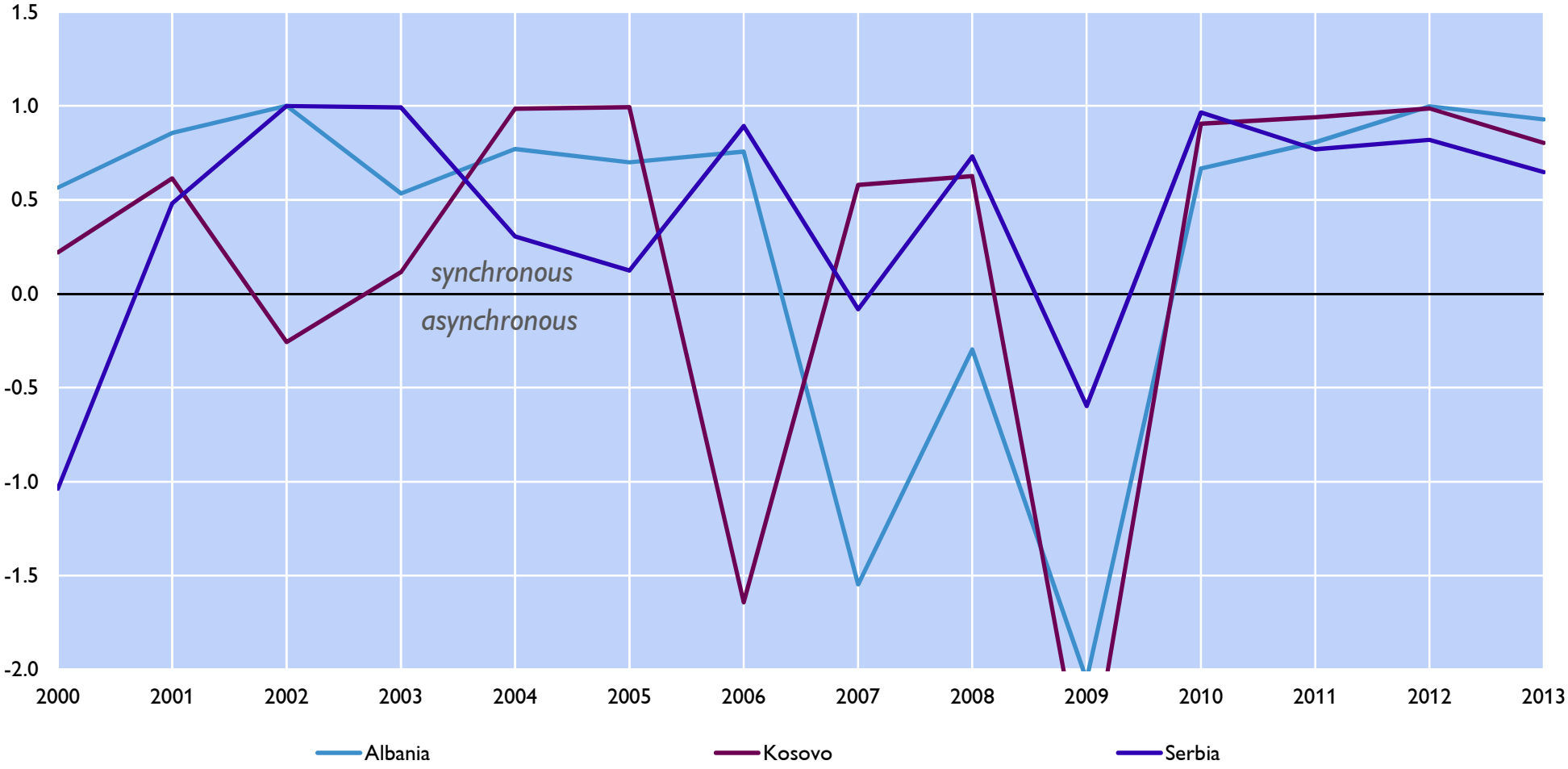
Source: Author's calculations.

Bilateral correlation index developed by Cerqueira and Martins (2009).

Results: Western Balkans broadly fall into two groups

Countries with a low degree of synchronization vis-à-vis the euro area

Bilateral correlation index



Source: Author's calculations.

Bilateral correlation index developed by Cerqueira and Martins (2009).

Results: Business cycle synchronization has mostly increased over time,

with an interruption at the peak of the financial crisis in 2009

Country	Transition until 2000	Pre-crisis 2001-2008	Crisis peak 2009	Crisis aftermath 2010-2013	Overall
Montenegro	n/a	0.868	-0.412	0.821	0.766
Macedonia	0.667	0.620	-1.074	↑ 0.838	0.602
Croatia	0.356	↑ 0.716	-0.513	↑ 0.857	0.539
Bosnia and Herzegovina	0.377	↑ 0.701	-1.292	↑ 0.772	0.534
Kosovo	n/a	0.252	-2.666	↑ 0.909	0.229
Serbia	-1.573	↑ 0.555	-0.597	↑ 0.800	0.145
Albania	-0.549	↑ 0.347	-2.053	↑ 0.850	-0.099

Results: Business cycle synchronization has mostly increased over time,

with an interruption at the peak of the financial crisis in 2009

Country	Transition until 2000	Pre-crisis 2001-2008	Crisis peak 2009	Crisis aftermath 2010-2013	Overall
Montenegro	n/a	0.868	-0.412	0.821	0.766
Macedonia	0.667	0.620	-1.074	↑ 0.838	0.602
Croatia	0.356	↑ 0.716	-0.513	↑ 0.857	0.539
Bosnia and Herzegovina	0.377	↑ 0.701	-1.292	↑ 0.772	0.534
Kosovo	n/a	0.252	-2.666	↑ 0.909	0.229
Serbia	-1.573	↑ 0.555	-0.597	↑ 0.800	0.145
Albania	-0.549	↑ 0.347	-2.053	↑ 0.850	-0.099

Determinants of business cycle synchronization

- Country-specific vs. transnational shocks
- Transmission channels of idiosyncratic shocks

- Sample: 6 Western Balkan countries (all but Kosovo) vis-à-vis EU-27
- Time span: from 1994 (or later) to 2013, depending on data availability
- Estimation method: System GMM estimator, endogeneous and exogeneous instruments
- Empirical model:

$$Correl_{ij,t} = \alpha + \beta Correl_{ij,t-1} + Z'_{ij,t}\gamma + \mu_{ij} + \lambda_t + v_{ij,t}$$

Results: Determinants of business cycle synchronization

- Factors *promoting* business cycle convergence
  - Bilateral trade: largest positive impact
  - Fiscal policy: if used as anti-cyclical stabilization instrument

- Factors *dampening* business cycle convergence
  - FDI inflows: procyclicality aggravates business cycle divergence
  - Remittances: apparently used for investment rather than for consumption-smoothing

- *No impact* of
  - Industrial specialization
  - De jure euroization / exchange rate regime

Conclusions

- Business cycle synchronization between the Western Balkans and the euro area has increased over time
- In the past few years (2010-13), all Western Balkan countries exhibited a high degree of business cycle synchronization vis-à-vis the euro area

- Factors *promoting* business cycle convergence: trade, fiscal policy
- Factors *dampening* business cycle convergence: FDI inflows, remittances

→ In terms of business cycle synchronization, lack of independent monetary policy currently does not seem to be very costly

→ However, business cycle synchronization is only *one* aspect of OCA, other dimensions are equally important

Annex: Regression results I

Variable/model	**(1)**	**(2)**	**(3)**	**(4)**
Bilateral trade	0.043** (0.020)	0.047** (0.020)	0.068*** (0.025)	0.046** (0.021)
Asymmetry of production	0.003 (0.006)	0.004 (0.007)	-0.007 (0.009)	0.010 (0.007)
Fiscal differences	-0.016* (0.008)	-0.015* (0.009)	-0.022** (0.009)	-0.015* (0.008)
De jure euroization / fixed EUR peg		0.043 (0.069)		
Bilateral FDI			-0.008*** (0.003)	
Bilateral remittances				-0.016* (0.008)
Lagged bilateral business cycle synchronization	0.081*** (0.025)	0.081*** (0.025)	0.072** (0.030)	0.038 (0.029)
Constant	1.030*** (0.290)	1.050*** (0.322)	0.824*** (0.197)	0.616*** (0.179)
Observations	2435	2435	2151	2066

Dependent variable: Bilateral business cycle synchronization. Estimation method: Blundell-Bond system GMM estimator. Standard errors are reported in parantheses. *,** and *** indicate a significance level of 10%, 5% and 1 %, respectively. Out-of-sample instrument included: logdistcap. In-sample instruments: up to 4 lags. Time dummies are included but not reported. Maximum time span: 1994-2013.

Annex: Regression results II

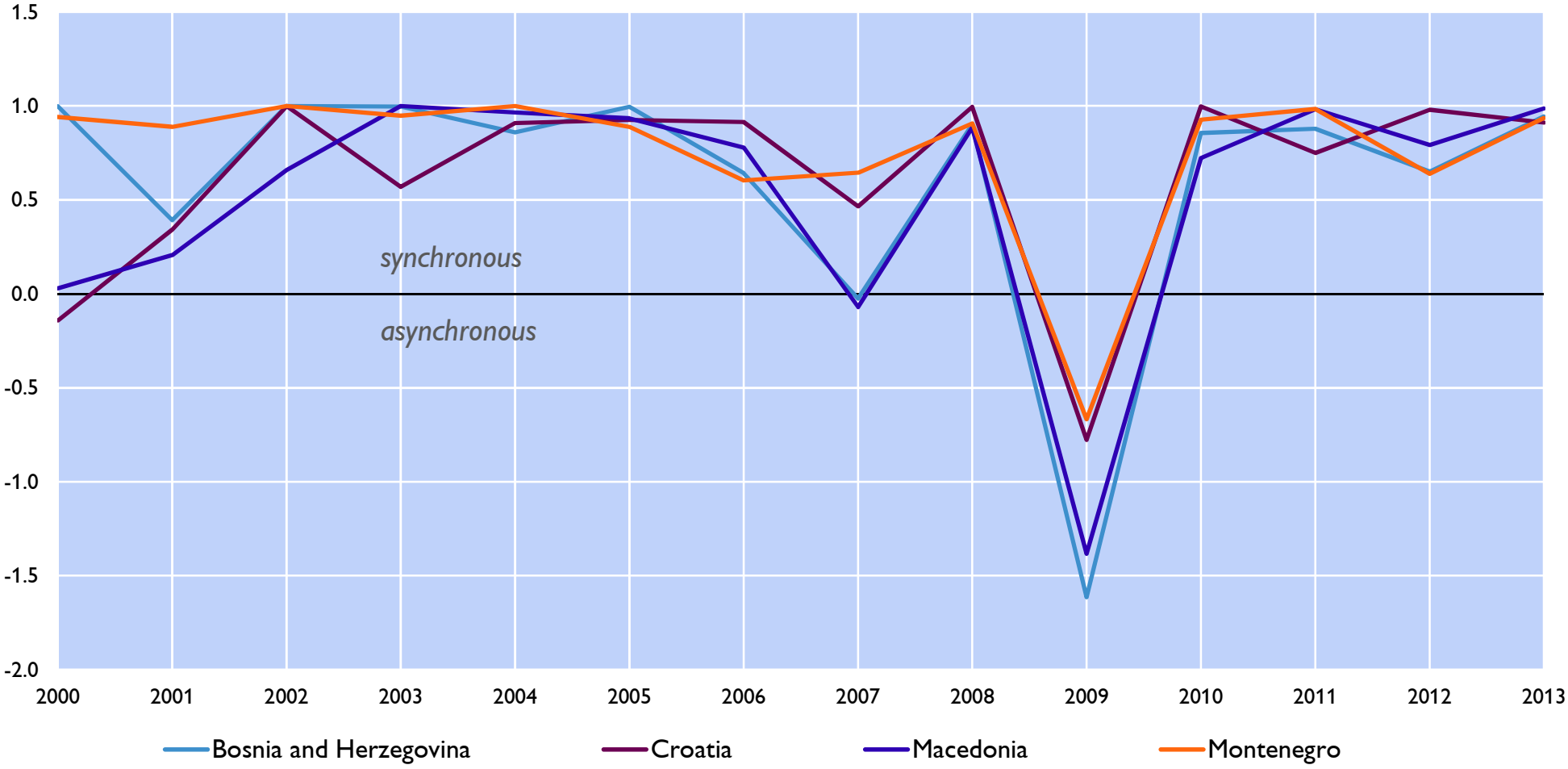
Variable/model	**(1)**	**(3)**	**(4)**
Lagged bilateral trade	0.056*** (0.018)	0.103*** (0.026)	0.063*** (0.023)
Lagged asymmetry of production	0.000 (0.007)	-0.017* (0.009)	0.002 (0.007)
Lagged fiscal differences	0.036*** (0.012)	0.030** (0.014)	0.044*** (0.011)
Lagged bilateral FDI		-0.013*** (0.003)	
Lagged bilateral remittances			-0.023* (0.013)
Lagged bilateral business cycle synchronization	0.069*** (0.026)	0.037 (0.027)	0.042 (0.029)
Constant	0.578*** (0.188)	1.553*** (0.500)	1.533*** (0.209)
Observations	2307	2026	1909

Dependent variable: Bilateral business cycle synchronization. Estimation method: Blundell-Bond system GMM estimator. Standard errors are reported in parantheses. *,** and *** indicate a significance level of 10%, 5% and 1%, respectively. Out-of-sample instrument included: logdistcap. In-sample instruments: up to 4 lags. Time dummies are included but not reported. Maximum time span: 1994-2013.

Annex: Synchronization vis-à-vis the EU-27

Countries with a high degree of synchronization vis-à-vis the EU-27

Bilateral correlation index



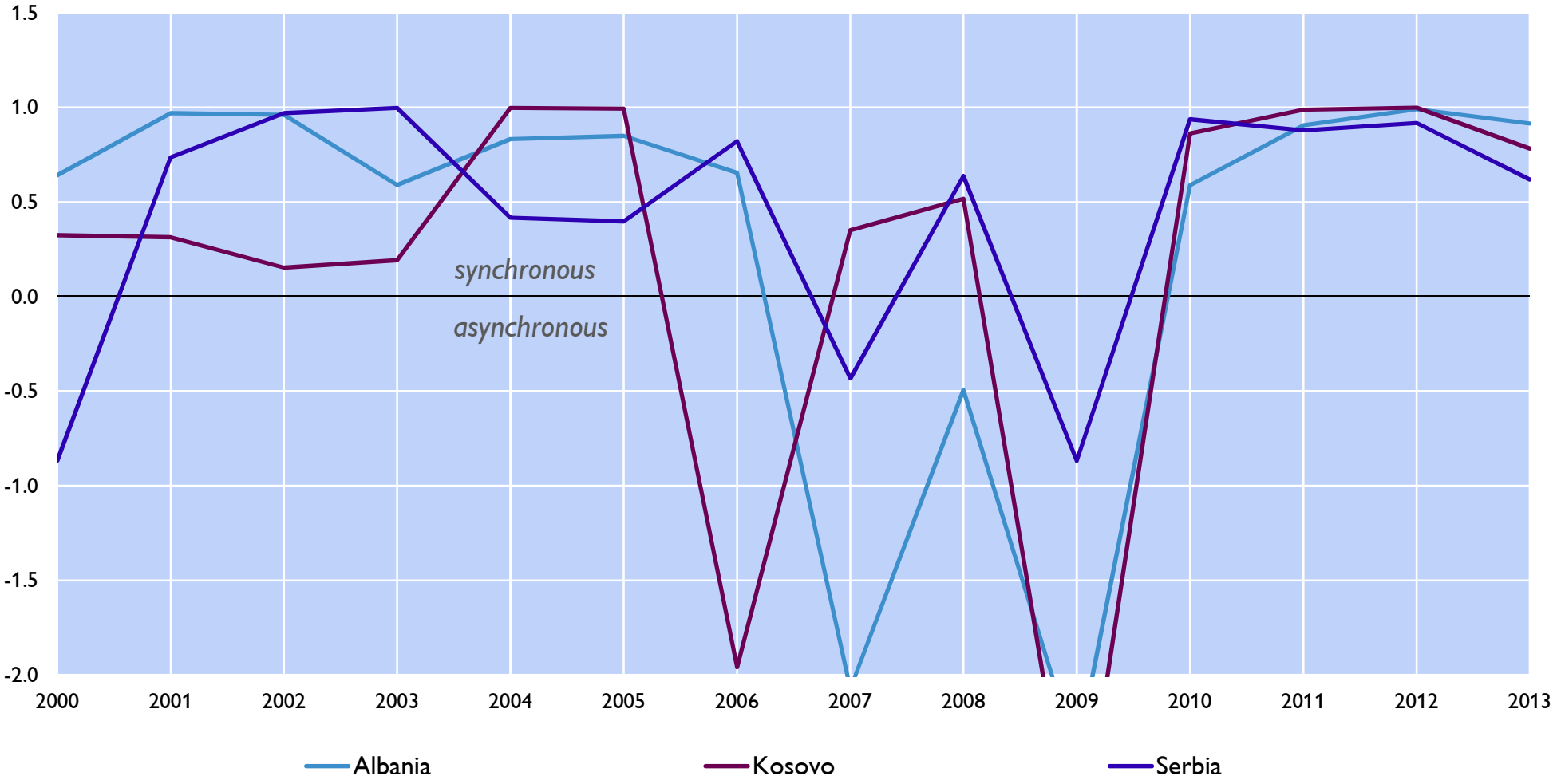
Source: Author's calculations.

Bilateral correlation index developed by Cerqueira and Martins (2009).

Annex: Synchronization vis-à-vis the EU-27

Countries with a low degree of synchronization vis-à-vis the EU-27

Bilateral correlation index



Source: Author's calculations.
Bilateral correlation index developed by Cerqueira and Martins (2009).

Annex: Synchronization vis-à-vis the EU27

Country	Transition until 2000	Pre-crisis 2001-2008	Crisis peak 2009	Crisis aftermath 2010-2013	Overall
Montenegro	n/a	0.860	-0.668	0.871	0.760
Croatia	0.401	0.765	-0.778	0.909	0.572
Macedonia	0.473	0.669	-1.383	0.871	0.532
Bosnia and Herzegovina	0.313	0.720	-1.615	0.832	0.526
Serbia	-1.381	0.568	-0.869	0.839	0.181
Kosovo	n/a	0.195	-3.072	0.908	0.175
Albania	-0.073	0.287	-2.424	0.850	0.096