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**IS THIS TIME DIFFERENT?
LESSONS FROM THE WESTERN
BALKANS**

MOTIVATION

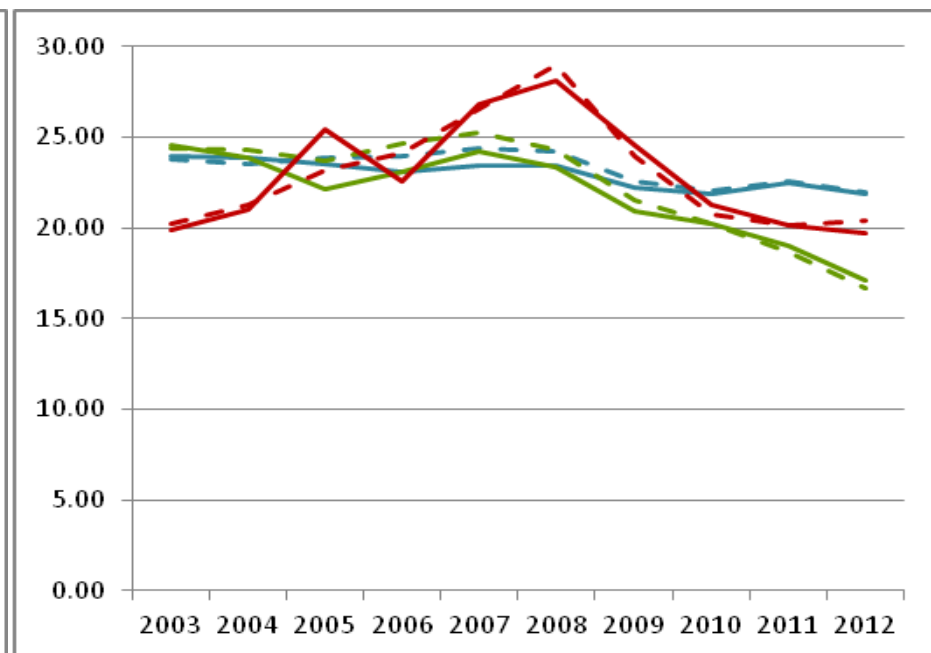
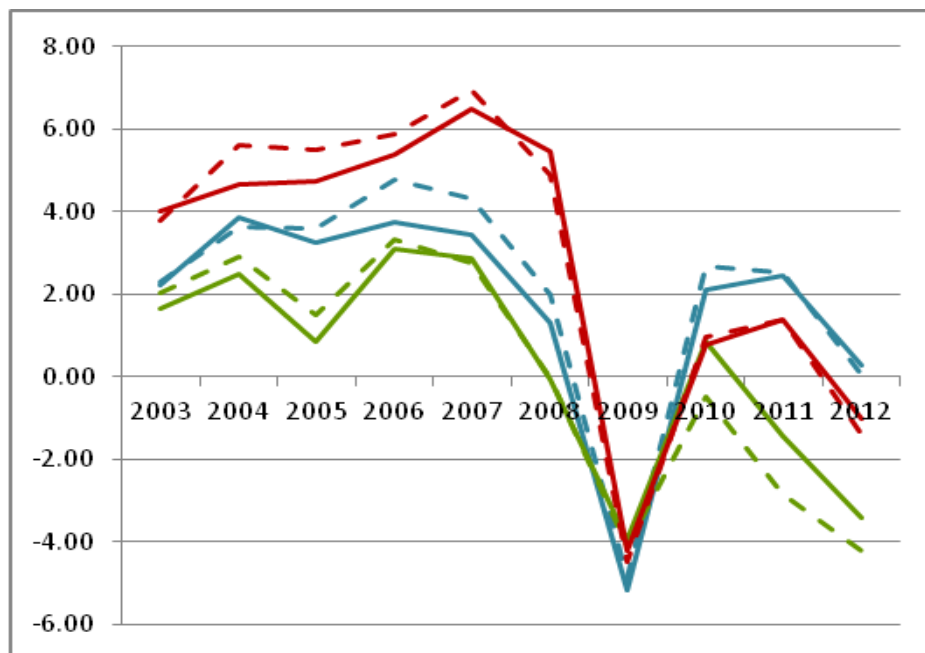
- Mechanism of boom-bust drivers: financial frictions (Minsky crisis)
- Is this time different in the Western Balkans when compared to the crises in 1930' and 1970'?

STYLIZED FACTS

Balkan benchmarked against Mediterranean and Core Europe

Real GDP growth

Investment to GDP

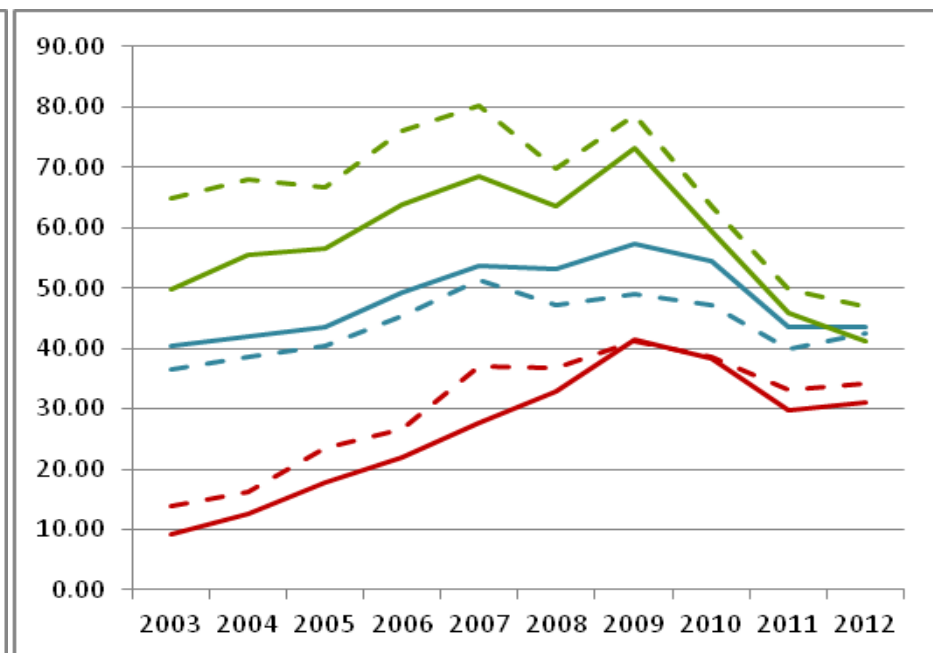
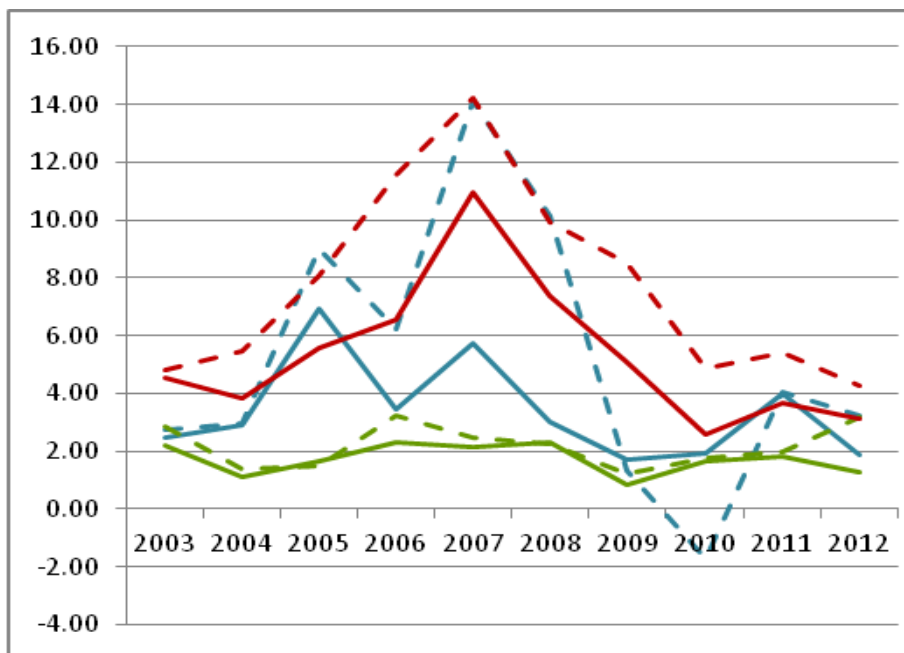


STYLIZED FACTS

Balkan benchmarked against Mediterranean and Core Europe

Inflow of foreign direct investment

BIS-reporting banks' claims on all sectors of the economy

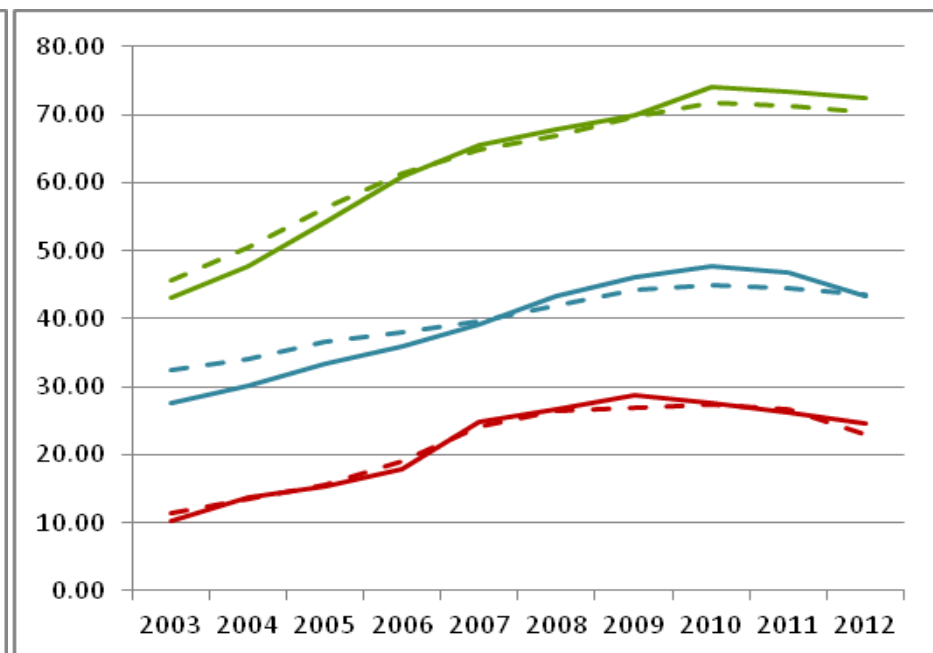
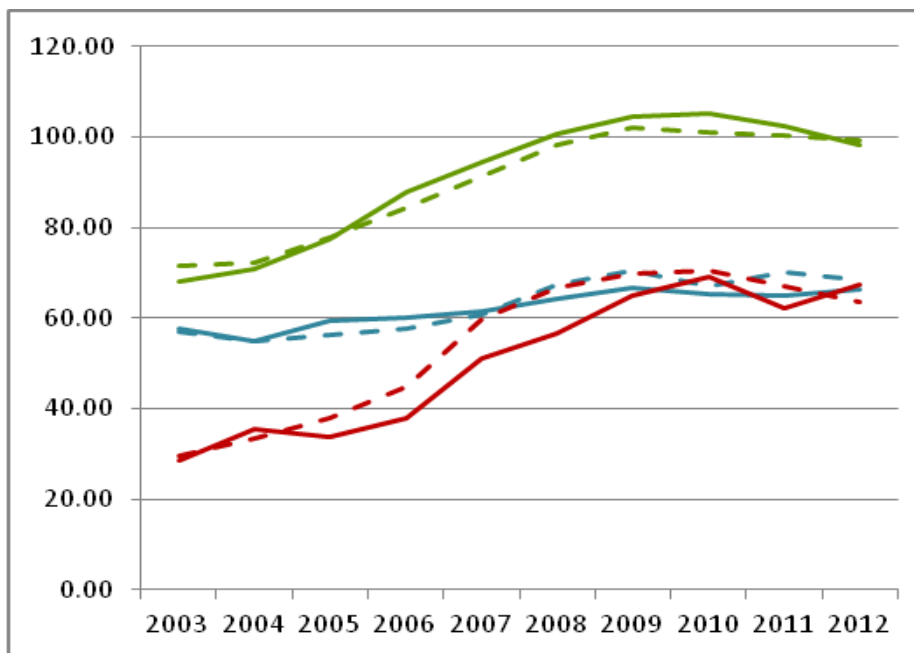


STYLIZED FACTS

Balkan benchmarked against Mediterranean and Core Europe

Non-financial corporate debt

Household debt



2 APPROACHES

- frictions on the demand side for loans from banks

Borrowers Frictions

Kiyotaki and Moore, 1997; Miller and Stiglitz, 2010; Krishnamurthy, 2010; Bernanke Gertler, and Gilchrist, 1999.

- frictions on the supply side of credit funds

Lenders Frictions

Holmstrom and Tirole, 1997.

A MODEL OF DEBT ACCUMULATION

- extended model of the financial accelerator (Bernanke, Gertler and Gilchrist, 1999), which exhibits strong endogenous propagation and amplification of a firm's debt (de)accumulation and net worth cyclicalities in the circumstances of leverage financing
- different industries, different countries (regions) and a different kind of investment

OPERATIONAL MODEL

Debt accumulation model

$$dbil_fdebt_bt_i =$$

$$\begin{aligned} & \alpha_0 + \alpha_1 dbil_core_bt_i + \alpha_2 dbil_fininv_bt_i + \alpha_3 cr_dbil_core_bt_i + \\ & \alpha_4 bh_dbil_core_bt_i + \alpha_5 mk_dbil_core_bt_i + \alpha_6 mn_dbil_core_bt_i + \\ & \alpha_7 sr_dbil_core_bt_i + \alpha_8 cr_dbil_fininv_bt_i + \alpha_9 bh_dbil_fininv_bt_i + \\ & \alpha_{10} mk_dbil_fininv_bt_i + \alpha_{11} mn_dbil_fininv_bt_i + \alpha_{12} sr_dbil_fininv_bt_i + \\ & \alpha_{13} l.bil_cap_t_i + \alpha_{14} l.dif_kolat_debt_i + \alpha_{15} id_man_i + \varepsilon \end{aligned}$$

where subscript i denotes a specific company, $dbil_fdebt_bt_i$ denotes the difference of financial debt, $dbil_core0_bt_i$ investments in core business activities, $dbil_fininv_bt_i$ financial investments, $l.bil_cap_t_i$ lagged value of equity of the firm, and $l.dif_kolat_debt_i$ difference of available collateral of the firm per unit of financial debt. All variables containing "bil" are normalized per unit of balance sheet sum of the companies in the observed period. The operational equation also contains dynamic dummy variables (where a dummy variable for the country is multiplied with the actual value of the specific variable) as follows: cr is Croatia, bh is Bosnia and Herzegovina, mk is Macedonia, mn is Montenegro, sr is Serbia, and si is Slovenia (which serves as a base dummy). id_man is a dummy variable for the manufacturing sector. Finally, ε is the error term.

2 UNBALANCED PANEL DATA SETS

To study borrowers' frictions:

- over 2,000 firms
- data on firms' investments (core and financial investments) and their indebtedness
- in the period 2005-2011

To study lenders' frictions:

- 120 banks
- Balance sheet and income statement data
- in the period from 2004 to 2013

Countries of former Yugoslavia (Croatia, Bosnia and Herzegovina, Macedonia, Montenegro, Serbia and Slovenia)

Data sources:

Amadeus database, Amadeus; official suppliers of micro data for Slovenia, Montenegro and Macedonia, Bankscope database, Croatian National Bank, Central Bank of Montenegro, Bank of Slovenia

RESULTS

dynamic dummies for core investments

	2007	2008	2009	2010
Slovenia	0.270***	0.239**	0.207**	0.124*
Croatia	0.073	-0.046	0.123	-0.018
Bosnia and Herzegovina	0.241***	0.162*	0.044	0.026
Macedonia	0.215**	0.098	-0.051	0.285
Montenegro	0.151	-0.015	-0.056	0.040
Serbia	0.183***	-0.027	0.175**	0.178*

Notes: ***, ** and * denote statistically significant values at 1, 5 and 10 percent on a two-tailed test, respectively.
We estimated the model with GMM method.

RESULTS

dynamic dummies for financial investments

	2007	2008	2009	2010
Slovenia	0.560***	0.253**	0.401***	0.163
Croatia	-0.238	-0.099	0.500**	-0.991***
Bosnia and Herzegovina	-0.279	0.278	0.696	0.890***
Macedonia	-0.113	0.526	-0.242	0.538**
Montenegro	0.267	0.538*	0.052	-2.029
Serbia	0.711**	0.970	0.073	0.271

Notes: ***, **and * denote statistically significant values at 1, 5 and 10 percent on a two-tailed test, respectively.

A CREDIT MODEL

- based on the theoretical literature along the lines of Mundell and Fleming tradition (Mundell, 1963; Fleming, 1962; Dornbusch, 1976; Magud and Vesperoni, 2015; Blanchard et al., 2015)
- specified for the open economy with banking, households, and business sector
- model enables explicit separation of supply and demand factors

OPERATIONAL MODEL

Credit model

$dloans_to_firms_bil =$

$$\alpha + \beta_1 b_n + \beta_2 cost_impar_bil + \beta_3 dbank_fin_bil + \beta_4 ddeposits_bil_1 + \beta_5 crdbank_fin_bil + \beta_6 bhdbank_fin_bil + \beta_7 mkdbank_fin_bil + \beta_8 mndbank_fin_bil + \beta_9 srdbank_fin_bil + \beta_{10} g_ngdp + \beta_{11} cr + \beta_{12} bh + \beta_{13} mk + \beta_{14} mn + \beta_{15} sr + \beta_{16} fmo + \varepsilon$$

where ($dloans_to_househ_bil$) is the yearly change in bank loans to households (per unit of the total balance sheet), ($dloans_to_firms_bil$) is the yearly change in bank loans to firms (per unit of the total balance sheet), (b_n) is a correction factor, ($cost_impar_bil_1$) is the lagged yearly costs of impairment (per unit of the total balance sheet), ($dbank_fin_bil$) is the bank funding channel (change in loans due to banks per unit of the total balance sheet), ($crdbank_fin_bil$) is a variable showing a specific effect of Croatia on the initial variable, ($bhdbank_fin_bil$) is a variable showing a specific effect of Bosnia and Herzegovina on the initial variable, ($mndbank_fin_bil$) is a variable showing a specific effect of Montenegro on the initial variable, ($srdbank_fin_bil$) is a variable showing a specific effect of Serbia on the initial variable, ($ddeposits_bil_1$) is the lagged total deposits (per unit of the total balance sheet); (g_ngdp) is a growth of GDP, (si) is a dummy variable for Slovenia, (cr) is a dummy variable for Croatia, (ba) is a dummy variable for Bosnia and Herzegovina, (mk) is a dummy variable for Macedonia, (mn) is a dummy variable for Montenegro, (sr) is a dummy variable for Serbia, and (fmo) is a dummy for a foreign-owned bank. Finally ε is the error term.

OPERATIONAL MODEL

Credit model

$dloans_to_househ_bil =$

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RESULTS

loans to firms

	coeff.	2007-2008	2009-2010	2011-2013
b_n	β_1	-0.005	-0.001	0.003
cost_impar_bil_1	β_2	-0.251	-0.023	-0.366
dbank_fin_bil	β_3	0.499 ***	0.391	0.692 ***
crdbank_fin_bil	β_5	-0.512 **	-0.006	-0.344
bhdbank_fin_bil	β_6	-0.354	0.231	-0.179
mkdbank_fin_bil	β_7	-0.458 *	0.194	-0.445
mndbank_fin_bil	β_8	-0.561 **	0.621 *	-0.087
srdbank_fin_bil	β_9	-0.350 **	0.003	0.830 ***
ddeposits_bil_1	β_4	0.083	0.078	0.228 ***
g_ngdp	β_{10}	0.799 ***	0.289	-0.144 ***
cr	β_{11}	-0.041 *	0.020	0.006
bh	β_{12}	-0.030	0.013	0.026
mk	β_{13}	-0.012	0.008	0.032
mn	β_{14}	-0.015	-0.024	-0.009
sr	β_{15}	-0.060 **	0.062 ***	0.010
fmo	β_{16}	-0.002	-0.015	0.006
_cons	α	-0.067 *	0.032 *	-0.002
N		190	222	340

Notes: ***, **and * denote statistically significant values at 1, 5 and 10 percent on a two-tailed test, respectively.

RESULTS

dynamic dummies for loans due to banks – loans to firms

	2007-2008	2009-2010	2011-2013
Slovenia	0.499***	0.391	0.692***
Croatia	-0.013	0.385*	0.347*
Bosnia and Herzegovina	0.145	0.622***	0.512***
Macedonia	0.041	0.585***	0.246
Montenegro	-0.062	1.012***	0.604***
Serbia	0.149	0.394***	1.522***

Notes: ***, **and * denote statistically significant values at 1, 5 and 10 percent on a two-tailed test, respectively.

RESULTS

loans to households

	coeff.	2007-2008	2009-2010	2011-2013
b_n	β_1	-0.016 *	0.002	0.015
cost_impar_bil_1	β_2	-0.080	-0.003	0.011
dbank_fin_bil	β_3	-0.022	-0.039	0.117
crdbank_fin_bil	β_5	0.035	0.162	-0.035
bhdbank_fin_bil	β_6	0.132	0.311 *	-0.032
mkdbank_fin_bil	β_7	0.384 ***	0.588 ***	-0.026
mndbank_fin_bil	β_8	0.113	0.080	-0.046
srdbank_fin_bil	β_9	0.030	0.182	1.830 ***
ddeposits_bil_1	β_4	0.096 ***	0.028	0.145 ***
g_ngdp	β_{10}	0.476 ***	0.326 ***	-0.007
cr	β_{11}	-0.009	-0.017 *	-0.003
bh	β_{12}	-0.013	-0.031 ***	-0.004
mk	β_{13}	0.001	-0.040 ***	-0.002
mn	β_{14}	-0.010	-0.049 ***	-0.013
sr	β_{15}	-0.022	0.021 *	0.002
fmo	β_{16}	0.031 ***	0.011	0.008
_cons	α	-0.066 ***	0.035 ***	-0.002
N		190	222	340

Notes: ***, ** and * denote statistically significant values at 1, 5 and 10 percent on a two-tailed test, respectively. A panel model is estimated by a multiple imputation MLE.

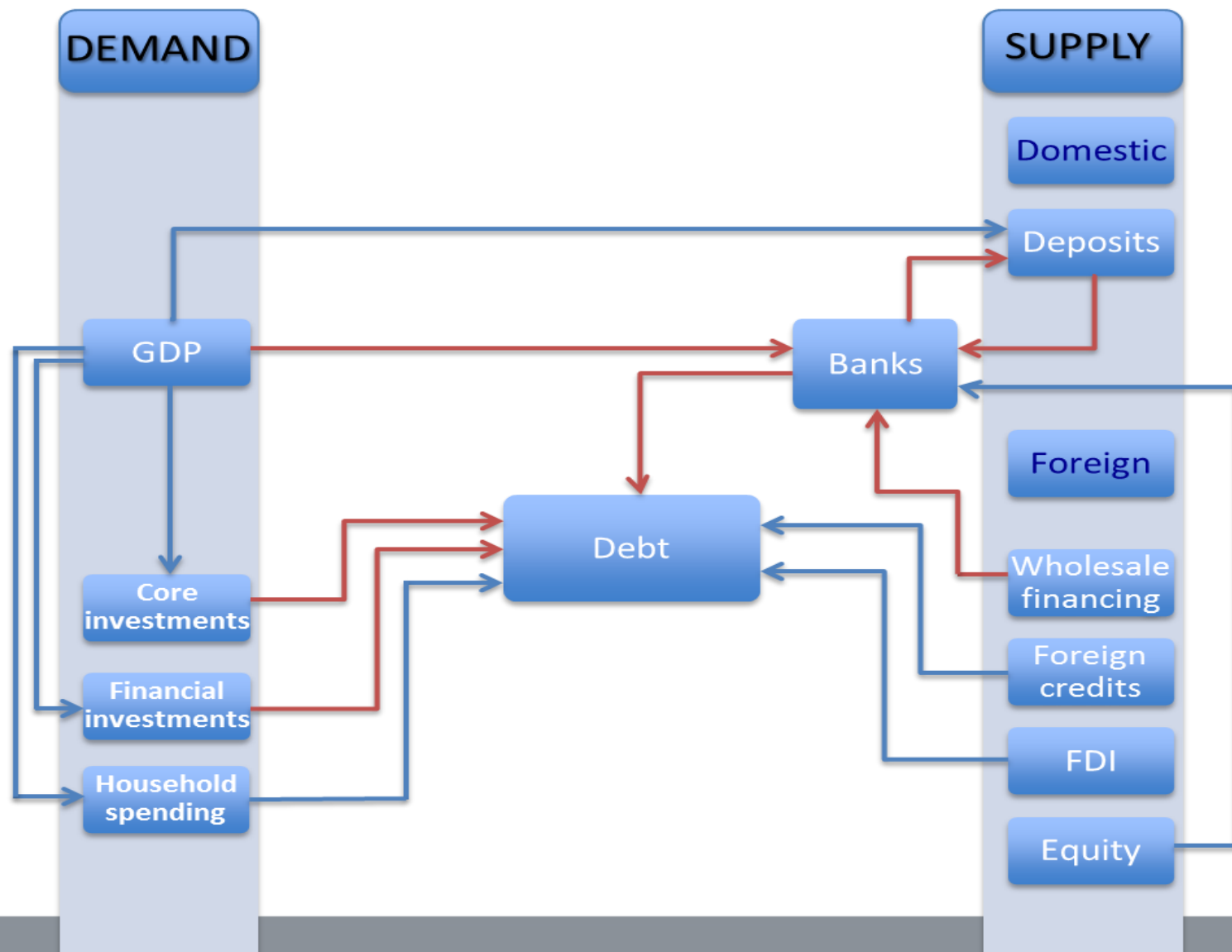
RESULTS

dynamic dummies for loans due to banks – loans to households

	2007-2008	2009-2010	2011-2013
Slovenia	-0.022	-0.039	0.117
Croatia	0.012	0.122	0.082
Bosnia and Herzegovina	0.109	0.271**	0.085
Macedonia	0.362***	0.548***	0.091
Montenegro	0.091	0.041	0.071
Serbia	0.008	0.143**	1.947***

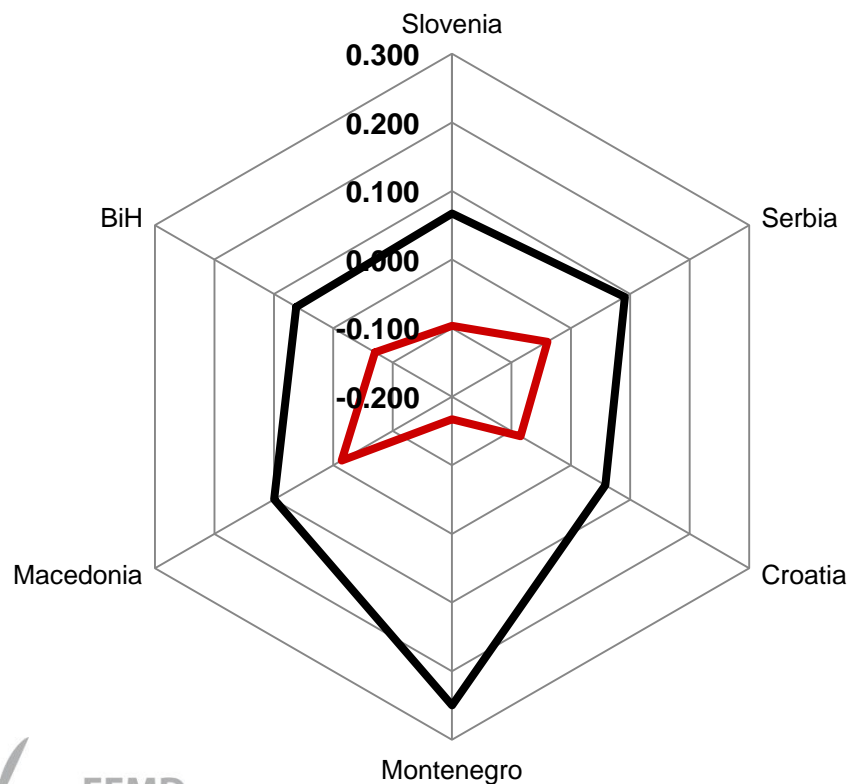
Notes: ***, **and * denote statistically significant values at 1, 5 and 10 percent on a two-tailed test, respectively.

INTERPLAY OF FRICTIONS AND ENVIRONMENT

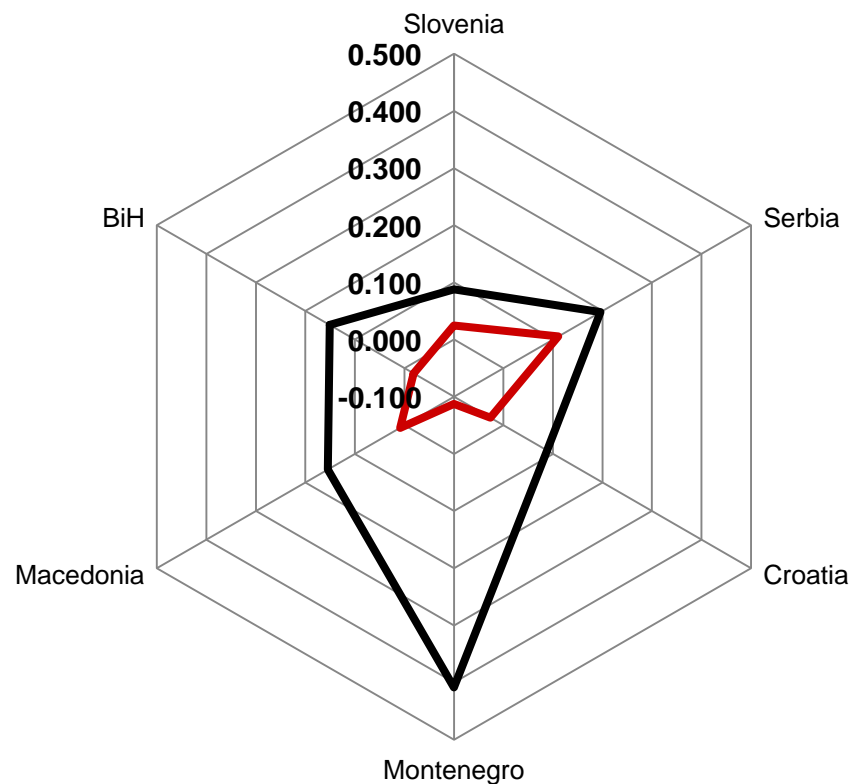


AGGREGATE DEMAND

Investment

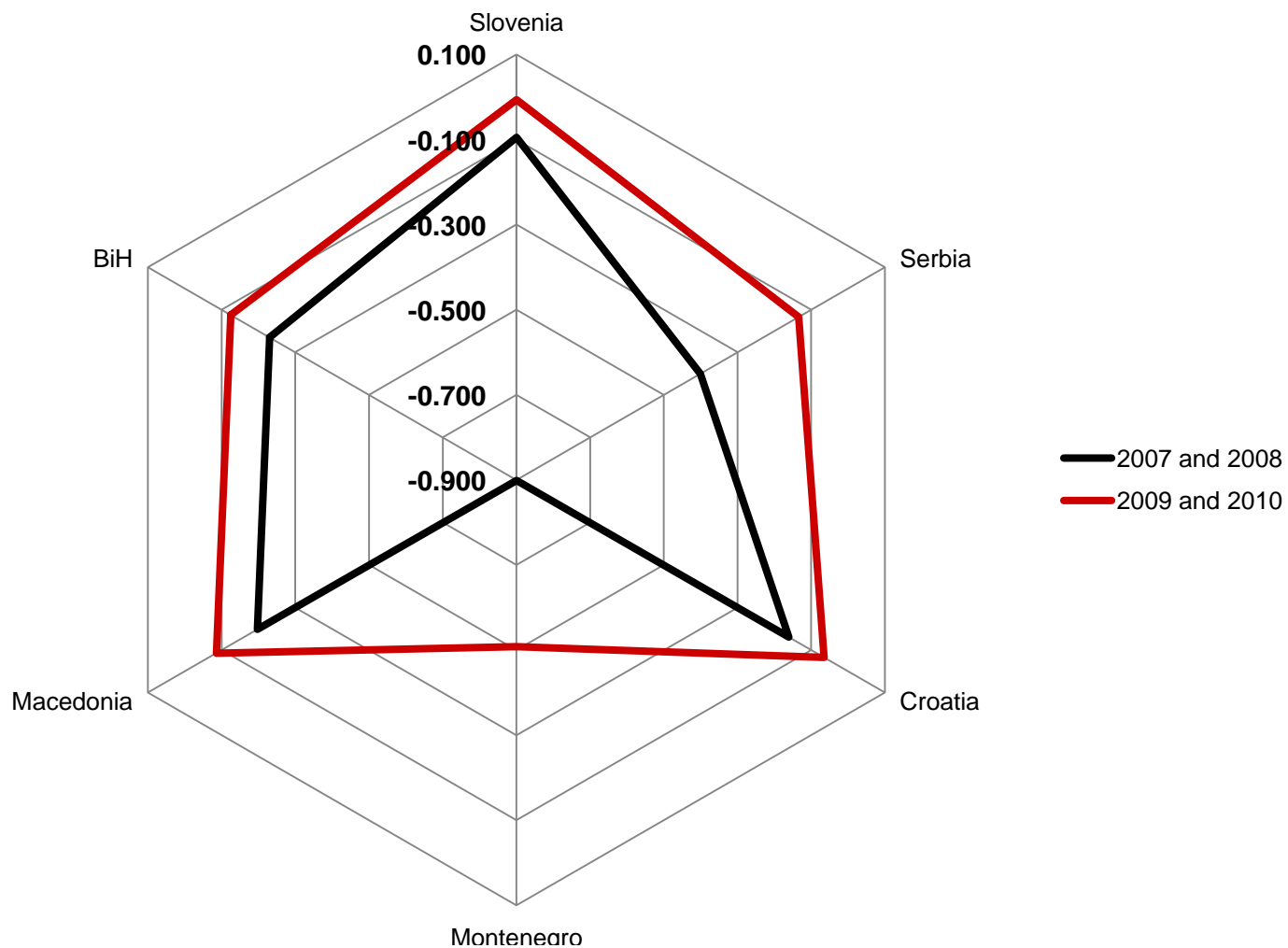


Household consumption



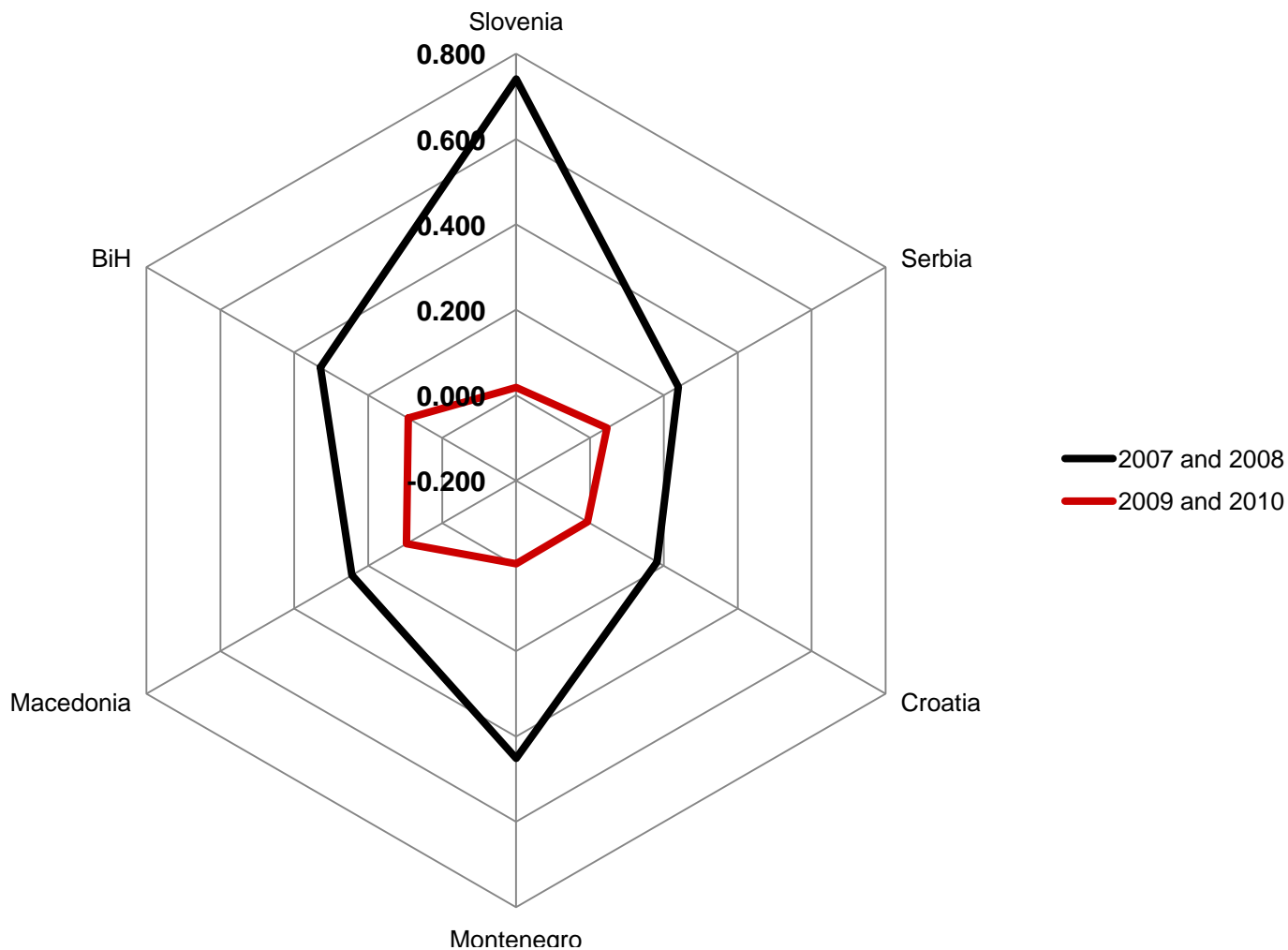
AGGREGATE DEMAND

Current account



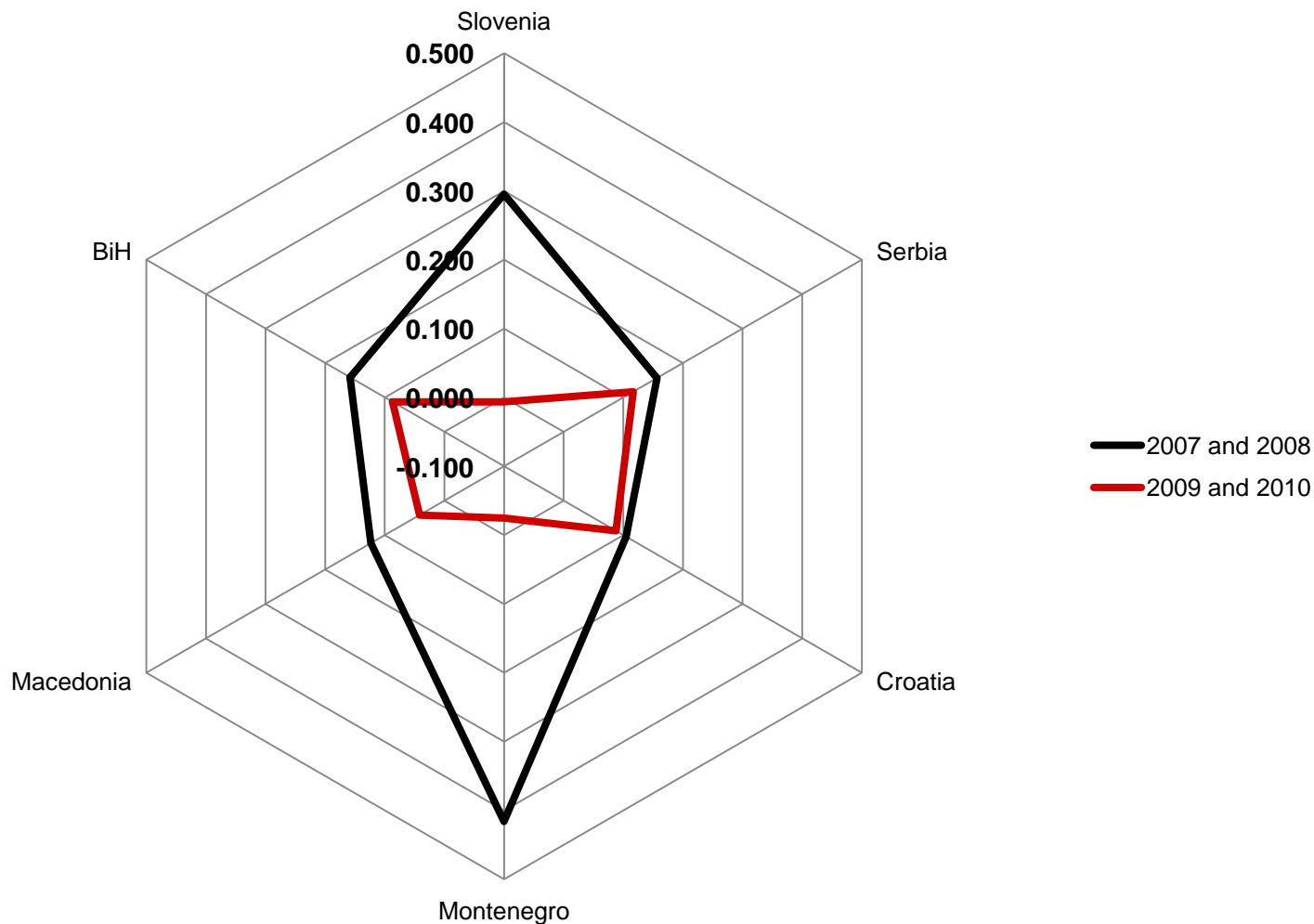
DEBT ACCUMULATION INDICATORS

Financial debt of enterprises



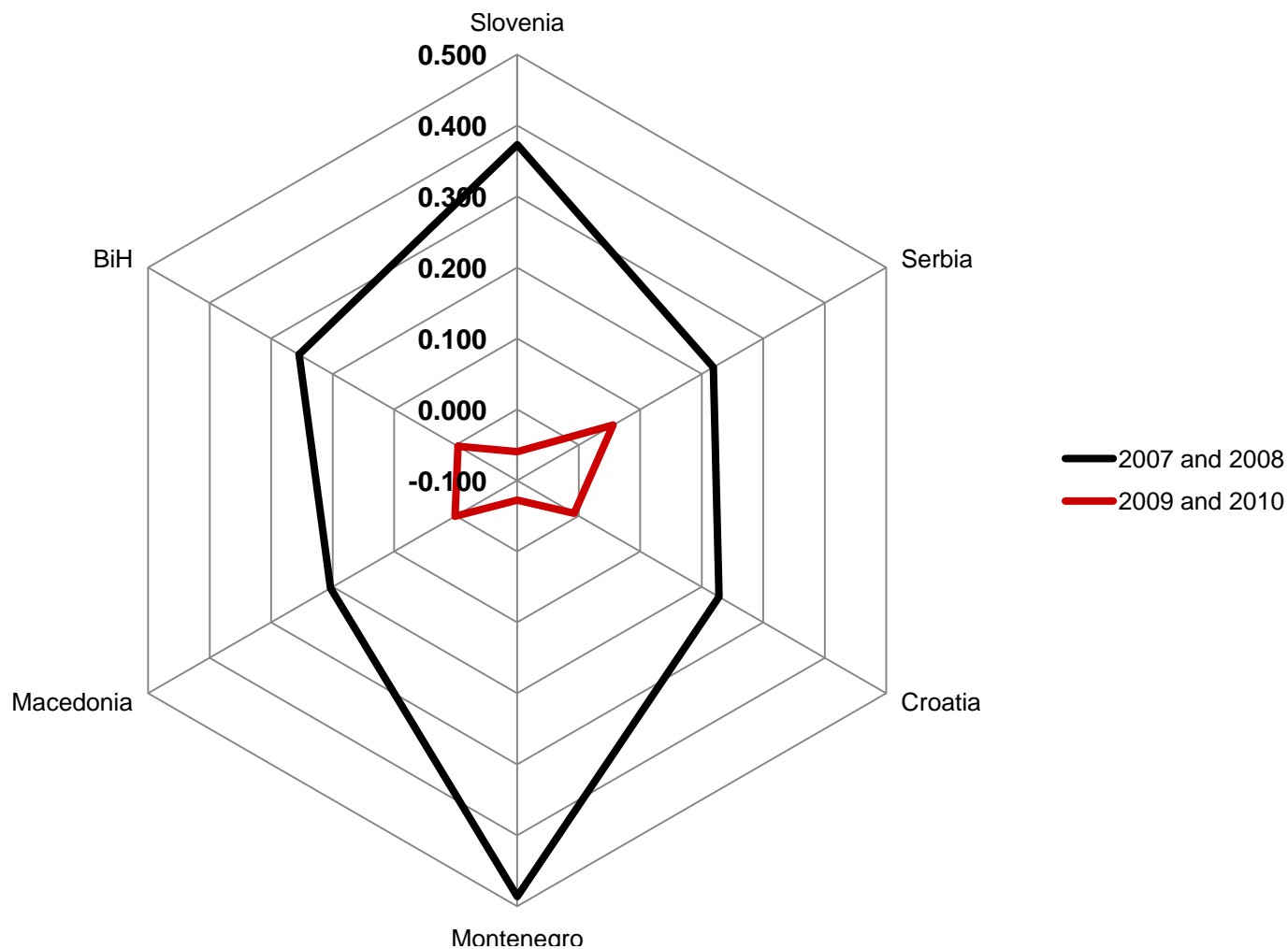
DEBT ACCUMULATION INDICATORS

Credits to firms



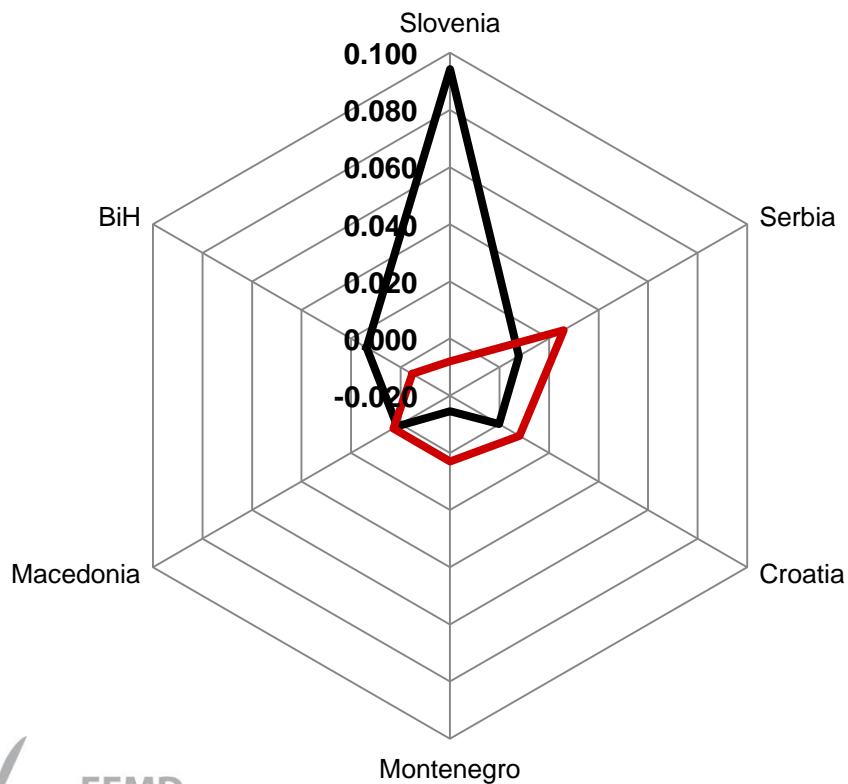
DEBT ACCUMULATION DRIVERS

Economic activity (growth of GDP) and country specific effects

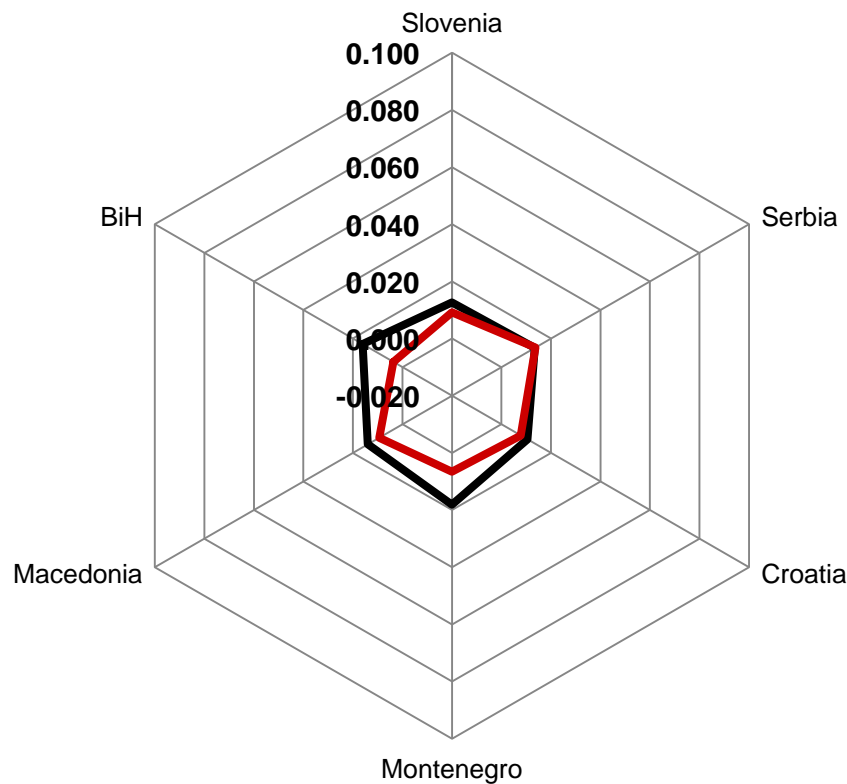


DEBT ACCUMULATION DRIVERS

Due to banks

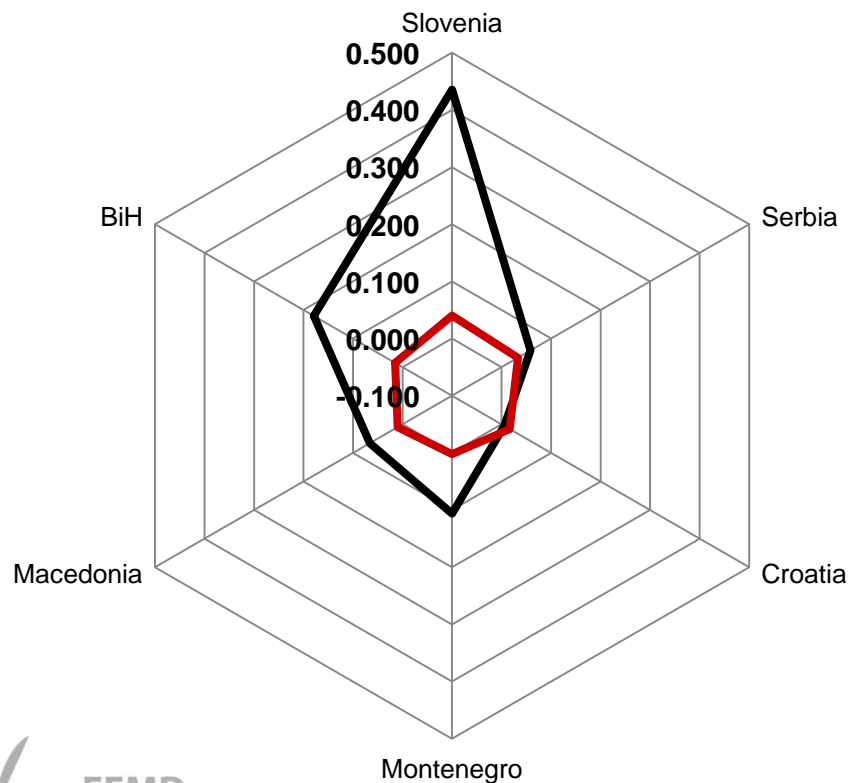


Deposits

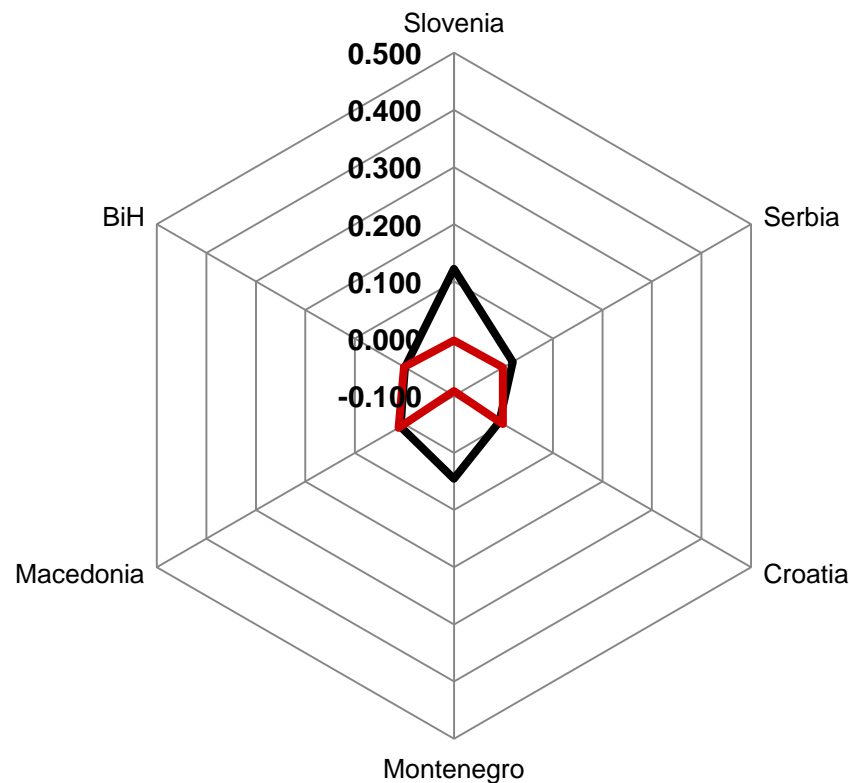


DEBT ACCUMULATION DRIVERS

Core investment

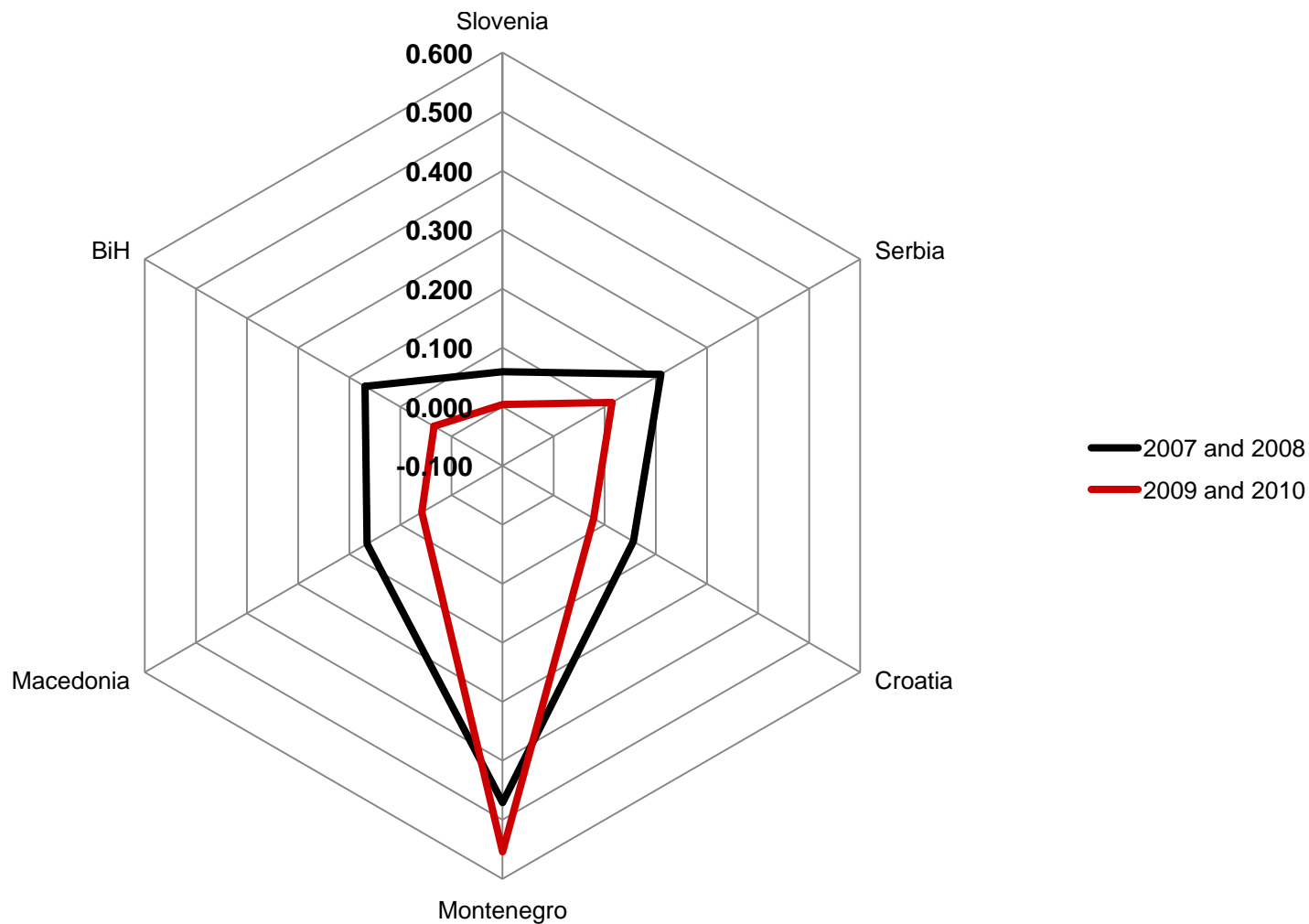


Financial investment



EXTERNAL FINANCIAL FLOWS INDICATORS

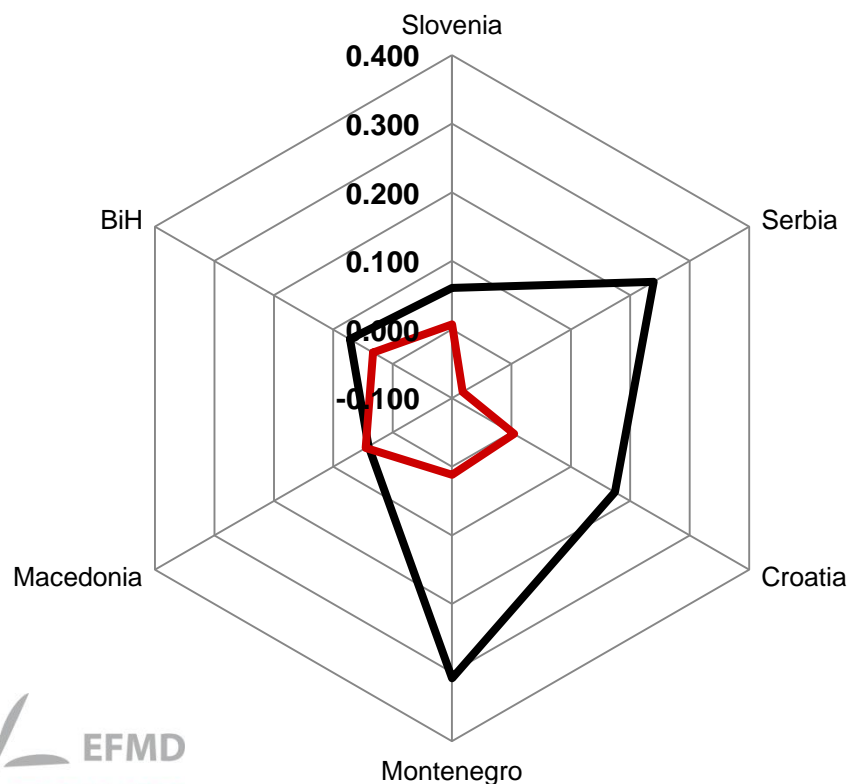
Financial account, FDI and equity to GDP, net incurrence of liabilities, other sectors



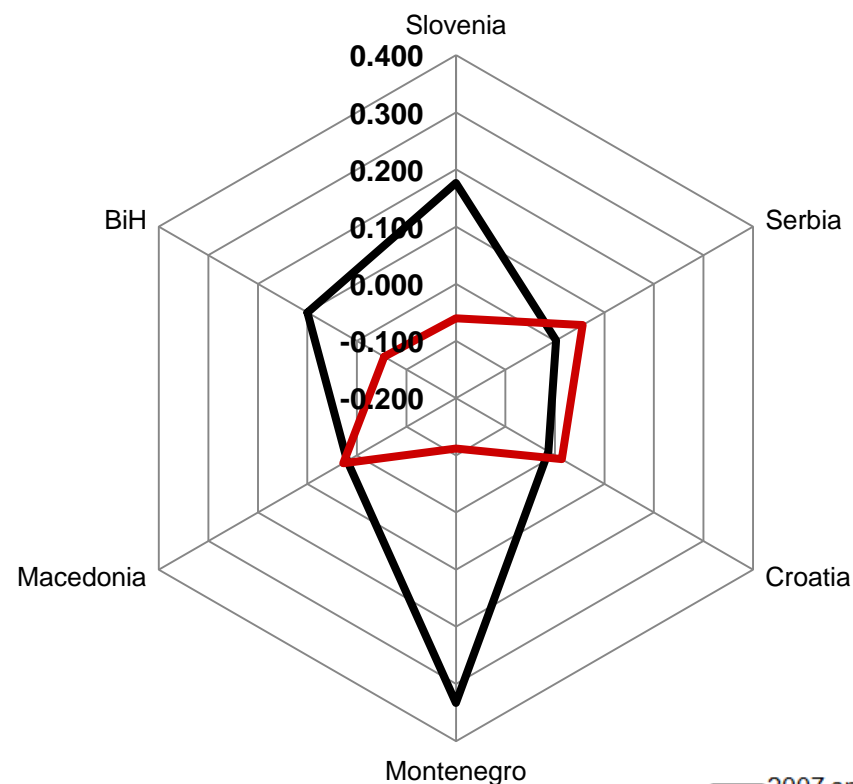
EXTERNAL FINANCIAL FLOWS INDICATORS

Financial account, portfolio investment (debt securities) and other investment to GDP, net incurrence of liabilities

Other sectors



Deposit-taking corporations



HOW COUNTRIES MANAGED ECONOMIC RISK IN THE 2007-2010?

CHANGE IN PERFORMANCE (BOOM vs. RECOVERY)

a measure of disequilibrium before the crisis:

- *private domestic spending disequilibrium:*
the highest in Montenegro
- *domestic financial sector adjustment:*
the highest in Montenegro and Slovenia
- *adjustment in foreign financial flows through loans:*
the highest in Montenegro, Slovenia and Serbia
- *adjustment in foreign equity financing:*
relatively small
- *overall:*
Serbia, Croatia, Macedonia the smallest adjustment

HOW COUNTRIES MANAGED ECONOMIC RISK IN THE 2007-2010?

CHANGE IN FINANCIAL FLOWS

domestic and external

VS.

CHANGE IN DOMESTIC SPENDING

a measure of resilience of the economy:

- *Considerable in all economies*
- *The largest resilience of enterprises in Slovenia*

IS THIS TIME DIFFERENT COMPARED TO THE CRISIS IN 1920' AND 1970'?

- **YES**

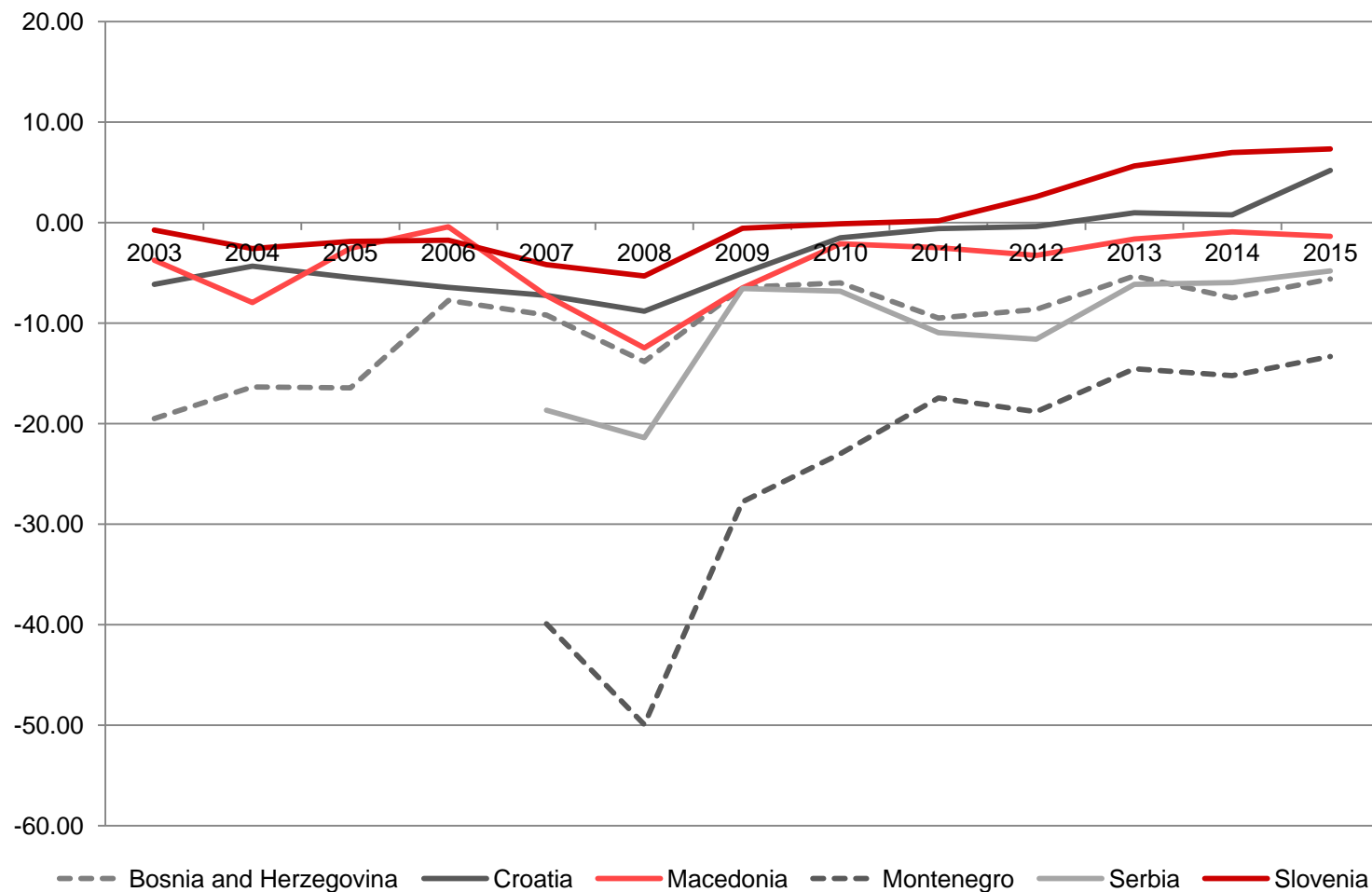
higher integration into the global economy, especially in financial flows

- **OPTIONS**

- Openness to trade only:
too slow
- Openness to trade and financial flows:
faster with huge swings
- Openness to trade and financial flows:
both wise macroeconomic policy and enterprise resilience are necessary.

?

Current account balance in percent of GDP



THANK YOU.

