

Credit Growth and Capital Buffers: Empirical Evidence from Central and Eastern European Countries

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What is the countercyclical capital buffer?

- a macro-prudential countercyclical instrument to tackle the time dimension of the systemic risk that accumulates in good times, currently codified together with the conservation buffer in Basel III (BCBS 2010)
- sits on top of the minimum capital adequacy (which is in most countries time-invariantly fixed at 8%)
- is time-variant and works via restrictions on distribution of earnings:
 - in the upswing, banks will be given 12 months to build the buffers before restrictions on distributions apply
 - in the downturn, banks should be able to release capital immediately

The objective of the buffer in Basel III

- should protect the banking sector from the credit cycle
 - act against procyclicality in the financial system
 - protect the banking sector from periods of excess aggregate credit growth that have often been associated with the build up of system-wide risk
- the aim is to ensure that the banking sector in aggregate has the capital on hand to help maintain the flow of credit in the economy when the broader financial system experiences stress after a period of excess credit growth

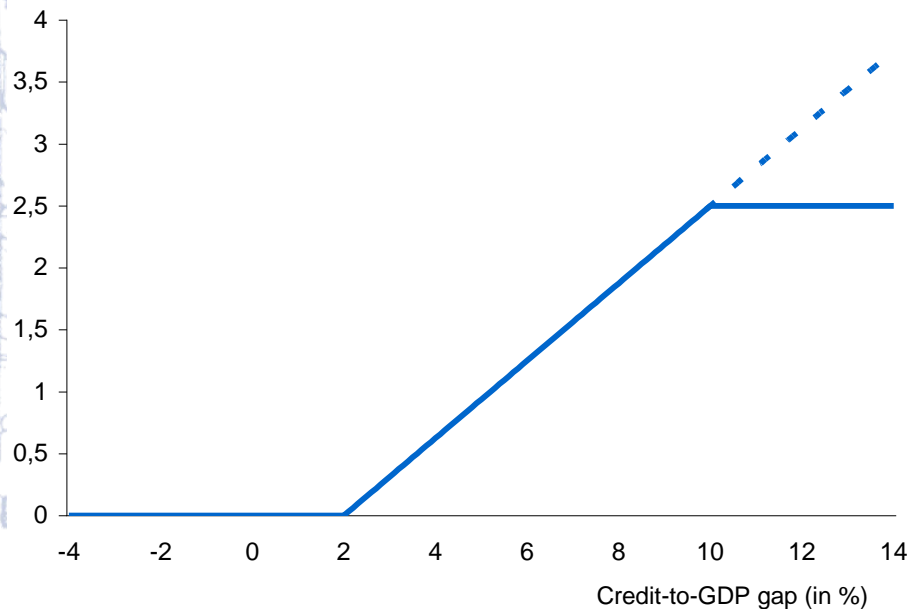
Countercyclical capital buffer (CCB) in Basel III

- may help to lean against the build-up phase of the cycle
 - raising the cost of credit, and therefore dampening its demand, when there is evidence that the stock of credit has grown to excessive levels relative to the benchmarks of past experience
- this potential moderating effect on the build-up phase of the credit cycle should be viewed as a positive side benefit, rather than the primary aim of the CCB regime
- other macroprudential tools could be used in tandem with the CCB

The role of credit-to-GDP gap

- the common reference guide is based on the aggregate private sector credit-to-GDP gap
 - a gap between the observed value and the calculated long-term trend of private sector credit to GDP

Countercyclical capital buffer
(% of RWA as a function of credit-to-GDP gap in pps)



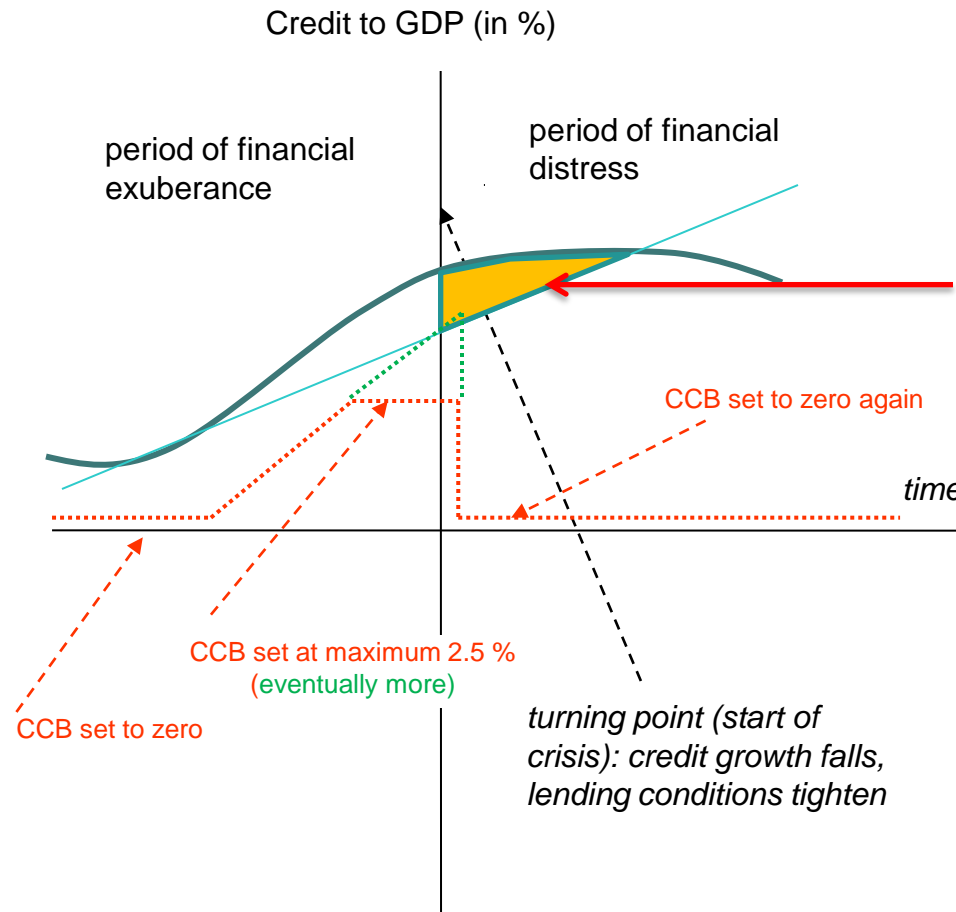
- for calculation of the long-term trend, the Basel III suggests using the Hodrick-Prescott filter with a high smoothing parameter ($\lambda=400,000$)
- buffer set as a function of the credit-to-GDP gap

The role of a macroprudential authority

- to monitor credit and its dynamics (and potentially other indicators) and make assessments of whether system-wide risks are being built up
- based on this assessment, to decide whether the CCB requirement should be imposed (set above the zero value)
- to apply judgment to determine whether the CCB should increase or decrease over time (within the range of zero to 2.5% of risk weighted assets, in very strong credit booms even above 2.5%)
- to be prepared to remove the requirement on a timely basis if the system-wide risk crystallizes

Stylized credit cycle and credit to GDP

- the credit to GDP gap might indicate well ahead a built-up of systemic risk, but is less suitable as an indicator for the release of the buffer



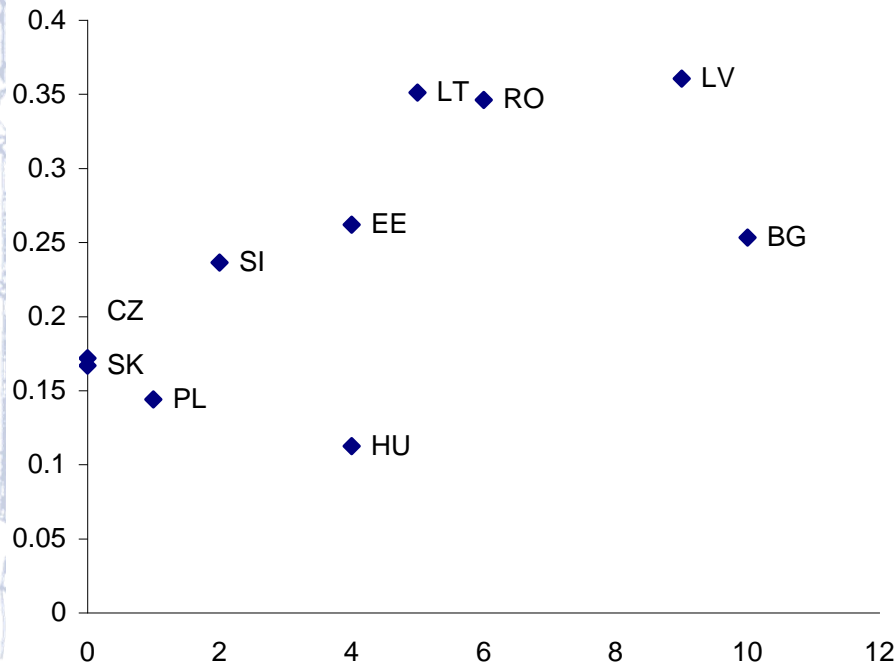
International reciprocity

- banking is global, macroprudential policy to a large extent local - how to avoid international arbitrage?
- CCB in Basel III designed in a way to prevent arbitrage via the concept of international reciprocity
 - bank-specific buffer calculated as a weighted average of jurisdiction buffers where exposures are located
 - a limit of 2.5% applied on international reciprocity (to prevent using the buffer rate as protectionist policy instrument)
 - however, voluntary reciprocity possible (at least in the EU)

Converging EU countries from the CEE region

- various tools applied in CEE countries as they experienced rapid credit growth in the pre-crisis period 2002-2007 - evidence of “excessiveness”?

Credit growth and number of tools applied to limit credit boom
(horizontal axes: number of tools;
vertical axes - average y-o-y real credit growth 2005-2007)



Tools to limit credit growth

Monetary policy tools

- interest rate increases
- reserve requirements

Regulatory measures

- higher risk weights/capital charges
- restrictions on LTV/LTI
- provisioning rate
- tight regulation on large exposures
- rules on collateral valuation

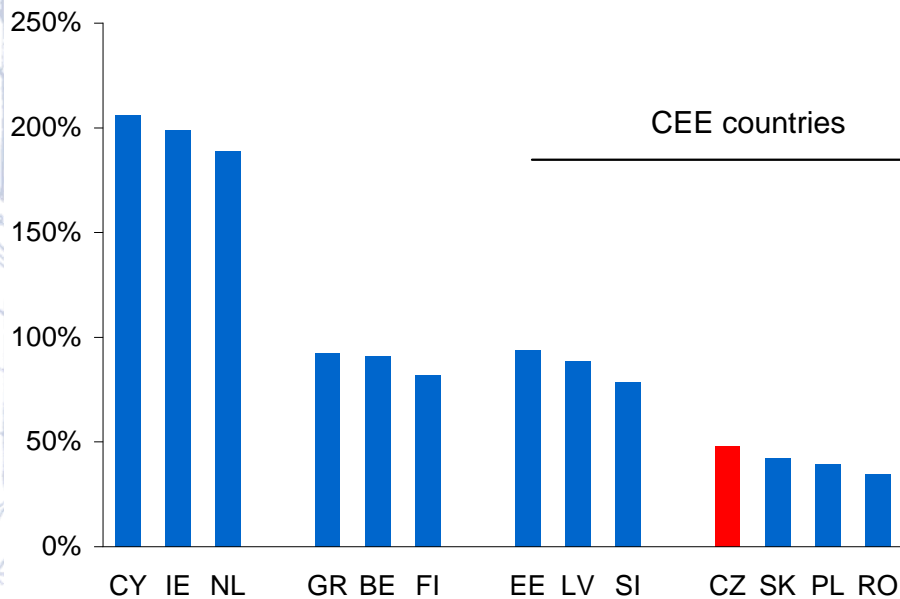
Administrative measures

- quantitative restrictions on credit growth
- eligibility criteria for borrowers
- tax treatment of loan-related payments
- guidelines and recommendations

Credit boom in the CEE countries

- some CEE countries already approached levels observed in some euro area countries
- credit underestimated (non-bank and cross-border credit)

Bank credit to the private sector in selected EU countries
(as % of GDP)

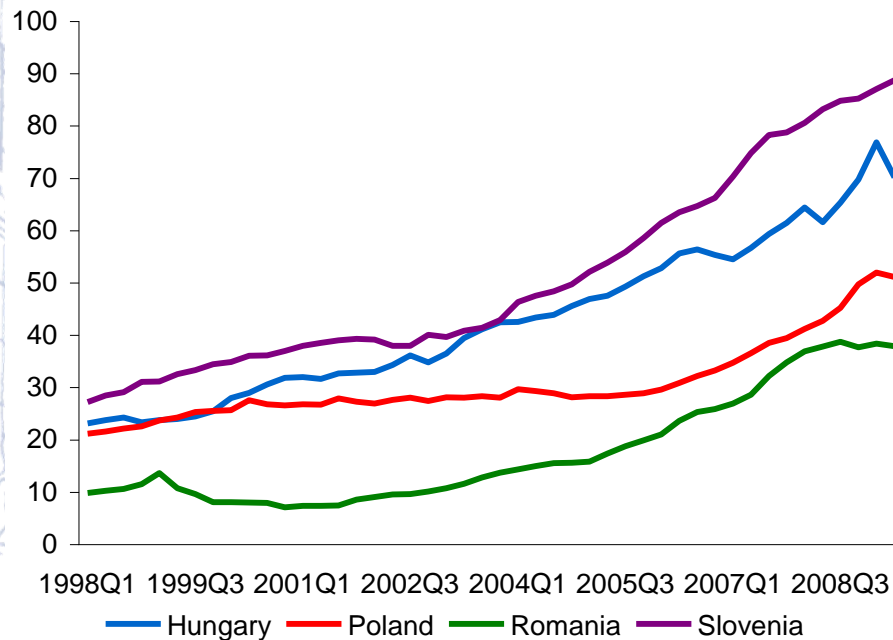


- FX lending prevalent in several CEE countries (but not in all)
- credit booms funded via external borrowing of domestic banks, usually from parent companies (foreign ownership of banking sectors in the CEE)

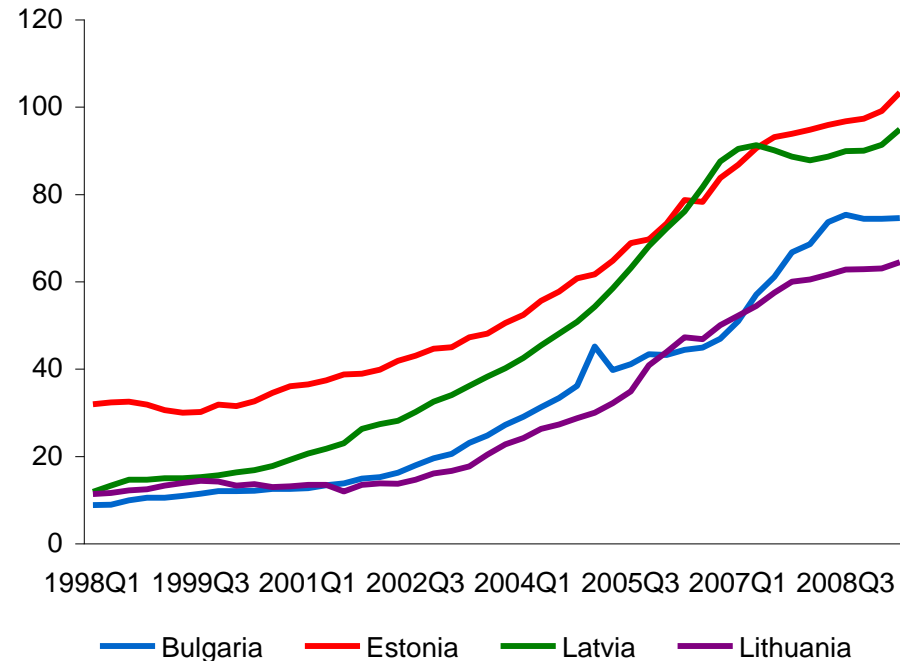
CEE countries and CCB calculation (1)

- short time-series (20Y of quarterly data recommended)
- high stable rise of credit growth is incorporated in the trend (convergence in credit to GDP)

Development of credit to GDP ratio in CEE countries (%)



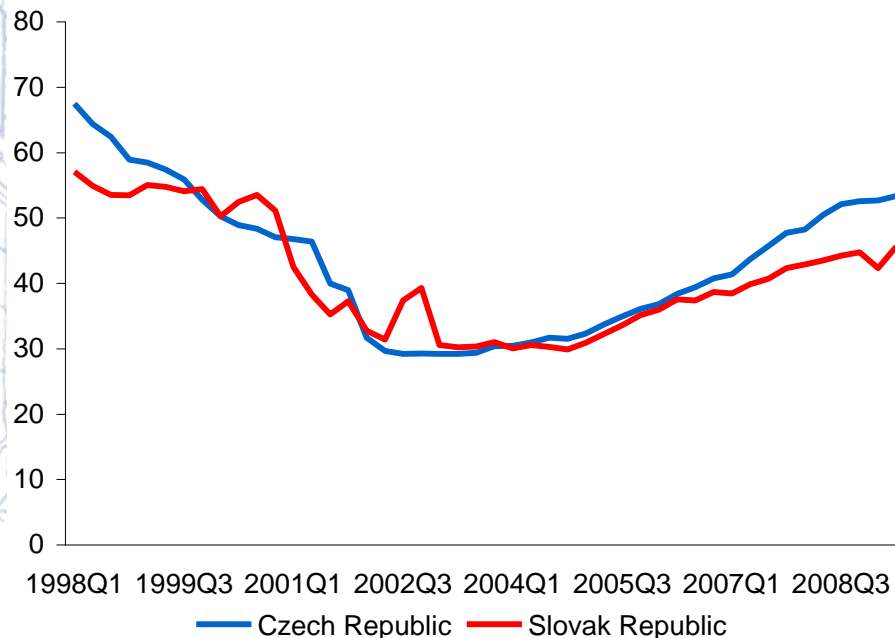
Development of credit to GDP ratio in CEE countries (%)



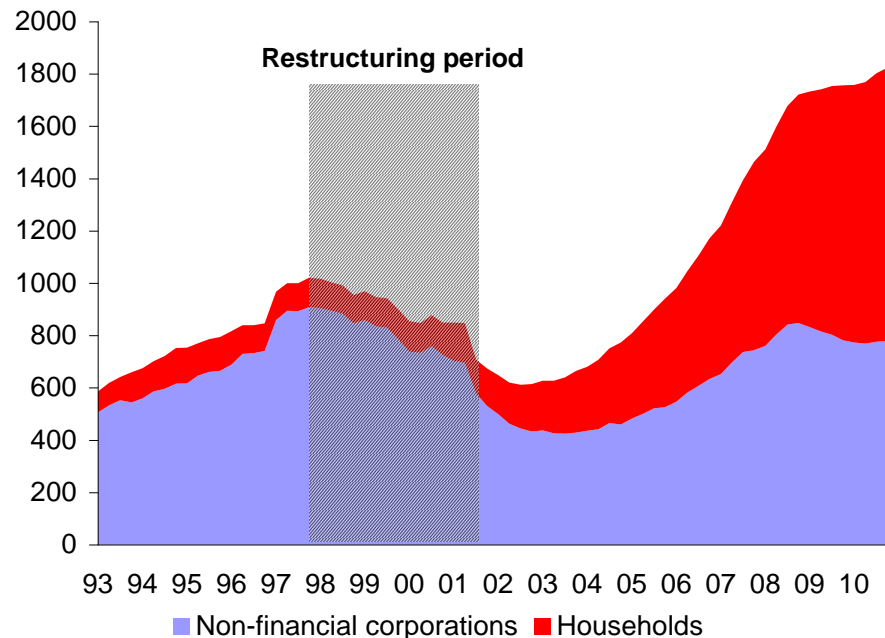
CEE countries and CCB calculation (2)

- initial undershooting and catching up hypothesis
- banking sector restructuring, changes in composition
- end-point bias of HP filter errs on the wrong (less conservative) side

Development of credit to GDP ratio in CEE countries (%)



Stock of bank credit to the real sector in the Czech Republic (in CZK bil)



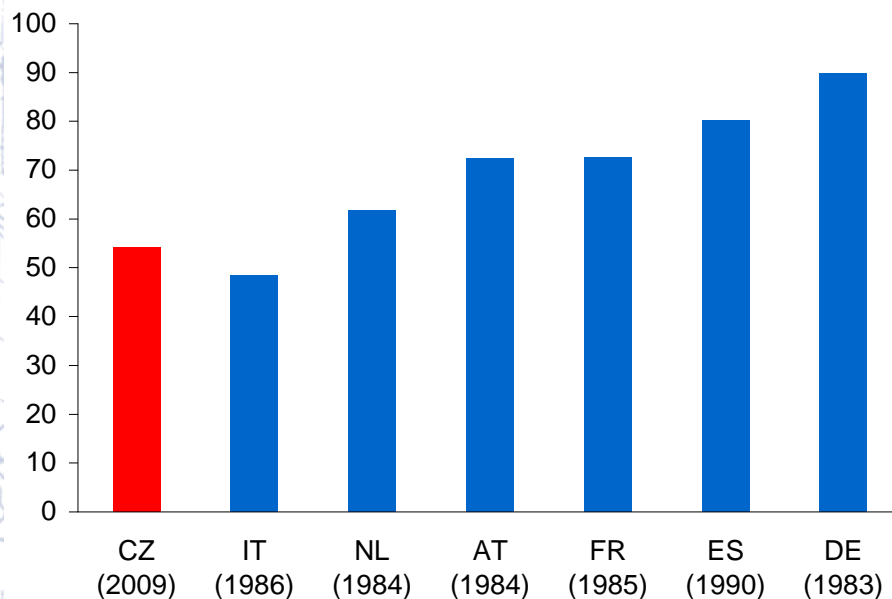
An alternative to the HP filter: fundamentals

- looking for an “equilibrium” / “sustainable” / “fundamental-based” level of credit
- the “out-of-sample” method: a way how to form judgment about the sustainable level of credit in the economy
 - based e.g. on Backe, Egert and Zumer (2006) and Kiss, Nagy and Vonnák (2006):
 - regressing the credit to GDP on a range of economic fundamentals (GDP per capita; households consumption; inflation etc.), using data for developed countries
 - applying the estimated elasticities „out of sample“, i.e. on CEE countries to calculate „equilibrium credit“

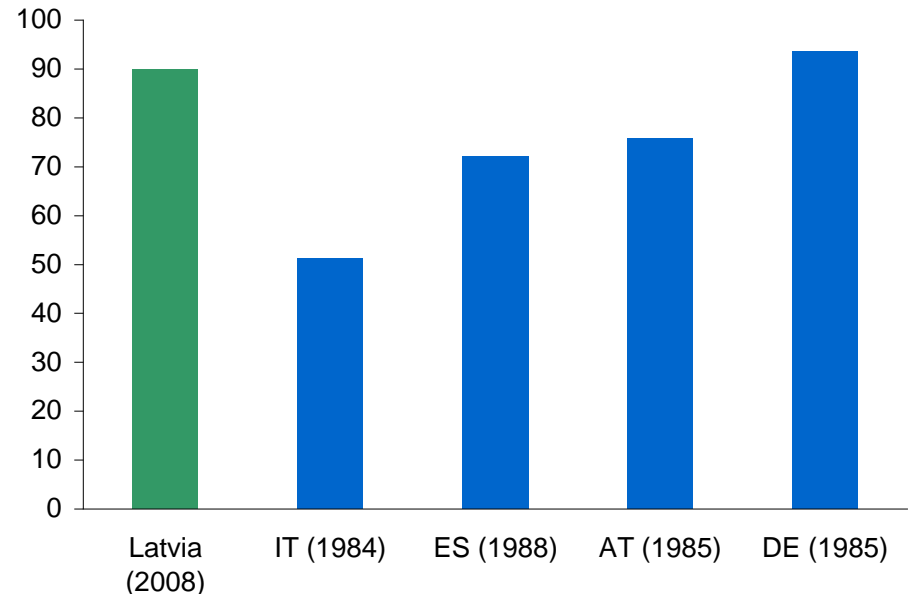
Using GDP per capita as the only fundamental

- compare the Czech Republic and Latvia with selected core EU countries when at similar level of economic development (in the 1980s)

Credit to GDP for similar level of economic development
(GDP per capita in 2005 USD = 17 ths USD; in %)



Credit to GDP for similar level of economic development
(GDP per capita in 2005 USD = 14 ths USD; in %)



Model specification in Gersl and Seidler (2011)

- dynamic nonstationary heterogenous panel estimator (PMG) based on Pesaran et al. (1999)
- short-run effect different for cross-sections, the same long-run cointegration relationship for all countries

$$\Delta(\text{credit/gdp})_t = \underbrace{-0.035}_{(**)}(\text{credit/gdp}_{t-1}) - \underbrace{(0.7\text{cons/gdp}_t + 0.013\text{gdp/pop}_t)}_{(***)} + \underbrace{\hspace{10em}}_{\text{long-run relationship}}$$

$$+ \underbrace{0.87\Delta(\text{cons/gdp})_t}_{(**)} - \underbrace{0.07\text{inf}_t}_{(*)} + \underbrace{0.014}_{(***)} \quad \text{short-run adjustment}$$

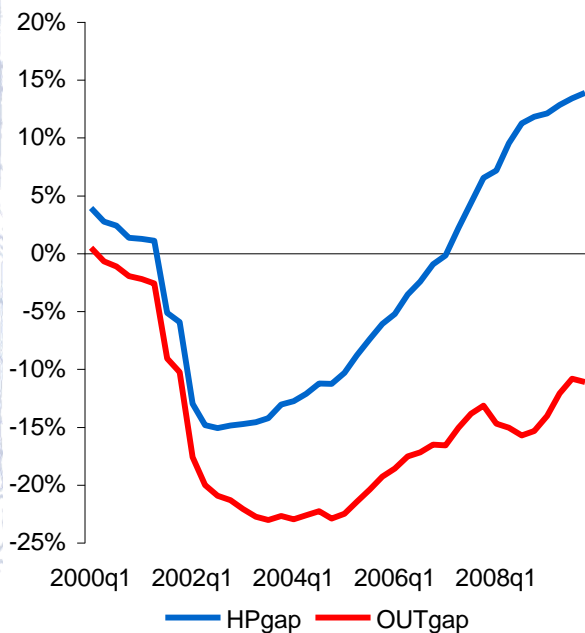
Note: *, ** and *** denote significance of the estimated coefficients at the 10, 5 and 1% levels respectively.

- only the estimated long-run cointegration relationship is used to calculate „equilibrium credit“ for CEE countries

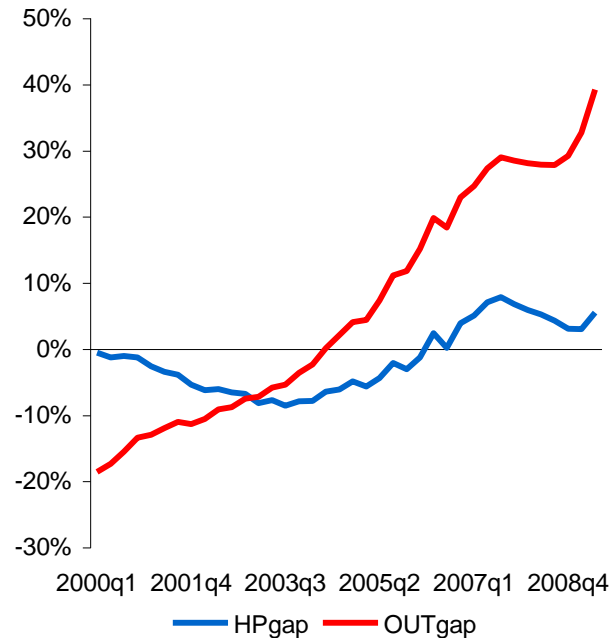
The out-of-sample method: selected results

- the out-of-sample estimation leads to different credit-to-GDP gaps
- Czech Republic does not seem to have been in excessive credit situation in 2009, while Estonia and Latvia do

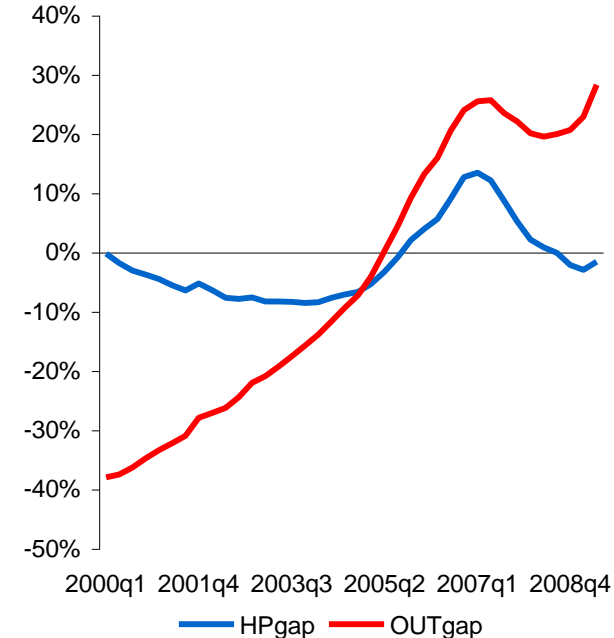
Czech Republic



Estonia



Latvia



The out-of-sample method: implied buffers

- different estimation of „gaps“ lead to different levels of countercyclical capital buffers

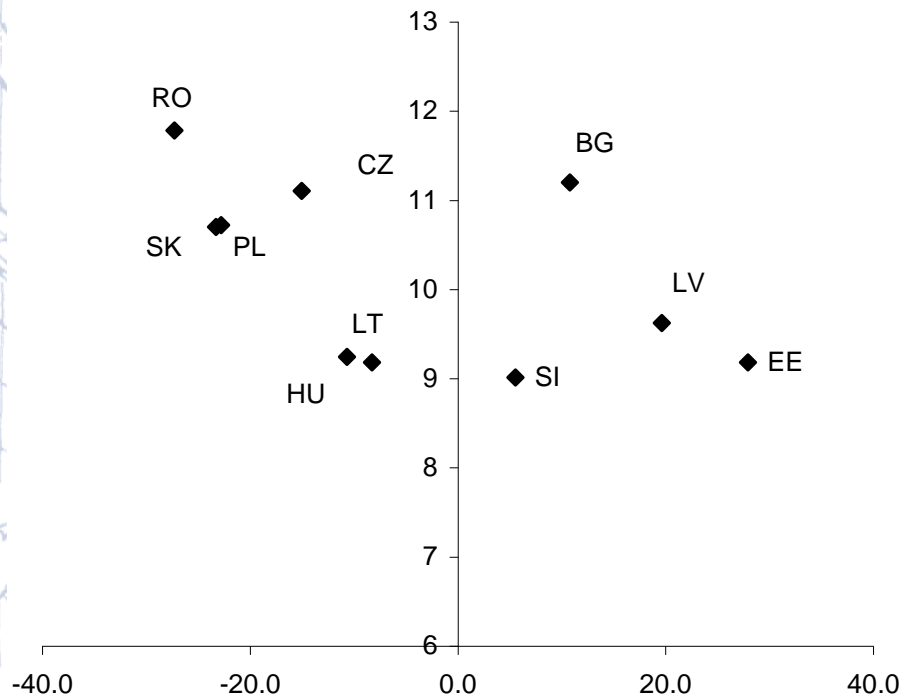
	Credit-to-GDP gap (%)		Countercyclical capital buffer (% of RWA)	
	HP filter	Out-of-sample	HP filter	Out-of-sample
BG	11.4	10.8	2.5	2.5
CZ	9.5	-15.0	2.4	0.0
EE	5.3	27.9	1.0	2.5
LT	6.9	-8.3	1.5	0.0
LV	1.0	19.6	0.0	2.5
HU	-1.4	-10.7	0.0	0.0
PL	3.0	-23.3	0.3	0.0
RO	6.1	-27.3	1.3	0.0
SK	6.1	-22.8	1.3	0.0
SI	5.4	5.5	1.1	1.1

Source: authors' calculations

Countries above equilibrium credit

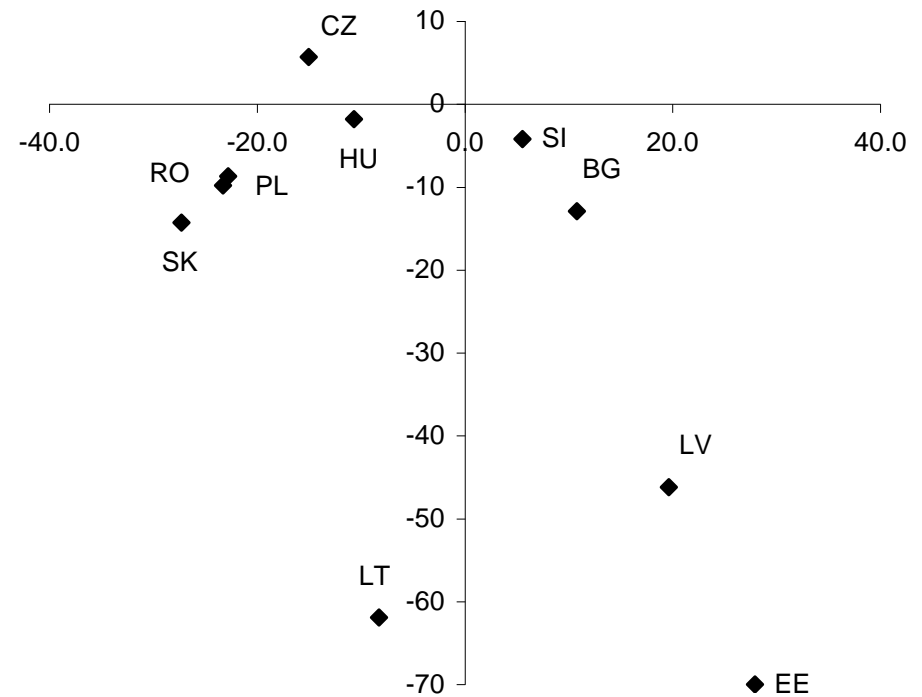
- countries above equilibrium credit show low high Tier 1 capital ratios (except BG); should be the other way round!
- some of them experienced huge bank losses during 2009

Credit-to-GDP gap via out-of-sample and Tier 1 ratio in 2008
(gap in pps; Tier 1 capital ratio in 2008)



Source: IMF, authors' calculations

Credit-to-GDP gap via out-of-sample and change in RoE
(gap in pps; change in RoE of banking sector in pps)



Source: IMF, authors' calculations

Key references

- **Gerstl, A., Seidler, J. (2011):** *Credit Growth and Capital Buffers: Empirical Evidence from Central and Eastern European Countries.* CNB Research and Policy Note 2/2011.
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- **Kiss, G., Nagy, M. and Vonnák, B. (2006):** *Credit Growth in Central and Eastern Europe: Convergence or Boom?* MNB Working Papers 2006/10, Magyar Nemzeti Bank (The Central Bank of Hungary).

Thank you for your attention!

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