



Fiscal and Monetary Institutions of CESEE countries

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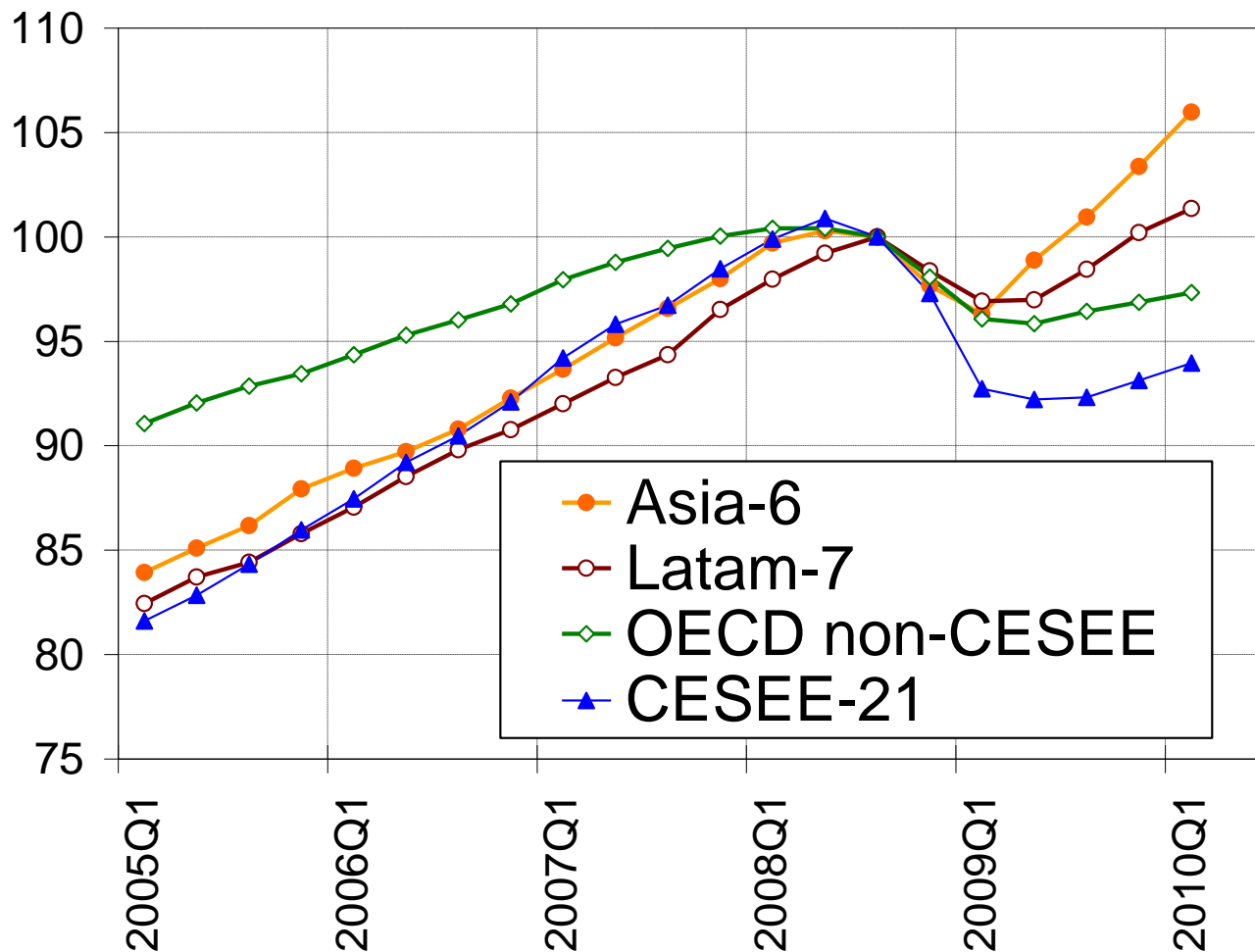


Outline

- Goal: identify the major institutional determinants of macro-economic stability and aggregate budgetary control in CESEE countries
- Macro-economic stability and budgetary outcomes
- Fiscal institutions, budgetary control, discretionary fiscal policy
- Monetary institutions, exchange rate regimes, bank regulation/supervision, central bank transparency, exchange rate overvaluation
- Econometric analysis: explaining macro-economic stability and budgetary control with monetary and fiscal institutions

CESEE countries grew fast before the crisis, but have been hit hard, and recovery is slow

GDP, 2008 quarter 3 = 100



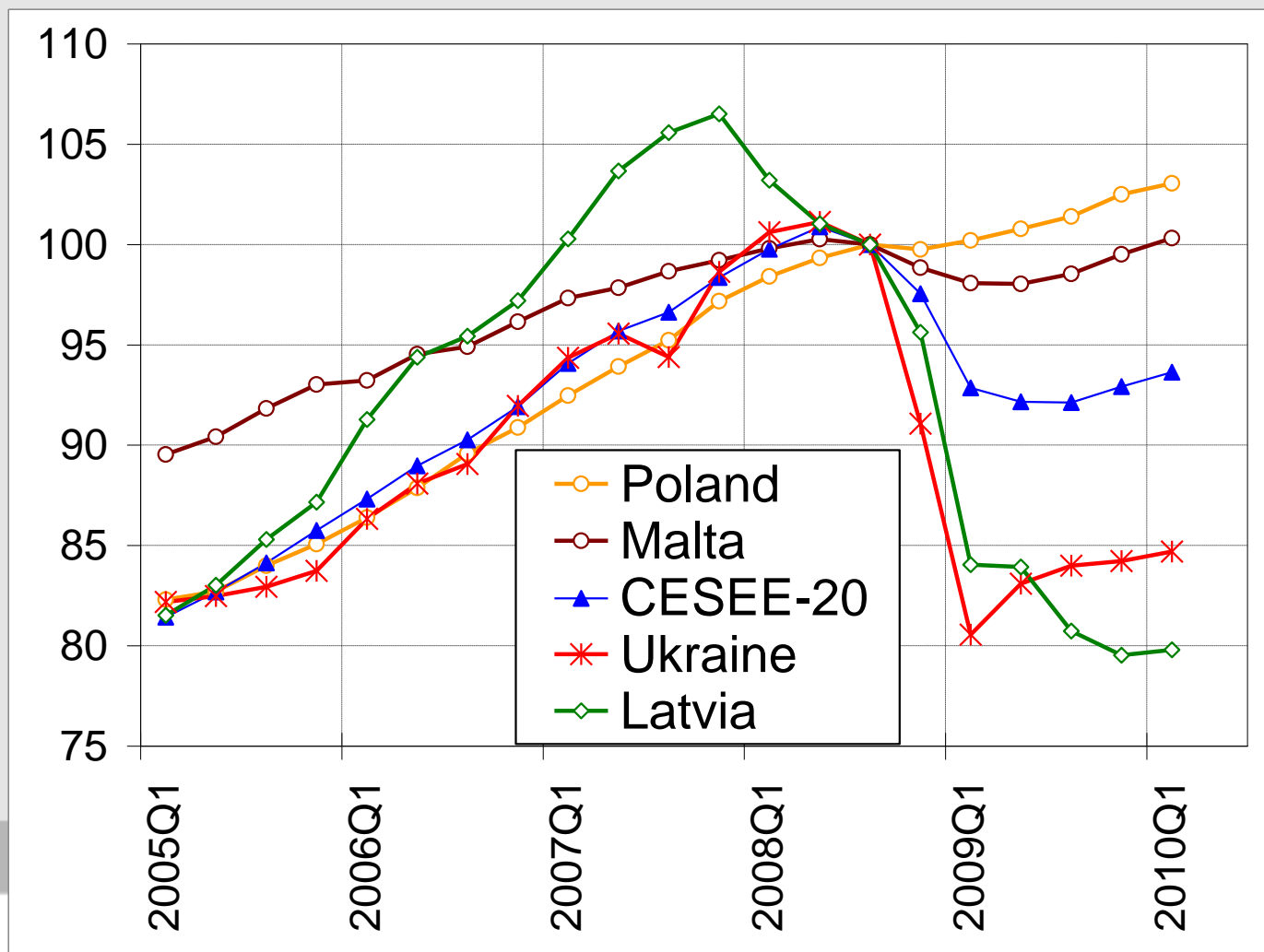
Asia-6: Indonesia, Korea, Malaysia, Philippines, Taiwan and Thailand

Latam-7: Argentina, Brazil, Chile, Columbia, Ecuador, Mexico and Peru

CESEE-21: Armenia, Belarus, Bulgaria, Croatia, Czech Republic, Cyprus, Estonia, Georgia, Hungary, Latvia, Lithuania, Malta, Moldova, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Turkey and Ukraine

Also, huge diversity within CESEE

GDP, 2008 quarter 3 = 100





Why CESEE have been hit hard?

Why diversity within CESEE?

- CESEE: unique development model that relied on trade and especially deep financial integration
- CESEE: larger net financial inflows than elsewhere, current account deficits
- Asia & Latin America: switch to a different model in the aftermath of the crises in late 1990/early 2000s: current account surplus or balance
- Yet CESEE is not a homogenous block, and the same framework has led to quite different outcomes. Role of fiscal and monetary institutions?



Macro-economic stability

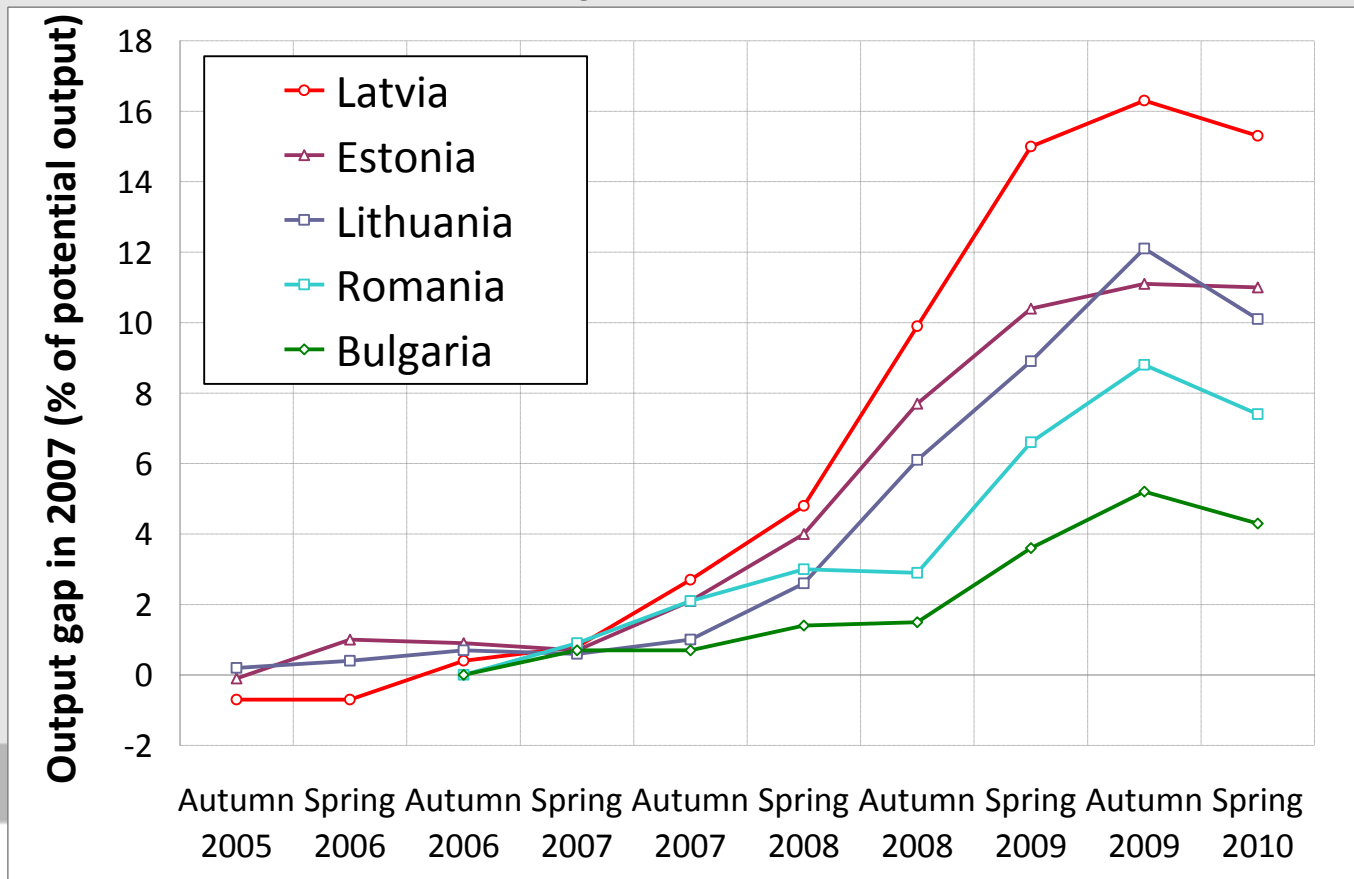
- The crisis should be included in the sample, because the seemingly fast and smooth growth before the crisis has led to vulnerabilities in several CESEE, which eventually resulted in huge output falls and slow recoveries so far
- Ideally, macro-stability should be measured as the volatility of the deviation from potential output...
- ... but measures of potential output are uncertain especially for countries like CESEE and at the time of the global crisis (see some examples in the next slide)
- Alternative measures:
 - Volatility of GDP growth rates in 2000-2010
 - Output decline in 2009 (a 'tail' event)



Large revisions in potential output calculations

The 2007 output gap as seen at different dates

E.g. the Autumn 2005 values show the 2007 forecast output gaps made in late 2005; the Spring 2010 values show the 2010 estimates for the 2007 output gaps



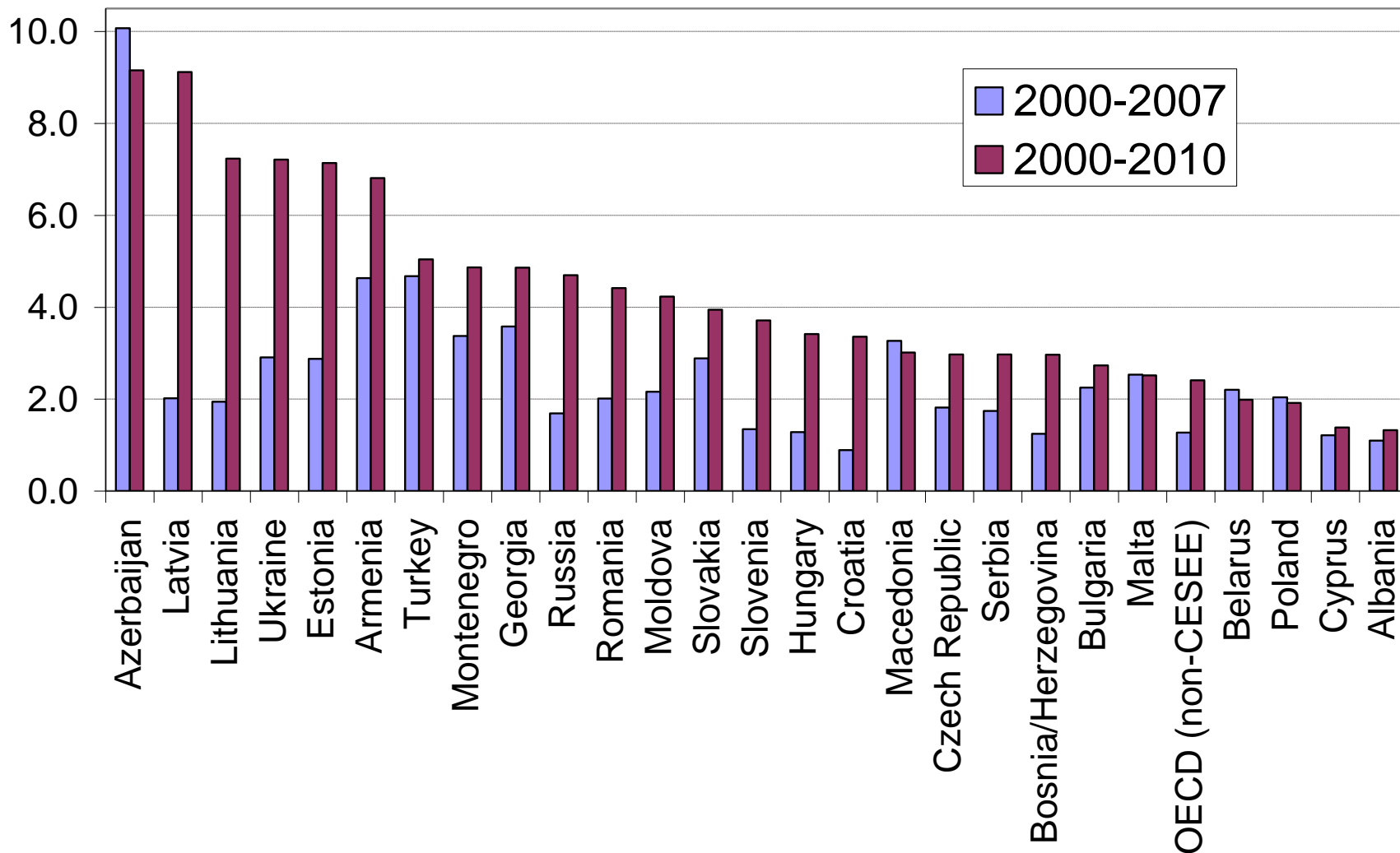
Source: European Commission forecasts



Volatility is generally higher in CESEE than in OECD

Increase in volatility from 2000-2007 to 2000-2010

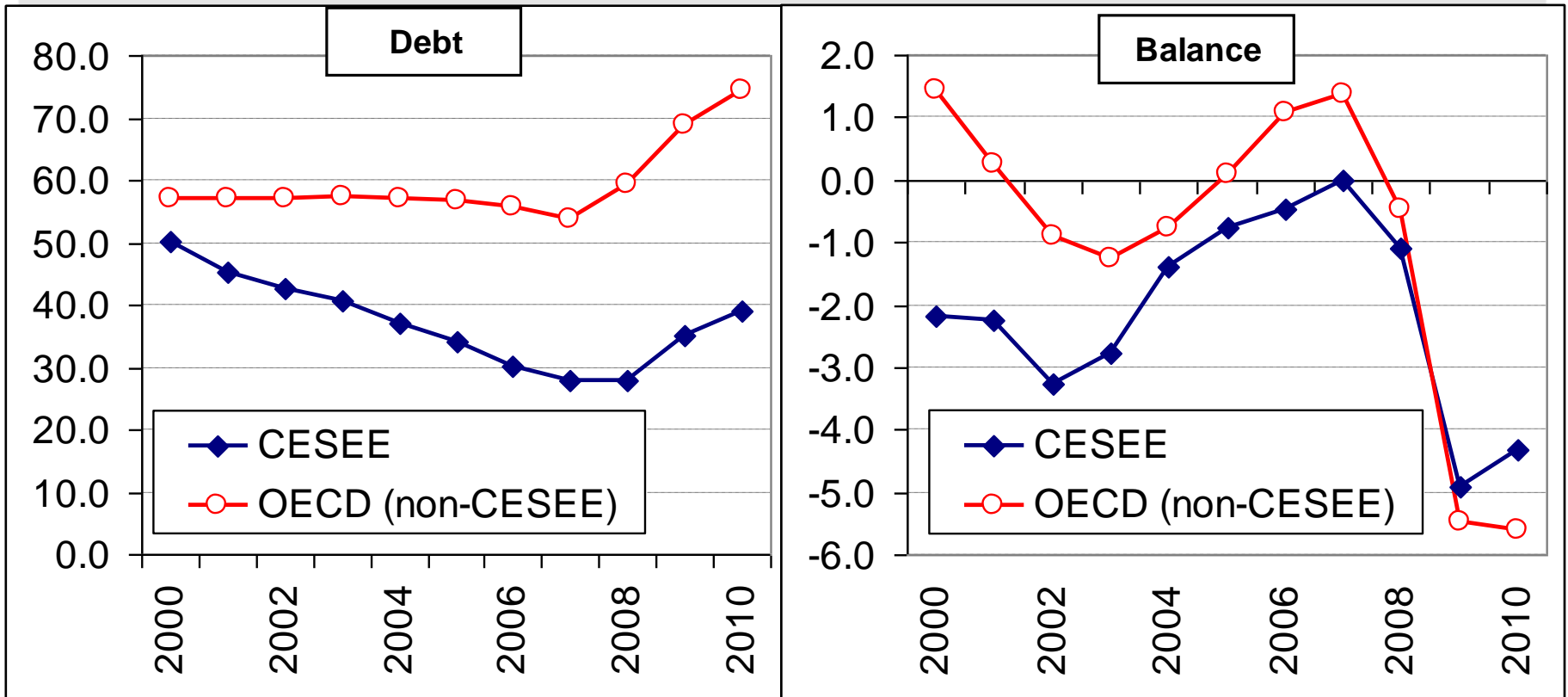
Standard deviation of annual GDP growth rates





CESEE fall in debt/GDP, despite larger deficits

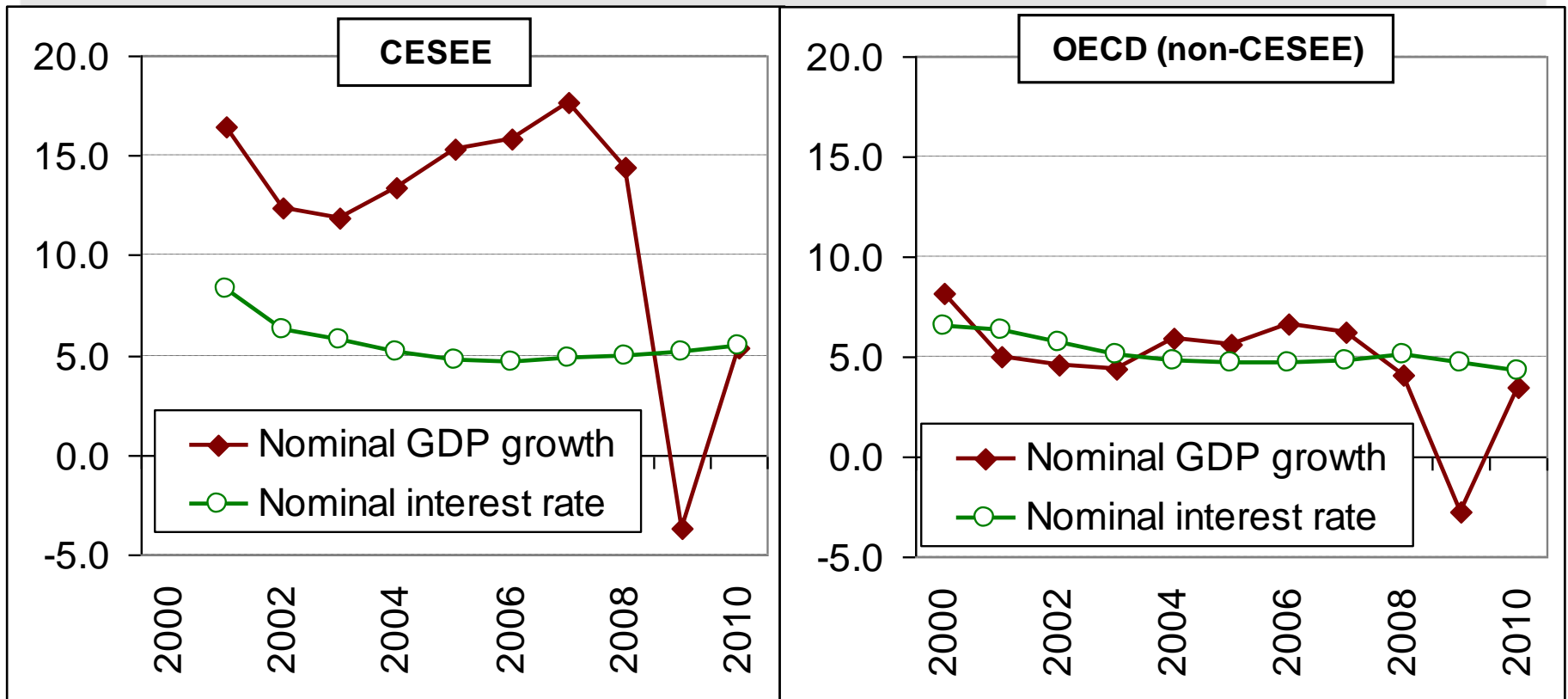
General government balance and gross debt (% GDP), 2000-2010





CESEE: GDP growth was well above the interest before the crisis

Implicit nominal interest rate on government debt and nominal GDP growth (%), 2000-2010



Note. Interest rate=government interest expenditures/previous year gross debt



Fiscal institutions



Budgetary Discipline Index

Sources :

1. OECD budget reviews
2. OECD International Database of Budget Practices and Procedures (2007/2008)

Snapshot of the situation between **2007** and **2008**

It doesn't reflect emerging trends or reforms occurred since 2008 and the general economic slowdown. For instance, all the progress achieved in such countries as Hungary is not reflected.



Construction of the Fiscal Discipline Index 1

	Index	Sub index	Numerical Coding
Budget preparation	0.5		
Fiscal rules		0.5	
Expenditure and debt rules			4.00
Budget nominal balance and debt rules			2.67
Debt rule			1.33
None			0.00
Medium Term Expenditure Framework		0.25	
Binding ceilings are decided at the start of budget preparation			4.00
No framework or ceilings are not binding during budget preparation ("targets")			0.00
Multi-annual expenditure estimates		0.25	
Multi-annual line item estimates based on current policy are updated several times per year			4.00
Multi-annual line item estimates based on current policy are available at the start of the budget preparation			2.00
There are no multi-annual line item estimates based on current policy			0.00

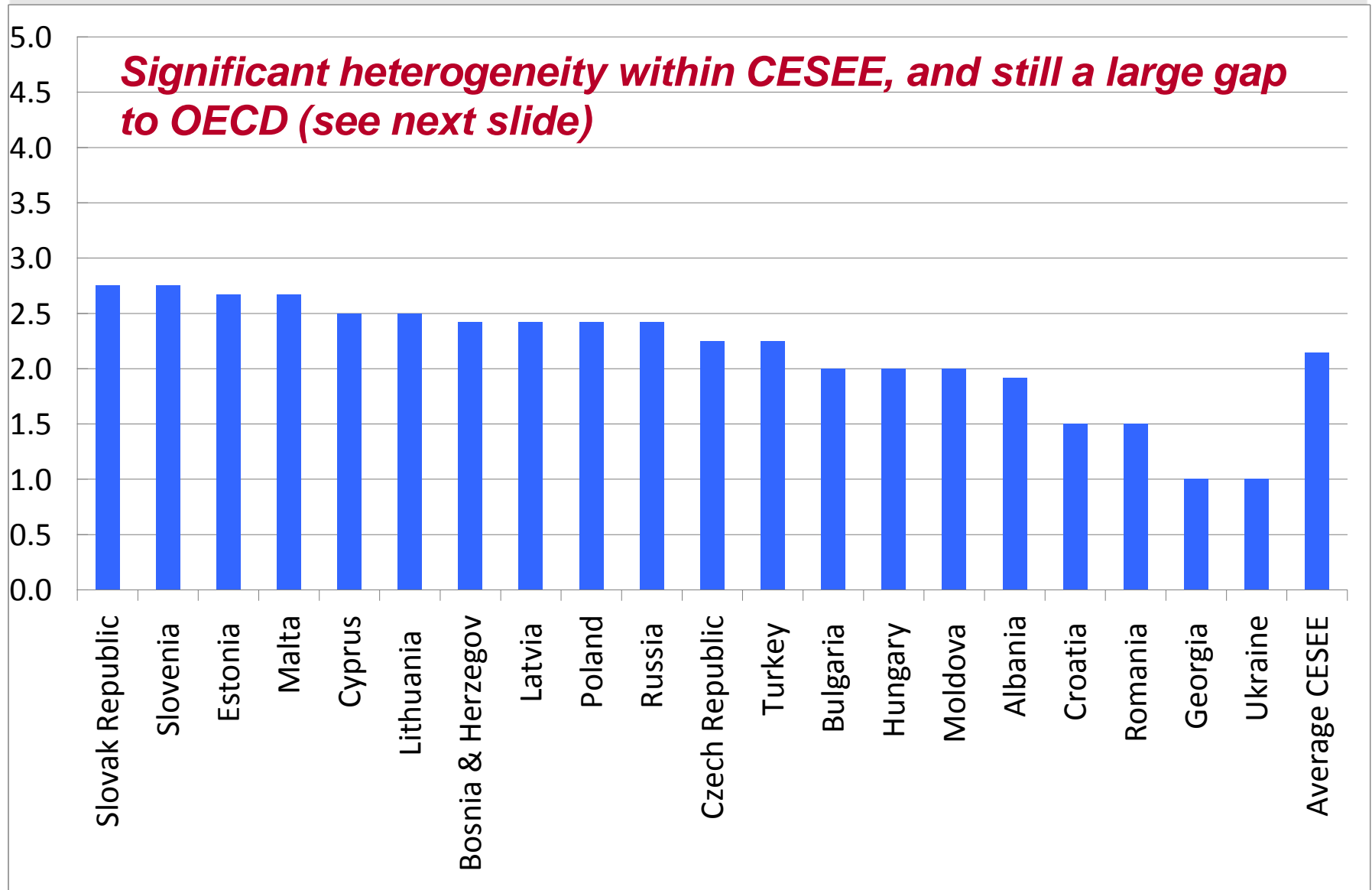


Construction of the Fiscal Discipline Index 2

	Index	Sub index	Numerical Coding
Legislation	0.25		
Constraint on Parliament to amend the budget bill		0.5	
Amendments leading to spending increases or decreases of tax revenue are required to be offset by savings or tax increases			4.00
No restrictions			0.00
Fiscal Council		0.5	
There is a fiscal council to assess fiscal policies independently			4.00
No fiscal council			0.00
Implementation	0.25		
Carryover of unused funds to next fiscal year		0.5	
Allowed within certain limits with authorisation of the MoF			4.00
Not permitted or allowed within certain limits without authorisation of the MoF			2.00
Unlimited			0.00
Quality of external audit		0.5	
Financial and performance audit with detailed scrutiny completed by strong mechanisms for follow up measures			4.00
Focus on financial audit and/or insufficient use of audit reports			0.00

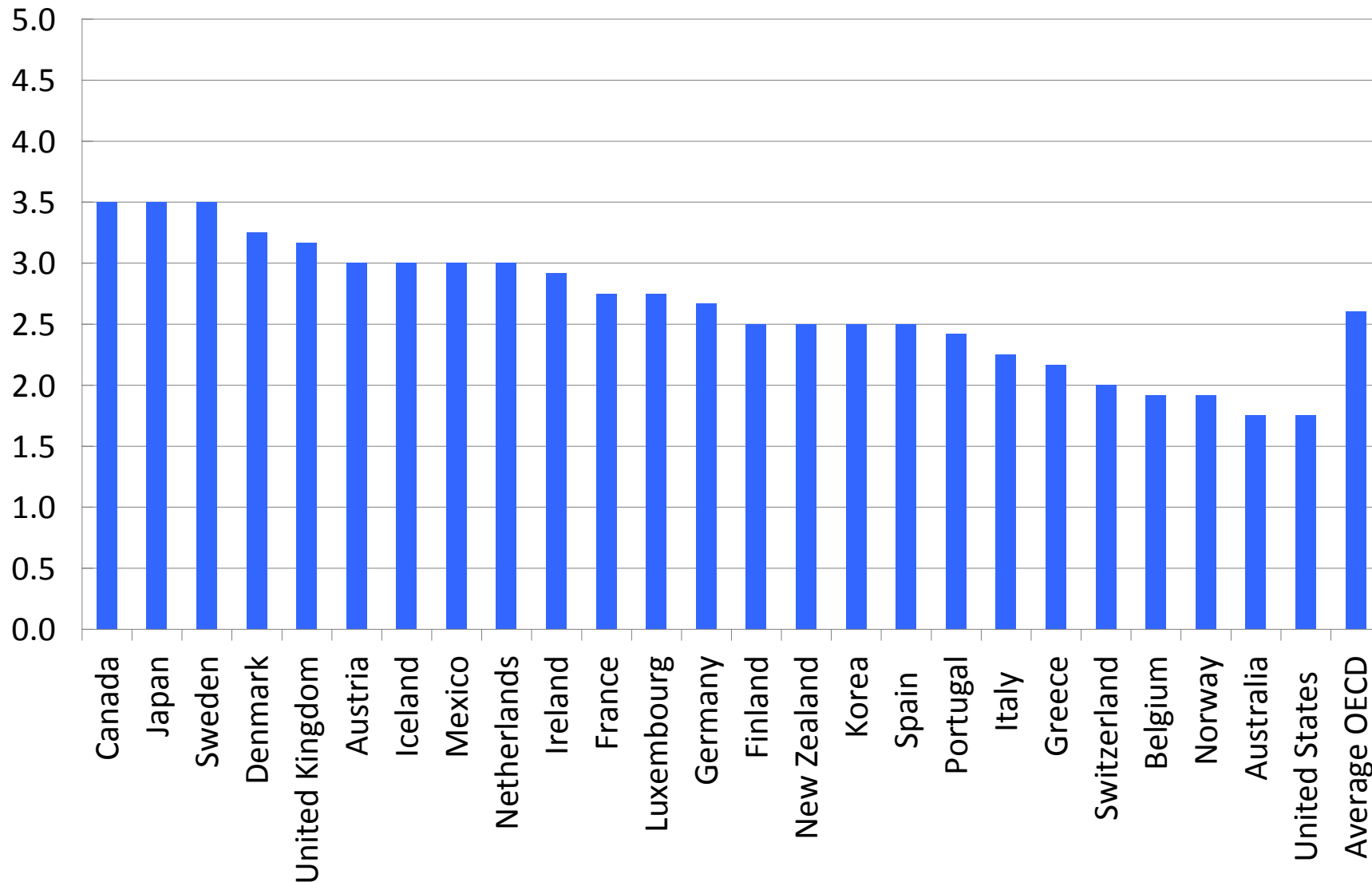


Budgetary Discipline Index for CESEE countries (snapshot 2007/2008)



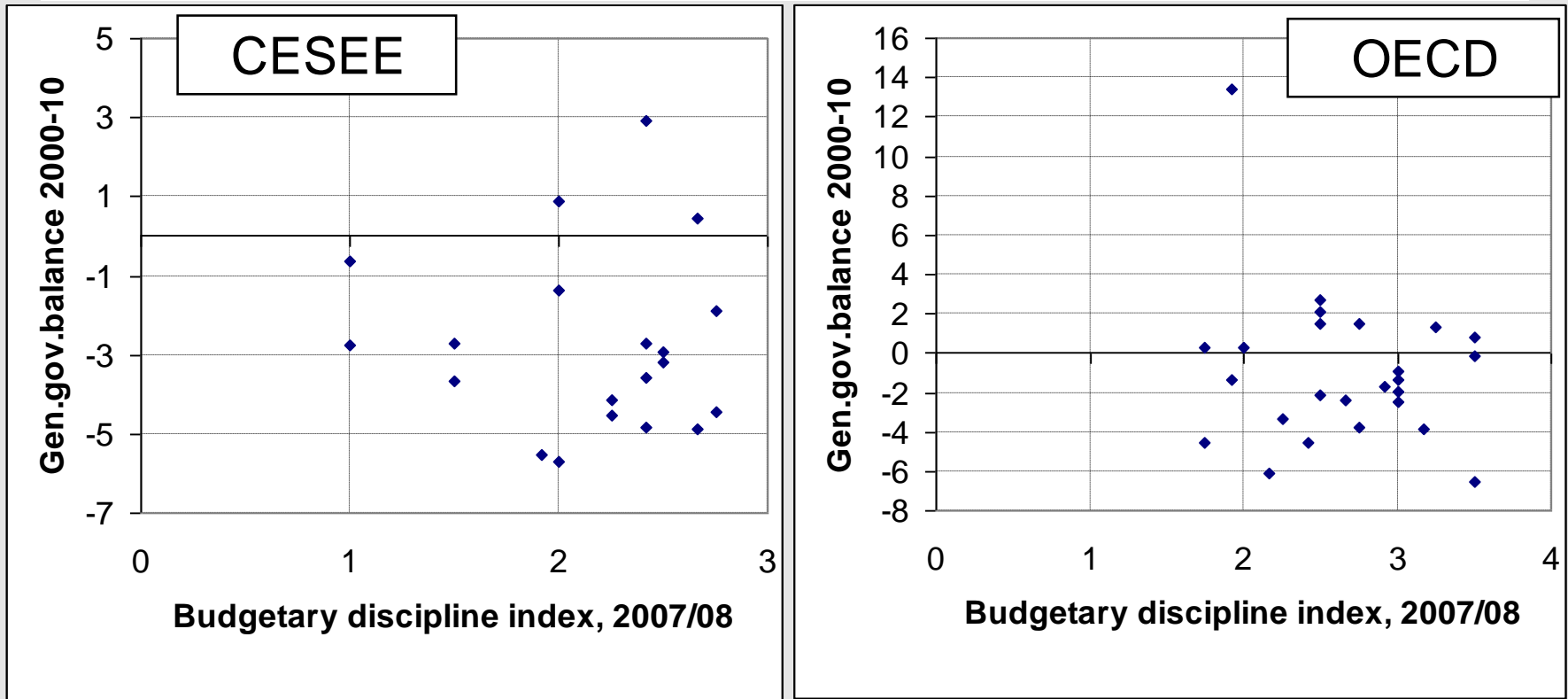


Budgetary Discipline Index for non-CESEE OECD countries (snapshot 2007/2008)



Slightly positive correlation (after the exclusion of Norway) between budgetary discipline and general government balance

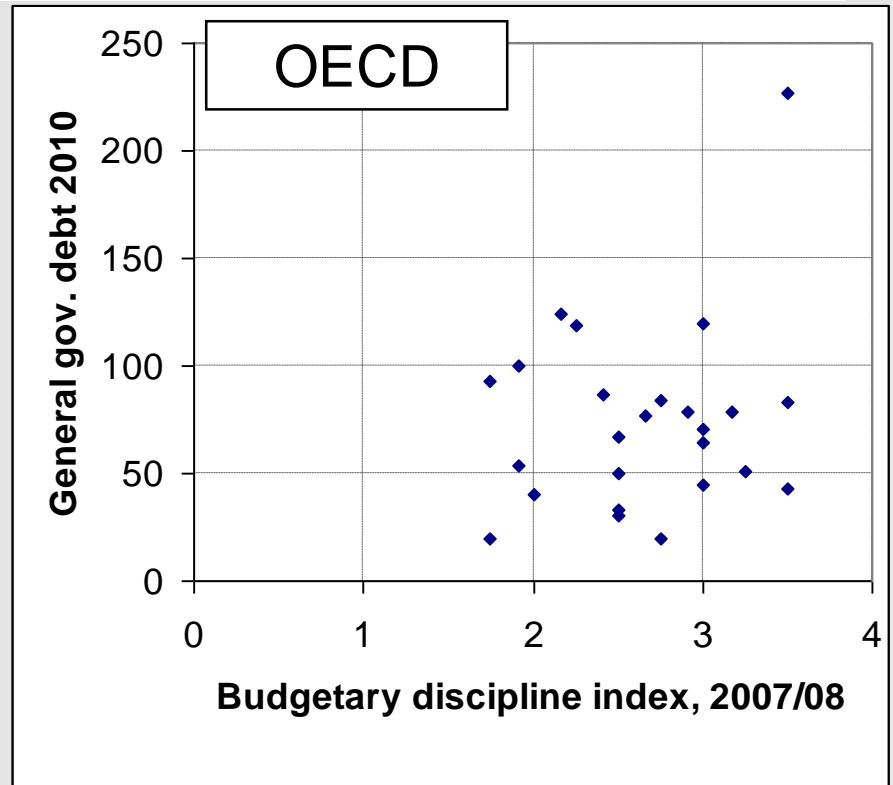
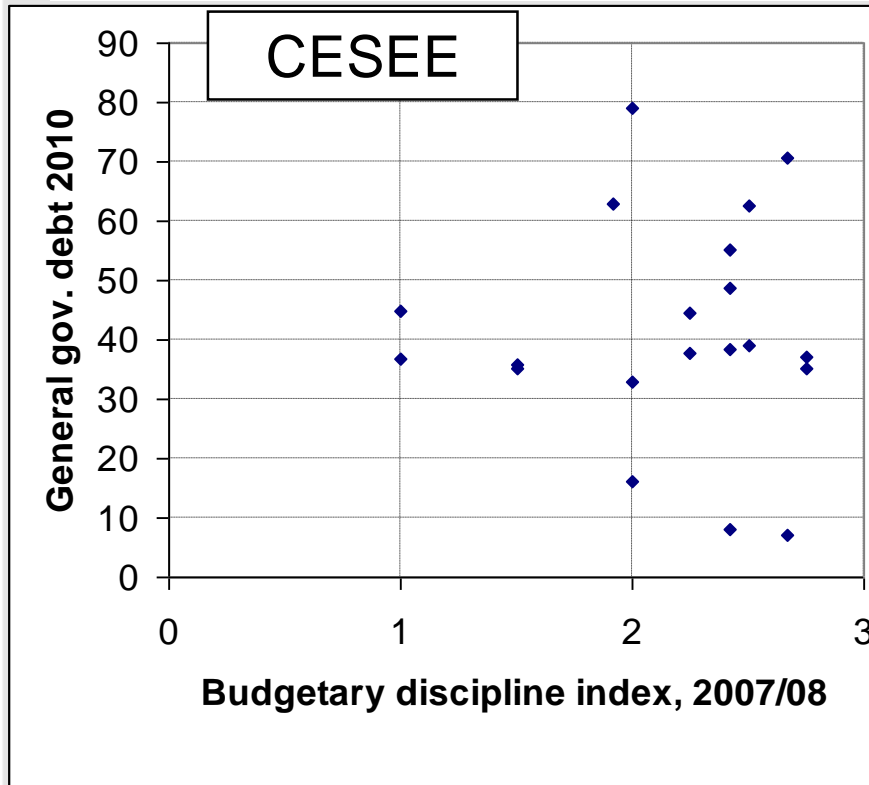
Budgetary discipline vs average budget balance





No correlation between budgetary discipline and general government gross debt

Budgetary discipline vs gen.gov. gross debt





Measuring discretionary fiscal policy

- Fiscal policy consists of three components:
 - automatic stabilizers, which react to the cyclical position of the economy without any government intervention;
 - discretionary fiscal policy that reacts to the state of the economy;
 - discretionary fiscal policy that is implemented for reasons other than current macroeconomic conditions.
- Our interest is in the third one. Method: regress change in government expenditures on GDP and a couple of other controls (next slide)



Measuring discretionary fiscal policy

- Following Fatás and Mihov (2003, QJE):

$$\Delta G_{i,t} = \alpha_i + \beta_i \Delta Y_{i,t} + \gamma_i \Delta G_{i,t-1} + \delta_i' \text{controls}_{i,t} + \varepsilon_{i,t}$$

$\Delta G_{i,t}$: change in government non - interest expenditures

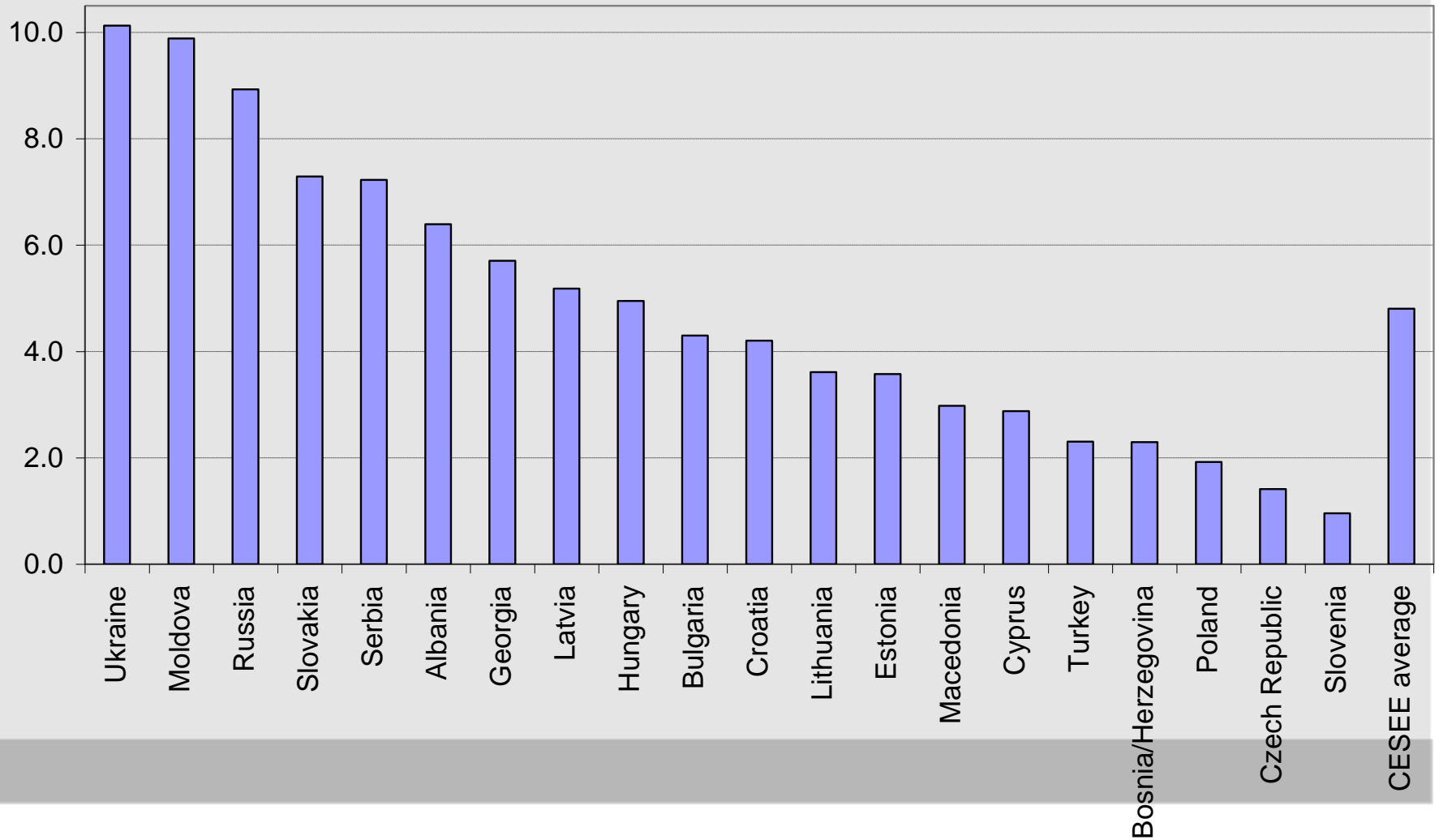
$\Delta Y_{i,t}$: change in output

- Controls: time trend, inflation
- Due to endogeneity output growth is instrumented (lagged variables, terms of trade changes)
- A measure of discr.fisc.pol.: standard deviation of regression residuals



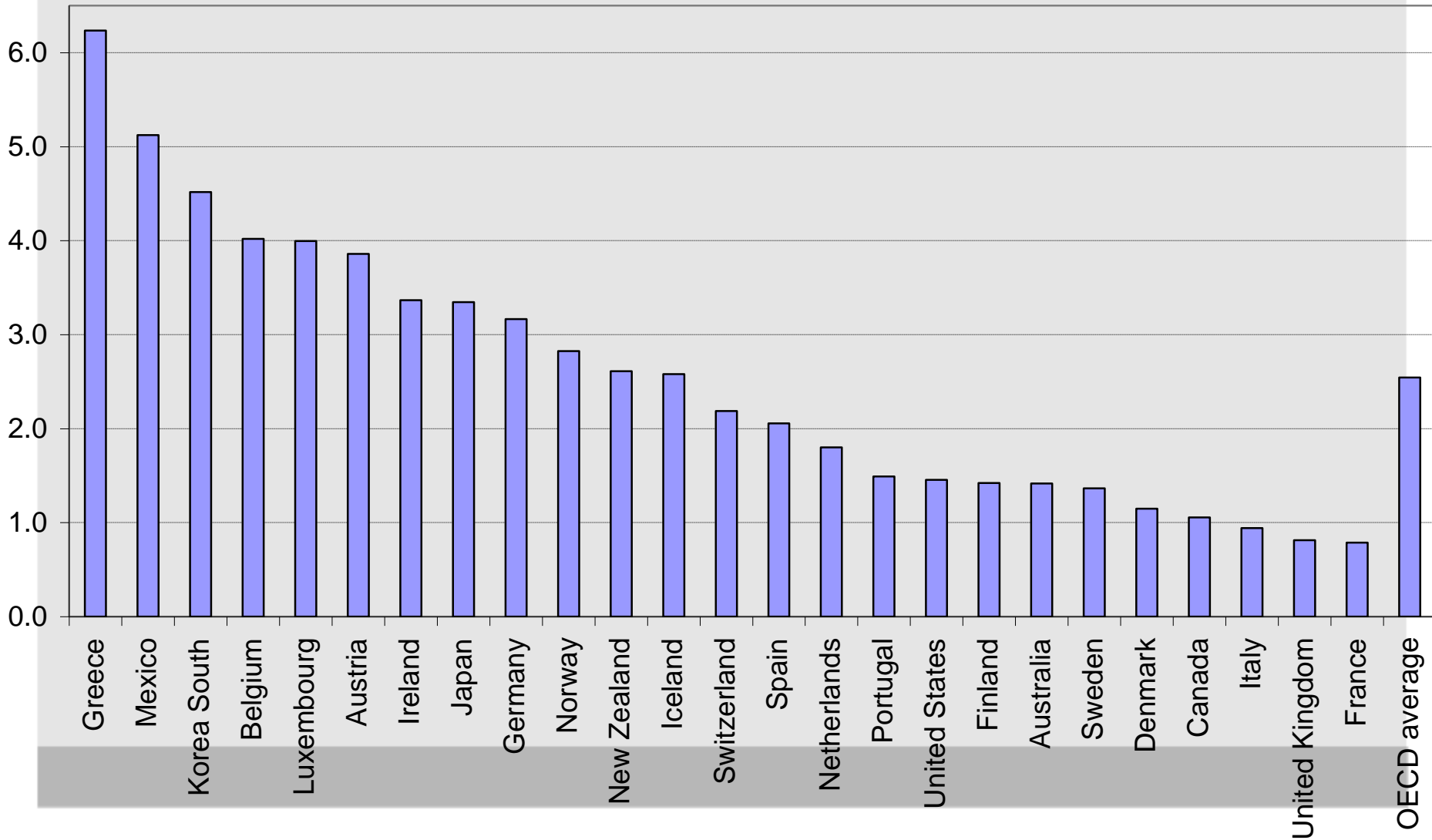
Variability of discretionary fiscal policy in CESEE countries

More volatility in CESEE than in OECD (see next slide)





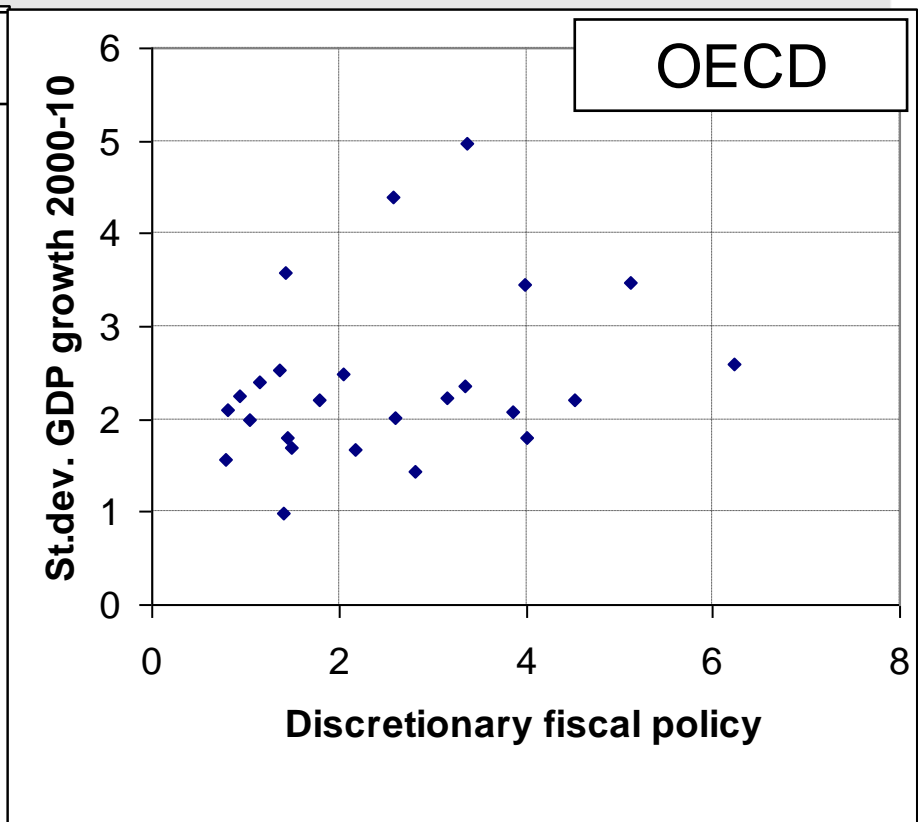
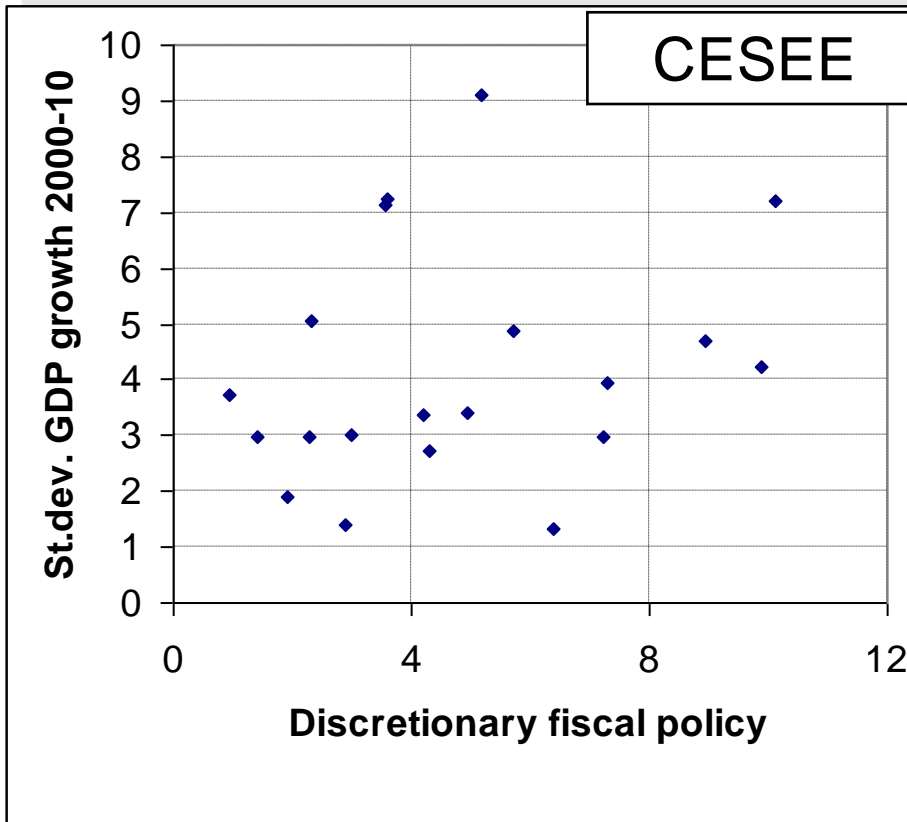
Variability of discretionary fiscal policy in non-CESEE OECD countries





Variability of discretionary fiscal policy versus variability of output

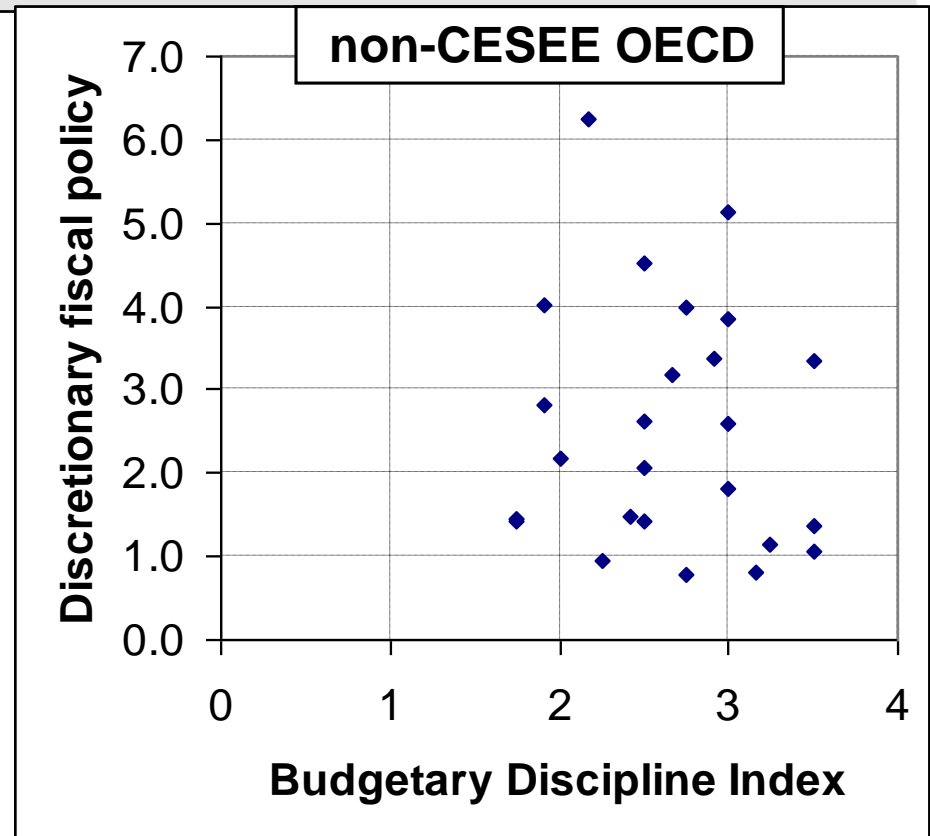
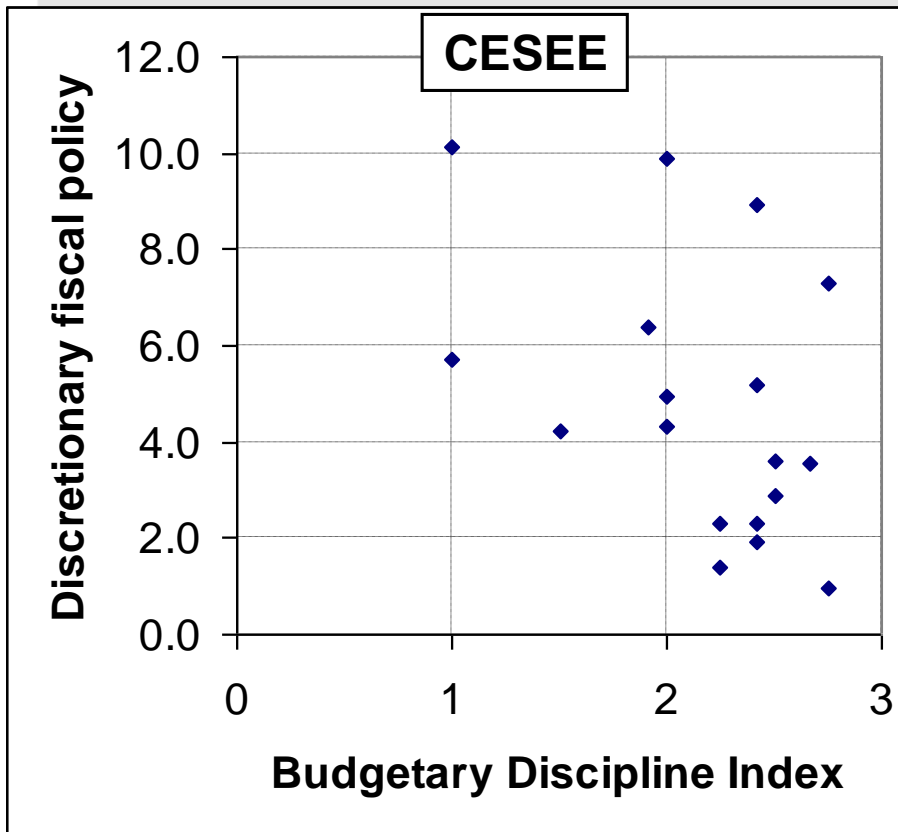
Positive relationship





Budgetary discipline index versus variability of discretionary fiscal policy

Negative relationship = better budgetary institutions indeed proved to constrain that part of discretionary fiscal policy, which is implemented for reasons other than current macroeconomic conditions





Monetary institutions



Large variety in exchange rate regimes 1.

1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009

EU members	Bulgaria	Floating	Currency board, DM	Currency board, EUR									
	Czech Rep.	Band 65% DM, 35% USD	Floating										
		+/- 7.5%											
	Cyprus	ECU/Euro peg							ERM-II, narrow band		Euro		
	Estonia	Currency board to DM				Currency board to EUR		ERM-II, Currency board					
	Hungary	Crawling band, +/- 2.25%, 30% USD &:			Crawling band, EUR +/- 2.25%	EUR band +/- 15%					Floating		
		70% ECU	70% DM	70% EUR									
	Latvia	Peg to SDR, +/- 1%							Peg €	ERM-II +/- 1%			
	Lithuania	Currency board to USD				Currency board to EUR		ERM-II, Currency board					
	Malta	Peg to a basket of ECU/Euro, USD, and GBP							ERM-II, narrow band		Euro		
	Poland	Crawling band 45% USD, 35% DM, 10% GBP, 5% FFR, 5% CHF			55% EUR, 45% USD +/- 12.5%	Floating							
+/- 7%		+/- 10%	+/- 5%										
Romania	Floating												
Slovakia	60% DM, 40% USD band +/- 3% +/- 5%		Floating					ERM-II +/- 15%, de facto float with revaluations		Euro			
	+7%												
Slovenia	Managed floating, de facto peg or crawling peg to DM/Euro						ERM-II narrow band		Euro				



Large variety in exchange rate regimes 2.

1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009

EU candidates	Albania	Floating (1992.07. -)												
	Bosnia and Hercegovina	Currency board to DM			Currency board to Euro									
	Croatia	Managed floating			Managed foating, de facto peg to EUR									
	Macedonia, FYR	de facto peg to the DM/EUR												
	Montenegro	Peg DM				Euroization								
	Serbia	Peg DM				Managed floating								
	Turkey	Crawling peg to a basked			Peg to a basket		Floating							
Neighbourhood	Azerbaijan	Peg to USD									Crawling peg		Euro-dollar basket	
	Armenia	Floating												
	Belarus	Peg to USD				Crawling band/managed against the RUB, later USD as well						Basket		
	Moldova	Peg to USD									Managed floating			
	Russia	USD		Floating										
	Ukraine	Peg or de facto peg to USD											Floating	

	Peg/band to USD		Peg/band to a basket		Peg/band to DM/Euro		ERM-II		Euro		Float
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Large variety in exchange rate regimes 3.

- Sometimes even countries with similar circumstances often opted for different regimes, e.g.
 - Czech Republic (float) and Slovakia (euro),
 - Romania (float) and Bulgaria (currency boards),
 - Serbia and Albania (float) and the other four western Balkan countries (various kinds of fixed exchange rates)
- Disappearance of intermediate regimes
- Even neighbourhood countries move away from US dollar pegs



The role of exchange rate regimes

	GDP volatility	CA/GDP (%) 2008	Inflation 2008	Credit/GD P (%) Change from 2004 to 2008	FDI to finance and real estate sectors (% of total FDI), 2007
Floater	3.7	-7.8	7.8	20	26
Fixer	4.7	-12.3	11.1	36	40

Fixers: Higher volatility, more external deficits, higher inflation, more credit, more FDI in finance and real estate (FIRE) sectors; also deeper crisis

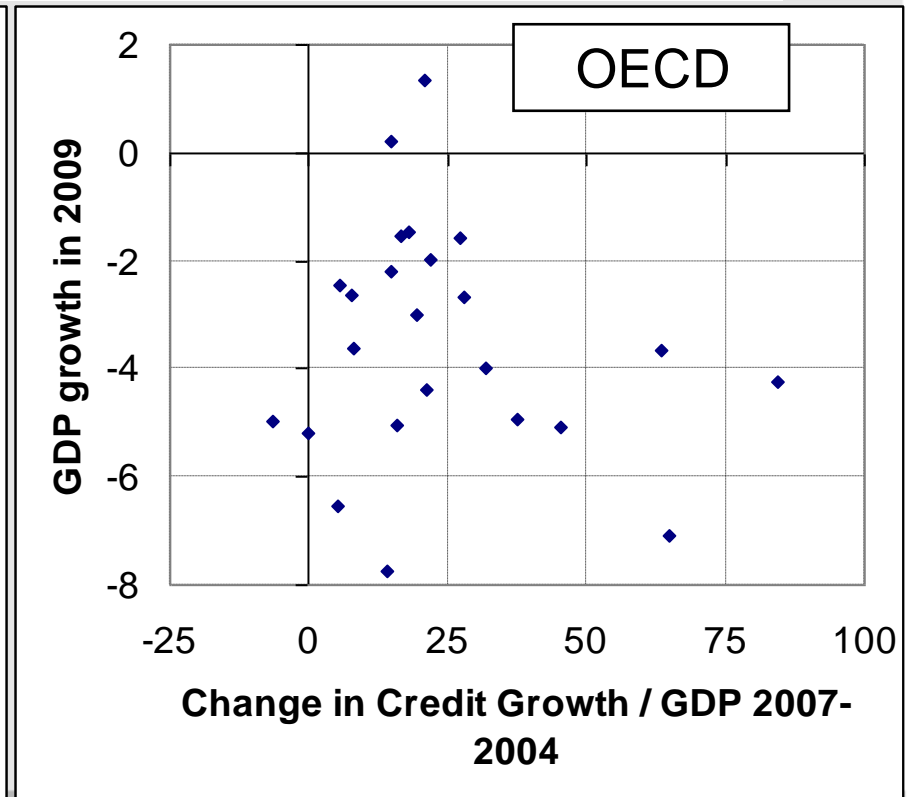
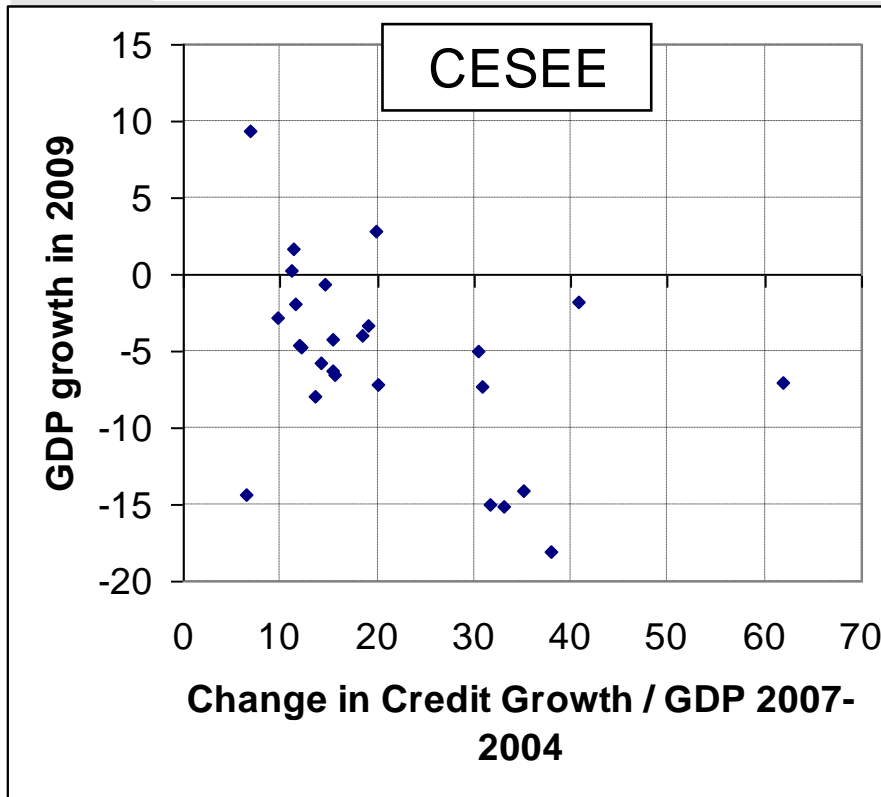
The speed of pre-crisis credit growth strongly correlates with the crisis response (see next slides)



Strong negative correlation between pre-crisis credit growth and 2009 output growth in CESEE

Weaker relation in non-CESEE OECD

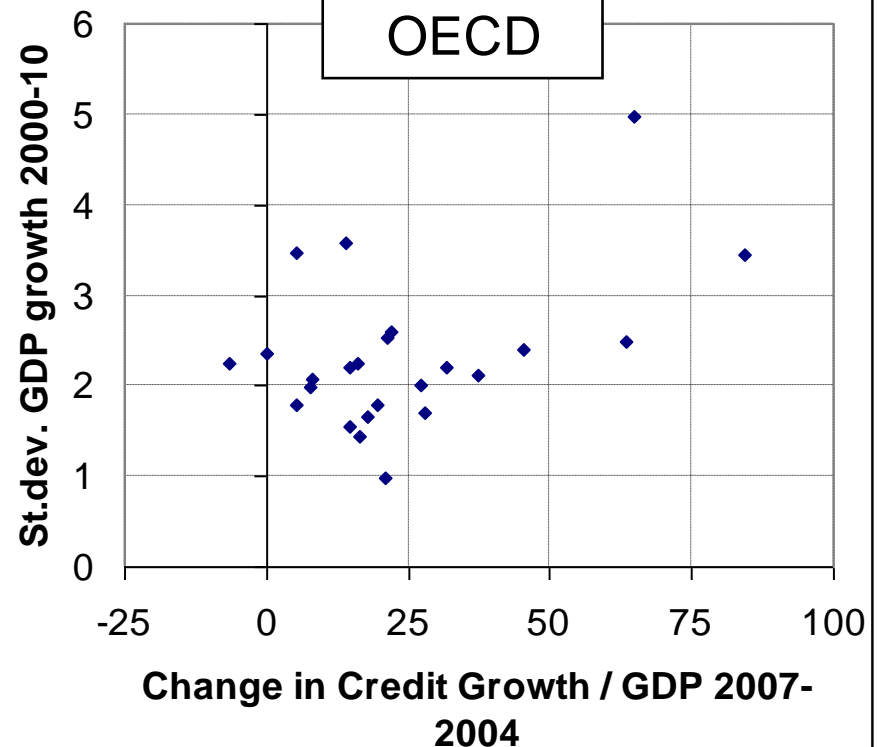
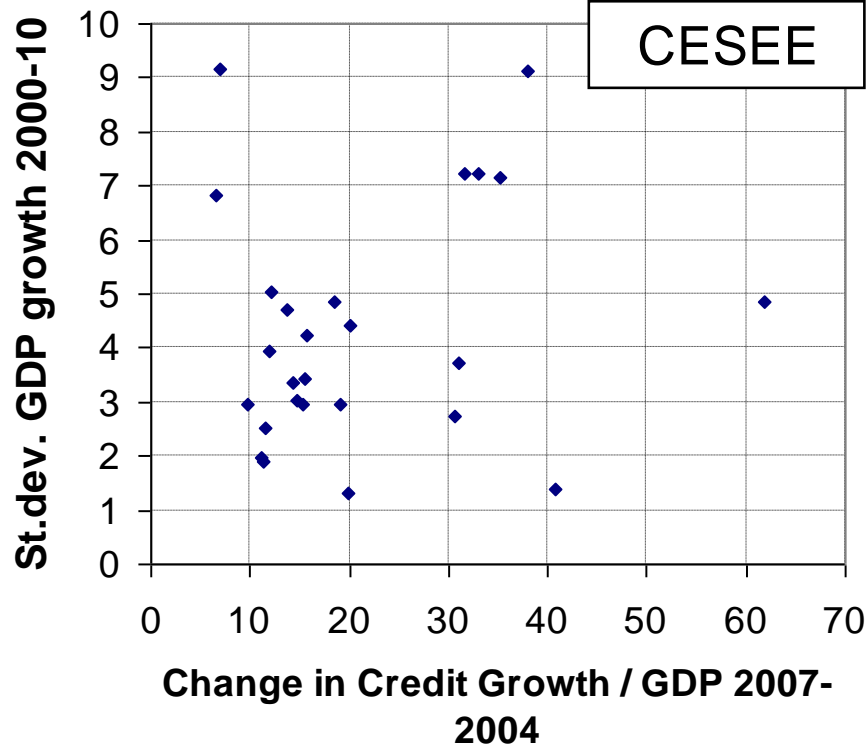
Credit growth in 2004-07 vs GDP growth in 2009





Somewhat positive correlation between pre-crisis credit growth and volatility of GDP growth

Credit growth in 2004-07 vs GDP volatility

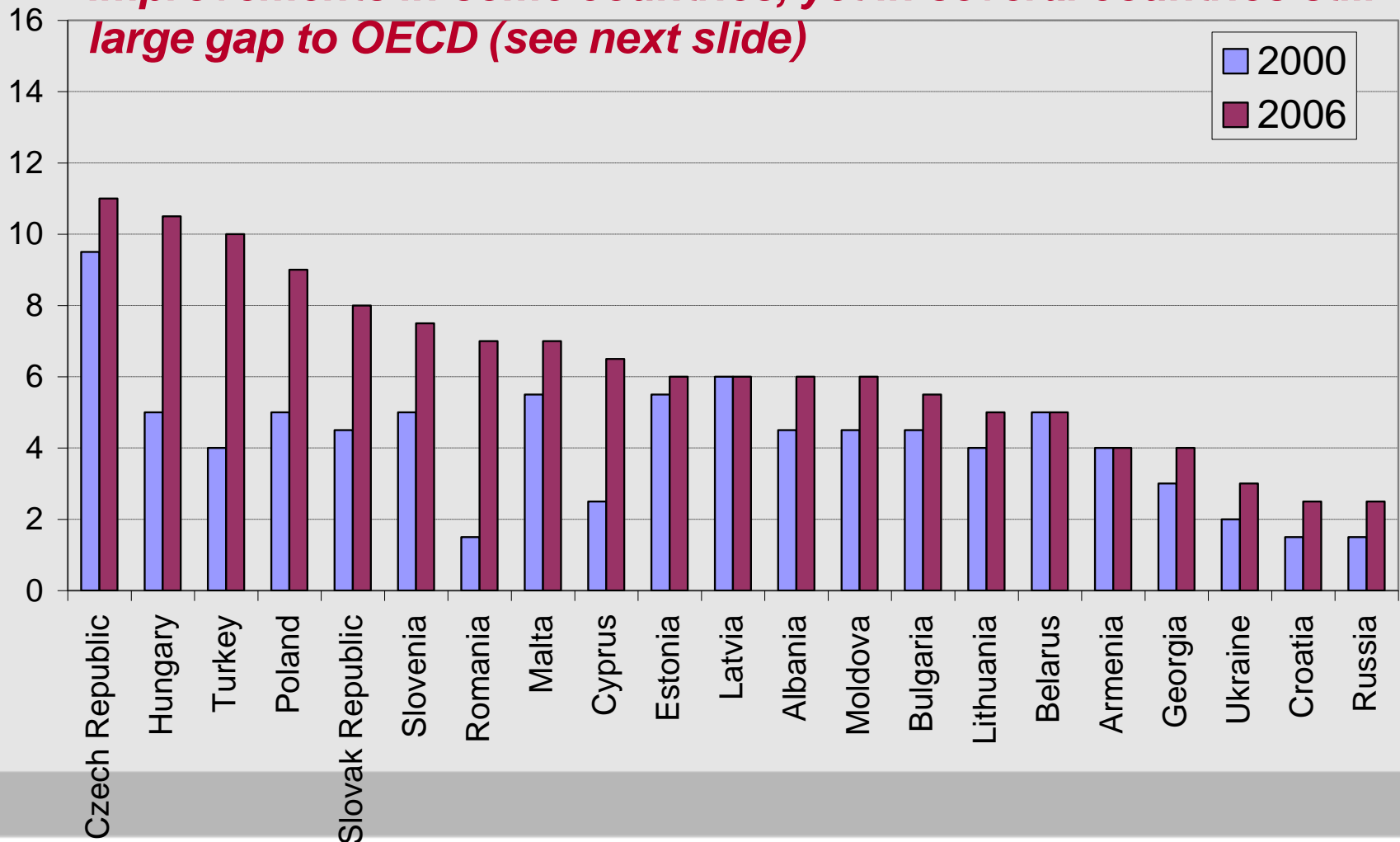




Central bank transparency in CESEE

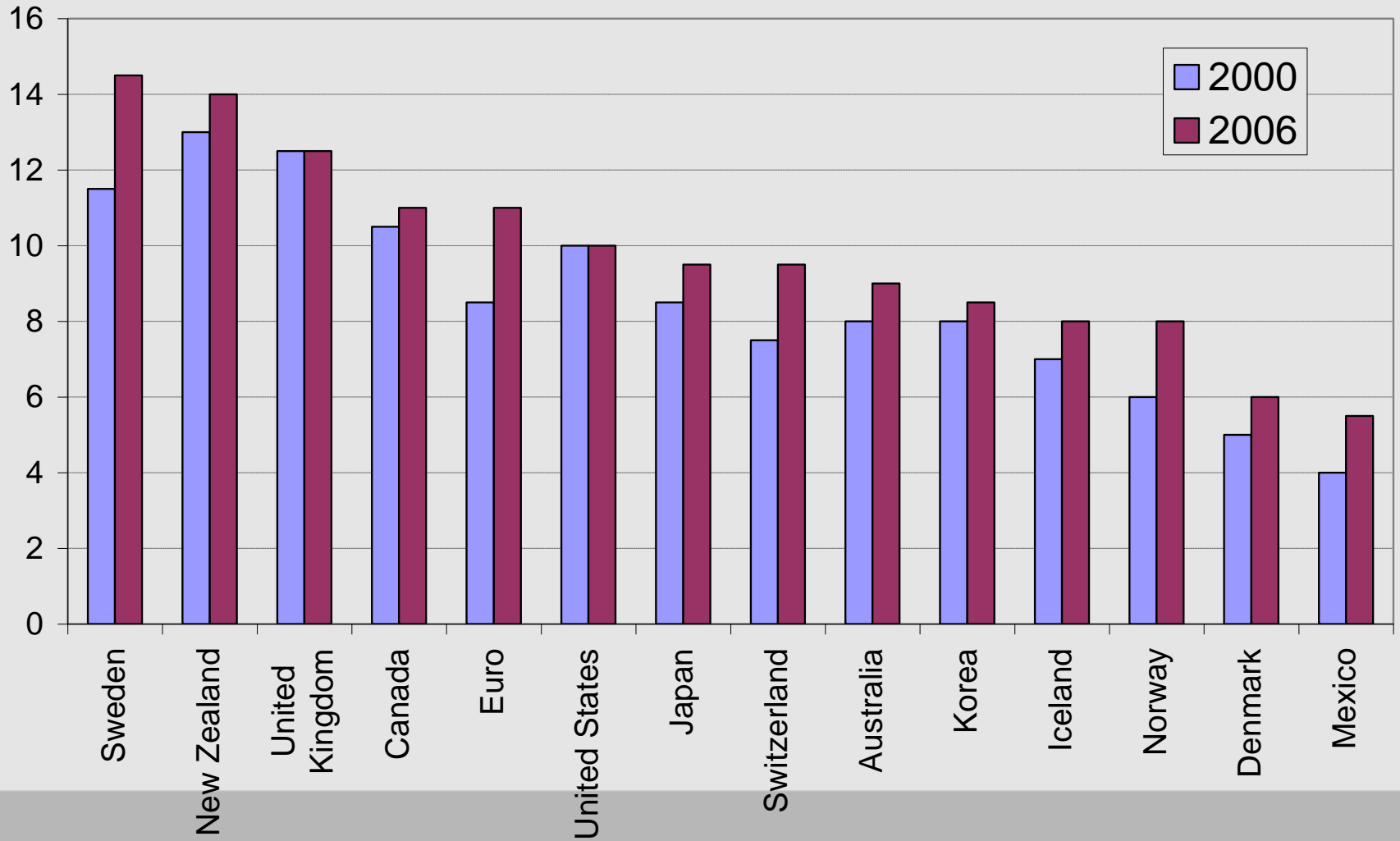
Transparency can be a proxy for institutional quality

Improvements in some countries, yet in several countries still large gap to OECD (see next slide)





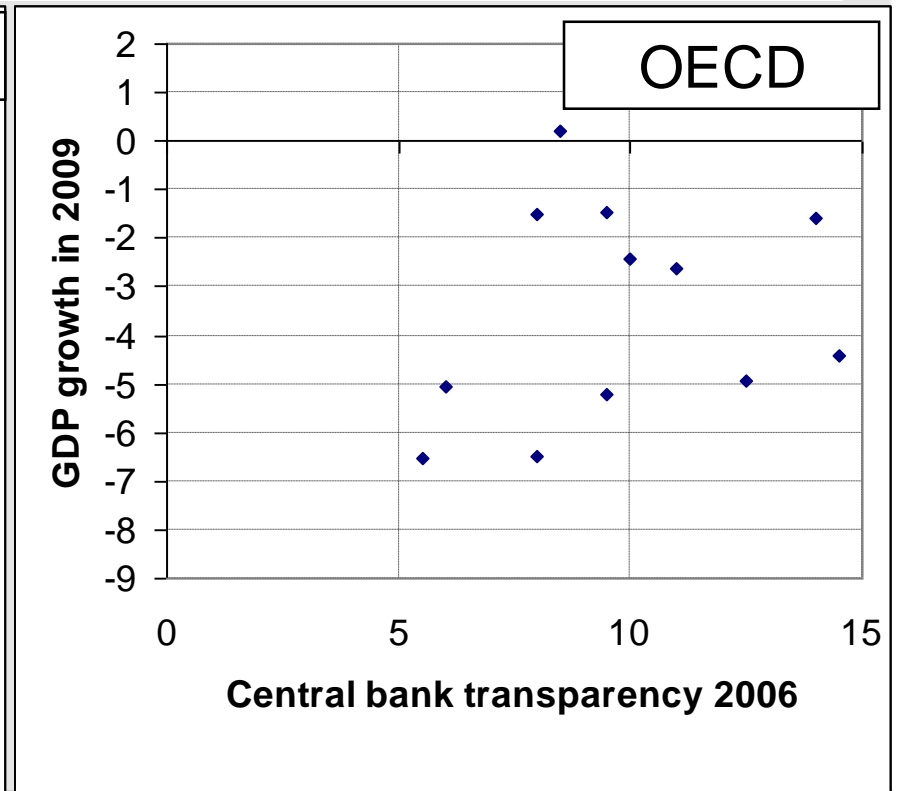
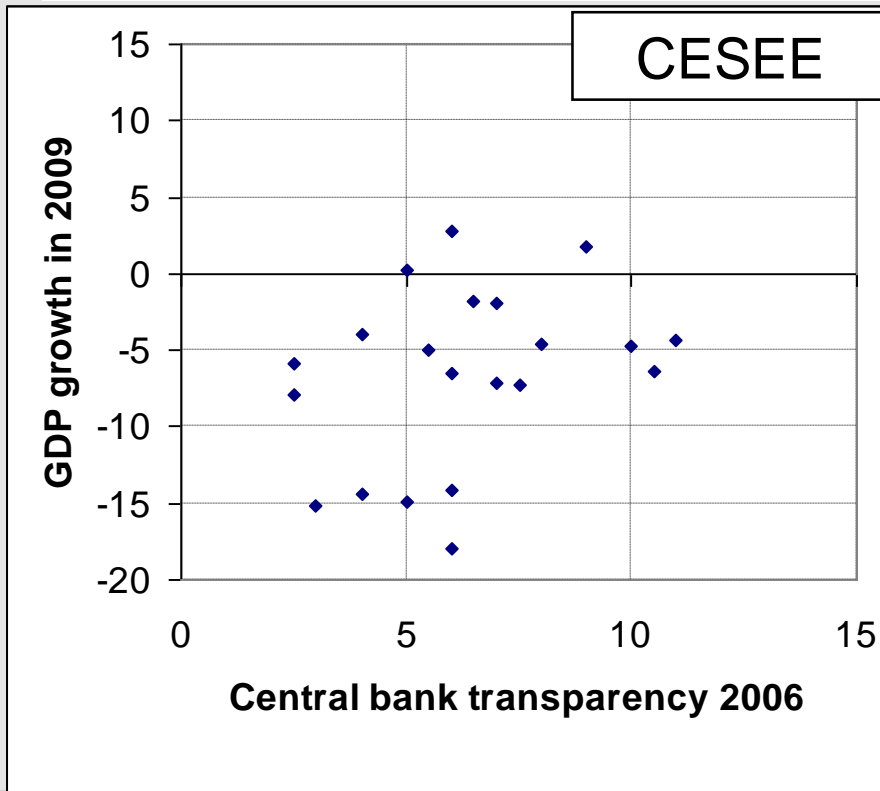
Central bank transparency in non-CESEE OECD





Positive correlation between central bank transparency and 2009 output growth

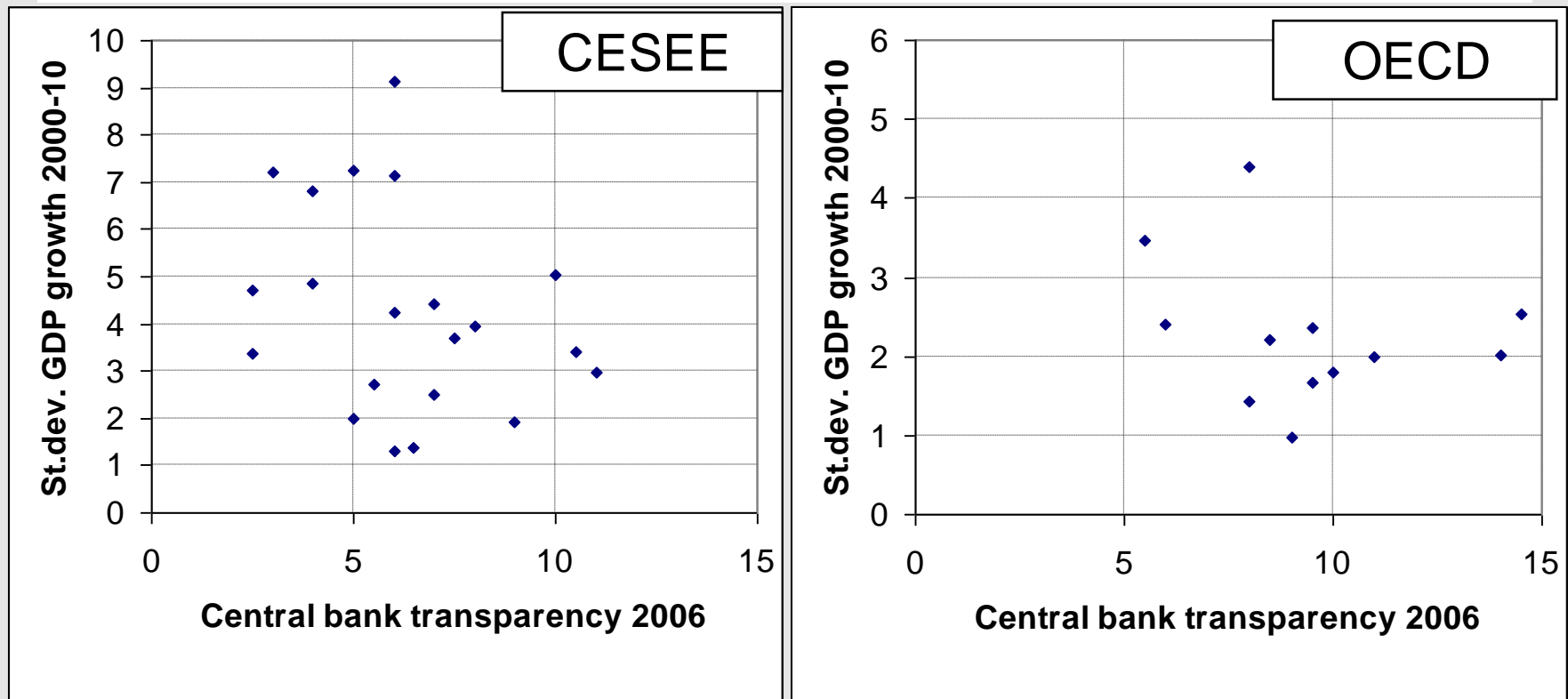
Central bank transparency vs GDP growth in 2009





Negative correlation between central bank transparency and output volatility

Central bank transparency vs GDP volatility





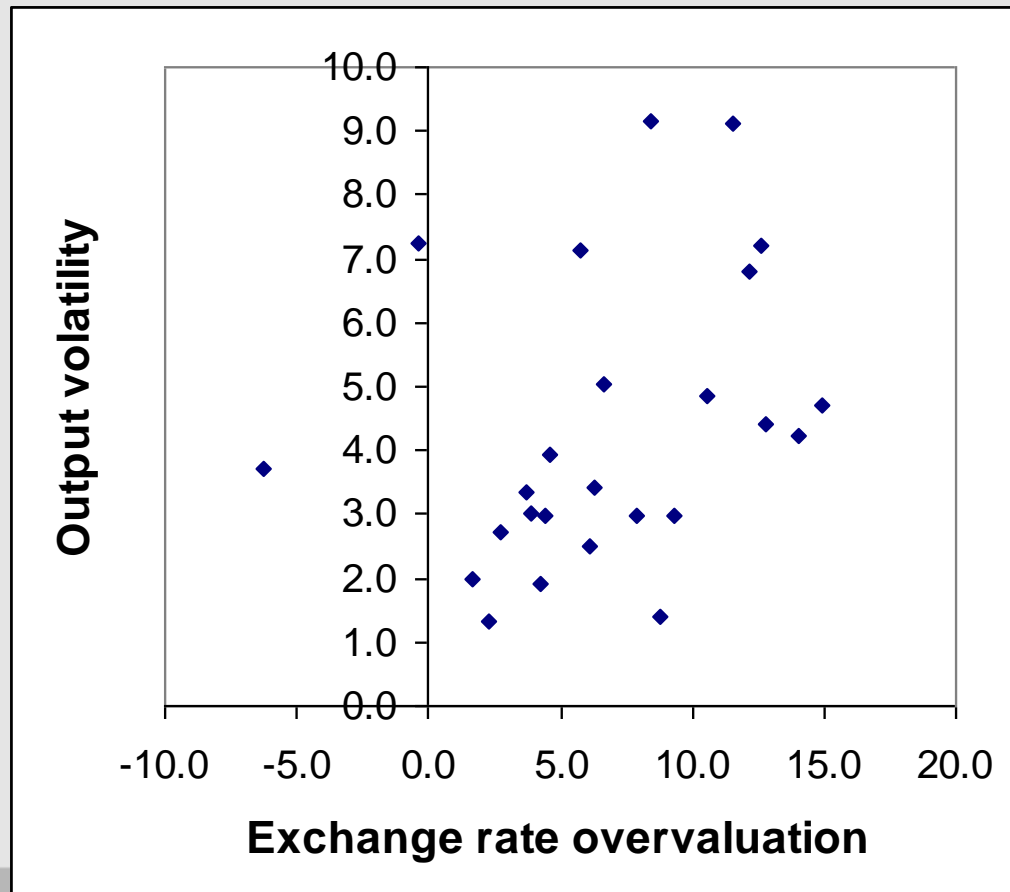
Exchange rate overvaluation

- Adjusted version of Balassa-Samuelson augmented purchasing power parity
- More productive countries tend to have higher price levels, but there is heterogeneity
- We calculated the average difference between the price level and GDP per capita for 2000-2007 and subtracted this difference from the 2008 difference between the price level and GDP per capita



Exchange rate overvaluation versus GDP volatility in CESEE countries

Positive correlation





Regression analysis



Cross section and panel regressions

- Simple correlations does not provide information about causality, nor the lack of an apparent correlation exclude a statistically significant relationship
- In this section we run cross section and panel regressions to uncover the impact of monetary and fiscal institutions on macro-economic stability and budgetary control
- We lay special emphasis on endogeneity, since the decision for a particular monetary or fiscal institution may be the consequence of macroeconomic stability or budgetary outcome



Regression analysis of output volatility

$$\log(\sigma_i^y) = \alpha + \beta \text{mon.inst.}_i + \gamma \text{fisc.inst.}_i + \delta' \text{controls}_i + v_i$$

- Monetary institutions: exchange rate regime; real exchange rate overvaluation; central bank transparency; bank supervision
- Fiscal institutions: budgetary discipline index; volatility of discretionary fiscal policy
- Controls: volatility of terms of trade, trade openness, GDP per capita, government expenditures/GDP, debt/GDP, pre-crisis speed of credit growth, institutional quality index of WEF



Regressions for GDP volatility

	A	B	C	B	E	F	G	H	I	J	K	L	M
DFP	0.25	0.03											
<i>t-ratio</i>	2.4	0.3											
BDI			-0.13	0.08									
<i>t-ratio</i>			-1.1	0.8									
FIXED					0.22	0.05							
<i>t-ratio</i>					1.5	0.4							
CREDIT							0.0017	0.0027					0.0023
<i>t-ratio</i>							2.4	5.1					6.6
CBT									-0.087	-0.034			-0.027
<i>t-ratio</i>									-4.0	-1.7			-1.4
OVERV											0.0058	-0.0025	
<i>t-ratio</i>											0.7	-0.4	
GDP per Cap		-0.009		-0.010		-0.010		-0.011		-0.009		-0.010	-0.010
<i>t-ratio</i>		-4.2		-4.6		-4.8		-5.4		-2.7		-5.0	-3.2
Trade open		0.004		0.005		0.004		0.004		0.002		0.004	0.001
<i>t-ratio</i>		3.5		3.7		3.2		3.0		0.9		3.3	0.7
R2bar	0.16	0.38	0.02	0.39	0.04	0.38	0.03	0.44	0.24	0.43	0.01	0.38	0.49
Nobs	47	47	45	45	51	50	51	50	34	34	51	50	34

- Without controls, all of our six measures correlate with a correct sign with GDP volatility, and most of them are significant
- With controls, pre-crisis credit growth and central bank transparency remain significant



Regression of discretionary fiscal policy on budgetary discipline index

BDI	-0.52	-0.52	-0.37	-0.33
<i>t-ratio</i>	(-3.6)	(-3.6)	(-2.5)	(-2.4)
Trade open		0.004		0.005
<i>t-ratio</i>		(2.0)		(2.8)
GDP per cap			-0.007	-0.009
<i>t-ratio</i>			(-1.6)	(-3.6)
R2bar	0.17	0.22	0.24	0.34
Nobs	43	43	43	43

- BDI (our Budgetary Discipline Index) explains volatility of discretionary fiscal policy
- The relationship remain significant when controls are added



Regression of change in Debt/GDP from 2000 to 2010 on budgetary discipline index

	OECD + CESEE	CESEE only
BDI	9.3	-20.1
<i>t-ratio</i>	(0.8)	-2.8
Int.rate - GDP growth	2.9	3.1
<i>t-ratio</i>	2.8	5.1
Debt/GDP in 2000	-0.1	-0.8
<i>t-ratio</i>	-0.5	-4.0
R2bar	0.30	0.77
Nobs	41	17

- BDI (our Budgetary Discipline Index) not significant for OECD but highly significant with a proper negative sign for CESEE \Rightarrow higher BDI = fall in debt
- OECD: some outliers could explain. E.g. Japan (highest DBI and debt) Norway (low BDI and low debt)



Regression of average balance/GDP (2000-2010) on budgetary discipline index

	OECD + CESEE	CESEE only
BDI	0.2	3.3
<i>t-ratio</i>	0.1	4.6
Int.rate - GDP growth	-0.1	-0.4
<i>t-ratio</i>	-1.3	-8.0
Debt/GDP in 2000	-0.03	0.01
<i>t-ratio</i>	-1.97	0.45
R2bar	0.10	0.63
Nobs	41	17

- BDI (our Budgetary Discipline Index) is not significant for OECD but highly significant with a proper positive sign for CESEE \Rightarrow higher BDI = higher surplus
- OECD: some outliers could explain again



Conclusions 1.

- We have documented that CESEE countries tend to grow faster (at least before the crisis) and have more volatile growth than non-CESEE OECD countries. This has implications for macroeconomic management.
- The crisis impacted CESEE countries harder than other emerging country regions of the world. Recovery is also slower.
- Yet there is a substantial heterogeneity within the region. Our question: do monetary and fiscal institutions played a role in macroeconomic stability and budgetary control in CESEE countries?



Conclusions 2.

- In addition to using some existing measures of monetary and fiscal institutions, we have developed new measures of budgetary discipline and exchange rate overvaluation
- We first assessed simple correlation between institutional variables and then run cross section regressions, controlling for a large number of possible factors and endogeneity
- Our measures correlate with output volatility, especially monetary institutions



Conclusions 3.

- The highly favourable relationship between economic growth and the interest rate played a crucial role in CESEE
- When controlling for the difference between interest rate and growth rate and initial level of debt, our Budgetary Discipline Index (BDI) significantly explains debt and balance developments in CESEE
- Higher BDI = lower debt & larger surplus
- These findings support our premise that robust fiscal institutions contribute to a more balanced budget and therefore to a greater fiscal discipline
- Countries with better budgetary rules and procedures had lower volatility of discretionary fiscal policy
- Discretionary fiscal policy increases macroeconomic instability → further supports the need for the improvement in budgetary rules and procedures