Effects of Fiscal Policy on the Post-Crisis Recovery of European Economies

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Aims and background

- To analyse the movements of fiscal policy and growth in European countries during the crisis and the recovery

    - Dynamics – pre-crisis, crisis and recovery stages
    - Country-group differences

- To investigate the effects of fiscal policy on the recovery

    - Numerous other variables also analysed – both for their effects on the recovery and for possible impact on the effects of fiscal policy

Aims and background

- Effects of fiscal policy are an important topic in current circumstances – especially in Europe

- Vast literature on fiscal multipliers – typically using structural VARs or some narrative identification

- Increasing attention on effects of fiscal consolidations – mostly panel methods; cyclically adjusted indicators or narrative identification

- Also various studies on determinants of the impact of the crisis and on determinants of the recovery

Stylised facts - Design

- Motivated by Chari and Henry (2014), who analyse Southeast Asian vs GIIPS countries

- We analyse 30 European countries - divided in 5 groups according to economic characteristics and fiscal policy features:

  - 3 Baltic countries, 7 new EU member states from CEE, 8 core euro area countries, GIIPS+Cyprus and 6 Southeastern European countries

- Our aim is to check the size, direction and significance of growth and fiscal policy movements – dynamics and differences in country groups

Stylised facts - Design

- Besides dividing the sample in groups, we also analyse several different sub-periods

  - Pre-crisis average (2005-2008)

  - The peak of the crisis (2009)

  - First post-crisis period (2010-2011)

  - Second post-crisis period (2012-2013)

  - Also cumulative differences – 2012-13 vs pre-crisis

- Means across country groups and sub-periods are calculated – Then differences are calculated and simple t-tests used to check significance of differences (similar approach to Chari and Henry (2014))
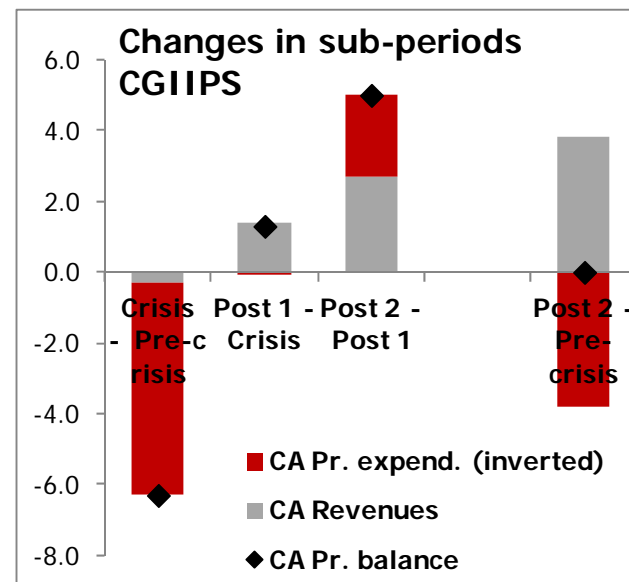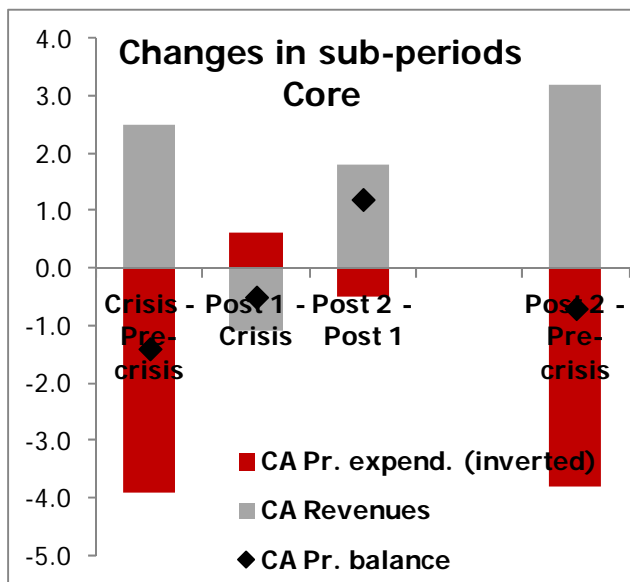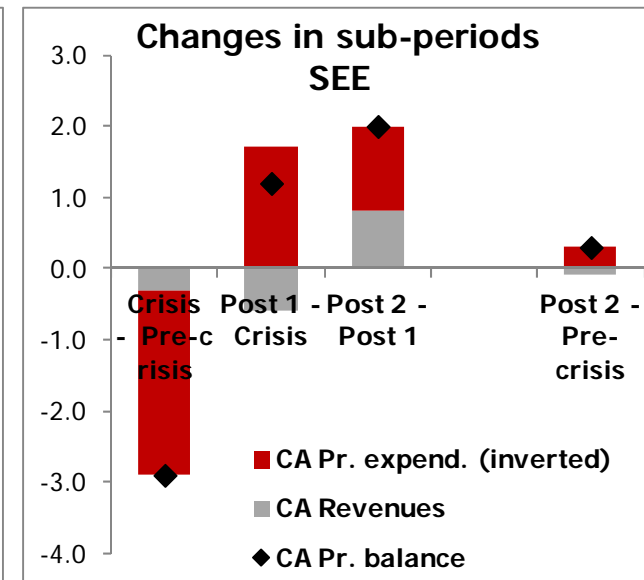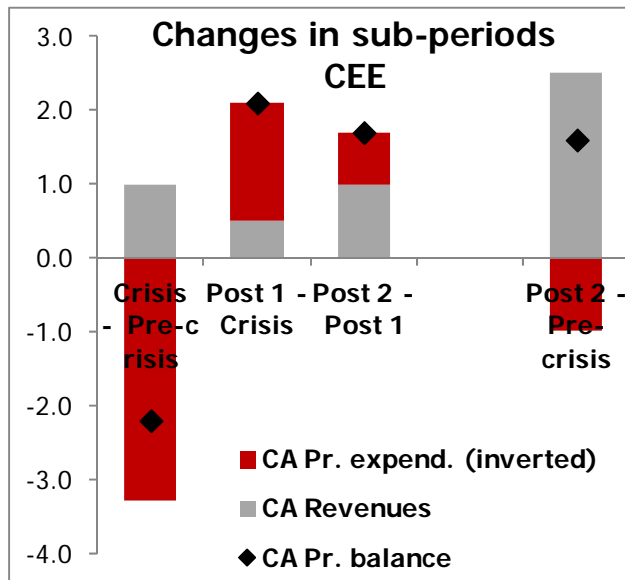
Stylised facts - Results

Cyclically adjusted primary budget balance, in % of nominal GDP

	Averages				Changes in sub-periods			
	Pre-crisis	Crisis	Post-crisis 1	Post-crisis 2	Crisis - Pre-crisis	Post 1 - Crisis	Post 2 - Post 1	Post 2 - Pre-crisis
balt	-3.4	-2.9	-0.1	0.2	0.5	2.8	0.3	3.6***
cee	-2.4	-4.6	-2.5	-0.8	-2.2	2.1	1.7	1.6
cgiips	-1.1	-7.4	-6.1	-1.1	-6.3**	1.3	5**	0.0
core	1.0	-0.4	-0.9	0.3	-1.4	-0.5	1.2**	-0.7
see	-1.0	-3.9	-2.7	-0.7	-2.9***	1.2*	2***	0.3

- As crisis hit in 2009, almost all country groups reacted with more relaxed fiscal policy – particularly CGIIPS and SEE

- Fiscal consolidation in both recovery periods – stronger in the Baltics and CEE in 2010-11, and in the other 3 groups in 2012-13

- Consequently, budget balances mostly tighter than pre-crisis, except in core countries – with differences in the structure of the adjustment

Stylised facts - Results
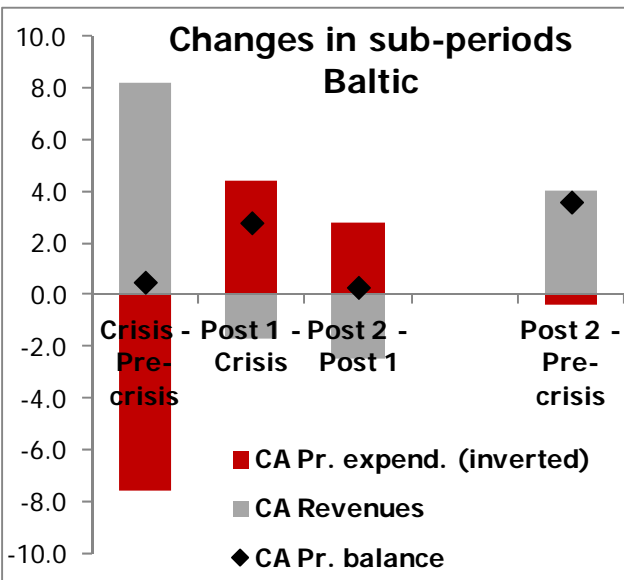
Stylised facts - Results

- Continuous rise in debt to GDP levels across the board – post-crisis ratios higher than pre-crisis for 15-18 p.p. in all groups, but more than 50 p.p. in CGIIPS

- Similar GDP dynamics in most countries except CGIIPS – the only ones still far below the 2008 GDP level – GDP growth rates still well below pre-crisis averages in all groups

- The adjustment mostly via considerably lower private investment – exports with the strongest positive effect

| **Real GDP level, 2008=100**								
	Averages				Changes in sub-periods			
	2008	2009	2011	2013	2009 - 2008	2011-2009	2013-2011	2013-2008
balt	100	84.4	91.1	97.5	-15.6***	6.7	6.4	-2.5
cee	100	95.1	98.9	99.7	-4.9***	3.8	0.8	-0.3
cgiips	100	96.1	95.1	90.4	-3.9***	-1.0	-4.7	-9.6**
core	100	95.5	100.2	100.6	-4.5***	4.7***	0.4	0.6
see	100	97.5	100.7	101.4	-2.5	3.2	0.7	1.4

Econometric analysis - Design

- The aim is to formally analyse effects of fiscal policy on post-crisis recovery in European countries

  - The aim affects our sample and the estimation method

- Endogeneity problem due to reverse causality from output to fiscal policy – difficult to identify properly exogenous policy

- The literature mostly uses VARs or panels, with cyclically adjusted data or narrative identification

- Instead, we use cross-section estimation – our focus is on a particular episode, not short/medium term effects (VARs) or numeruous episodes (panels)

Econometric analysis - Design

- We are interested in the recovery of GDP in 2013 compared to the trough level in 2009 -> dependant variable

- Fiscal policy defined as cummulative cyclically adjusted primary balance 2009-2012
  - Cyclical adjustment expected to remove the reverse causality from output to budget balance
  - The 1-year lag compared to dependant variable is common in the literature due to implementation lags of fiscal policy

- Sample is 37 European economies, annual data – focus on 2009-2013, but pre-crisis data used as well

- Due to considerable country heterogeneity, we also include pre-crisis per capita real GDP

Econometric analysis - Results
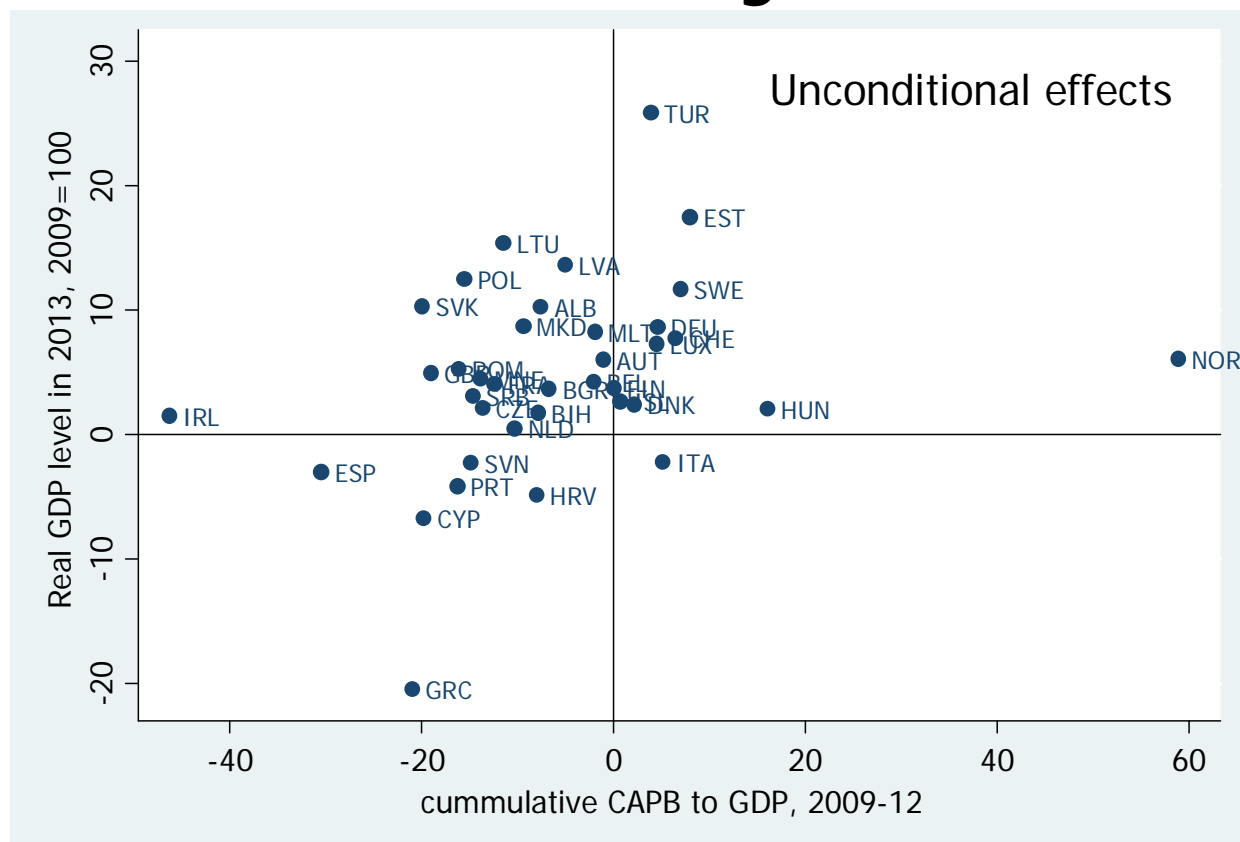
- We proceed by adding controls pre-crisis and during recovery - to analyse their effects on the recovery and to check robustness of fiscal policy results

  - Keep only significant ones – otherwise degrees of freedom problem

Econometric analysis - Results

- We first extend our initial specification with various pre-crisis factors, as suggested by literature on crisis impact

- We find no effects of pre-crisis overheating on the recovery (output gap, C/A balance, loan growth)

- Also little impact of structural features such as trade opennes or exchange rate regime

- From vulnerability indicators, only pre-crisis debt levels have a significant negative effect on recovery – external debt and foreign reserves are insignificant

- The positive impact of fiscal consolidation is fairly robust across specifications – although size is relatively small

Econometric analysis - Results

Dependant variable	real GDP level in 2013 compared to 2009								
cumulative CAPB, % of NGDP, 2009-12	0.18** (0.08)	0.16* (0.08)	0.13 (0.08)	0.27* (0.14)	0.18** (0.08)	0.16* (0.08)	0.18** (0.08)	0.18** (0.08)	0.20** (0.08)
log of per capita real GDP in EUR, 2008	-2.50** (1.11)	-3.15** (1.50)	-4.23** (1.74)	-2.29** (1.06)	-2.76** (1.15)	-2.27** (1.06)	-1.10 (1.15)	-1.02 (1.37)	-1.77 (1.52)
output gap as % of HP-trend output, 2008		-0.42 (0.57)							
average current account balance as % of NGDP, 2005-08			0.26 (0.16)						
difference in the loan/NGDP ratio between 2008 and 2005				0.02 (0.02)					
opennes, 2008 (exports+imports of G&S as % of NGDP)					0.03 (0.02)				
dummy for exchange rate regime in 2008, 1 for hard pegs						-2.16 (2.34)			
gross public debt, % of NGDP in 2008							-0.14** (0.05)	-0.14** (0.06)	-0.14** (0.05)
gross external debt as % of NGDP, 2008								-0.00 (0.00)	
total foreign reserves in months of imports, 2008									-0.57 (1.01)

Econometric analysis - Results

- Next we investigate factors between 2009 and 2012 that might have affected recovery

- Effective foreign demand growth has a strong positive impact on recovery – consistent with rising exports shares

- No rebound effects – countries with better growth/lower fall in 2009 recovered faster

- Other factors insignificant – financial flows, IMF arrangements, real exchange rate, nominal exchange rate to the dollar, changes in monetary policy rates

- The positive impact of fiscal consolidations still holds

Econometric analysis - Results

Dependant variable	real GDP level in 2013 compared to 2009								
cumulative CAPB, % of NGDP, 2009-12	0.18** (0.08)	0.16** (0.07)	0.15** (0.07)	0.16* (0.08)	0.18** (0.08)	0.13* (0.07)	0.13* (0.07)	0.14* (0.08)	0.13* (0.07)
log of per capita real GDP in EUR, 2008	-1.10 (1.15)	-2.03 (1.26)	-2.14* (1.23)	-1.83 (1.35)	-1.69 (1.29)	-2.76* (1.49)	-2.22* (1.27)	-2.48* (1.23)	-1.80 (1.22)
gross public debt, % of NGDP in 2008	-0.14** (0.05)	-0.11* (0.06)	-0.14** (0.06)	-0.15** (0.07)	-0.15** (0.07)	-0.12** (0.06)	-0.14** (0.06)	-0.14** (0.06)	-0.15** (0.06)
cumulative foreign demand growth from 2009		0.71*** (0.21)	1.13*** (0.30)	1.14*** (0.31)	1.33*** (0.38)	0.99*** (0.32)	1.10*** (0.28)	1.13*** (0.29)	1.34*** (0.38)
real GDP growth rate in 2009			0.57* (0.28)	0.57* (0.29)	0.67** (0.31)	0.46 (0.31)	0.51* (0.29)	0.55* (0.29)	0.79** (0.36)
cumulative net financial flows as a % of NGDP, 2009-12					0.02 (0.05)				
cumulative net FDI flows as a % of NGDP, 2009-12						0.11 (0.09)			
cumulative net non-FDI flows as a % of NGDP, 2009-12					0.06 (0.06)				
dummy=1 if purchases made from IMF 2009-13						-2.94 (2.63)			
cumulative change of the CPI-based real effective exchange rate, 2009-12							0.19 (0.16)		
cumulative change of the exchange rate to USD, 2009-12								-0.08 (0.15)	
difference in the policy rate between 2012 and 2009									-0.55 (0.53)

Econometric analysis - Results

- Finally, we also check whether results on fiscal policy are affected by particular variable definitions

- Slightly different periods of adjustment and including projected 2014 GDP as dependent variable yield unchanged results

- The result on consolidations also holds if cumulative replaced with separate 2010-12 values – joint effect is significantly positive

- Use of dummies for consolidations; use only of CAPB improvements or of continuous tightening (like in some other studies) all confirm baseline results

Econometric analysis - Results

Dependant variable	real GDP level in 2013 compared to 2009	real GDP level in 2014 compared to 2009		real GDP level in 2013 compared to 2009				
cumulative CAPB, % of NGDP, 2009-12	0.15** (0.07)		0.17** (0.07)					
cumulative CAPB, % of NGDP, 2010-12		0.17** (0.08)						
CAPB, % of NGDP, 2012				0.39 (0.50)				
CAPB, % of NGDP, 2011				-0.20 (0.39)				
CAPB, % of NGDP, 2010				0.32 (0.29)				
DV=1 if positive cummulative CAPB/NGDP 2009-12					6.66** (2.63)			
cumulative CAPB/NGDP 2009-12 if positive, 0 otherwise						0.11 (0.07)		
cumulative CAPB/NGDP 2010-12 if positive, 0 otherwise							0.14 (0.08)	
cumulative CAPB/NGDP 2010-12 if CAPB/NGDP continuously growing 2010-12, 0 otherwise								0.32** (0.14)
log of per capita real GDP in EUR in 2008	-2.14* (1.23)	-1.90 (1.23)	-2.78* (1.38)	-1.96 (1.26)	-3.15** (1.33)	-2.09 (1.30)	-2.05 (1.30)	-2.47** (1.20)
gross public debt, % of NGDP in 2008	-0.14** (0.06)	-0.15** (0.06)	-0.15** (0.06)	-0.14** (0.07)	-0.14** (0.06)	-0.14** (0.07)	-0.14** (0.07)	-0.14*** (0.05)
cumulative foreign demand growth from 2009	1.13*** (0.30)	1.15*** (0.30)	1.32*** (0.41)	1.25*** (0.30)	1.25*** (0.27)	1.25*** (0.31)	1.26*** (0.31)	1.31*** (0.31)
real GDP growth rate in 2009	0.57* (0.28)	0.60** (0.29)	0.60* (0.34)	0.64** (0.30)	0.74** (0.29)	0.60* (0.30)	0.61* (0.30)	0.63** (0.28)

Conclusion

- All country groups initially reacted to the crisis with lower budget balances – and then embarked on fiscal consolidation in the two post-crisis recovery periods

- The strength and dynamics of consolidation and its composition differ across country-groups

- Formal estimates show significant positive effect of fiscal consolidation on the recovery – robust to the inclusion of numerous controls

- Notwithstanding weaknesses due to potential endogeneity, results support fiscal consolidation efforts as policymakers try to stimulate higher GDP growth – but country specific factors may also be important

Thank you for your attention!

Comments and questions are welcome!

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