Performance of the EU spending rule – a quantitative assessment

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Motivation – academic literature

'Rule vs. discretion' debate echoes the debate on optimal design of fiscal rules and could be declined into three main trade-offs:

1) **Sustainability vs. stabilisation**

   - Broad consensus to focus on gross policy errors ('excessive public debt')

   - But pace of adjustment subject to discussion

     ➢ Lower pace with: no sovereign risk (Benigno and Woodford 2004), deep crisis (Auerbach and Gorodnichenko 2012, Blanchard and Leigh 2014), negative r-g (Blanchard et al. 2019)

     ➢ Faster pace with: good times (Eyraud et al. 2018), expenditure-based adjustment (Giavazzi et al. 2019), debt perceived as not risk free (Corsetti et al. 2014, Bianchi et al. 2019)

2) **Flexible vs. tight rules**

   - Tighter rules limit present deficit bias and debt accumulation (Yared 2019)

   - Flexible rules allow a better response to unexpected shocks ('escape clauses', 'cycle-dependent effort')
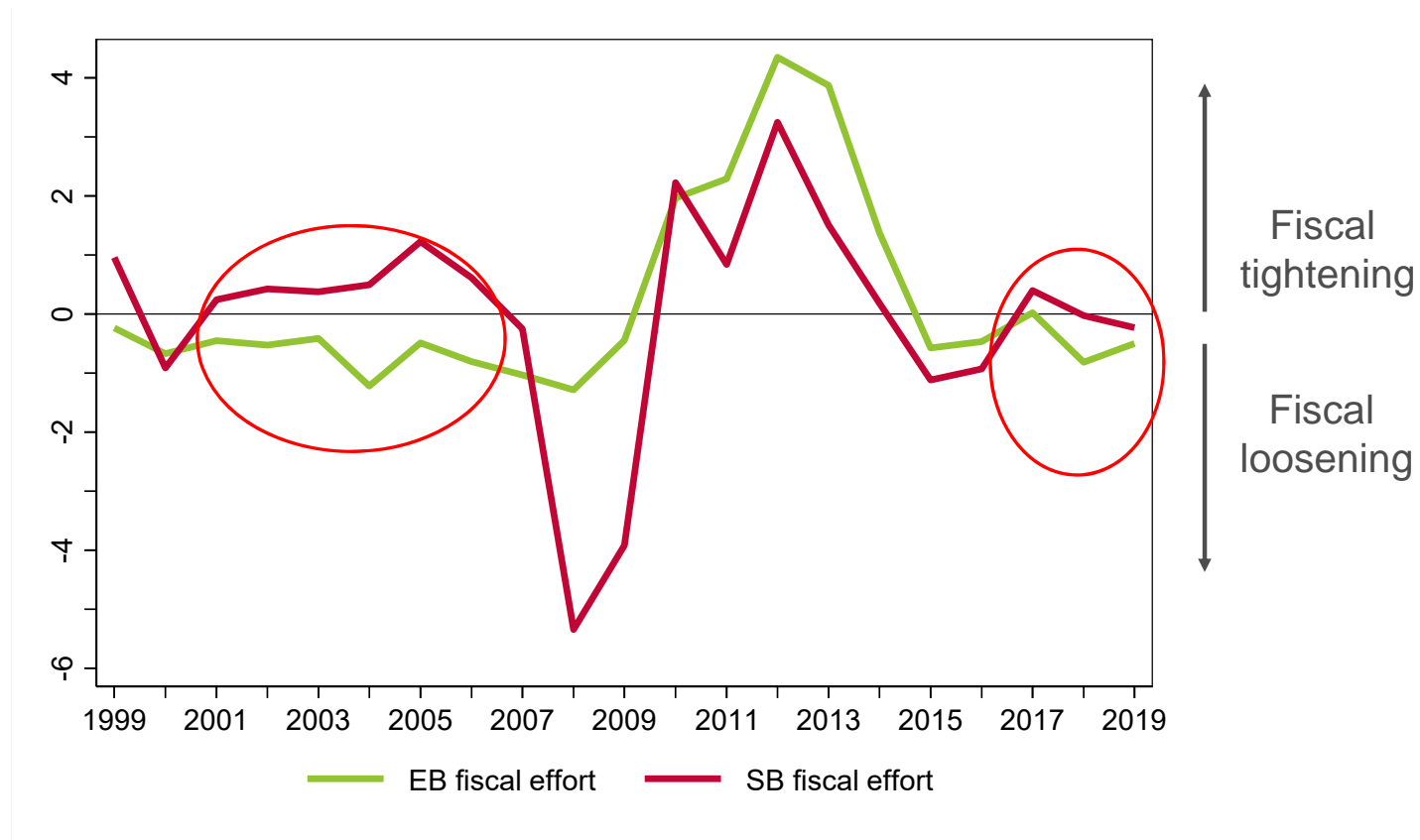
3) **Simplification vs. complexity**

   - Broad consensus on the need for simpler fiscal rules (Andrle et al. 2015, Bénassy-Quéré et al. 2018, Désirée et al. 2018, Deroose et al. 2018, Kamps and Leiner-Killinger 2019)

   - But (successful) rules in other areas could be quite complex (competition authority, monetary policy)

Motivation – policy experience

Structural balance is an imperfect indicator of the fiscal effort

Fiscal effort in Spain (1999-2019)

Motivation – topical policy context

- Commission's review on economic and fiscal government framework ('6 & 2 pack') released on 5 February 2020

- Broad consensus on general design: single operational indicator and debt anchor (*Andrle et al. 2015, Bénassy-Quéré et al. 2018, Désirée et al. 2018, Deroose et al. 2018, EFB 2019, Kamps and Leiner-Killinger 2019*)

- In terms of operational indicator, deep literature on fiscal rules in general and spending rules

- But – to the best of our knowledge – no study analyses

  ➢ **functioning of the EU expenditure benchmark** (also vis-à-vis the structural balance) (expenditure benchmark = the EU spending rule = EB)

  ➢ **impact of modifying the measurement of the actual fiscal effort**

- This paper endeavours to fill these gaps

Definition of the EU spending rule (= expenditure benchmark)

Two key indicators of preventive arm of SGP

	Effort based on structural balance (SB)	Effort based on expenditure benchmark (EB)
Part of SGP since ...	2005	2012
Basic idea	Use the change of the govt. budget balance, which is under the control of policymakers	Compare net expenditure growth with an appropriate benchmark
Type of indicator	Top-down measure of fiscal effort (Alesina and Perotti 1995)	Quasi-bottom-up measure of fiscal effort (Romer and Romer 2010, Carnot and de Castro 2015)
Definition	$\Delta\,SB_t$	$(y^* - exp_t)\dfrac{E_{t-1}}{Y_t}$

y^* is the 10-year average of real potential growth rate in nominal term
exp_t (net) expenditure growth rate

Main differences: How to measure the fiscal effort?

	Effort based on SB	Effort based on EB
Net of business cycle	✓	✓
Net of one-offs	✓	✓
Net of interest expenditure	✗	✓
Net of EU funds	✗	✓
Net of DRM	✗	✓
Smooth potential GDP	✗	✓
Smooth investment	✗	✓

Outline

2.1. Assessment of sustainability

Objective

Assess if current fiscal rules of the preventive arm of the SGP would have ensured sustainable public debt ratios if Member States had applied and complied with them since 1999?

Why does it matter?

Primary objective of the SGP is to ensure sustainability. "Maastricht assignment" can reinforce the deficit bias mainly due to negative externalities *(Yared 2019, Alesina and Perotti 1995).*

Tool

Fiscal counterfactual simulations with a small dynamic macroeconomic model (*Arnold and Garcia-Macia 2020, Hauptmeier and Kamps 2020*)

Starting point of counterfactual simulations: determine a fiscal rule gap

Fiscal rule gap: $f_t = required\ effort_t - actual\ effort_t^b$

$required\ effort_t = Min\ (matrix, MTO_t - SB_{t-1})$
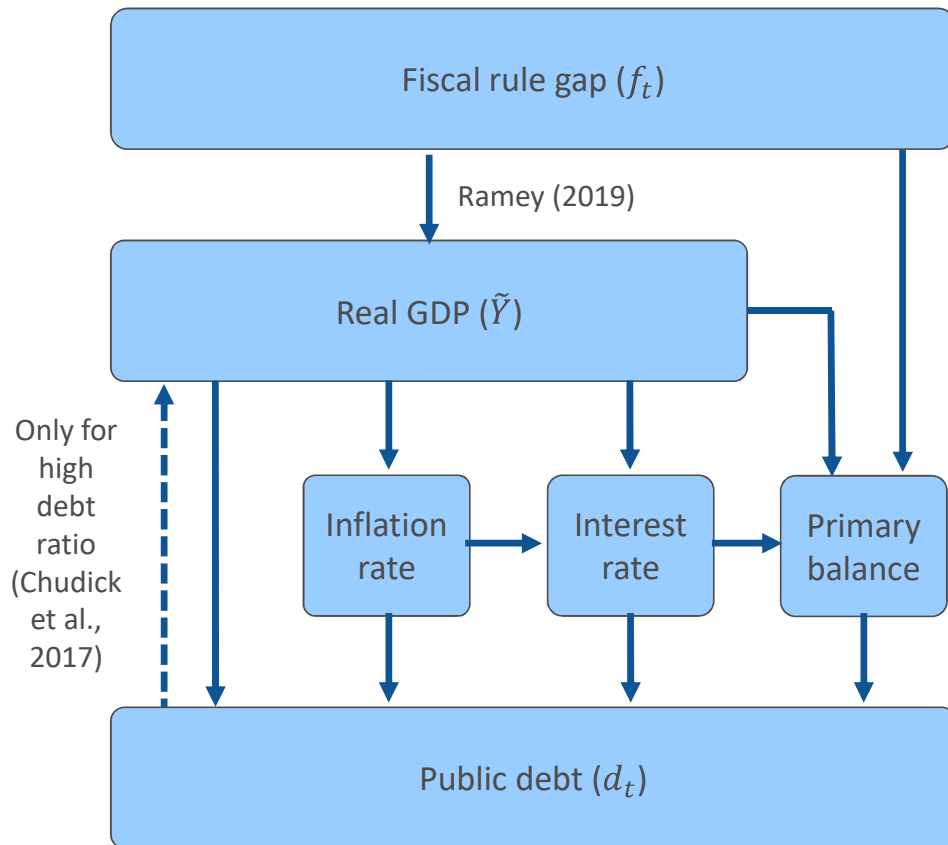
$actual\ effort_t^b = \begin{cases} ef_t^{EB} = (\bar{y}_t^* - g_t) \cdot \dfrac{MEA_{t-1}}{GDP_t} \\ \\ ef_t^{SB} = \Delta sb_t \end{cases}$

Size of fiscal rule gap (three scenarios):

- **S.1: Strict compliance:** f_t with $f_t > 0$ tightening and $f_t < 0$ loosening w.r.t baseline

- **S.2: Compliance with capped effort:** $-1 < f_t < 1$

- **S.3: Compliance with capped effort and escape clause:** $f_t = Min\ (actual\ effort_t^b, 0)$ in "exceptionally bad times" (real growth < 0 or OG < -4)

Scenarios not so different in the medium run, since once you reach the MTO, you stay at the MTO

Key features of small dynamic model for counterfactual simulations

Fiscal rule gap (f_t)

Ramey (2019)

Real GDP $(\tilde{Y})$

Only for high debt ratio (Chudick et al., 2017)

Inflation rate

Interest rate

Primary balance

Public debt (d_t)

$$f_t = required\ effort_t - actual\ effort_t^b$$

Fiscal multiplier Persistence Risk premium

$$\tilde{Y}_t = \tilde{Y}_{t-1}\frac{\tilde{Y}_t^b}{\tilde{Y}_{t-1}^b}\left(1 - \epsilon\left(\sum_{s=0}^{S}\rho^s(f_{t-s}-f_{t-s-1})\right)\right)\left(1 - \tau(d_{t-1}-d_{t-1}^b)\right)$$
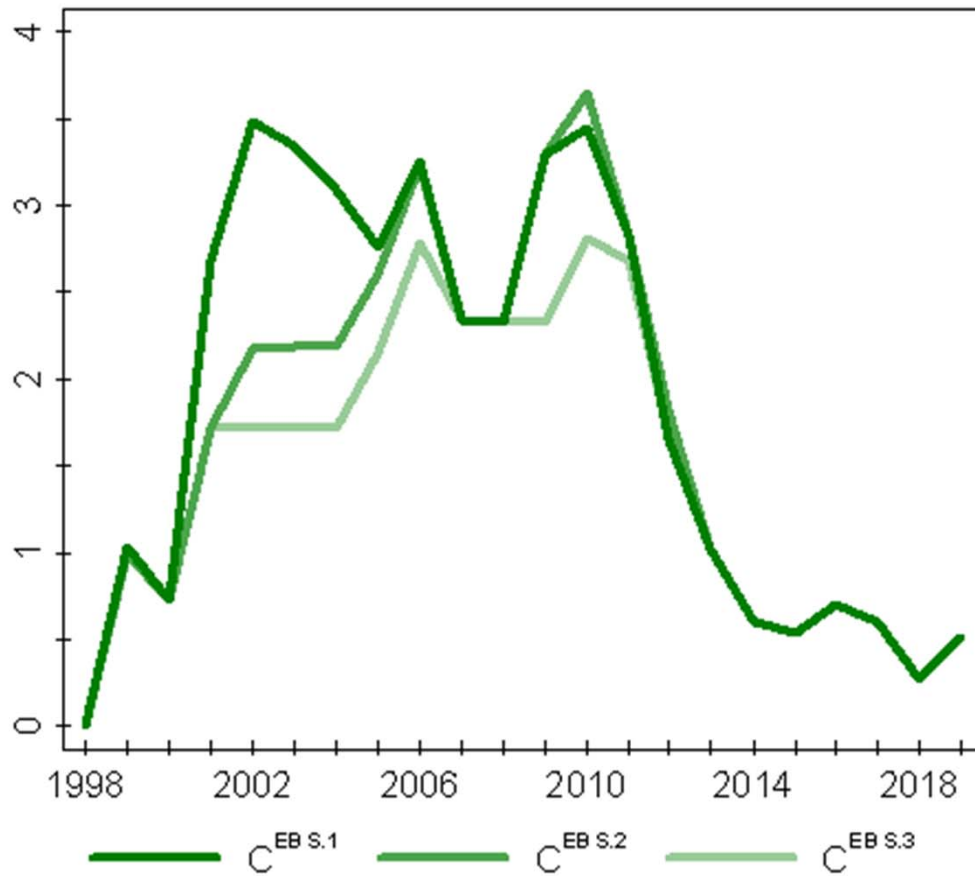
Discount factor

$$\hat{y}_t = \frac{\tilde{Y}_t}{\tilde{Y}_t^{pot}} - 1 \quad,\ with\quad \tilde{Y}_t^{pot} = \tilde{Y}_t^{pot\,b}$$

$$\Delta d_t = -pb_t + \underbrace{d_{t-1}\frac{\widetilde{si}_t}{(1+g_t)}}_{interest\ rate} - \underbrace{d_{t-1}\frac{\tilde{g}_t}{(1+g_t)}}_{real\ growth} - \underbrace{d_{t-1}\frac{\pi_t(1+\tilde{g}_t)}{(1+g_t)}}_{inflation\ rate} + sfa_t$$

snowball

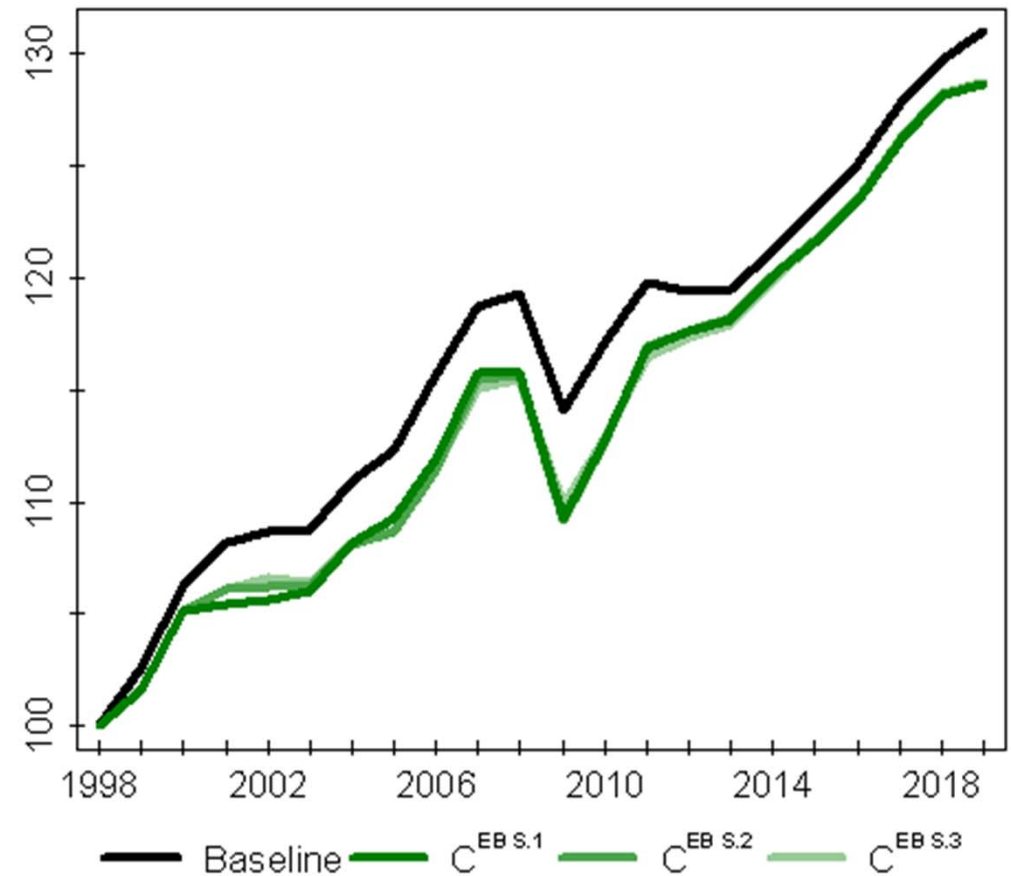# Counterfactual spending rule scenarios I (EU6, 1999-2019)

Counterfactual Spending rule scenarios II (EU6, 1999-2019)
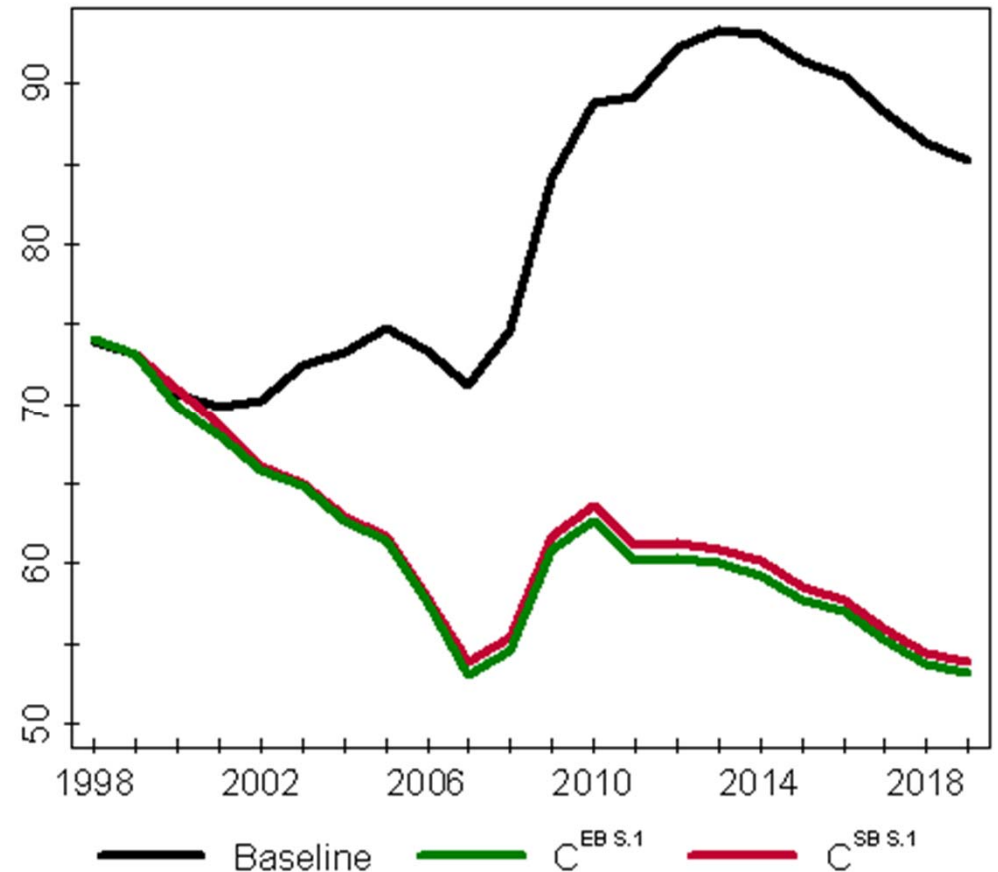
Counterfactual spending rules vs. SB (EU6, 1999-2019)
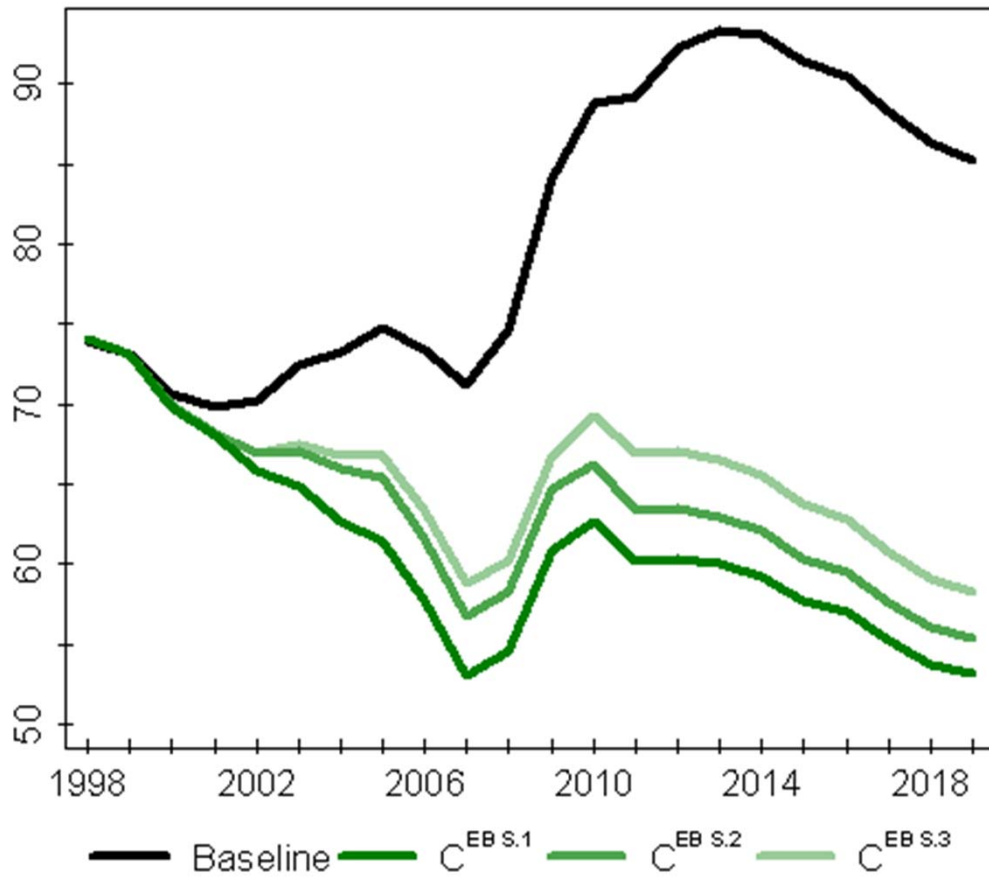
Annual contributions to change in debt (in pps. of GDP) | Public debt (% of GDP)
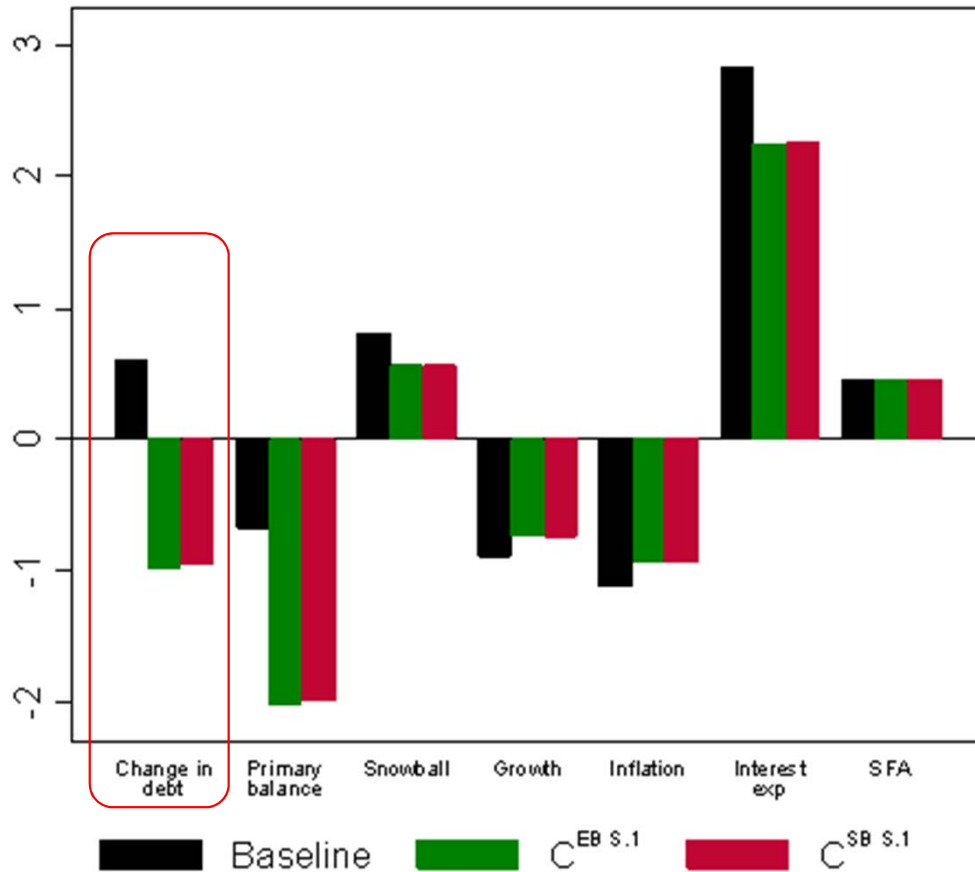
Counterfactual debt ratios six largest EA countries
(% of GDP, 2019)
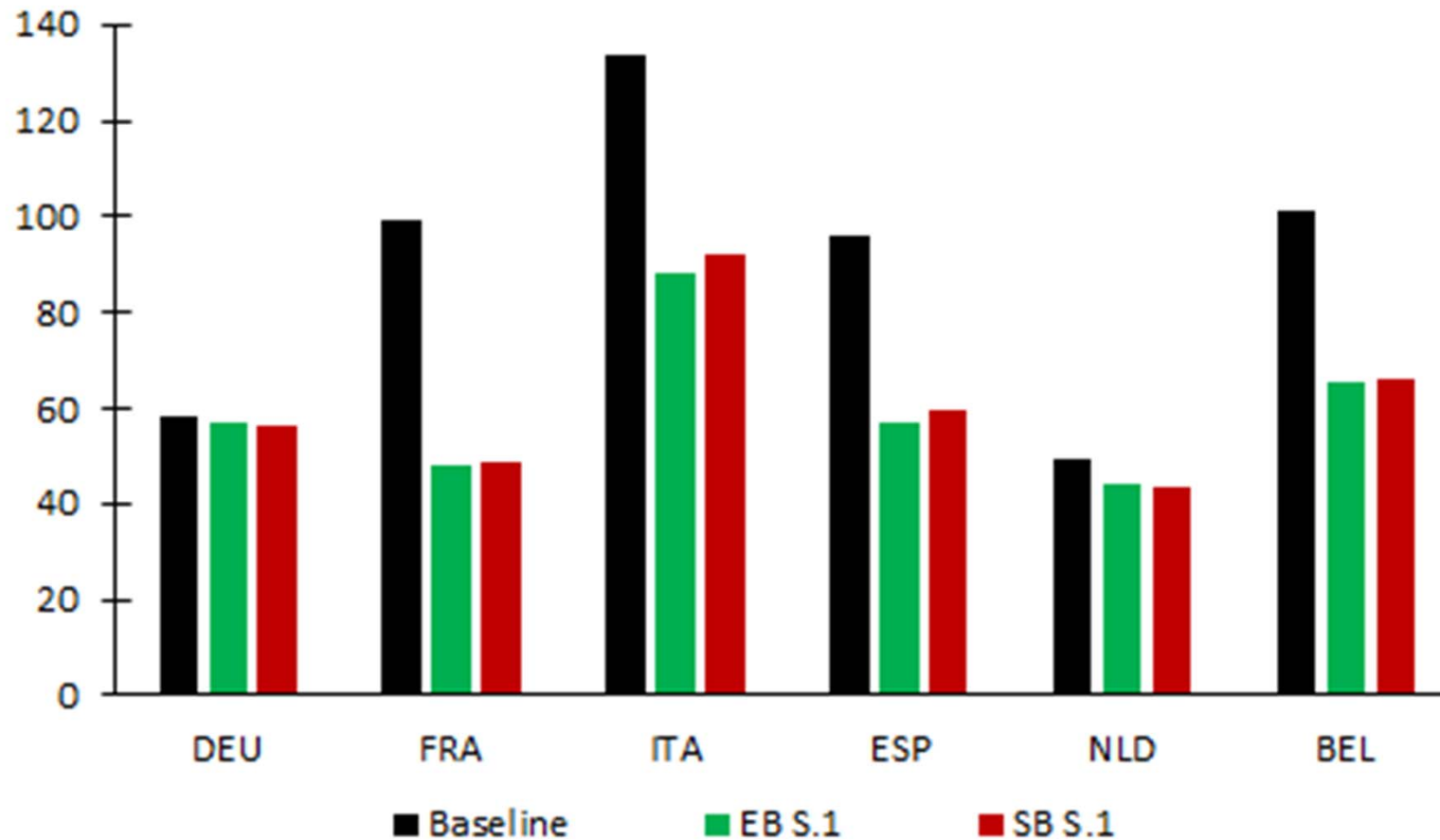
Counterfactual debt ratios for different definitions of the expenditure benchmark (EU6, % of GDP, 2019)
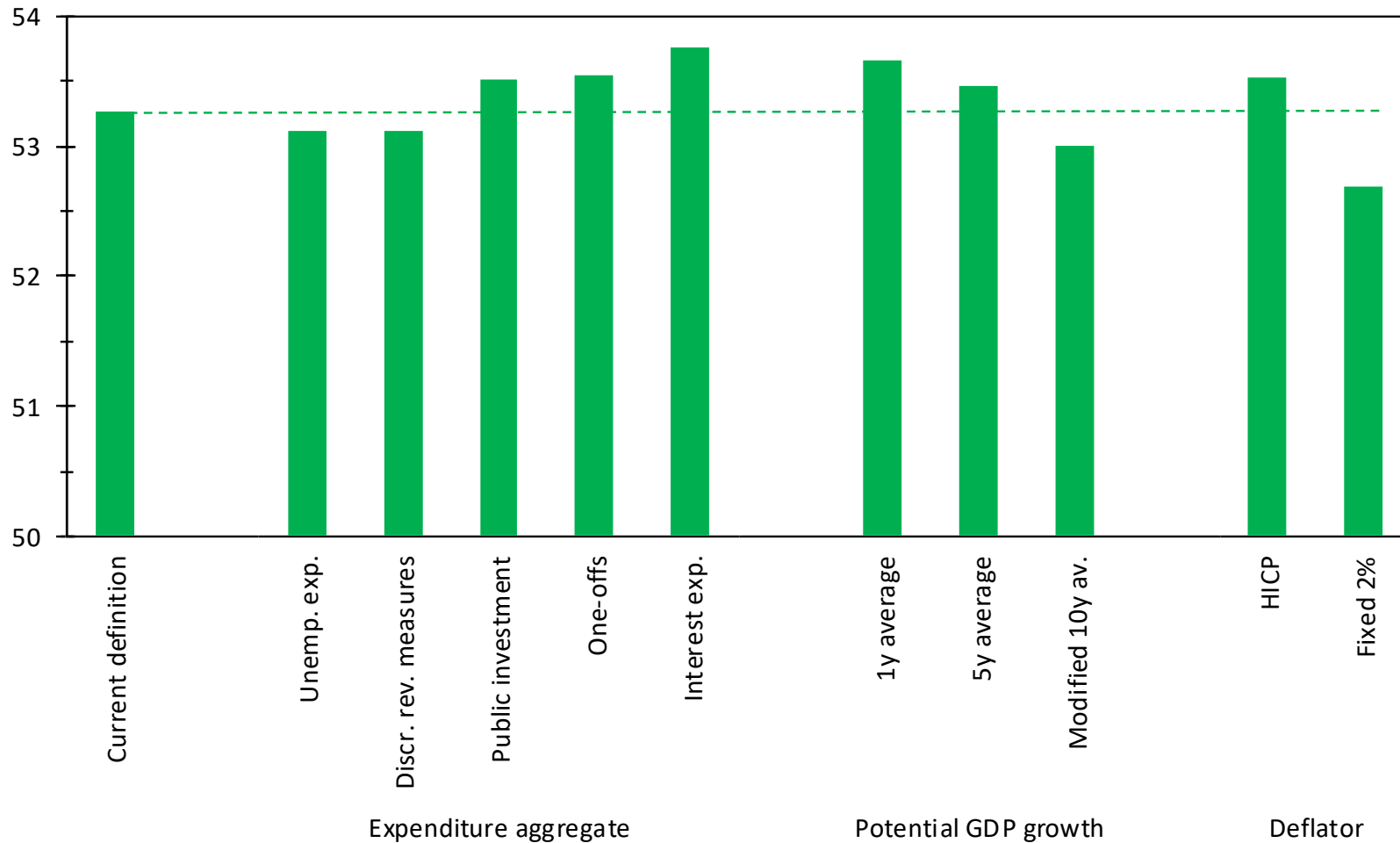
2.2. Assessment of stabilisation

Objective: Assess the cyclicality of the actual fiscal effort (EB vs. SB) since creation of EMU

Why does it matter?

- SGP should, in principle, allow Member States to deal with normal cyclical fluctuations by letting automatic stabilisers operate freely.

- In the case of very large shocks (*Christiano et al., 2011*) or constrained monetary policy (*Blanchard et al., 2013, Blanchard and Leigh, 2013*), automatic stabilisers alone may not be sufficient.

Tool: Panel regression analysis

Panel regression framework

Estimation of a fiscal reaction function (_Lane 2003_)

$$effort_{i,t} = \beta_1\, cycle_{i,t} + \beta_2\, debt_{i,t-1} + \beta_3\, X_{i,t-1} + \theta_t + \vartheta_i + u_{i,t}$$

$$effort_{i,t} = \beta_2\, cycle_{i,t} + \beta_3\, debt_{i,t-1} + \beta_4\, X_{i,t-1} + \beta_5\, dummy_{i,t} \cdot cycle_{i,t} + \beta_6\, dummy_{i,t} + \theta_t + \vartheta_i + u_{i,t}$$

- _Dependent variables_: EB- vs. SB fiscal effort (standardised with mean 0 and st.dev. 1)

- _Country sample_: 28 Member States (only EU members)

- _Data coverage_: Focus on **real time-data** (_Cimadomo 2006_) using COM forecast reports AF 2000 – SF 2019, ex-post data for robustness (COM SF 2019)

- _Time period_: 2000-19 (up to 20 years)

- _Estimation techniques_: LSDV/GMM estimator

Main findings of panel estimation

| Specification	Baseline		Good vs. bad times		Counterfactual	
Dependent variable: Fiscal effort	EB	SB	EB	SB	EB	SB
Dataset	Real time (COM SF 2000-19)		Real time (COM SF 2000-19)		COM SF 2019	
Estimator	FD-GMM	FD-GMM	FD-GMM	FD-GMM	FD-GMM	FD-GMM
	(1)	(2)	(3)	(4)	(5)	(6)
Output gap (t)	−0.176***	−0.053**	−0.156	−0.044	−0.040	−0.068
	(−5.339)	(−2.372)	(−1.571)	(−0.824)	(−1.473)	(−1.144)
Public debt (t-1)	0.004***	0.007***	0.004***	0.007***	0.012*	0.002*
	(2.854)	(4.555)	(2.802)	(4.383)	(1.783)	(1.943)
Distance to MTO (t)	0.097***	0.220***	0.097***	0.224***	0.463***	0.288***
	(2.764)	(5.250)	(2.802)	(5.250)	(4.547)	(5.118)
EDP (t)	0.313**	0.291**	0.311**	0.292**	0.291**	0.183*
	(2.302)	−2.003	(2.312)	(2.004)	(2.013)	(1.979)
Election year (t)	−0.002*	−0.001	−0.002*	−0.001	−0.003	−0.000
	(−1.698)	(−0.733)	(−1.776)	(−0.646)	(−1.183)	(−0.114)
Crisis dummy 2008-09	−0.897***	−2.170***	−0.700**	−1.518***	−0.373	−0.359
	(−3.386)	(−5.419)	(−2.263)	(−4.269)	(−1.479)	(−1.394)
Dummy good times (t)			0.029	0.226		
			(0.217)	(1.455)		
Output gap * good times			−0.114	−0.200		
			(−1.624)	(−1.330)		
# countries	28	28	28	28	28	28
# observations	470	472	470	472	471	471
Impact of output gap in:						
- good times (size)			−0.279**	−0.245**		
- good times (p-value)			0.044	0.04		
Wald test time dummies	0	0	0	0	0	0
AR(1) (p-value)	0.001	0	0.001	0.000	0	0
AR(2) (p-value)	0.64	0.917	0.646	0.828	0.653	0.405
Hansen (p-value)	0.583	0.715	0.928	0.91	0.672	0.578
# instruments	29	29	33	33	29	29

Main findings of panel estimation

Important distinction: cyclicality of the same **actual effort** measured alternatively by EB and SB
Result: EB gives a less benign assessment of the historical fiscal effort

Different **counterfactual efforts** using EB and SB as **a requirement**

Specification	Baseline		Good vs. bad times		Counterfactual	
Dependent variable: Fiscal effort	EB	SB	EB	SB	EB	SB
Dataset	Real time (COM SF 2000-19)		Real time (COM SF 2000-19)		COM SF 2019	
Estimator	FD-GMM	FD-GMM	FD-GMM	FD-GMM	FD-GMM	FD-GMM
	(1)	(2)	(3)	(4)	(5)	(6)
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Election year (t)	-0.002*	-0.001	-0.002*	-0.001	-0.003	-0.000
	(-1.698)	(-0.733)	(-1.776)	(-0.646)	(-1.183)	(-0.114)
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Dummy good times (t)			0.029	0.226		
			(0.217)	(1.455)		
Output gap * good times			-0.114	-0.200		
			(-1.624)	(-1.330)		
# countries	28	28	28	28	28	28
# observations	470	472	470	472	471	471
Impact of output gap in: - good times (size)			-0.279**	-0.245**		

Modulations of the definition of the fiscal effort on cyclicality (EU, 1999-2019)
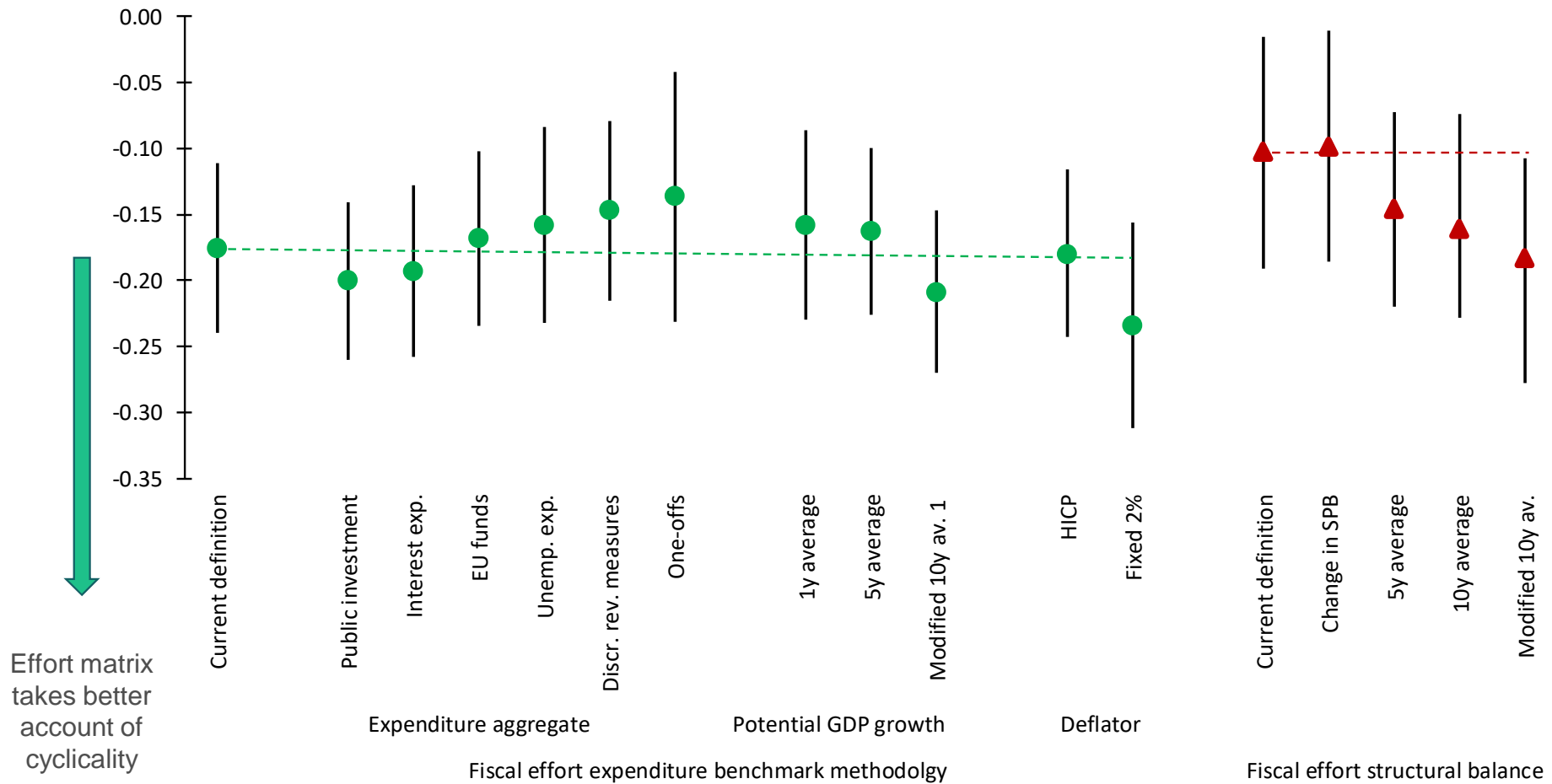
2.3. Assessment of predictability

**Objective:** Assess reliability of Commission forecast of actual fiscal efforts (EB vs. SB)

Why does it matter? Reliable budgetary projections are a cornerstone of effective fiscal surveillance. The six-pack (budgetary frameworks directive) and the two-pack provisions have strengthened the role of independent forecasts.

Tool: Forecast error analysis

Forecasts not (systematically) biased for EU countries

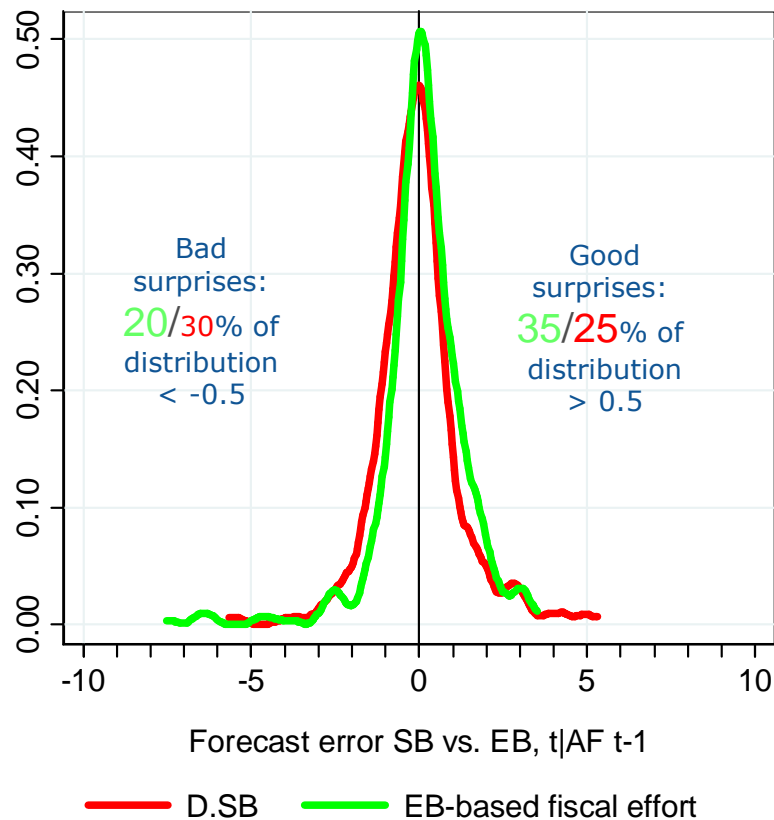**Findings from an empirical test for systematic bias**
(one-year ahead forecast error of fiscal effort (2000-19) (+/- fiscal effort smaller/larger than expected)
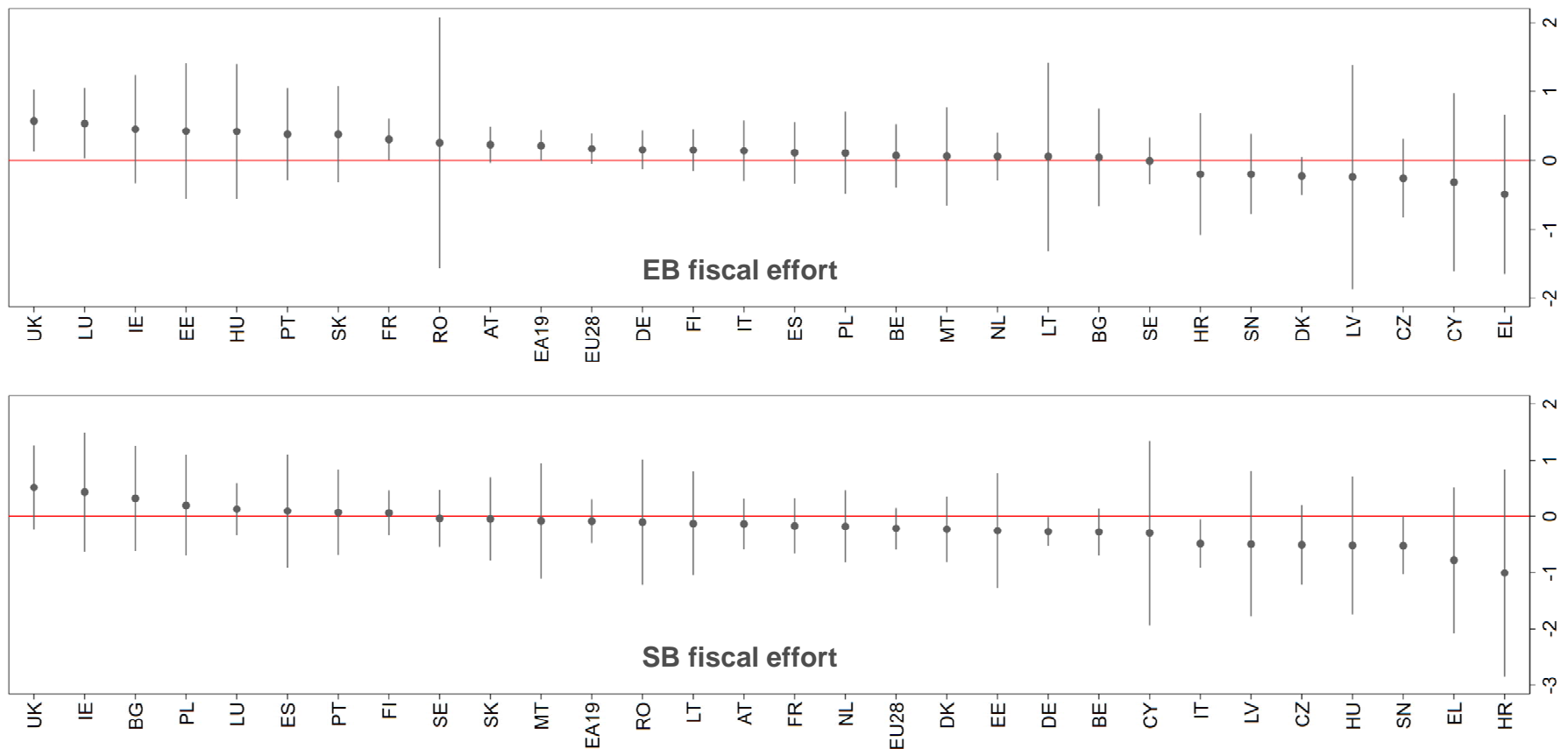
Note: Empirical specification used: dependent variable: forecast error of the fiscal effort (SB or EB)one-year ahead (t|AF t-1), independent variable: constant. No time and/or country dummies are added. Grey circles represent the size of the coefficient of the constant and the vertical lines show the 95% error bands.

Forecast errors of fiscal efforts (EB and SB) are broadly similar

Kernel forecast error, one-year ahead forecast error (t|AF t-1, 2000-19)
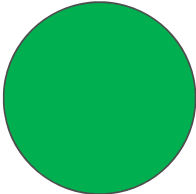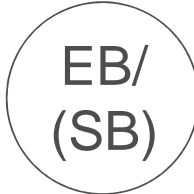

Bad surprises: 20/30% of distribution < -0.5

Good surprises: 35/25% of distribution > 0.5

Forecast error SB vs. EB, t|AF t-1

D.SB   EB-based fiscal effort
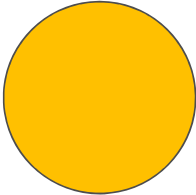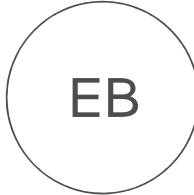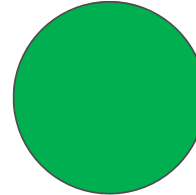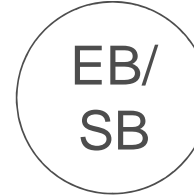
	SB	EB
Countries	28	28
Obs.	427	422
Mean	0.0	0.1
Modus	-0.1	0.1
Std. dev.	1.3	1.3
Skewness	0.4	-1.6
Kurtosis	6.7	11.1

Note:

- Skewness: the more negative, the further the tail is on the left side of the distribution

- Kurtosis: the higher, the more frequent extreme values (or outliers)

Main takeaways

Main objective	Key findings	Objective achieved	Better indicator
Ensure sustainability	• Public debt-to-GDP ratios would have been significantly lower than today, in particular in high-debt Member States, if the current SGP had been applied since 1999. • EB and SB deliver similar results, but EB seems slightly more growth-friendly.	🟢	EB/ (SB)
Foster stabilisation	• Discretionary fiscal policies have, on average, been procyclical in the EU since 2000, the main reason being fiscal loosening in good times. • The expenditure benchmark appears to be a more effective indicator in reducing procyclicality than the structural balance. • Strict compliance with fiscal rules would have resulted in an acyclical fiscal effort → automatic stabilisers can play freely	🟡	EB
Guarantee predictability	• Commission forecasts of fiscal efforts are not systematically biased • Broadly similar size of forecast errors of EB- and SB-based fiscal efforts	🟢	EB/ SB

Thank you

Additional slides

Reminder: calculation of expenditure benchmark

	Variable (for t unless otherwise mentioned, in nominal terms)	Source
+	Government expenditure aggregate	SCPs (table 2a, ESA code TE)
–	Interest expenditure	SCPs (table 2a, ESA code D.41)
–	Government expenditure on EU programmes which is fully matched by EU funds revenue	SCPs (table 2c, row 1)
–	Gross fixed capital formation not matched by EU funds (for year t) = Gross fixed capital formation (for year t) – Investment expenditures matched by EU funds (for year t)	SCPs (table 2a, ESA code P.51g) – SCPs (table 2c, row 1a) *if available*
+	Gross fixed capital formation not matched by EU funds averaged over t-3 to t	SCPs (table 2a, ESA code P.51g) – SCPs (table 2c, row 1a) *if available* ESTAT (and ECB) for past data
–	Cyclical unemployment benefit expenditure	SCPs (table 2c, row 2)
=	*modified* expenditure aggregate Et	

Step 2 – Expenditure *net of discretionary revenue measures* is obtained by subtracting from the *modified* expenditure aggregate Et the estimated impact for year t of revenue measures having an incremental effect on revenues collected in t with respect to t-1. For that purpose, it is necessary to estimate the *incremental impact for year t* (DR_t) of discretionary revenue measures having an incremental effect on revenues collected in t, including the revenue increase mandated by law – both revenue-increasing *and* -decreasing measures are to be taken into account. Member States should provide the estimate of that impact in their SCPs: it is the sum of "discretionary revenue measures" (table 2c, row 3) and of "revenue increases mandated by law" (table 2c, row 4).

Step 3 – Compute the net expenditure growth rate for year t: $g_t = (G_t - DR_t - G_{t-1})/ G_{t-1}$

Impact of modifying the actual EB fiscal effort

Expenditure aggregate (E)		Benchmark				
		Potential growth (P)		**Deflator (D)**		
E 1	Total expenditure net of E2 – E7	P 1	10-y potential GDP (t-5, …, t+4)	D 1	GDP deflator (COM SF)	→ **Current SGP definition**
E 2	E1 incl. interest payments	P 2	10-y potential GDP (t-8, …, t+1)	D 3	HICP deflator	
E 3	E1 incl. cyclical unemp. benefits	P 3	5-y potential GDP	D 4	2% inflation target	
E 4	E 1 incl. DRM	P 4	1-y potential GDP			**Modified SGP Indicator**
E 5	E 1 incl. smoothed investment					
E 6	E1 incl. EU funds					
E 7	E1 incl. one-offs					