

When and why do countries break their national fiscal rules?

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The opinions expressed in this paper are those of the author and do not necessarily reflect the official viewpoint of the German Council of Economic Experts.

Motivation

New EU legal framework after sovereign debt crisis

- EU member states significantly strengthened supranational and national fiscal frameworks
 - Six-pack and Two-pack regulations at the EU level, Fiscal Compact at the national level
- Key elements are various numerical fiscal rules, also at the national level, restricting the discretion of governments

EU legal framework

EC Directive 2011/85/EU

"Each MS shall have in place numerical fiscal rules..." (Art. IV.5)

"... effective and timely monitoring of compliance with the rules, based on reliable and independent analysis carried out by independent bodies ..." (Art. IV.6.1b)

"...consequences in the event of non-compliance" (Art. IV.6.1c)

Regulation EU 473/2013

"MS shall have in place independent bodies for monitoring compliance with [...] numerical fiscal rules..." (Art. V.1)

Fiscal Compact (Treaty on Stability, Coordination and Governance)

"Rules [...] shall take effect [...] through provisions of binding force and permanent character, preferably constitutional..." (Art. III.3.2)

Literature on fiscal rules

Theoretical literature on fiscal rules

- Theoretical rationale for introducing fiscal rules well established - based on deficit bias of politicians and governments (e.g. Wyplosz, 2012 or Debrun et al., 2008)
 - Deficit bias can arise due to a.o. asymmetric information, common pools, short-sightedness, spillovers

▶ Literature on deficit bias

Empirical studies: Introduction of fiscal rules leads a.o. to...

- Lower fiscal deficits (e.g. Ayuso-i Casals et al., 2009),
- Lower sovereign interest rate spreads (e.g. Heinemann et al., 2014; Iara and Wolf, 2014),
- Lower output volatility (e.g. Fatas and Mihov, 2006) or
- More fiscal space (e.g. Nerlich and Reuter, 2015)

Introduction

Analysis of determinants of compliance with fiscal rules

- So far only studies of effects of fiscal rules on macroeconomic and fiscal variables independent of countries' compliance
- As shown in Reuter (2015), actual compliance with fiscal rules might not necessarily be needed for their economic effects
- But analysis can shed light on the optimal design and framework of fiscal rules

First paper to analyse actual compliance

- 51 rules in 20 of the EU28 member states from 1995 to 2014
- Which features of fiscal rules and their fiscal framework, as well as their political or economic environment lead to higher probabilities of compliance?

Literature

Only studies analysing compliance with fiscal rules in larger sample:

[Cordes et al. \(2015\)](#)

- Description of features of compliance with 31 expenditure rules in advanced and emerging economies
- No econometric exercises based on compliance data
- Expenditure rules are complied with more often than other types, especially in coalition agreements or statutory law and with specific nominal targets

[Frankel and Schreger \(2013\)](#)

- (Forecast) Compliance with supranational EU rules set out in Maastricht treaty
- Find forecasts of governments to be biased when country is in danger of non-compliance
- Bias is smaller in countries with strong national rules as well as independent forecasting institutions

Data

Sample of Fiscal Rules

- 51 national numerical fiscal rules [▶ Full list of included fiscal rules](#)
 - Were or are in force in 20 of the EU28 from 1995 to 2014
 - Enlisted in European Commission (2014) and/ or IMF (2015)

Characteristics of Sample

[▶ Reasons for excluding rules](#)

- Covering general (67%) or central (33%) government
- Enshrined in statutory law or constitution (69%), or mere coalitional agreements or political commitments (31%)
- Rule types: 25 balanced budget rules (49%), 11 debt rules (22%), 15 expenditure rules (29%) and no revenue rules
- Introduced during or after the financial crisis (53% since 2008), but also before 2008 (47%)

Description of rule-specific Variables ($R_{i,j,t}$) I

Variable	Description and possible values	EC(2014)	this paper
Debt Rule	1 if rule type is debt rule, 0 otherwise	22% 78%	22% 78%
Expenditure Rule	1 if rule type is expenditure rule, 0 otherwise	38% 62%	29% 71%
Central government	0 if rule covers general government, 1 if only central government	67% 33%	67% 33%
Statutory base	If rule is based on political commitment (1), coalition agreement (2), legal act (3), constitution (4)	8% 29% 53% 10%	13% 20% 50% 18%
Adjustment margin	Room for changing objectives: complete freedom (1), some but constrained margin (2), no margin for adjustment (3)	5% 44% 51%	5% 48% 48%
Monitoring body	Institution monitoring compliance: no regular monitoring (1), government body, including MoF (2), independent authority or national parliament (3)	9% 49% 42%	5% 35% 60%

Notes: Source of variable description is [?] and percentages refer to share of fiscal rules in total [?] database (only rules which cover general or central government and came into force before 2014) and sample of fiscal rules in this paper with specific value described on the left.

Description of rule-specific Variables ($R_{i,j,t}$) II

Variable	Description and possible values	% of obs.	this paper
Alert mechanism	1 if real-time alert mechanism of risk of non-compliance exists, 0 otherwise	50% 50%	48% 53%
Enforcement body	Institution enforcing the rule: no specific body (1), government body, including MoF (2), independent authority or national parliament (3)	14% 67% 19%	20% 65% 15%
Non-compl. actions	Enforcement mechanisms of rule: no ex-ante defined actions (1), obligation to present corrective proposals (2), automatic correction and possibility of sanctions (3), automatic correction or sanctions (4)	45% 27% 18% 10%	50% 20% 15% 15%
Escape clauses	1 if escape clauses are foreseen and clearly specified, 0 otherwise	27% 73%	30% 70%
Media visibility	Visibility of rule: no or modest interest (1), high interest, but unlikely public debate if non-compliance (2), closely monitored and non-compliance sparks public debate (3)	42% 23% 35%	28% 30% 43%

Notes: Source of variable description is [?] and percentages refer to share of fiscal rules in total [?] database (only rules which cover general or central government and came into force before 2014) and sample of fiscal rules in this paper with specific value described on the left.

► Correlation of variables

Compliance with fiscal rules

Main variable of interest: Compliance with fiscal rules $c_{i,j,t}$

- Transformation of explanatory information collected from EC and IMF databases into mathematical inequalities
- Rules very heterogeneous, even if constraining the same fiscal variable not always setting same numerical limits

Statistical Data and Caveats

- Calculation of compliance based on Eurostat Government Finance Statistics and Eurostat's AMECO database
- I.e. compliance calculated might differ from compliance observed on national level
 - But EU data might be less prone to manipulation by national politicians - more realistic picture of actual compliance
- Analyse only ex-post and annual compliance
- Calculation does not take into account escape clauses, but existence controlled for in econometric exercises

Average compliance with national numerical fiscal rules I

<i>Rule Type:</i>	<i>All Rules</i>	<i>BBR</i>	<i>DR</i>	<i>ER</i>
Avg. Compliance	52%	37%	88%	48%
Observations	290	139	69	82
<i>Constrained Var.: Stock</i>	<i>Flow</i>	<i>Coverage:</i>		<i>CG</i>
Avg. Compliance	72%	46%	36%	62%
Observations	75	215	107	183
<i>Legal basis:</i>	<i>PC</i>	<i>CA</i>	<i>L</i>	<i>C</i>
Avg. Compliance	43%	56%	54%	51%
Observations	44	71	126	49

Notes: Average compliance in % of years in subsample indicated above horizontal line. BBR - Balanced Budget Rule; DR - Debt Rule; ER - Expenditure Rule; PC- Political Commitment; CA - Coalitional Agreement; L - Statutory Law; C - Constitution; GG - General Government Level; CG - Central Government Level; RG - Regional Government Level; LG - Local Government Level; Euroarea countries: Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Portugal, Slovakia, Slovenia, Spain; Former transition economies: Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia.

Average compliance with national numerical fiscal rules II

<i>In case of non-compliance:</i>	<i>Autom. sanct./ corr. mech.</i>	<i>Oblig. to respond/ justify</i>	<i>No pre-defined action</i>	
Avg. Compliance	67%	55%	44%	
Observations	52	67	158	
<i>Countries:</i>	<i>Euroarea</i>	<i>Non-EA</i>	<i>Former transition</i>	<i>Not form. tran.</i>
Avg. Compliance	44%	61%	72%	39%
Observations	148	142	119	171
<i>Time periods:</i>	<i>1995-2000</i>	<i>2001-2005</i>	<i>2006-2010</i>	<i>2011-2014</i>
Avg. Compliance	45%	51%	54%	56%
Observations	47	71	81	91

Notes: Average compliance in % of years in subsample indicated above horizontal line. BBR - Balanced Budget Rule; DR - Debt Rule; ER - Expenditure Rule; PC - Political Commitment; CA - Coalitional Agreement; L - Statutory Law; C - Constitution; GG - General Government Level; CG - Central Government Level; RG - Regional Government Level; LG - Local Government Level; Euroarea countries: Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Portugal, Slovakia, Slovenia, Spain; Former transition economies: Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia.

Additional explanatory variables

Country-specific ($V_{i,t}$) variables

Output Gap (-1)	Government fragmentation
Nom. eff. exchange rate	Ideology (conservatism)
Inflation	Election Year
GG Debt (-1)	Population
Implied interest rate (-1)	Decentralization

Supranational ($S_{i,t}$) variables

EMU convergence	Membership in EMU
Reformed SGP	EMU × Reformed SGP
IMF programme	

Sources: Eurostat, IMF and the World Bank's Database on Political Institutions

Econometric Framework

290 observations between 1995 and 2014

- Binary variable $c_{i,j,t}$: one if country i complied with its fiscal rule j in year t and zero if not
 - Only observed in years when fiscal rules were actually in force

Econometric models similar to the following:

$$c_{i,j,t} = \alpha + \beta R_{i,j,t} + \gamma V_{i,t} + \theta S_{i,t} + \nu_t + \mu_i + \varepsilon_{i,j,t} \quad (1)$$

(vector $R_{i,j,t}$ = rule-specific variables, vector $V_{i,t}$ = country-specific variables, vector $S_{i,t}$ = supranational variables, $\varepsilon_{i,j,t}$ = idiosyncratic error term)

- Other vector(s) are always included to control for rule-, country-specific or supranational properties.
- Time- (ν_t) and country- (μ_i) fixed effects are included
- Panel logistic-regression - tables show average marginal effects

Endogeneity concerns

Omitted variable: Voter preferences

- Daflon & Pujol (2001) and Krogstrup & Wälti (2008) show voter preferences largely time-invariant (with no significant electorate changes), i.e. captured by country fixed effects
- Additionally, control variables from political economy: ideology, election year, gov. fragmentation, decentralization

Reverse causality

- Possible introduction of new rules or change of rule characteristics because of (non-)compliance
- In this paper: every change / introduction leads to new rule $j + 1$ for country i
- Furthermore change / introduction of fiscal rules long and cumbersome process (several years)

Estimation results f. fiscal rule-specific characteristics $R_{i,j,t}$

	(2)	(3)	(5)	(7)	(9)	(11)	(13)
Debt Rule	2.88*** (0.92)						9.93*** (3.18)
Expenditure Rule		0.66 (0.92)					-11.08* (4.53)
Statutory base			-0.10 (0.57)				-3.09** (1.57)
Monitoring body				1.80 (1.25)			15.55*** (4.25)
Enforcement body					2.43*** (0.80)		3.89* (2.25)
Escape clauses						-1.57 (1.22)	-12.47*** (3.70)
Observations	251	251	238	238	238	238	238

Notes: Each column presents a separate panel logistic regression with a country i 's compliance $c_{i,j,t}$ with its fiscal rule j at year t as dependent variable. Country-specific controls ($V_{i,t}$), supranational controls ($S_{i,t}$), country-fixed effects and time-fixed effects are included in all regressions, but not reported. The selection of variables in Column 13 emerges after consecutively excluding insignificant variables following the general-to-specific approach by

Estimation results f. country specific characteristics $V_{i,t}$

	(2)	(5)	(6)	(7)	(10)	(12)	(13)
Output Gap (-1)	-0.08 (0.09)						
GG Debt (-1)		-0.05 (0.04)					-0.03** (0.01)
Implied interest rate (-1)			-21.88 (19.59)				-28.22* (14.52)
Gov. Fragmentation				-2.25 (2.27)			-2.94* (1.31)
Population					-0.73** (0.32)	-0.73** (0.32)	0.06*** (0.01)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	No
Observations	241	241	244	244	244	244	272

Notes: Each column presents a separate panel logistic regression with a country i 's compliance $c_{i,j,t}$ with its fiscal rule j at year t as dependent variable. Rule-specific controls ($R_{i,j,t}$), supranational controls ($S_{i,t}$), country-fixed effects (except for Column 15) and time-fixed effects are included in all regressions, but not reported. The selection of variables in Column 14 and 15 emerges after consecutively excluding insignificant variables following the general-to-specific approach by Hendry (surveyed in Campos et al., 2005). The coefficients present average marginal effects

History of fiscal rules

	(5)	(6)	(7)	(8)
No. of years since introduction of rule	-0.13 (0.10)			
Diff. gov. parties than at introduction		-1.96** (0.95)		
Distance (abs) to numerical limit (-1)			-0.12 (0.26)	
Dist. (only non-compl.) num. limit (-1)				-1.11** (0.48)
Observations	238	238	176	176

Notes: RG - Regional Government, LG - Local Government, BBR - Balanced Budget Rule, ER - Expenditure Rule, DR - Debt Rule. Each column presents a separate panel logistic regression with a country i 's compliance $c_{i,j,t}$ with its fiscal rule j at year t as dependent variable. Rule- $(R_{i,j,t})$ and country- $(V_{i,t})$ specific and supranational $(S_{i,t})$ controls, country-fixed effects (except for column 7, i.e. for regressions with initial distance) and time-fixed effects are included in all regressions, but not reported. The coefficients present average marginal effects and standard errors are in parentheses. * denotes significance at 10 percent level, ** denotes significance at 5 percent; *** denotes significance at 1 percent.

Forecast errors

	(1)	(2)	(3)	(4)
Forecast error of nominal GDP	-0.04 (0.06)			
Forecast error of nominal GDP (only negative)		-0.06 (0.11)		
Forecast error of nominal GDP (only positive)		-0.02 (0.08)		
Forecast error of GG primary balance			-1.00*** (0.32)	
Forecast error of GG primary balance (only negative)				-2.38*** (0.62)
Forecast error of GG primary balance (only positive)				-0.51 (0.32)
Observations	220	220	211	211

Notes: Each column presents a separate panel logistic regression with a country i 's compliance $c_{i,j,t}$ with its fiscal rule j at year t as the dependent variable. Rule- $(R_{i,j,t})$ and country- $(V_{i,t})$ specific and supranational $(S_{i,t})$ controls, country-fixed effects and time-fixed effects are included in all regressions, but not reported. Forecast errors are

Robustness

Uncertainty reg. calculation of compliance variable

▸ Robustness

- Compl. might differ from that observed by national inst.
 - European, not national data, and some specificities used in descriptions might be ambiguously defined
 - But can be assumed that differences are small in terms of percentage points of GDP
- Calculating compliance based on the constrained variable...
 - 0.5 percentage points of GDP higher or lower,
 - 10 percent higher or lower and
 - one standard deviation higher or lower than
- Var's remaining significant throughout are debt rules, and monitoring and enforcement body

Uncertainty regarding econometric specification

▸ Robustness

- Excl. country-specific variables, country- and time-fixed effects
- Qualitative results relatively stable, except for specification without any control variables

Conclusions

First analysis of countries' compliance with its fiscal rules

- 51 fiscal rules in 20 EU member states from 1995 to 2014

Average overall compliance around 50%

- Higher with debt rules (or stock vars), rules covering general gov. and enforced by autom. sanctions or correction mech.
- Independent monitoring and enforcement bodies significantly associated with higher probability of compliance
- Ownership of rules important

Future Research

- This paper starting point to analyse optimal design and framework of fiscal rules
- One of the most important questions remains which actual numerical limits the rules are setting
- Combined analysis of compliance and effects of fiscal rules (binding vs. non-binding rules)

Appendix

Literature deficit bias

"deficit bias":

- **Common-pool theory**, Egger and Köthenbürger (2010), Roubini and Sachs (1989), Volkbrink and De Haan (2001), Velasco (2000), Fabrizio and Mody (2006), Perotti and Kontopoulos (2002), Besley and Case (2003), Talvi and Vegh (2005), Alesina et al. (2008)
- **Information asymmetry**, Alt and Lassen (2006), Broesens and Wierts (2009), Brender and Drazen (2005), Shi and Svensson (2006), Avrate et al. (2009)
- **Impatience and short-sightedness of governments**, Lambertini (2003), Petterson (1999), Rogoff and Bertelsmann (2010)
- **Spill-over effects**, Beetsma and Uhlig (1999), Detken et al. (2004), Sutherland et al. (2005)

Sample of fiscal rules covering the general government I

Ctry.	Type	From	To	Rule	Condition
<i>Legal basis: Statutory Law or Constitution</i>					
BG	BBR	2012	-	$bb_t^c \geq -2\%$	
BG	DR	2003	-	$d_t \leq d_{t-1}$	if $d_{t-1} > 60\%$
BG	ER	2012	-	$e_t \leq 40\%$	
DK	BBR ¹	2012	-	$sb_t \geq -0.5\%$	
ES	BBR	2002 ³	2005	$bb_t \geq 0$	
ES	BBR	2006	2011	$bb_t \geq 0$	otherwise
				$bb_t \geq -2\%$ (10-11: -1%)	if $\delta Y_t < 2\%$
				$bb_t > 0\%$	if $\delta Y_t > 3\%$
ES	ER ⁴	2011	-	$\delta(PE_t - U_t^{disc}) \leq \phi_9 \delta Y_t$	
HR	ER ⁵	2011 ⁶	2013 ⁷	$\Delta e_t \leq -1\%$	if $pb_{t-1} < 0$
				$pb_t^{cyc} \geq 0$	if $pb_{t-1} \geq 0$
HU	BBR	2004 ⁸	2009 ⁹	$pb_t > 0$	
HU	BBR ²	2010	2011	$bb_t > bb_{t-1}$	
HU	DR	2012 ¹⁰	-	$d_t \leq d_{t-1}$	if $d_{t-1} > 50\%$
HU	ER ²	2010	2011	$\delta PE_t^r \leq 0.5 \delta Y_t^r$	

Notes: ¹ Not mentioned in IMF (2015) dataset, only in EC (2014), ² Not mentioned in EC dataset only in IMF, ³ in IMF only from 2003, ⁴ in IMF only covering central not general government, ⁵ in IMF dataset, split into two rules, one expenditure and one balanced budget rule, ⁶ in IMF only from 2012, ⁷ in EC in force also past 2013, ⁸ in EC only from 2007, ⁹ in EC only until 2008, ¹⁰ in IMF only from 2016, ¹¹ not as mentioned as rule in IMF, but mentioned in text as future rule, ¹² in EC only from 1997, ¹³ in EC only from 2014, ¹⁴ in IMF from 2009, ¹⁵ according to EC until 2011, but "discontinued in 2010 and 2011" according to IMF, ¹⁶ in IMF still in force, ¹⁷ in IMF until 2007/2008, ¹⁸ according to IMF only until 2004.

Sample of fiscal rules covering the general government II

Ctry.	Type	From	To	Rule	Condition
<i>Legal basis: Statutory Law or Constitution</i>					
IE	DR ¹	2013	-	$d_t \leq d_{t-1}$	if $d_{t-1} > 60\%$
IE	BBR ¹¹	2013	-	$sb_t \geq -0.5\%$	
LV	BBR	2013	-	$sb_t \geq -0.5\%$	if $sb_{t-1} > -1\%$
				$sb_t \geq sb_{t-1} + 0.5\%$	if $sb_{t-1} < -1\%$
LV	DR ¹	2013	-	$d_t \leq 60\%$	
PL	DR	1999 ¹²	2013	$BB_t/R_t \geq BB_{t-1}/R_{t-1}$	if $d_{t-1} > 50\%$
				$d_t \leq d_{t-1}$	if $d_{t-1} > 55\%$
PT	DR ¹	2013	-	$\Delta d_t \leq -\frac{1}{20}(d_{t-1} - 60\%)$	if $d_{t-1} > 60\%$
RO	DR ²	2013	-	$d_t \leq 60\%$	
RO	ER ²	2010	2012	$\delta E_t \leq \ominus_{-3} \delta Y_t$	if $bb_{t-1} \leq 0$
SE	BBR	2007	-	$sb_t \geq 1\%$	
SK	DR	2012	-	$d_t \leq 60\%$	
SK	BBR	2013 ¹³	-	$sb_t \geq -0.5\%$	if $d_{t-1} > 60\%$
				$sb_t \geq -1\%$	if $d_{t-1} \leq 60\%$
UK	BBR	1997	2008	$bb_t^{cur, cyc} \geq 0$	
UK	BBR	2010 ¹⁴	-	$bb_t > bb_{t-1}$	
UK	DR	1997	2008	$nd_t \leq 40\%$	

Notes: ¹ Not mentioned in IMF (2015) dataset, only in EC (2014), ² Not mentioned in EC dataset only in IMF, ³ in IMF only from 2003, ⁴ in IMF only covering central not general government, ⁵ in IMF dataset, split into two rules, one expenditure and one balanced budget rule, ⁶ in IMF only from 2012, ⁷ in EC in force also past 2013, ⁸ in EC only from 2007, ⁹ in EC only until 2008, ¹⁰ in IMF only from 2016, ¹¹ not as mentioned as rule in IMF, but mentioned in text as future rule, ¹² in EC only from 1997, ¹³ in EC only from 2014, ¹⁴ in IMF from 2009, ¹⁵

Sample of fiscal rules covering the general government III

Ctry.	Type	From	To	Rule	Condition
<i>Legal basis: Coalitional agreement or Political Commitment</i>					
BG	BBR	2011	2011	$bb_t^c \geq -2\%$	
BG	ER	2006	2009 ¹⁵	$e_t \leq 40\%$	
DK	ER	1994	2006	$\delta C_t^r \leq 0.5\%$ ($\leq 1\%$ in 2002-2005)	
DK	BBR	1992	2006 ¹⁶	$sb_t \geq -0.5\%$	
EE	BBR	1993	2011 ¹⁷	$bb_t \geq 0$	
EE	BBR	2012	-	$sb_t \geq 0$	
SE	BBR	2000	2006	$sb_t \geq 2\%$	
SI	DR	2000	2009 ¹⁸	$d_t \leq 40\%$	

Notes: ¹ Not mentioned in IMF (2015) dataset, only in EC (2014), ² Not mentioned in EC dataset only in IMF, ³ in IMF only from 2003, ⁴ in IMF only covering central not general government, ⁵ in IMF dataset, split into two rules, one expenditure and one balanced budget rule, ⁶ in IMF only from 2012, ⁷ in EC in force also past 2013, ⁸ in EC only from 2007, ⁹ in EC only until 2008, ¹⁰ in IMF only from 2016, ¹¹ not as mentioned as rule in IMF, but mentioned in text as future rule, ¹² in EC only from 1997, ¹³ in EC only from 2014, ¹⁴ in IMF from 2009, ¹⁵ according to EC until 2011, but "discontinued in 2010 and 2011" according to IMF, ¹⁶ in IMF still in force, ¹⁷ in IMF until 2007/2008, ¹⁸ according to IMF only until 2004.

Economic symbols: δ growth rate, Δ difference, \odot_t average over past t years (forecast years if t is negative), r real values (using BIP deflator), cur current figures, c on cash basis, cyc cyclically adjusted, ndisc non-discretionary; BB_t Budget balance, bb_t Budget balance (% of GDP), C_t Government final consumption, d_t Gross debt (% of GDP), E_t Total expenditure, e_t Total expenditure (% of GDP), inv_t Investment expenditures (% of GDP), nd_t net debt (% of GDP), pb_t Primary balance (% of GDP), PE_t Primary expenditure, $Pensions_t$ Pension expenditure, R_t Total revenue, sb_t Structural balance (% of GDP), U_t Unemployment expenditures, Y_t GDP, Y_{pt} Potential GDP.

Sample of fiscal rules covering the central government I

Ctry.	Type	From	To	Rule	Condition
<i>Legal basis: Statutory Law or Constitution</i>					
DE	BBR	1990 ³	2010	$inv_t + bb_t \geq 0$	
DE	BBR	2011	-	$sb_t \geq -0.35\%$	
FR	ER ⁴	2011	-	$\max(\delta E_t, \delta(PE_t - Pensions_t)^r) \leq 0$	
HR	DR	2009	-	$\Delta d_t \leq 0\%$	
HU	BBR ^{1,5}	2009	2011	$pb_t \geq 0\%$	
HU	DR	2009	2011	$\Delta d_t \leq 0\%$	
LT	ER	2008	-	$\delta E_t \leq \textcircled{5}(\delta R_t) + 0.5\%$	if $\textcircled{5}BB_t^{GG} \leq 0$
PL	ER	2011	2014	$\delta E_t^{cyc,r} \leq 1\%$	
PT	BBR ¹	2002	-	$bb_t \geq 0$	

Notes: ¹ Not mentioned in IMF (2015) dataset, only in EC (2014), ² Not mentioned in EC dataset, only in IMF, ³ in IMF from 1969, ⁴ in IMF only one rule enshrined in statutory law and political commitment, ⁵ in EC mentioned as debt rule, ⁶ in EC debt rule instead of balanced budget rule, ⁷ in EC still in force in 2014, ⁸ in IMF from 1982, ⁹ in IMF same as statutory rule from 2011

Economic symbols: δ growth rate, Δ difference, \textcircled{t} average over past t years (forecast years if t is negative), r real values (using BIP deflator), cur current figures, c on cash basis, cyc cyclically adjusted, ndisc non-discretionary; BB_t Budget balance, bb_t Budget balance (% of GDP), C_t Government final consumption, d_t Gross debt (% of GDP), E_t Total expenditure, e_t Total expenditure (% of GDP), inv_t Investment expenditures (% of GDP), nd_t net debt (% of GDP), pb_t Primary balance (% of GDP), PE_t Primary expenditure, $Pensions_t$ Pension expenditure, R_t Total revenue, sb_t Structural balance (% of GDP), U_t Unemployment expenditures, Y_t GDP, Yp_t Potential GDP.

Sample of fiscal rules covering the central government II

Ctry.	Type	From	To	Rule	Condition
<i>Legal basis: Coalitional agreement or Political Commitment</i>					
BE	ER	1993	1998	$\delta PE^r \leq 0\%$	
DE	ER	1990 ⁶	2007	$\delta E_t \leq 1\%$	
DE	ER	2008	- ⁷	$\delta E_t \leq \delta R_t$	
FI	BBR	1999	2002	$bb_t \geq -2.75\%$	
FI	BBR	2003	2008	$bb_t \geq -2.5\%$	
FI	BBR ⁸	2011	-	$bb_t \geq -1\%$	
FR	ER ⁹	1998	2010	$\max(\delta E_t, \delta(PE_t - Pensions_t)^r) \leq 0$	
PL	BBR	2006	2007	$BB_t \leq 30Bio.$	

Notes: ¹ Not mentioned in IMF (2015) dataset, only in EC (2014), ² Not mentioned in EC dataset, only in IMF, ³ in IMF from 1969, ⁴ in IMF only one rule enshrined in statutory law and political commitment, ⁵ in EC mentioned as debt rule, ⁶ in EC debt rule instead of balanced budget rule, ⁷ in EC still in force in 2014, ⁸ in IMF from 1982, ⁹ in IMF same as statutory rule from 2011

Economic symbols: δ growth rate, Δ difference, \odot_t average over past t years (forecast years if t is negative), r real values (using BIP deflator), cur current figures, c on cash basis, cyc cyclically adjusted, ndisc non-discretionary; BB_t Budget balance, bb_t Budget balance (% of GDP), C_t Government final consumption, d_t Gross debt (% of GDP), E_t Total expenditure, e_t Total expenditure (% of GDP), inv_t Investment expenditures (% of GDP), nd_t net debt (% of GDP), pb_t Primary balance (% of GDP), PE_t Primary expenditure, $Pensions_t$ Pension expenditure, R_t Total revenue, sb_t Structural balance (% of GDP), U_t Unemployment expenditures, Y_t GDP, Y_{pt} Potential GDP.

Fiscal rules not included in sample

Original databases include additional fiscal rules which are not part of the sample of this paper Four main reasons:

- ❶ data availability (only constrain very small parts of government finances or use variables not available),
- ❷ becoming effective only in the future (rules will only be in force in future years),
- ❸ setting no quantified target (especially with lower legal basis not have quantifiable or clear targets definitions), and
- ❹ classified ambiguously (medium term expenditure frameworks with regularly changing targets).

Many of those rules which could not be included in the sample of this paper were also missing in one of the two original datasets, which might point to some unclear definition or interpretation of those rules.

Correlations for rule-specific variables $R_{i,j,t}$

↑ Debt Rules

⇔ ↑ Non-compliance actions

⇔ ↑ Statutory base

↑ Statutory base

⇔ ↑ Non-compliance actions

⇔ ↑ Monitoring body

⇔ ↑ Escape clauses

↑ Room for adjustment

⇔ ↑ Balanced Budget Rules

⇔ ↑ Enforcement Body

⇔ ↑ Alert mechanism

↑ Expenditure Rules

⇔ ↑ Central Government

⇔ ↓ Statutory base

⇔ ↓ Non-compliance actions

↑ Central Government

⇔ ↓ Non-compliance actions

⇔ ↓ Alert mechanism

▶ Full correlation table

Analysis of Correlations

Correlations btw. rule- ($R_{i,j,t}$) & country-specific ($V_{i,t}$) var.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Balanced Budget R.	1.00											
(2) Debt Rule	-0.55	1.00										
(3) Expenditure Rule	-0.59	-0.35	1.00									
(4) Central Gov.	-0.07	-0.29	0.36	1.00								
(5) Statutory base	0.04	0.36	-0.39	-0.12	1.00							
(6) Adjustment margin	-0.40	0.26	0.20	-0.21	0.10	1.00						
(7) Monitoring body	-0.03	0.04	-0.01	-0.06	0.40	0.05	1.00					
(8) Alert mechanism	0.17	0.23	-0.41	-0.39	0.01	0.12	-0.01	1.00				
(9) Enforcement body	-0.29	0.23	0.10	-0.24	0.11	0.32	-0.11	0.34	1.00			
(10) Non-compl. actions	-0.03	0.35	-0.31	-0.36	0.39	0.23	0.09	0.30	0.43	1.00		
(11) Escape clauses	-0.09	0.24	-0.13	-0.03	0.60	0.09	0.60	-0.01	0.17	0.43	1.00	
(12) Media visibility	0.05	-0.05	0.00	-0.12	0.25	-0.12	0.22	0.13	0.06	0.15	0.27	1.00
(13) Output Gap (-1)	0.01	0.01	-0.02	-0.09	-0.21	-0.18	-0.08	0.08	-0.04	-0.06	-0.05	-0.03
(14) Exch. Rate	-0.18	0.19	0.02	-0.05	0.16	0.15	-0.06	-0.02	0.23	0.17	0.14	-0.03
(15) Inflation	-0.02	0.14	-0.12	-0.20	-0.06	0.04	-0.12	0.18	0.11	0.13	-0.11	-0.14
(16) GG Debt (-1)	-0.11	-0.11	0.23	0.41	0.18	0.05	0.25	-0.41	-0.16	-0.25	0.03	-0.06
(17) Impl. interest rate (-1)	-0.34	0.26	0.13	0.08	0.22	0.03	0.29	-0.21	-0.05	-0.07	0.31	-0.16
(18) Gov. fragmentation	0.01	0.09	-0.10	-0.05	0.27	-0.15	0.18	-0.29	-0.17	0.13	0.16	-0.03
(19) Ideology	-0.18	0.03	0.17	0.02	0.01	0.29	-0.11	0.09	0.20	0.11	-0.12	-0.03
(20) Election Year	0.03	-0.01	-0.02	-0.03	0.00	-0.04	-0.05	0.01	0.04	0.02	0.00	-0.03
(21) Population	-0.15	-0.13	0.29	0.36	0.22	-0.21	0.34	-0.31	-0.17	0.02	0.38	0.44
(22) Decentralization	-0.17	-0.23	0.41	0.61	-0.03	-0.13	-0.02	-0.28	-0.29	-0.31	-0.07	0.01

Notes: Correlations between variables described in rows and variables as numbered in rows. Sample are the 290 observations for which compliance data is available in this paper.

Estimation results f. supranational framework $S_{i,t}$

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
EMU convergence	-2.09 (1.43)	0.19 (1.00)					
Membership in the EMU	-4.98*** (1.92)		-2.88** (1.42)			-3.03** (1.44)	
Reformed SGP	1.46 (3.08)			-0.97 (2.25)		0.63 (3.02)	
EMU Mem. × Reformed SGP	0.65 (1.65)				0.62 (1.57)	1.17 (1.63)	
IMF support programme	-1.44 (1.61)						-0.34 (1.44)
Observations	238	238	238	238	238	238	238

Notes: Each column presents a separate panel logistic regression with a country i 's compliance $c_{i,j,t}$ with its fiscal rule j at year t as dependent variable. Rule- ($R_{i,j,t}$) and country- ($V_{i,t}$) specific controls, country-fixed effects and time-fixed effects are included in all regressions, but not reported. The coefficients present average marginal effects and standard errors are in parentheses. * denotes significance at 10 percent level, ** denotes significance at 5 percent; *** denotes significance at 1 percent.

Combinations of fiscal rules

	(1)	(2)	(3)	(4)
Also rule at RG or LG level	2.93 (2.01)			
Combination BBR & ER		0.08 (2.10)		
Combination BBR & DR			2.31 (2.73)	
No. of rules in force simultaneously				-0.19 (1.26)
Observations	238	238	238	238

Notes: RG - Regional Government, LG - Local Government, BBR - Balanced Budget Rule, ER - Expenditure Rule, DR - Debt Rule. Each column presents a separate panel logistic regression with a country i 's compliance $c_{i,j,t}$ with its fiscal rule j at year t as dependent variable. Rule- $(R_{i,j,t})$ and country- $(V_{i,t})$ specific and supranational $(S_{i,t})$ controls, country-fixed effects (except for column 7, i.e. for regressions with initial distance) and time-fixed effects are included in all regressions, but not reported. The coefficients present average marginal effects and standard errors are in parentheses. * denotes significance at 10 percent level, ** denotes significance at 5 percent; *** denotes significance at 1 percent.

Results dep. on dependent var. uncertainty

	(1) Base- line	(2) +0.5% GDP	(3) -0.5% GDP	(4) +10%	(5) -10%	(6) +1 Std. Dev.	(7) -1 Std. Dev.
Debt Rule	4.37*** (1.06)	5.92*** (1.60)	4.06*** (1.22)	3.37*** (0.96)	5.42*** (1.43)	5.36*** (1.08)	5.38*** (2.04)
Expenditure Rule	-2.38** (1.20)	-0.76 (1.42)	-1.70 (1.34)	-0.07 (1.07)	-1.99 (1.40)	-5.01*** (1.33)	-2.83 (2.33)
Monitoring body	1.81** (0.74)	1.89* (1.02)	2.12** (0.91)	0.64 (0.67)	1.94** (0.86)	2.67*** (0.82)	2.81** (1.22)
Enforcement body	3.48*** (0.94)	3.52*** (1.27)	3.59*** (1.07)	1.28* (0.65)	3.62*** (1.09)	4.69*** (1.20)	4.19*** (1.50)
Escape clauses	-1.85* (1.06)	-3.52** (1.47)	-1.32 (1.22)	-0.51 (1.02)	-1.58 (1.25)	-3.05** (1.36)	1.48 (1.76)
Observations	269	269	257	269	269	269	257

Notes: Each column presents a separate panel logistic regression with a country i 's compliance $c_{i,j,t}$ with its fiscal rule j at year t as dependent variable. Country-specific (V_i, t) and supranational ($S_{i,t}$) controls, and time-fixed

Results dep. on fixed effects & controls

	(1)	(2)	(3)	(4)	(5)	(6)
Debt Rule	9.93*** (3.18)	4.37*** (1.06)	9.97*** (3.29)	3.84*** (0.88)	9.35*** (3.23)	6.66*** (2.36)
Expenditure Rule	-11.08** (4.53)	-2.38** (1.20)	-11.80*** (4.48)	-2.32** (1.03)	-10.28** (4.46)	-6.85 (4.17)
Monitoring body	15.55*** (4.25)	1.81** (0.74)	13.46*** (4.07)	1.61** (0.65)	13.78*** (4.24)	7.04** (2.82)
Enforcement body	3.89* (2.25)	3.48*** (0.94)	5.29** (2.36)	3.19*** (0.81)	4.23* (2.24)	3.77** (1.70)
Escape clauses	-12.47*** (3.70)	-1.85* (1.06)	-9.47*** (3.43)	-1.55* (0.94)	-10.73*** (3.65)	-3.44 (2.11)
Country-specific variables	Yes	Yes	Yes	Yes	Yes	No
Supranational variables	Yes	Yes	Yes	Yes	No	No
Time fixed effects	Yes	Yes	No	No	Yes	Yes
Country fixed effects	Yes	No	Yes	No	Yes	Yes