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Do National Fiscal Rules Support Numerical Compliance with EU Fiscal Rules?

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Cristiana Belu Manescu, Elva Bova, Martijn Hoogeland and Philipp Mohl

Abstract

This paper investigates how national fiscal rules have supported numerical compliance with EU fiscal rules. Using a novel dataset of numerical compliance with national fiscal rules, the relationship between national and EU rule compliances is explored using both descriptive analysis and panel regression analysis applied for fiscal rules in place between 1998 and 2019. The descriptive analysis shows that compliance with national and EU rules is on average higher in low-debt situations, with compliance with EU fiscal rules somehow higher than for national rules. Panel regressions show that the simple presence of a national fiscal rule does not seem to matter for EU rule compliance. However, national rules that are complied with and are well designed are associated with compliance with almost all types of EU fiscal rules. Against the usual caveats on panel regressions, the results suggest that rule design, monitoring and enforcement can enhance ownership and therefore compliance with numerical fiscal rules.

JEL Classification: H60, H11, E62.

Keywords: Fiscal policy, fiscal rules, EU framework.

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1. INTRODUCTION

The public finances of EU Member States are shaped by numerical fiscal rules at both the EU and national levels. At the EU level ⁽¹⁾, there are four types of fiscal rules, namely the structural balance rule, the expenditure benchmark, the 3 % headline deficit rule and the debt reduction benchmark. At the national level, Member States have adopted similar types of rules, with different designs and specifications. Some rules fully mirror those at the EU level, while others depart in few aspects or are quite different. The rules at the national level also cover different layers of government and different budget items ⁽²⁾.

EU law calls for the adoption of national fiscal rules that support compliance with EU rules. Council Directive 2011/85/EU ⁽³⁾ requires Member States to adopt national fiscal rules that ‘effectively promote compliance with its obligations deriving from the Treaty on the Functioning of the European Union in the area of budgetary policy over a multiannual horizon for the general government as a whole’. To address this provision, several Member States have adopted national rules in various forms with a view to supporting compliance with EU rules.

National fiscal rules can support compliance with EU rules in several ways, however evidence is missing. The literature has identified several drivers of compliance with fiscal rules, in particular relating to the fiscal and macroeconomic environment, the type of fiscal rules and institutions and political economy factors ⁽⁴⁾. However, the implications of compliance with and design of national fiscal rules has, to the best of our knowledge, not been assessed. The ‘design strength’ of a fiscal rule refers to the practices or arrangements that make a rule more effective in constraining fiscal policy and fostering fiscal transparency ⁽⁵⁾. Among other criteria, it covers whether the target can easily be changed and whether compliance with the rule is well monitored ⁽⁶⁾.

Against this background, this paper provides new evidence on the implications of national fiscal rules on compliance with EU fiscal rules. This relationship is assessed mainly with panel regressions focusing on the following three questions.

1. Does the mere **existence** of national rules influence compliance with EU fiscal rules?
2. Does **compliance** with national fiscal rules support compliance with EU rules?
3. Does the **design** of national fiscal rules matter for compliance with EU fiscal rules?

Findings from stylised facts and panel regressions show that national and EU fiscal rules seem to reinforce each other when they are complied with and/or are well designed. Based on a novel dataset of numerical compliance with fiscal rules and using data from the Commission’s Fiscal Governance Database (FGD), stylised facts and panel regressions are applied to national and EU fiscal rules that were in force for the 1998–2019 period. The evidence reported shows that the presence of national fiscal rules per se has no implications on compliance with EU fiscal rules. However, having

⁽¹⁾ See Council Regulation (EC) No 1466/97 of 7 July 1997 on the strengthening of the surveillance of budgetary positions and the surveillance and coordination of economic policies and Council Regulation No 1467/97 of 7 July 1997 on speeding up and clarifying the implementation of the excessive deficit procedure, both as amended.

⁽²⁾ Commission communication – The EU economy after COVID-19: Implications for economic governance’, COM(2021) 662.

⁽³⁾ Council Directive 2011/85/EU of 8 November 2011 on requirements for budgetary frameworks of the Member States.

⁽⁴⁾ European Commission (2021), Reuter (2019), Larch and Santacrose (2020), Larch et al. (2020), Thygesen et al. (2019), De Jong and Gilbert (2020).

⁽⁵⁾ The Commission uses the widely accepted definition from Kopits and Symansky (1998).

⁽⁶⁾ This methodology rests on a widely accepted definition that sets out five major criteria for a well-designed rule. For more information, see Deroose, Moulin and Wiertz (2006).

national rules that are complied with and are well designed seems to support compliance with EU fiscal rules.

This paper is structured as follows: Section 2 explains the novel database and provides some stylised facts; Section 3 features the empirical analysis and its findings; Section 4 concludes the paper.

2. NUMERICAL COMPLIANCE: STYLISTED FACTS

In line with the relevant literature (e.g. Reuter 2019), this study focuses on numerical compliance. Differently from **legal** compliance, **numerical** compliance only captures the *ex post* deviation of a fiscal outcome from the target that is implied by the rule. As such, numerical compliance only captures a distance indicator (of the variable out-turn from the target) and excludes any flexibility, one-off treatments and escape clauses that would be considered in the assessment of legal compliance. Despite having no legal status, numerical compliance indicators can still represent a measurement of the adherence to fiscal rules. For the analysis, two sets of compliance are used for the rules shown below.

2.1. NUMERICAL COMPLIANCE WITH EU FISCAL RULES

Numerical compliance with EU fiscal rules is calculated as the deviation of the realised outcome from the target or reference value. For each EU fiscal rule (e.g. structural balance rule, debt rule), the compliance indicator measures the deviation of the realised outcome from the target or reference value as a percentage of gross domestic product (GDP) ⁽⁷⁾. A positive value indicates an overachievement of the target or reference value, while a negative value refers to non-compliance or a shortfall. Compliance with EU fiscal rules is defined by country, year and type of rule.

Numerical compliance indicators are defined for the following four types of EU fiscal rules.

- **Structural balance rule** ⁽⁸⁾. A positive (negative) sign means that the country's fiscal effort, as measured by the change in the structural balance, exceeds (falls below) its requirements or that the country is above its medium-term objective (MTO).
- **Expenditure rule.** A positive (negative) sign means that the annual 10-year average rate of nominal potential growth exceeds (falls below) the growth rate of net expenditure growth ⁽⁹⁾.
- **Headline deficit rule.** A positive (negative) sign means that the headline balance is in surplus or with a deficit below 3 % of GDP.
- **Debt rule.** For Member States with a debt-to-GDP ratio above 60 %, a positive (negative) sign means that the actual debt-to-GDP ratio is below (above) the one required by the (backward-looking) one-twentieth debt reduction rule. For Member States with a debt-to-GDP below 60 % of GDP, the sign is positive and measures the distance to the 60 % reference value.

⁽⁷⁾ For simplicity, this chapter does not take into account the implications of the 'freezing' principle applied in the EU fiscal surveillance process. For further information see European Commission (2019a), Box II.4.1 'Freezing principle and unfreezing modalities', *Report on Public Finances in EMU – 2018*, pp. 59–60.

⁽⁸⁾ The deviation to the structural balance rule is calculated as the difference between the change in the structural balance and the fiscal adjustment requirement of the fiscal rule.

⁽⁹⁾ Potential growth and net expenditure growth are measured in line with the EU expenditure benchmark (European Commission 2019b).

This analysis takes the changing nature of EU fiscal rules into account. This analysis considers 108 EU fiscal rules (structural balance, expenditure, headline deficit and debt rules) that were in place during 1998–2019. The dataset takes into account only those periods when a rule was in force and assumes that no rule applied when a country was subject to the excessive deficit procedure⁽¹⁰⁾. For example, the EU expenditure rule was introduced only in 2015. We also take into account that the EU fiscal rules have changed over time. In particular, the structural balance rule was modified in 2005 (mainly by introducing a country-specific MTO) and in 2015 (mainly by modulating the required fiscal adjustment around the economic cycle and public debt in the context of introduction of the matrix of requirements). The Stability and Growth Pact stipulates that compliance with the debt criterion requires a country’s debt ratio to be either below 60 % of GDP or ‘sufficiently diminishing and approaching the reference value at a satisfactory pace.’ However, only the six-pack reform in 2011 introduced an operational definition for the appropriate pace of debt reduction. According to the debt reduction benchmark, Member States are required to reduce the differential of the government debt-to-GDP ratio with respect to the 60 % of GDP reference value by one twentieth on average over a period of 3 years.

2.2. NUMERICAL COMPLIANCE WITH NATIONAL FISCAL RULES

Numerical compliance with national fiscal rules is constructed based on the rules included in the Commission’s Fiscal Governance database and follows Reuter (2019)’s approach⁽¹¹⁾. The FGD contains those national numerical fiscal rules that meet the definition by Kopits and Symansky (1998), whereby a fiscal rule is ‘a permanent constraint on fiscal policy, expressed in terms of a summary indicator of fiscal performance’. It contains five types of numerical fiscal rules, namely expenditure rules, deficit rules, structural balance rules, debt rules and revenue rules. Rules cover the general government, central government, regional government, local government, social security or a combination thereof⁽¹²⁾.

Compliance is calculated for 90 fiscal rules in force in 27 Member States during 1998–2019⁽¹³⁾. Out of the 141 total national rules of the FGD over the period under consideration, 90 rules have been selected for the analysis. Excluded rules encompass: (i) revenue rules, as they are not fully matched by equivalent EU rules; (ii) rules covering a limited part of the general government, due to their limited impact on fiscal performance; and (iii) rules for which compliance was difficult to calculate (e.g. a rule implying different targets for municipalities). When the same rule type applies to different levels of government, the rule with the largest coverage is selected (e.g. a rule covering general government, rather than a similar rule that only covers local government). Finally, the sample includes national rules with a design identical or strongly similar to the one of EU fiscal rules.

Following Reuter (2019), numerical compliance is calculated as the deviation of the outcome of the aggregate implied by the fiscal rule from the target set by the rule. The FGD description of a rule provides information about the aggregate bound by the rule (e.g. debt-to-GDP ratio, nominal expenditure growth, structural balance) and of the target of each rule (e.g. 60 % of debt-to-GDP target, or 0.5 % of potential GDP)’. Based on this information and using mostly variables from the annual macroeconomic database (AMECO)⁽¹⁴⁾, compliance with national fiscal rules is calculated for each year that a rule was in force, as the deviation of the realised outcome from the target. Some data have been complemented with relevant information from national budgetary documents, from the FGD or

⁽¹⁰⁾ The United Kingdom was excluded from the analysis over the sample period.

⁽¹¹⁾ https://economy-finance.ec.europa.eu/economic-research-and-databases/economic-databases/fiscal-governance-database_en.

⁽¹²⁾ European Commission website: [Fiscal rules in EU Member States](#).

⁽¹³⁾ Annex I displays the full set of rules included and excluded from the sample.

⁽¹⁴⁾ https://economy-finance.ec.europa.eu/economic-research-and-databases/economic-databases/ameco-database_en.

from the International Monetary Fund (IMF) Government Finance Statistics database. A positive value indicates an overachievement of the target or reference value implied by the national fiscal rule, while a negative value refers to a shortfall.

The sample of selected national fiscal rules includes mostly structural balance and debt rules.

Out of the 90 national rules considered in this analysis, 28 are structural balance rules, of which 12 are designed in the same way as the EU structural balance rule; 26 are debt rules, of which 14 mirror the EU debt rule (either the 60 % of GDP reference value or the debt-reduction benchmark); 19 are deficit rules, of which five mirror the EU 3 % of GDP reference value rule; and 17 are expenditure rules, of which four mirror the EU expenditure benchmarks.

National fiscal rules display quite a broad variety of designs. When they do not mirror the EU rules, structural balance rules are bound by specified targets, such as 0.45 % of structural deficit (in Austria), or – 1 % of structural deficit (in Czechia and Lithuania), zero structural deficit (in Estonia, Spain and Malta) or 0.5 % in most other cases. At times, structural balance rules are conditional to the debt level (such as in Bulgaria), or allow for a range within possible targets (in Denmark), or set a phased adjustment (in Finland and Sweden). Debt rules or anchors consider reference values other than the 60 %, such as 55 % in Czechia, 50 % in Hungary and Slovakia, 40 % in Slovenia and 35 % in Sweden. In some cases, no increase is allowed (such as in Spain), or the increase could be conditional on the revenue increase (in Estonia). For the deficit rules not mirroring the EU rules, a zero or surplus target is set for the nominal balances, usually of regional and local governments, for Belgium, Germany, Spain, Lithuania, Portugal and Sweden. A 2 % deficit is the target in Bulgaria, and Finland considers a 0.5 % deficit target and a phased adjustment for its deficit rules. Finally, expenditure rules can be ceilings (in Denmark, the Netherlands, Finland and Sweden), or be linked to output growth (in Spain) or revenue growth (in Germany and Lithuania). Bulgaria has a 40 % of GDP ceiling for expenditure.

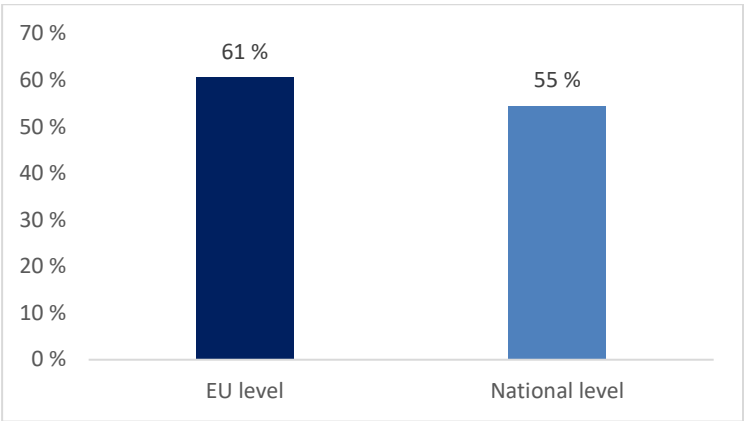
For the econometric analysis, two series of national compliance are calculated.

- The first one is a dummy variable, taking values of zero for non-compliance and one for compliance. The dummy variable can be expressed by rule but also by country. For the latter, the dummy takes a value of zero when no rules of country X have been complied with at time t and a value of one when all rules of country X have been complied with at time t. It takes values of 0.25, 0.33 or 0.5 when one rule in a total of four, three or two rules has been complied with, respectively.
- The second one measures the deviation from the target expressed as a percentage of GDP, following European Commission (2021) and Larch and Santacrocce (2020). This indicator is calculated for each type of rule, but it cannot be meaningfully aggregated across all types of rules. For instance, a deviation from the debt rule target is not comparable to a deviation from the deficit rule.

Numerical compliance seems to be slightly higher for EU than for national rules, yet comparisons warrant some caution. Stylised facts show that over the past two decades, Member States have complied on average around two thirds of the time with EU fiscal rules (structural balance, expenditure, deficit and debt rules), yet they have somehow complied fewer times with national fiscal rules (Graph 1)⁽¹⁵⁾. Comparisons across the two sets of fiscal rule compliance present some limitations as the two datasets cover different years of rules in force. For example, under the excessive deficit procedure, EU rules would be suspended but national rules could still apply.

⁽¹⁵⁾ Compliance rates appear to be higher in real time than *ex post* (European Commission, 2021).

Graph 1: Average numerical compliance rates with fiscal rules at the EU and national levels (1998–2019)

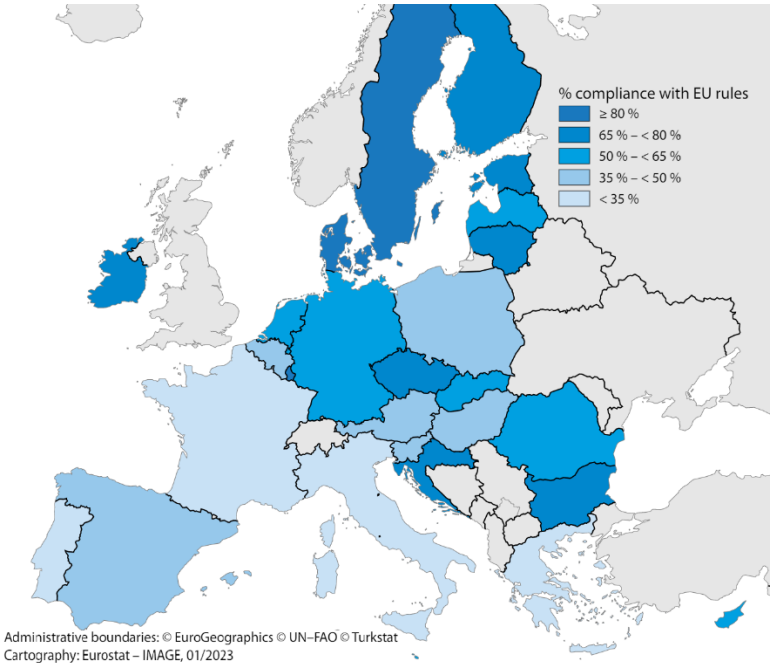


Source: Commission services.

NB: The numerical compliance rate refers to the average rate across all types of fiscal rules. Compliance is measured as a dummy variable, where 1 refers to compliance and 0 to non-compliance.

Numerical compliance varies significantly across Member States and across types of rules. EU rules have been mostly complied with in Denmark, Luxembourg and Sweden (Graph 2), while national rules have been mostly complied with in Czechia, Luxembourg, Netherlands, Poland and Slovenia (Graph 3). Regarding types of rules, expenditure rules show the highest compliance rates at the national level, while deficit rules have the highest rates at the EU level. Compliance rate with expenditure rules is higher at the national than at the EU level. By contrast, compliance rates with structural balance, deficit and debt rules are higher at the EU level than at the national level (Table 1).

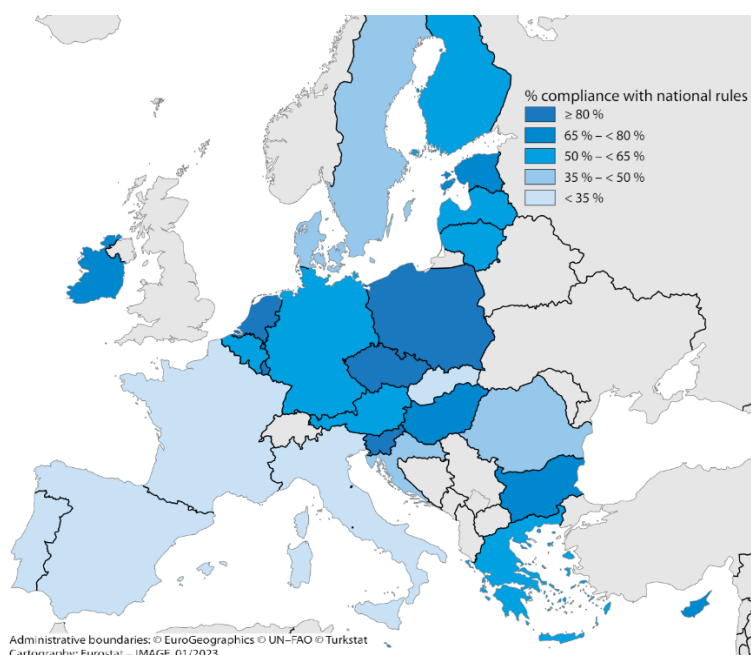
Graph 2: Numerical compliance rates with EU fiscal rules across the Member States (1998–2019)



Source: Commission services.

NB: The numerical compliance rates refer to the average rate across all types of EU fiscal rules. Compliance is measured for each fiscal rule as a dummy variable, where 1 refers to compliant and 0 to non-compliant.

Graph 3: Numerical compliance rates with national fiscal rules across the Member States (1998–2019)



Source: Commission services.

NB: The numerical compliance rate refers to the average rate across all national fiscal rules as described in Chapter 2. Compliance is measured for each fiscal rule as a dummy variable, where 1 refers to compliant and 0 to non-compliant.

Table 1: Numerical compliance rates by types of fiscal rules at the EU and national levels (1998–2019)

Type of rule	National level	EU level
Structural balance	46 %	54 %
Expenditure	64 %	58 %
Deficit	47 %	67 %
Debt	62 %	63 %

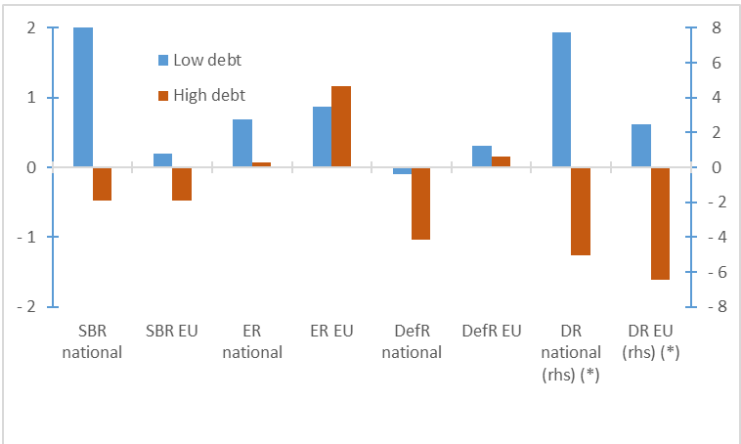
Source: Commission services.

NB: Compliance is measured for each fiscal rule as a dummy variable, where 1 refers to compliant and 0 to non-compliant. The differences between the compliance rates at the EU and national levels are potentially affected by differences in the time period being assessed. For the EU fiscal rules, the sample does not include periods in which Member States were under an excessive deficit procedure.

Based on simple correlations, numerical compliance with fiscal rules seems to be higher in the cases shown below.

- **When public debt ratios are low.** Compliance rates with almost all fiscal rules are higher in periods with low public-debt-to-GDP ratios compared to periods with high ratios-. In addition, Member States with low debt appear, on average, to overachieve fiscal rules (Graph 4).

Graph 4: Numerical compliance rates in cases of low and high public debt (% of GDP)



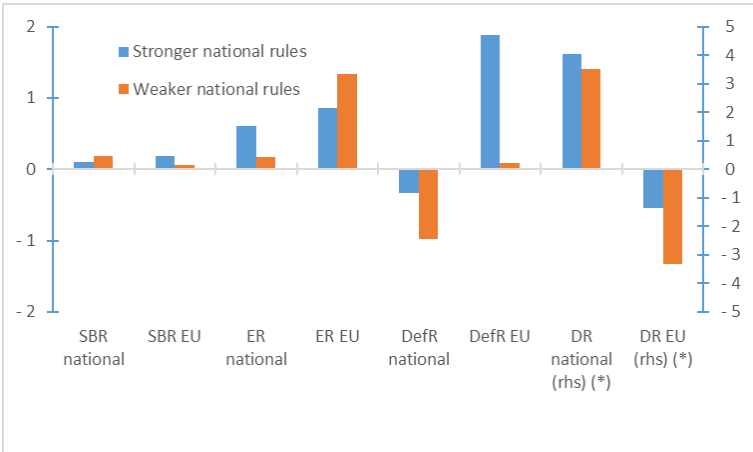
Source: Commission services.

NB: SBR stands for structural balance rule, ER for expenditure rule, DefR for deficit rule, ER for expenditure rule and DR for debt rule. Numerical compliance here is shown in a more precise measurement, namely in terms of the average gap to the target expressed as a percentage of GDP. Low debt corresponds to public debt at or below 60 % of GDP. High debt corresponds to public debt above 60 % of GDP.

(*) The values for the national and EU debt rules are displayed on the right-hand side (rhs) of the graph.

- **In Member States with well-designed fiscal rules.** Member States with well-designed national fiscal rules display higher compliance rates with EU fiscal rules for most rule types (Graph 5).

Graph 5: Numerical compliance rates for stronger and weaker design of fiscal rules (% of GDP).



Source: Commission services.

NB: SBR stands for structural balance rule, ER for expenditure rule, DefR for deficit rule, ER for expenditure rule and DR for debt rule. The numerical compliance rates are measured in as a percentage of GDP. The strength of the rules is based on the national fiscal rule strength index of the FGD. This index looks at national rules. Stronger rules are those with an index above average for that year, whereas weaker rules have an index below average for that year. For further information on the different dimensions of the strength index, see: https://economy-finance.ec.europa.eu/economic-research-and-databases/economic-databases/fiscal-governance-database_en.

(*) The values for the national and EU debt rules are displayed on the right-hand side of the graph.

3. EMPIRICAL ANALYSIS

3.1. MODEL SPECIFICATION

To assess the implications of national fiscal rules on numerical compliance with EU rules, we use a dynamic panel applied to the Member States for the 1999–2019 period, using the following baseline model specification: ⁽¹⁶⁾

$$Y_{i,t} = \beta_1 Y_{i,t-1} + \beta_2 X_{i,t} + \beta_3 Z_{i,t-1} + \theta_t + \vartheta_i + u_{i,t} \quad (\text{equation 1})$$

where the dependent variable $Y_{i,t}$ is the numerical compliance with EU fiscal rules by type of rule (structural balance rule, expenditure rule, headline balance rule, debt rule) and the independent variable $X_{i,t}$ refers to national fiscal rules.

Three different indicators are used for the independent variable $X_{i,t}$:

- (i) **existence of national fiscal rules**, i.e. a simple dummy variable, with a value of zero if no national fiscal rule is in place at time t in country x and a value of one if one or more fiscal rules are in place;
- (ii) **numerical compliance by type of rule**, expressed as the deviation of the realised outcome from the rule target in percentage points of GDP; and
- (iii) **average numerical compliance with all types of national fiscal rules**, i.e. the average compliance rate across all types of national fiscal rules. In this last case, compliance is defined at the country level as a dummy variable, which takes a value of between one (if for year t all national rules in place in country x are complied with) and zero if for year t no national rules in country x are complied with. Its advantage is that it allows the measurement of the relationship between any type of national rule and a given EU rule. For example, an expenditure rule at the national level may support compliance with the EU structural budget balance rule and not just the EU expenditure rule, which is implicitly assumed in the analysis at the rule level (i.e. in case ii above).

The panel regression includes control variables as relevant drivers of compliance with fiscal rules selected based on the relevant literature, specified in the equation as $Z_{i,t}$ ⁽¹⁷⁾. Control variables are all inserted with a lag to reflect the usual time span of fiscal reaction functions. The expected sign with respect to compliance is shown in brackets: \pm corresponds to a supporting/weakening compliance, as shown below.

- **A change in the output gap (\pm)**. Past evidence points to a procyclicality of the fiscal effort, particularly for rules that constrain stock variables rather than flow variables (Reuter, 2019; European Commission, 2021); compliance seems to be higher when growth and inflation rise (Larch and Santacroce, 2020).
- **Fiscal space and adjustment programme (\pm)**. High borrowing needs due to high debt levels and high interest rates could be associated with high deficits and debts, thereby limiting compliance with deficit and debt rules. Evidence shows that countries in excessive deficit procedures appear to improve compliance with fiscal rules (Thygesen et al., 2019). The presence of an adjustment programme can go in the same direction.

⁽¹⁶⁾ A similar set-up is chosen as in European Commission (2021).

⁽¹⁷⁾ Annex II provides a detailed overview of data sources by variable.

- **Fiscal rule design (+).** A stronger national fiscal rule, as captured by the Commission’s fiscal rule strength index (see Box 1), tends to improve compliance with rules and support fiscal discipline (Reuter, 2019; European Commission, 2018).
- **Political economy channel/election years (–).** Compliance appears to be weaker in election years (Reuter, 2019; European Commission, 2021).
- **Country and time-fixed effects.** The specification includes time-fixed effects (θ) and country-fixed effects (ϑ) to capture systematic differences across Member States and time, while u represents an error term.
- **Global financial crisis (–).** Within the time dummies, a crisis dummy covering the 2009–2011 global financial crisis has also been inserted.

BOX 1: THE FISCAL RULE STRENGTH INDEX

Well-designed fiscal rules include a number of desirable features. To capture these features, the Directorate-General of Economic and Financial Affairs has constructed an index of the strength of a given fiscal rule, the fiscal rules strength index. The index is based on annual survey responses by representatives from the Ministry of Finance in each Member State and verified by Commission staff. The dataset consists of domestic fiscal rules that have been in force since 1990 and covers all types of numerical fiscal rules and all levels of government (social security, local, regional, central and general government).

For each rule, the index takes into account the following criteria: (i) legal basis; (ii) binding character; (iii) bodies monitoring compliance and the correction mechanism; (iv) correction mechanisms; and (v) resilience to shocks. This methodology is inspired by earlier academic work (Deroose, Moulin and Wierds, 2006). The last three criteria also measure the possible involvement of independent fiscal institutions with relevant design elements: the monitoring of compliance with the fiscal rule, the assessment/endorsement/production of the forecasts, the activation of the correction mechanism in case of deviation or the triggering of escape clauses.

An interaction model is used to test whether the design of national fiscal rules matters for compliance with EU fiscal rules:

$$Y_{i,t} = \beta_1 Y_{i,t-1} + \beta_2 X_{i,t} + \beta_3 fri_{i,t} + \beta_4 X_{i,t} \cdot fri_{i,t}^{national} + \beta_5 Z_{i,t-1} + \theta_t + \vartheta_i + u_{i,t}$$

(equation 2)

where the design of fiscal rules is measured with the fiscal rules strength index (*fri*). From equation 2 we can derive the marginal effect: as shown below, this measures how a change of compliance with national fiscal rules impacts compliance with EU fiscal rules for different levels of design strength of national fiscal rules:

$$\frac{\partial Y_{i,t}}{\partial X_{i,t}} = \beta_2 + \beta_3 fri_{i,t}$$

(equation 3)

The estimation uses a bias-corrected fixed effects estimator developed for the autoregressive panel, as in Bruno (2005a). This estimator corrects for the inherent endogeneity generated when the lagged dependent variable is included among the regressors, as in our case. To address additional potential sources of endogeneity, related to the output gap and compliance with the national rules dummy, a robustness estimation is conducted on the baseline specification. This uses a difference-GMM (generalised method of moments) instrumental variable estimation, treating the lagged dependent, the output gap and the national compliance dummy as endogenous, for which internal instruments are

used. Specifically, the internal instruments consist of the lag of order two of the dependent variable, the lag of the output gap and the lag of the national compliance dummy.

3.2. MAIN FINDINGS OF COMPLIANCE WITH FISCAL RULES

As mentioned, the regression analysis seeks to address the three following research questions.

(1) Does the simple existence of national fiscal rules influence EU rule compliance?

The simple existence of national fiscal rules per se does not seem to matter for EU rule compliance. In fact, estimation results show an insignificant relationship between the existence of national fiscal rules and numerical compliance with EU rules. This finding holds irrespective of the type of EU fiscal rule (Table 2).

Table 2: Regression coefficients of EU compliance on the existence of national rules

	Dependent variable: deviation from ...			
	structural balance rule	expenditure rule	deficit rule	debt rule
	(1)	(2)	(3)	(4)
Dependent variable (t – 1)	0.022	– 0.007	0.674***	0.722***
	– 0.049	(0.0503)	(0.0360)	(0.0359)
Change in output gap (t – 1)	– 0.0232	– 0.142*	0.335***	– 0.176
	(0.0383)	(0.0728)	(0.0470)	(0.111)
EU/IMF adjustment programme	2.137***	5.250***	1.363**	– 4.581***
	(0.402)	(0.752)	(0.531)	(1.111)
Implicit interest rate (t – 1)	0.270**	1.186***	– 0.0648	– 1.986***
	(0.130)	(0.247)	(0.156)	(0.329)
Debt to GDP ratio (t – 1)	0.00984	0.0201	0.00893	0.0161
	(0.00807)	(0.0149)	(0.0104)	(0.0221)
Pre-election period	– 0.00498*	– 0.00743	– 0.00806**	0.00697
	(0.00291)	(0.00535)	(0.00361)	(0.00667)
2009 – 2011 crisis dummy	– 0.0888	0.513	– 0.991**	– 2.934***
	(0.438)	(0.801)	(0.429)	(0.884)
Existence of national rules	– 0.296	– 0.253	– 0.0106	1.123
	(0.417)	(0.762)	(0.550)	(1.346)
Observations	489	489	491	474
Number of country_id	28	28	28	28
Wald test time dummies	0.0167	0.00258	0.0197	1.74e-05

NB: Compliance is calculated as deviation of outcome from target and is here expressed in terms of percentage of GDP. Standard errors in parentheses: *** p < 0.01; ** p < 0.05; * p < 0.1. Panel estimations use Bruno (2005a) bias correction for autoregressive panels. The panel includes data for the United Kingdom only on the EU rule compliance side (and not for compliance with national rules), which explains the 28 country groupings in the regression.

Source: Commission services.

(2) Does compliance with national fiscal rules support compliance with EU fiscal rules?

Compliance with national fiscal rules tends to be strongly associated with compliance with EU fiscal rules. Estimation results show that higher compliance with national fiscal rules supports compliance with all types of EU fiscal rules. This result is robust to different indicators measuring compliance with national rules: (i) an average numerical compliance indicator across all types of national fiscal rules (as in specifications (1) to (4) in Table 3); and (ii) a numerical compliance indicator by type of fiscal rule (as in specifications (5) to (8) in Table 3).

Table 3: Regression coefficients of EU compliance on national compliance

	Dependent variable: deviation from ...							
	structural balance rule	expenditure rule	deficit rule	debt rule	structural balance rule	expenditure rule	deficit rule	debt rule
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable (t – 1)	–0.006 (0.048)	–0.02 (0.05)	0.654*** (0.037)	0.711*** (0.035)	0.177*** (0.063)	0.347*** (0.107)	0.371*** (0.058)	0.349*** (0.054)
Change in output gap (t – 1)	–0.026 (0.038)	–0.143* (0.073)	0.326*** (0.048)	–0.189* (0.112)	–0.125*** (0.042)	–0.083 (0.106)	0.169** (0.068)	–0.240 (0.206)
EU/IMF adjustment programme	2.137*** (0.401)	5.250*** (0.760)	1.255** (0.530)	–4.893*** (1.110)	0.736** (0.342)	1.448 (1.436)	0.048 (0.549)	–3.834** (1.779)
Implicit interest rate (t – 1)	0.310** (0.129)	1.241*** (0.250)	–0.054 (0.156)	–1.927*** (0.324)	0.189 (0.137)	0.207 (0.464)	–0.622** (0.250)	–2.679*** (0.822)
Debt to GDP ratio (t – 1)	0.015* (0.008)	0.026* (0.015)	0.013 (0.011)	0.021 (0.023)	0 (0.012)	–0.043 (0.044)	0.036*** (0.011)	–0.056 (0.050)
Pre-election period	–0.004 (0.003)	–0.006 (0.005)	–0.007** (0.004)	0.007 (0.007)	–0.005* (0.003)	–0.024*** (0.007)	–0.005* (0.003)	0 (0.013)
2009 – 2011 crisis dummy	0.031 (0.430)	0.641 (0.802)	–0.887*** (0.427)	–2.788*** (0.878)	0.119 (0.652)	–0.230 (1.047)	–0.175 (0.441)	–1.346 (1.408)
Average national compliance dummy	1.965*** (0.512)	1.985*** (0.952)	1.733** (0.675)	3.085** (1.234)	0.550*** (0.069)	0.516*** (0.110)	0.624*** (0.064)	0.245*** (0.06)
Numerical compliance with equivalent national rule					0.550*** (0.069)	0.516*** (0.110)	0.624*** (0.064)	0.245*** (0.06)
Observations	489	489	491	474	175	114	134	136
Number of country_id	28	28	28	28	28	28	28	28
Wald test time dummies	0	0.027	0	0	0.687	0.461	0.007	0.0310

NB: Standard errors in parentheses: *** p < 0.01, ** p < 0.05, * p < 0.1. Panel estimations using Bruno (2005a) bias correction for autoregressive panels. The panel includes data for the United Kingdom only on the EU rule compliance side (and not for compliance with the national rules), which explains the 28 country groupings in the regression.

Source: Commission services.

The relationship between national and EU compliance appears robust to endogeneity for all rules, with the exception of the debt rule. There could be reverse causality between compliance with EU fiscal rules and the economic cycle and/or compliance with national fiscal rules. In both cases, the estimates provided above would be biased. Therefore, we use internal instruments to address this problem (namely, the lagged output gap and the lagged national compliance dummy). The regression coefficients corrected for the sources of endogeneity mentioned point to a still positive relationship between national and EU compliance. Yet, the relationship no longer holds for the EU debt rule (Table 4). Compared to previous estimations, however, the regression coefficients display a lower significance, suggesting that, in previous estimations, endogeneity was indeed an issue. Nonetheless, after controlling for endogeneity, the relationship remains positive and statistically significant for all but the debt rule.

Table 4: Endogeneity-corrected regression coefficients of EU compliance on national compliance

Dependent variable: deviation from ...				
	structural balance rule	expenditure rule	deficit rule	debt rule
	(1)	(2)	(3)	(4)
Average National Compliance Dummy	2.555*	3.558*	2.183*	1.264
	(1.293)	(1.924)	(1.269)	(3.497)
Observations	474	474	504	459
Number of country_id	28	28	28	28
AR(1) (p-value)	0	0.001	0.038	0.047
AR(2) (p-value)	0.029	0.102	0.114	0.863
Instr.	33	33	33	32

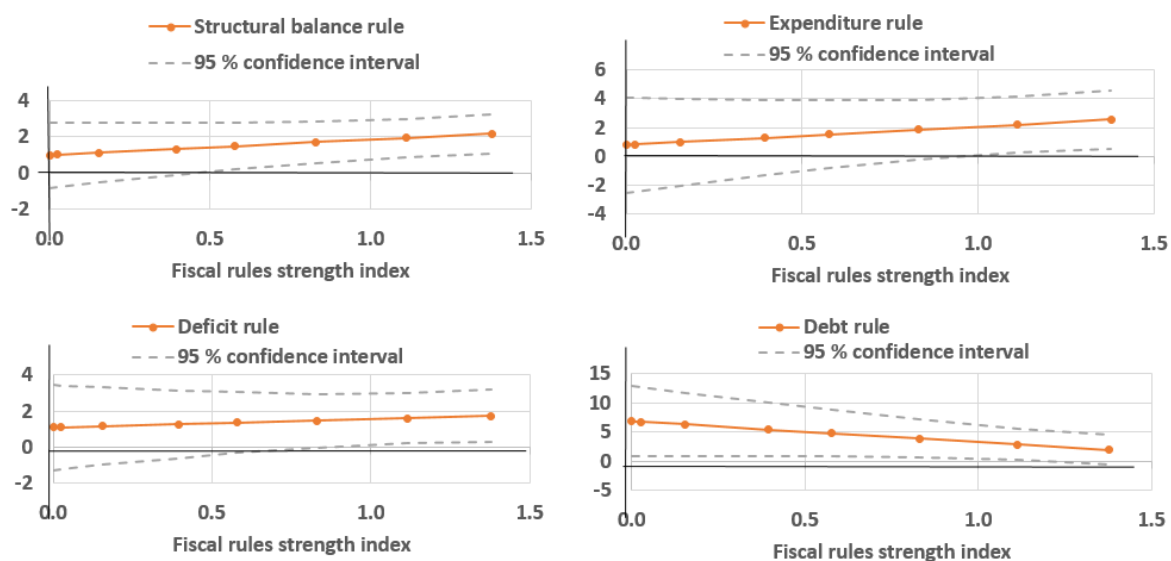
NB: Standard errors in parentheses: *** p < 0.01, ** p < 0.05, * p < 0.1. Difference GMM estimator of equation 1, using the twice-lagged dependent variable, the lagged output gap and the lagged national compliance dummy as internal instruments. The panel includes data for the United Kingdom only on the EU rules compliance side (and not for compliance with the national rules), which explains the 28 country groupings in the regression.

Source: Commission services.

(3) Does the design of national rules affect the relationship between EU and national compliance?

The relationship between the two sets of compliance is sensitive to rule design. For all rules except the debt rule, estimates of national compliance on EU compliance conditional on the fiscal rule index are positive and significant only at higher values of the index. This suggests that national compliance and EU rule compliance are strongly related only when national rules are well designed. At the 80th percentile of the fiscal rule index, the relationship between national and EU compliance is twice as strong as the one observed at the 30th percentile of the index for the EU structural balance rule and three times stronger for the expenditure rule. For the deficit rule, the relationship becomes stronger by a magnitude of 1.5 (Graph 6). By contrast, for the debt rule, the impact of national compliance is inversely related to the design.

Graph 6: Impact of national compliance with fiscal rules on compliance with EU fiscal rules conditional on the design strength of national rules



NB: Estimation based on equation 3, using Bruno (2005a) bias correction for autoregressive panels. The strength of national rule design is calculated based on the fiscal rule index of the Commission, for which the 30th, 40th, 50th, 60th, 70th, 80th and 90th percentiles are shown on the x-axis.

Source: Commission services.

3.3. MAIN FINDINGS OF KEY CONTROL VARIABLES

As regards the control variables, the estimation results point to the following findings.

- **Compliance with the EU deficit rule improves if economic conditions improve.** This finding – which is consistent across model specifications – would suggest a pro-cyclical behaviour for the deficit rule, in line with previous literature. This is not the case for the other rules, which are either weakly and negatively associated with changes in the output gap or display an insignificant relationship.
- **Initial debt levels seem to weakly support compliance with EU fiscal rules.** A low public debt level is associated with better compliance with the EU structural balance, expenditure and deficit rules. However, the coefficients are not significant in all specifications.
- **The relationship with interest rates is ambiguous across rules.** For the EU structural balance and expenditure rules, higher levels of debt servicing as measured by the implied interest rate are associated with stronger compliance. By contrast, the coefficient is strongly significant and negative for the debt rule, thereby indicating that at higher levels of debt servicing, compliance with the debt rule is more challenging. The coefficient tends to be insignificant for the deficit rule.
- **Compliance with EU fiscal rules appears to be more lax prior to elections.** Results for the pre-election period dummy are weakly significant and negative, particularly for the deficit rule.

- **Under a macro-adjustment programme, compliance is much stronger, but not for the debt rule.** Coefficients for the adjustment programme dummy are strongly significant and positive for the structural balance rule, the expenditure benchmark and the deficit rule. However, they are negative for the debt rule, which might imply selection bias, as those countries with deteriorating debt would be in an adjustment programme. The latter finding may also explain why high interest rates are positively associated with compliance with the EU structural balance and expenditure rules, as this relationship can be affected by the presence of an adjustment programme.
- **The global financial crisis of 2009–2011 strongly weakened compliance with the EU debt and deficit rules.** The global financial crisis dummy is in fact negatively and significantly associated with compliance with the debt rules (with a negative coefficient of around 3) and to a lesser extent with the deficit rules (with a negative coefficient of almost 1). As expected, the crisis dummy has no implications for the EU structural balance and expenditure rules, which entered into force after the crisis.

4. CONCLUSIONS

This paper examines the implications of national fiscal rules on numerical compliance with EU fiscal rules. Particularly, it investigates whether: (i) the **existence** of national rules influences compliance with EU rules; (ii) **compliance** with national fiscal rules supports compliance with EU rules; and (iii) the **design** of national rules supports compliance with EU rules.

For this purpose, we developed a novel dataset of numerical compliance with EU and national fiscal rules over the period between 1999 and 2019. Numerical compliance is given by the deviation of the fiscal aggregate outcome from its target, implied by the fiscal rule design. Using out-turn data, only *ex post* compliance is examined.

Stylised facts point to a slightly higher compliance at the EU level than at the national level. More than half of national rules and more than two thirds of EU rules are on average complied with. Yet compliance differs widely across Member States and types of rules. Finally, comparing EU compliance and national compliance should take into account the difference in data availability in the two samples.

The relationship between EU and national compliance is estimated through panel regressions. Compliance with EU fiscal rules is regressed on compliance with national fiscal rules and a set of control variables, in particular relating to macroeconomic, fiscal and political economy settings. This allows for an assessment of their relationship, controlling for additional factors that may impact EU compliance. The regression is run by types of EU rules.

The key empirical findings can be summarised as follows. First, the existence of national fiscal rules per se has no significant implications on compliance with EU fiscal rules. Second, having a national rule that is complied with, seems to be associated with compliance with EU fiscal rules. We find that compliance at the EU level is positively and strongly correlated with compliance at the national level. The finding is robust across different measures of compliance with national rules and corrections for endogeneity point to insignificant coefficients for the EU debt rule. In addition, strong rule design seems to reinforce the relationship between national and EU compliance. This relationship is strong and positive only when national fiscal rules are well designed. The finding emerges when interacting national compliance with the Commission's fiscal rule index, which captures the strength and quality of a national rule design.

Establishing a causal link warrants caution. The regressions only capture the relationship between compliance with EU and national rules. Besides being quite challenging in econometrics terms, establishing the causality of such a relationship presents its own conceptual hurdles. The relationship can in fact be shaped in either direction: either national rules supporting EU rules or EU rules supporting national rules. The direction could differ by type of rule, by country and even over time, with one year in which the EU rule could act as a reference for the national rule, and vice versa in another year. Ultimately, such a causality direction could also be perceived differently depending on the administrations involved and on policymakers more generally.

The findings have some implications for policymaking, albeit with the usual caveats of economic regression analyses. National and EU fiscal rules appear to reinforce each other, although the direction of causality cannot be fully established. Synergies seem to appear only when rules are complied with, at least in numerical terms, and/or national rules are well designed. The findings seem to support steps towards improving national fiscal frameworks with better rule design and by enhancing rule compliance through improved monitoring and enforcement mechanisms. Going forward, such conclusions could be supported by additional testing and robustness estimations, and by taking into account the role played by legal, as opposed to numerical, compliance.

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ANNEX 1. LISTS OF INCLUDED AND EXCLUDED RULES

Δ	change/difference	NB	nominal balance
Σ	sum	nb	nominal balance (% of GDP)
δ	growth rate	C_nb	current nominal balance
$\bigcirc t$	average over past t years (forecast years if t is negative)	pb	primary balance (% of GDP)
t	year of reference	sb	structural balance (% of potential GDP)
real	real values (using BIP deflator)	D	nominal debt
cyc	cyclically adjusted	d	nominal debt (% of GDP)
cur	current figures	D_s	debt service payments
prim	primary figures	E	nominal expenditure
defl	deflator	e	nominal expenditure (% of GDP)
unempl	unemployment	OG	Output gap
c	on cash basis	R	revenue
ndisc	non-discretionary	r	revenue (% of GDP)
		Y	GDP
		Y *	Potential GDP

Table 5: List of national fiscal rules included in the analysis

Coun-try	Rule	Type	Sec-tor	From	Until	Formula	Condition(s)	Notes	Data source compliance
AT	1.7	SBR	GG	2017	2019	$sb_t > -0.45\%$			AMECO
AT	2	ER	GG	2015	2019	EU rule			
AT	4	DR	GG	2017	2019	EU rule			
AT	5	DefR	GG	2012	2019	EU rule			
BE	1.1	ER	CG	1993	1998	$\delta E_{prim_real}_t \leq 0$		Proxied with total exp. Excluded 1993–1995.	AMECO
BE	3.1, 3.2	DefR	LG	1990	2019	$nb \geq 0$		Excluded 1990–1995	Eurostat
BE	4.2	SBR	GG	2014	2019	EU rule			
BE	5.1, 5.2	DefR	SS	2003	2019	$nb \geq 0$			Eurostat
BG	1.1	DR	GG	2003	2013	$d_t \leq d_{t-1}$	$d_{t-1} > 60\%$, otherwise unconstrained		AMECO
BG	1.2	DR	GG	2014	2019	EU rule			
BG	2.1-2.4	ER	GG	2006	2019	$e_t \leq 40\%$			AMECO

BG	3.1-3.4	DefR	GG	2011	2019	$nb \uparrow \geq -2\%$			
BG	4.1, 4.2	DR	LG	2005	2019	$D_s \uparrow \leq 0.15 \times \varnothing 3R$		FGD data: only 2017–2019.	FGD
BG	6.1, 6.2	SBR	GG	2014	2019	$sb \uparrow \geq -0.5\%$	$sb \uparrow \geq -1\%$ if debt < 40 %		AMECO
BG	7	DefR	GG	2014	2019	EU rule			
BG	8	ER	GG	2014	2019	EU rule			
CY	1	SBR	GG	2013	2019	EU rule			
CY	3	DR	GG	2015	2019	EU rule			
CZ	4.1	SBR	GG	2017	2019	$sb \uparrow \geq -1\%$			AMECO
CZ	5.1	DR	GG	2017	2019	$d \uparrow \leq d \uparrow - 1$	$d \uparrow > 55\%$		AMECO
DE	2.1, 2.2	ER	CG, RG	1990	2009	1990–2007: $\delta E \uparrow \leq 1\%$ 2008–2009: $\delta E \uparrow \leq \delta R \uparrow$		Exclude 1996: outlier data.	Eurostat
DE	3.1	DefR	LG	1990	2019	$nb \geq 0$			Eurostat
DE	4.1	DefR	RG	2009	2019	$nb \geq 0$			Eurostat
DE	5.1	DefR	SS	2009	2019	$nb \geq 0$			Eurostat
DE	6.1	SBR	GG	2013	2019	$sb \uparrow \geq -0.5\%$		2013, 2014 excluded	AMECO
DK	1.1	SBR	GG	1992	2006	$sb \uparrow \geq 0.5\%$	AND $sb \uparrow \leq 1.5\%$	Proxied with cycl adjusted balance	IMF data
DK	4.1	SBR	GG	2012	2019	$sb \uparrow \geq 0.5\%$			AMECO
DK	5.1	ER	GG	2014	2019	$E_real \uparrow \leq \text{exp ceiling}$		Limit in 2014 taken from SCP. Proxied 2019 limit: converted 2016 prices	National fiscal document
EE	1.1-1.3	SBR	GG	1993	2019	$sb \uparrow \geq 0$		Proxied with cycl adjusted balance	IMF data
EE	3.1, 3.2	DR	CG	2010	2019	$d \uparrow \leq 0.4 \times R$			Eurostat
EL	2	DR	GG	2019	2019	EU rule			
EL	4	SBR	GG	2019	2019	$sb \uparrow \geq -0.5$			AMECO
ES	1.1, 1.2	DefR	GG	2002	2011	$NB \uparrow \geq 0$	For 2006–2011 only IF $\delta Y < 2\%$: $nb \uparrow \geq -2\%$ AND IF $\delta Y > 3\%$: $nb \uparrow > 0\%$	2 conditions formulas for 1 rule	AMECO
ES	1.4	SBR	GG	2012	2019	$sb \uparrow \geq 0$			AMECO
ES	4.1	DR	RG	2003	2011	$d \uparrow = d \uparrow - 1$			Eurostat
ES	5.1, 5.2	ER	GG 201	2011	2019	2011: $\delta(PE \uparrow - U \uparrow) \leq Y \varnothing 9$ $\delta Y \uparrow$		Proxied with GG primary expenditure, 2016 &	Eurostat

			2-2019: LG, RG, CG			2012-2019: $\delta(\text{PE}_t - \text{U}_t) \leq Y \otimes 10 \delta Y_t$		2017: unemployment expenditure from SCP database. 2 formulas.	
ES	6	DR	GG	2012	2019	EU rule			
FI	1.1, 1.2	SBR	CG	1999	2008	1999-2002: $\text{sb}_t \geq -2.75\%$ 2003-2008: $\text{sb}_t \geq -2.50\%$		Proxied with IMF- data cycl adjusted balance. 2 formulas.	IMF data
FI	2.1	DR	CG	1995	2007	$d_t \leq d_{t-4}$	ONLY applies to final year of each legislative period.	Proxied by GG debt	AMECO
FI	3.1- 3.3	ER	CG	1999	2019	$E_t \leq E_{\text{ceiling}_t}$			National fiscal docume nt
FI	7.1, 7.2	SBR	CG	2011	2019	$\text{Sb}_t \geq -1.7\%$		FGD data: 17-19 only	FGD
FI	8.1, 8.2	DefR	CG	2011	2019	2011-2014: $\text{nbt} \geq -1\%$ 2015-2019: $\text{nbt} \geq -0.5\%$		2 formulas for 1 rule	Eurostat
FI	9	SBR	GG	2013	2019	EU rule			
FI	10.1	DefR	LG	2015	2019	$\text{nb} > -0.5\%$			Eurostat
FR	8	SBR	GG	2013	2019	EU rule			
HR	1.1	DR	CG	2009	2014	$d_t \leq d_{t-1}$	IF $d_t > 60\%$, otherwise unconstrained		Eurostat
HR	2.1, 2.2	ER	GG	2012	2018	2012-2013: $\delta e_t \leq -1\%$ 2014-2018: $\delta E_t \leq \delta Y$	IF $\text{pb}_{t-1} < 0$; but if $\text{pb}_{t-1} \geq 0$, formula = $\text{pb}_{\text{cyc}_t} \geq 0$	2 formulas for 1 rule	AMECO
HR	3	SBR	GG	2019	2019	EU rule			
HR	4.10	ER	GG	2019	2019	$\delta E_t \leq \delta Y^* \times \delta \text{GDP}_{\text{deflat}}$ or			AMECO
HR	5	DR	GG	2019	2019	EU rule			
HU	1.1	DefR	GG	2007	2008	$\text{pb}_t > 0$			AMECO
HU	5.1, 5.2	DR	GG	2014	2019	$d_t \leq d_{t-1}$	IF $d_{t-1} > 50\%$		AMECO
HU	6	DefR	GG	2013	2019	EU rule			
HU	7	SBR	GG	2014	2019	EU rule			

IE	4	DR	GG	2015	2019	EU rule			
IE	5	SBR	GG	2013	2019	EU rule			
IT	5	SBR	GG	2014	2019	EU rule			
IT	6	DR	GG	2014	2019	EU rule			
IT	7	ER	GG	2014	2019	EU rule			
LT	2.1	ER	CG	2008	2014	$\delta E \leq 0.5 \times \varnothing 56R$	if GG $\varnothing 5nb < 0$		Eurostat
LT	4.1	DefR	LG	1990	2005	$nb \geq 0$			Eurostat
LT	5.1	SBR	GG	2015	2019	$Sb \uparrow \geq -1$			AMECO
LT	9.1	ER	CG, SS	2015	2019	$\varnothing 56E \leq 0.5 \times \varnothing 56Y^*$	if GG $\varnothing 5nb < 0$		Eurostat
LU	5	SBR	GG	2015	2019	EU rule			
LV	3.1	ER	GG	2014	2019	$\delta E_{real \uparrow} \leq \delta Y^*$		FGD data: 17-19 only	FGD
LV	4.2	SBR	GG	2013	2019	$sb \uparrow \geq -0.50 \%$	IF $sb \uparrow - 1 > -1 \%$; but IF $sb \uparrow - 1 < -1 \%$ formula = $sb \uparrow \geq sb \uparrow - 1 + 0.5 \%$		AMECO
LV	5	DR	GG	2013	2019	EU rule			
MT	1	DR	GG	2015	2019	EU rule			
MT	2.1	SBR	GG	2014	2019	$sb \uparrow > 0 \%$			AMECO
NL	1.1-1.5	ER	GG	1994	2019	$E_{real \uparrow} \leq E_{ceiling \uparrow}$			National fiscal document
NL	5	SBR	GG	2014	2019	EU rule			
NL	6	DR	GG	2014	2019	EU rule			
NL	7	DefR	GG	2014	2019	EU rule			
PL	2.1	DR	GG	1997	2013	$dt < 60 \%$			
PL	2.2	DR	GG	2014	2019	EU rule			
PT	1.1-1.3	DefR	CG	2002	2019	$nb \uparrow > 0 \%$			Eurostat
PT	4	SBR	GG	2014	2019	EU rule			
PT	5	DR	GG	2013	2019	EU rule			
RO	3	SBR	GG	2014	2019	EU rule			
RO	4	ER	GG	2014	2019	EU rule			
RO	5	DR	GG	2014	2019	EU rule			
SE	1.1	DefR	LG	2000	2019	$nb \uparrow \geq 0 \%$			Eurostat
SE	2.1-2.3	ER	CG+SS	1996	2019	$E \uparrow < E_{ceiling \uparrow}$		1996 excluded due to missing data	National fiscal document

									nt	
SE	3.0-3.2	SBR	GG	2000	2006	2000–2006: sb t ≥ 2 % 2007–2018: sb t ≥ 1 % 2019–x: sbt ≥ 0.33 %			2000–2009: Proxied with cycl adjusted balance. 3 formulas.	IMF data
SE	4.1	DR	GG	2019	2019	d t ≤ d t – 1	if d_t ≥ 35 %			AMECO
SI	1.1	DR	GG	2000	2009	d t ≤ 40 %				AMECO
SI	5.1	SBR	GG	2015	2019	sbt ≥ MTO × OG × δY*	IF: OG < 0		FGD data: 2017–2019 only	FGD
SK	4.1	DefR	LG	2005	2019	Cnb t ≥ 0			FGD data: 2017–2019 only	FGD
SK	5.1	DR	GG	2012	2019	dt ≤ 50 %	IF year ≤ 2017. In 2018: d t ≤ 49 %. In 2019: d t ≤ 48 %.			AMECO
SK	6	SBR	GG	2014	2019	EU rule	SK			

Table 6. List of national fiscal rules excluded from the analysis

Country	Rule number	Rule type	Sector(s)	From	Until	Reason for exclusion
AT	1.1	DefR	CG, RG, LG	1999	2007	Deficit targets hard to retrieve
AT	1.2	DefR	GG	2008	2019	Deficit targets hard to retrieve
BE	4.1	DefR	RG	1990	2013	Larger coverage available
BE	6	ER	SS	1995	2019	Limited coverage
BG	9	DefR	LG	2014	2019	Larger coverage available
BG	10	ER	LG	2014	2019	Larger coverage available
CY	2	DefR	LG	1986	2019	Limited coverage
CZ	6	DR	LG	2017	2019	Larger coverage available
DE	1	DefR	CG	1990	2019	Limited coverage
DK	1	SBR	GG	2007	2017	Forward-looking targets
DK	6	SBR	GG	2017	2019	Forward-looking targets
EE	2	DR	LG	1997	2019	Data availability
FI	4	DefR	LG	1995	2019	Forward-looking, unspecified targets
FI	11	DefR	SS	2015	2019	Selective coverage
FR	3	DefR	LG	1983	2019	Data availability
HU	2	DR	LG	1996	2011	Target insufficiently specified
HU	3	DR	CG, SS	2009	2011	Forward-looking and target insufficiently specified
IE	1	ER	CG	2000	2012	Expenditure allocation practice
IE	3	DefR	LG	2004	2019	Limited coverage
IT	1.1	ER	CG, RG	2001	2007	Limited coverage
IT	1.2	ER	RG	2008	2010	Limited coverage
IT	2.1	ER	RG, LG	1999	2006	Targets differ per region/municipality
IT	2.2	DefR	RG, LG	2007	2008	Targets differ per region/municipality
IT	2.3	ER/DefR	RG, LG	2009	2015	Targets differ per region/municipality
IT	2.4	DefR	RG, LG	2016	2019	Targets differ per region/municipality
IT	3	DefR	RG, LG	2001	2019	Data availability
IT	4	DefR	RG	2001	2019	Limited and selective coverage, targets differ per region/municipality
LT	2	ER	CG, SS	2015	2019	Applies to selected appropriations
LT	4	DefR	LG	2006	2019	Data availability
LT	7	SBR	LG, SS	2016	2019	Larger coverage available
LT	8	SBR	LG, SS	2018	2019	Larger coverage available
LU	3	DefR	SS	1992	2019	Limited and selective coverage
LU	4	DefR	LG	1989	2019	Limited and selective coverage

PL	1	DefR	CG	2006	2007	Target insufficiently specified
PL	3	DR	LG	2009	2014	Larger coverage available
PL	4	ER	other	2011	2012	Undefined targets
PL	5	DefR	LG	2011	2019	Data availability
PL	6	ER	GG	2016	2019	Forward-looking inflation target
PL	7	DR	LG	2014	2019	Data availability
PT	2	DR	LG	2003	2019	Data availability
PT	3.1	DR	RG	2007	2013	Limited coverage
PT	3.2	DefR	RG	2014	2019	Limited coverage
PT	6	DR	RG	2014	2019	Limited coverage
PT	7	DefR	LG	2014	2019	Limited coverage
RO	1	DefR	LG	2007	2019	Data availability
RO	2	DR	LG	2010	2019	Data availability
SI	2	DR	LG	1990	2014	Limited coverage
SI	3	ER	GG	2010	2011	Data availability
SK	1	ER	CG	2002	2015	Extra-budgetary expenditure
SK	2	DR	LG	2002	2019	Data availability
SK	3	DefR	LG	2002	2008	Data availability

ANNEX 2. FULL LIST OF VARIABLES AND SOURCES

Table 7: Main compliance variables used for calculating numerical compliance with national fiscal rules

Compliance variable	Formula ID	Government sector	Unit of measurement	Source	Source code
Nominal balance	NB	GG	€ bn	AMECO	UBLG
Nominal balance in % of GDP	nb	GG	% of GDP	AMECO	UBLG
Nominal balance, cyclically adjusted, in % of GDP	nb_cyc	GG	% of GDP	AMECO	UBLGA
Structural balance in % of GDP	sb	GG	% of potential GDP	AMECO	UBLGAPS
Primary balance in % of GDP	pb	GG	% of GDP	AMECO	UBLGI
Primary balance, cyclically adjusted	pb_cyc	GG	€ bn	AMECO	UBLGBP
Nominal debt, absolute figures	D	GG	€ bn	AMECO	UDGG
Nominal debt, in % of GDP	d	GG	€ bn	AMECO	UDGG
Nominal expenditure, absolute figures	E	GG	€ bn	AMECO	UUTG
Nominal expenditure, in % of GDP	e	GG	% of GDP	AMECO	UUTG
Real expenditure, absolute figures	E_real	GG	€ bn	AMECO	OUTG
Real expenditure, growth rate	ΔE_real	GG	Growth rate	AMECO	OUTG
Real expenditure, indexed	n/a	GG	NAT currency, 2015 constant prices	AMECO	OUTG
Nominal debt, general government	D	GG	€ m	Eurostat	gov_10dd_edpt1, GD, MIO_EUR, S1310 (GG)
Nominal debt, central government	D	CG	€ m	Eurostat	gov_10dd_edpt1, GD, MIO_EUR, S1311 (CG)

Nominal debt, regional government	D	RG	€ m	Eurostat	gov_10dd_edpt1, GD, MIO_EUR, S1312 (RG)
Nominal debt, local government	D	LG	€ m	Eurostat	gov_10dd_edpt1, GD, MIO_EUR, S1313 (LG)
Nominal debt, social security	D	SS	€ m	Eurostat	gov_10dd_edpt1, GD, MIO_EUR, S1314 (SS)
Nominal debt, general government, in % of GDP	d	GG	% of GDP	Eurostat	gov_10dd_edpt1, GD, PC_GDP, S1310 (GG)
Nominal debt, central government, in % of GDP	d	CG	% of GDP	Eurostat	gov_10dd_edpt1, GD, PC_GDP, S1311 (CG)
Nominal debt, regional government, in % of GDP	d	RG	% of GDP	Eurostat	gov_10dd_edpt1, GD, PC_GDP, S1312 (RG)
Nominal debt, local government, in % of GDP	d	LG	% of GDP	Eurostat	gov_10dd_edpt1, GD, PC_GDP, S1313 (LG)
Nominal debt, social security, in % of GDP	d	SS	% of GDP	Eurostat	gov_10dd_edpt1, GD, PC_GDP, S1314 (SS)
Nominal expenditure, general government	E	GG	€ m	Eurostat	gov_10a_main, TE, MIO_EUR, S1310 (GG)
Nominal expenditure, central government	E	CG	€ m	Eurostat	gov_10a_main, TE, MIO_EUR, S1311 (CG)
Nominal expenditure, regional government	E	RG	€ m	Eurostat	gov_10a_main, TE, MIO_EUR, S1313 (LG)
Nominal expenditure, regional government, estimates	E	RG	€ m	Manual calculation	gov_10a_main, TE, MIO_EUR, S1313 (LG)
Nominal expenditure, local government	E	LG	€ m	Eurostat	gov_10a_main, TE, MIO_EUR, S1312 (RG)
Nominal expenditure, social security	E	SS	€ m	Eurostat	gov_10a_main, TE, MIO_EUR, S1314 (SS)
Nominal balance, general	NB	GG	€ m	Eurostat	gov_10a_main, B9, MIO_EUR,

government						S1310 (GG)
Nominal balance, central government	NB	CG	€ m	Eurostat		gov_10a_main, B9, MIO_EUR, S1311 (CG)
Nominal balance, regional government	NB	RG	€ m	Eurostat		gov_10a_main, B9, MIO_EUR, S1312 (RG)
Nominal balance, local government	NB	LG	€ m	Eurostat		gov_10a_main, B9, MIO_EUR, S1313 (LG)
Nominal balance, social security	NB	SS	€ m	Eurostat		gov_10a_main, B9, MIO_EUR, S1314 (SS)
Nominal expenditure, general government, in % of GDP	e	GG	% of GDP	Eurostat		gov_10a_main, TE, PC_GDP, S1310 (GG)
Nominal expenditure, central government, in % of GDP	e	CG	% of GDP	Eurostat		gov_10a_main, TE, PC_GDP, S1311 (CG)
Nominal expenditure, regional government, in % of GDP	e	RG	% of GDP	Eurostat		gov_10a_main, TE, PC_GDP, S1312 (RG)
Nominal expenditure, local government, in % of GDP	e	LG	% of GDP	Eurostat		gov_10a_main, TE, PC_GDP, S1313 (LG)
Nominal expenditure, social security, in % of GDP	e	SS	% of GDP	Eurostat		gov_10a_main, TE, PC_GDP, S1314 (SS)
Nominal balance, general government, in % of GDP	nb	GG	% of GDP	Eurostat		gov_10a_main, B9, PC_GDP, S1310 (GG)
Nominal balance, central government, in % of GDP	nb	CG	% of GDP	Eurostat		gov_10a_main, B9, PC_GDP, S1311 (CG)
Nominal balance, regional government, in % of GDP	nb	RG	% of GDP	Eurostat		gov_10a_main, B9, PC_GDP, S1312 (RG)
Nominal balance, local government, in % of GDP	nb	LG	% of GDP	Eurostat		gov_10a_main, B9, PC_GDP, S1313 (LG)
Nominal balance, social security, in % of GDP	nb	SS	% of GDP	Eurostat		gov_10a_main, B9, PC_GDP, S1314 (SS)

Revenue, general government	R	GG	€ m	Eurostat	gov_10a_main, TR, MIO_EUR, S1310 (GG)
Revenue, central government	R	CG	€ m	Eurostat	gov_10a_main, TR, MIO_EUR, S1311 (CG)
Revenue, regional government	R	RG	€ m	Eurostat	gov_10a_main, TR, MIO_EUR, S1312 (RG)
Revenue, regional government, estimates	R	RG	€ m	Manual calculation	gov_10a_main, TR, MIO_EUR, S1312 (RG)
Revenue, local government	R	LG	€ m	Eurostat	gov_10a_main, TR, MIO_EUR, S1313 (LG)
Revenue, social security	R	SS	€ m	Eurostat	gov_10a_main, TR, MIO_EUR, S1314 (SS)
Revenue, general government, in % of GDP	r	GG	% of GDP	Eurostat	gov_10a_main, TR, PC_GDP, S1310 (GG)
Revenue, central government, in % of GDP	r	CG	% of GDP	Eurostat	gov_10a_main, TR, PC_GDP, S1311 (CG)
Revenue, regional government, in % of GDP	r	RG	% of GDP	Eurostat	gov_10a_main, TR, PC_GDP, S1312 (RG)
Revenue, local government, in % of GDP	r	LG	% of GDP	Eurostat	gov_10a_main, TR, PC_GDP, S1313 (LG)
Revenue, social security, in % of GDP	r	SS	% of GDP	Eurostat	gov_10a_main, TR, PC_GDP, S1314 (SS)
Primary expenditure	E_prim	GG	€ m	AMECO	UUTGI
Nominal balance, cyclically adjusted, in % of GDP	nb_cyc_Y*	GG	% of potential GDP	AMECO	UBLGAP
GDP deflator	Y_defl	GG	Index, national currency	AMECO	RWCDV
GDP deflator, growth rate	δY_{defl}	GG	Growth rate	Manually calculated (from GDP_defl)	n/a

GDP in current figures	Y	GG	€ bn	AMECO	UVGD
GDP growth rate	δY	GG	Growth rate	Manually calculated (from GDP_current)	n/a
Potential GDP	Y_pot	GG	national currency bn	AMECO	OVGDP
Potential GDP, growth rate	δY_{pot}	GG	Growth rate	Manually calculated (from GDP_current)	n/a
Unemployment expenditure	E_unempl	GG	€ bn	EC (internal dataset)	n/a
Nominal expenditure, growth rate	δE	GG	index	Manually calculated (from E)	UUTG
Expenditure ceilings, out-turn data	E	GG	EUR or national currency	National fiscal documents	n/a
Expenditure ceilings	E ceiling	GG	EUR or national currency	National fiscal documents	n/a

Table 8. Control variables used for calculating numerical compliance with national fiscal rules

Control variable	Government sector	Unit of measurement	Source	Source code
Output gap	GG	% of GDP	AMECO	AVGDGP
Decentralisation rate of government expenditure	n/a	index	Manual calculation from E_GG&E_RG	n/a
Decentralisation rate of government revenue	n/a	index	Manual calculation from R_GG&R_RG	n/a
Decentralisation rate of government revenue and expenditure	n/a	index	Manual calculation from Decentr_E & Decentr_R	n/a
Standardised fiscal rule strength index	Country level	index	EC website (Fiscal Governance Database)	n/a
Inflation rate (harmonised CPI)	n/a	index, 2015 prices	AMECO	ZCPIH

Implied interest rate	GG	% of GDP	AMECO	AYIGD
Executive election year	CG	binary	World Bank / Inter-American Development Bank – Database of Political Institutions	ExecElec
Legislative election year	CG	binary	World Bank / Inter-American Development Bank – Database of Political Institutions	LegElec
Military expenditure, general government	GG	% of GDP	Eurostat	General government expenditure by function (COFOG) (gov_10a_exp)
Military expenditure, central government	CG	% of GDP	Eurostat	General government expenditure by function (COFOG) (gov_10a_exp)
Government fragmentation rate	n/a	index	World Bank / Inter-American Development Bank – Database of Political Institutions	fragment
Ideology index	CG	index	World Bank / Inter-American Development Bank – Database of Political Institutions	ideology
GDP_current national currency	GG	national currency bn	AMECO	UVGD
EMU membership	n/a	binary	ECB website: https://www.ecb.europa.eu/uro/intro/html/index.en.html	n/a
IMF adjustment programme	n/a	binary	EC website	n/a

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