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To cite this version:

Cezara Vinturis. A multi-speed fiscal Europe ? Fiscal rules and fiscal performance in the EU former communist countries. Post-Communist Economies, 2021, pp.1-24. 10.1080/14631377.2020.1867432 . hal-03137165

HAL Id: hal-03137165

https://uca.hal.science/hal-03137165

Submitted on 10 Feb 2021

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A multi-speed fiscal Europe? Fiscal Rules and Fiscal Performance in the EU Former Communist Countries

Cezara VINTURIS*

Abstract: This paper shows that, contrary to their favourable effect in the EU non-FCC (Former Communist Countries), fiscal rules do not significantly affect fiscal performance in the group of EU FCC. This finding, which may echo differences between FCC and other EU inherited from the Cold War period, is robust when considering various estimation methods, dividing fiscal rules along various dimensions, and using several observed and computed measures of fiscal performance. However, when going beyond the simple presence of fiscal rules, we find that an improvement of the strength of fiscal rules significantly affects fiscal performance in EU FCC, with a magnitude higher than that in EU non-FCC. Our findings are particularly important from the perspective of the future Euro zone and European Union enlargements, which involve former communist countries, and go along with the adoption of various types of fiscal rules.

Keywords: fiscal rules; fiscal performance; EU former communist countries; balanced-budget rules.

JEL Codes: E62, H62, O52.

Acknowledgments: I would like to thank the Editor Richard Connolly, the two Guest Editors of the Special Issue and the two anonymous referees for their insightful comments and suggestions. I am indebted to the participants at the 2019 GEBA-GDR Money, Banking and Finance Thematic Conference, and to Jean-Louis Combes and Nicoleta Sirghi for many useful discussions at various stages of this paper. I am very indebted to the French Ministry of Foreign Affairs and International Development for their Eiffel PhD scholarship. This work was supported by the Agence Nationale de la Recherche of the French government through the program "Investissements d'avenir" ANR-10-LABX-14-01. I am solely responsible for possible errors and omissions.

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1 Introduction

In the beginning of the 1990s, most Central and Eastern European countries under dictatorships expressed their desire for profound political changes. The lengthy and painful transition process that started was aimed at generating political, institutional and economic reforms, in order to put these countries on the path of democracy.

These changes undoubtedly nourished the most important turning point in the European construction. On the one hand, following roughly four decades of hesitations since the end of the World War 2, Western European countries finally agreed in the early 1990s on clear dates for a monetary union, which was to be achieved by the end of the millennium. On the other hand, the European Union (EU) opened the door to many Former Communist Countries (FCC) that expressed their interest for joining the EU. A major EU enlargement did effectively occur around the mid 2000s, with the adhesion of 10 FCC in just three years.[1]

Aside from their adhesion to the EU, it is interesting to analyze the FCC from the perspective of possible institutional and cultural reminiscences, inherited from the Cold War period. Such an analysis has a first order importance from the standpoint of the current achievements and the route to follow for the FCC that are part of the EU, all the more in the context of the celebrations of around two decades of the Euro currency. Regarding the former, several FCC grew monetary institutions that allowed them to join the Euro area, namely Slovenia (2007), Slovakia (2009), Estonia (2011), Lithuania (2014) and Latvia (2015). Regarding the latter, the remaining EU FCC are in the process of adopting the single currency.[2]

However, being part of a monetary union requires in particular strong fiscal institutions, capable of delivering a sound and sustainable fiscal stance in order to protect the single currency against, for example, the need for monetization of explosive deficits and debt (see the seminal contribution of Sargent and Wallace, 1981). To avoid such unwanted consequences, all countries in the Euro area are expected to respect supranational fiscal rules (for example, the 3% deficit/GDP and the 60% debt/GDP upper bounds introduced by the Treaty

[1] The Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, and Slovenia entered the EU in 2004 (together with the two Southern Europe countries, Cyprus and Malta), while Bulgaria and Romania joined them in 2007 and Croatia in 2013.

[2] For example, as of 2018 Bulgaria and Romania respect respectively 4 and 5 of the 7 convergence criteria needed to join the Euro Area (which will take place probably during the 2020s).

of Maastricht in 1992 and revised through the six- and two-pack, see e.g. European Fiscal Board, 2019), which are completed with national rules in most EU countries. Particularly popular in Western EU countries, such national fiscal rules have been more recently adopted also in EU FCC with the aim of supporting better fiscal outcomes. Nevertheless, the existing literature does not undoubtedly point out to favourable effects of fiscal rules on fiscal performance.[3] While fiscal rules are found to improve fiscal outcomes by e.g. Debrun et al. (2008), Tapsoba (2012), Combes et al. (2018), their impact is not significant in Debrun and Kumar (2007), Escolano et al. (2012), or Cevik and Teksoz (2014), to the point where the meta-analysis of Heinemann et al. (2018) indicates only a weakly-significant (around the 10% significance level) favourable effect.

Consequently, the goal of the present paper is to explore the effect of fiscal rules on fiscal performance in EU FCC. Focusing on the FCC is motivated by at least two major considerations. On the one hand, to the best of our knowledge, only few studies investigate the fiscal performance of the EU FCC. Aside from the descriptive discussion of Budina and van Wijnbergen (1997), these studies however focus on a wide range of political institutions, including electoral systems, political fragmentation, voter participation or the different phases of the budget process and particularly the executive-legislative interaction (see Ylaoutinen, 2004; Fabrizio and Mody, 2006; Schneider and Zapal, 2006; Mulas-Granados et al., 2009; Hallerberg and Ylaoutinen, 2010), and only Fabrizio and Mody (2006) look at the quality of fiscal institutions approached by a multidimensional index inspired by Gleich (2003). On the other hand, EU FCC are combined with the other EU countries, i.e. EU non-FCC, in the existing studies devoted to fiscal rules and fiscal performance (see e.g. Debrun et al., 2008). However, by focusing on the EU FCC alone, our analysis unveils significant differences between them and the other EU countries. Using the bias-corrected least squared dummy (LSDVC) estimator, which is particularly appealing for our small sample of 11 EU FCC observed during the 1995-2014 period, our results are as follows.

First, we find that in the EU FCC the presence of fiscal rules does not significantly influence the primary fiscal balance, which is our main measure of fiscal performance. This

[3] In addition to the fiscal performance, other dimensions of fiscal policy were found to be affected by fiscal rules, including fiscal policy cyclicality (with pros: Debrun et al., 2008; Combes et al., 2017; and cons: Blanchard and Giavazzi, 2004; Dessus et al., 2016) or government borrowing costs (see e.g. Badinger and Reuter, 2017; Thornton and Vasilakis, 2018; Afonso and Jalles, 2019).

result is at odds with the strong favourable effect of fiscal rules on the primary fiscal balance that we illustrate for the other 17 EU countries, or for all the 28 EU countries in our sample.

Second, we show that this finding is robust in various ways, namely when performing estimations (i) by alternatively excluding each of the eleven countries to control for possible outliers; (ii) by extending the sample to include nine additional FCC countries that were part of the former Soviet Union and Albania; (iii) by using the LSDV estimator without correction and with several alternative corrections of the Nickel (1991) bias between the lagged dependent variable and country-fixed effects; and (iv) by adding time-fixed effects. In addition, fiscal rules are not found to significantly affect alternative measures of fiscal performance, either observed (namely, the overall fiscal balance) or computed (namely, the cyclically-adjusted overall and primary balance, or the structural balance).

Third, we explore heterogeneities related to different types of fiscal rules. None of the various types of fiscal rules considered, namely, budget balance rules (BBR), debt rules (DR), or expenditure rules (ER), significantly influences fiscal performance in EU FCC, contrary to the favourable effect of BBR and DR in the EU non-FCC. Moreover, the same holds when looking at the age and the number of fiscal rules, and the presence and the number of national and supranational fiscal rules. Finally, the presence of medium term budgetary frameworks (MTBF) is not found to affect fiscal performance in the EU FCC, consistent with our main findings.

Fourth, we extend our analysis and investigate the importance of the strength of FR. We find that an increase in the strength of FR significantly improves fiscal performance in EU FCC, with a magnitude stronger than that estimated for the EU non-FCC. This finding completes our previous results, as it shows that in the EU FCC it is not the mere presence of FR that matters for fiscal performance, but rather the way FR are enforced.

Altogether, our analysis draws attention on a possible threat of a multi-speed fiscal Europe: contrary to the other EU countries, simply adopting fiscal rules is not sufficient to significantly influence fiscal performance in the EU FCC. This finding may be explained by structural differences between the FCC and the other EU countries, mainly reflecting (i) almost half a century of fundamental differences in institutions, which, despite several decades of transition, still conserve some of their pre-1990 characteristics, including a dependency to the party state or resistance (fear) to change; and (ii) poor post-communist institutions, characterized by the common-pool problem and possibly a zero-sum (non-cooperative) po-

litical process, as summarized by the excellent discussion of Kopits (2008). Such issues may translate into a loose understanding and commitment by governments of fiscal rules in terms of fiscal performance in the EU FCC.

Instead, when incentives are created by enforcing their implementation, fiscal rules significantly improve fiscal performance in the EU FCC. Consequently, from the perspective of the adoption of the Euro by several EU FCC, and potentially by other FCC that are in the process of joining the EU (for example, countries that were part of the former Socialist Federal Republic of Yugoslavia), an appropriate strategy should go beyond the simple adoption of fiscal rules towards measures of enforcement in order to make them count for fiscal discipline.

The paper is organized as follows. Section 2 describes the methodology, section 3 presents the data, section 4 reports the main results and their robustness, section 5 accounts for various types of fiscal rules, section 6 goes beyond the simple presence of fiscal rules and considers the impact of their strength, and section 7 provides some conclusive remarks.

2 Methodology

The goal of our analysis is to study the effects of fiscal rules (FR) on fiscal performance (FP) in the panel composed of the former communist countries (FCC) that are part of the European Union (EU), namely

$$FP_{it} = \alpha + \beta FR_{it} + \gamma X_{it} + \epsilon_{it}, \tag{1}$$

with X the vector of control variables and ϵ_{it} the residuals. Starting from this simple OLS setup, we perform several corrections in order to obtain our benchmark model.

First, the vector of control variables intends to clean the effect of FR on FP from country-specific factors that may lead to biased estimates if uncontrolled for. However, once accounted for, the impact of FR on FP may still be polluted by country-specific factors that are unobserved. To account for such factors, we extend model (1) to add country-fixed effects.

Second, as previously emphasized by the existing literature (see, e.g. Combes et al., 2018), a certain share of fiscal outcomes are hardly modified between consecutive years. To account for this potential persistence, we further extend model (1) by including the lagged

value of fiscal performance. Consequently, with μ_i the country-fixed effects and FP_{it-1} the lagged fiscal performance, model (1) now rewrites

$$FP_{it} = \alpha + \delta FP_{it-1} + \beta FR_{it} + \gamma X_{it} + \epsilon_{it}. \tag{2}$$

Finally, the influence of FR on FP may be subject to endogeneity, since governments may decide to adopt fiscal rules when fiscal conditions are favourable, including in terms of fiscal performance. Particularly challenging for fiscal policy macroeconomic time series data, this issue may ideally be addressed by instrumenting the variable FR;[4] however, as indicated by Debrun et al. (2008) and Combes et al. (2018), given the difficulties of finding appropriate time-varying instrumental variables (IV), the common solution is to resort to lagged values, possibly within regression-based techniques such as the system-GMM estimator of Blundell and Bond (1998). Nevertheless, this technique provides fairly robust estimates when the number of countries is (much) larger than the number of years, which is not the case in our setup. Instead, to account for the relatively small size of our sample, we draw upon the Least Squared Dummy Variable (LSDV) method, which may outperform GMM methods in small samples (see e.g. Arellano and Bond, 1991; Kiviet, 1995, 1999, Judson and Owen, 1999; Bun and Kiviet, 2003). In addition, to deal with the Nickell (1981) bias that characterizes dynamic panel models, i.e. the fact that the correlation between the lagged dependant variable and the residual term yields inconsistent estimates, we draw upon the bias-corrected LSDV estimator (LSDVC) of Bruno (2005a,b) that is appropriate for unbalanced panels like ours.

3 Data

We test the effect of fiscal rules on fiscal performance using yearly data for the period 1995-2014 in the 11 central and eastern former communist countries (FCC) that are currently part of the European Union, namely: Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

Our main variables are measured as follows. On the one hand, the presence of fiscal rules (FR) is captured by a dummy variable equal to 1 if a country has a fiscal rule in a certain

[4] Alternatively, following the work of Tapsoba (2012), several studies, e.g. Guerguil et al. (2017) and Combes et al. (2019), considered the adoption of fiscal rules as random once its main determinants are controlled for, and compare fiscal performance in countries that adopted FR and that did not adopt FR.

year, and to 0 if not. Data come from the IMF Fiscal Rules dataset, which provides the largest data coverage on fiscal rules. On the other hand, in our main analysis we capture fiscal performance using the primary fiscal balance (PB), computed as the difference between general government's fiscal revenues and public spending, excluding interest payments.[5]

The vector of control variables includes, in addition to the lagged measure of fiscal performance, various variables that may affect fiscal performance. First, according to Bohn (1998), in the presence of large public debt governments are likely to conduct higher fiscal surpluses in order to stabilize possible unsustainable debt dynamics; to mitigate a possible simultaneity bias, we introduce the one-period lagged debt. Second, we consider the inflation rate (normalized to be equal to inflation divided by 1+inflation), given that monetary conditions, such as an inflation targeting framework, may raise fiscal discipline as suggested by Minea and Tapsoba (2014). Finally, we use two more variables, namely the (log of) real GDP per capita and the openness degree to account for domestic real conditions and the international activity. This parsimonious specification seems appropriate given our relatively small sample.[6]

4 Fiscal rules and fiscal performance

We begin by generating a counterfactual through looking at the effect of FR in the other EU countries, i.e. EU non-FCC. Then, we report the impact of FR on FP in the EU FCC. Lastly, we discuss the robustness of our results.

4.1 Preliminaries: FR and FP in the EU non-FCC

Given the debates in the literature on the effect of fiscal rules on fiscal performance, we first consider the sample of 17 EU non-FCC.[7] Results are reported in Table 1.

[5]Given the complexity of the concept of fiscal performance, our robustness analysis will consider several alternative measures chosen to capture its various facets.

[6]We report that the use of other variables does not allow improving this specification; for example, unemployment was found not to significantly affect fiscal performance, consistent with Fabrizio and Mody (2006) or Hallerberg and Ylatoutinen (2010).

[7]These countries are: Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxemburg, Malta, Netherlands, Portugal, Spain, Sweden and the United Kingdom.

Table 1: FR and FP in the EU non-FCC

	(1)	(2)	(3)	(4)
Estimator	OLS	LSDV	LSDVC	LSDVC
Lag PB	0.749***	0.698***	0.784***	0.707***
	(0.0331)	(0.0368)	(0.0359)	(0.0448)
FR	1.287***	1.353***	1.458***	1.894***
	(0.435)	(0.470)	(0.499)	(0.432)
Debt				0.0510***
				(0.0097)
Inflation				25.00***
				(8.292)
RGDPpc				1.021
				(1.922)
Openness				0.00866
				(0.0225)
N	356	356	356	251
R2	0.600	0.523	-	-

Notes: Standard errors in parentheses. *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.

According to column (1), simple OLS pooled estimations show that, aside from the strong persistence in the primary fiscal balance (see the large and significant coefficient of its lagged value) supporting the use of dynamic panel estimators, the presence of FR significantly increases the primary fiscal balance with a magnitude compared to previous estimates (see the discussion in Heinemann et al., 2018). These findings are confirmed when using the LSDV estimator in column (2), and the correction suggested by Bruno (2005a) in column (3). Finally, this significant favourable effect is still at work when including in column (4) our vector of control variables, namely public debt, inflation, real GDP per capita, and the openness degree; in particular, governments are found to significantly respond to higher debt by increasing their primary balance, and, given the modest inflation rates in these countries over the considered period, a higher inflation rate may be the sign of strong demand-driven economic growth, which provides additional fiscal revenues that raise the primary fiscal balance. Consequently, we find a positive effect of FR on fiscal performance measured by the primary fiscal balance in the EU non-FCC countries.

4.2 Main results: FR and FP in the EU FCC

The estimated effect of FR on the EU FCC is reported in Table 2. Although its persistence is comparable with the other EU countries, the primary fiscal balance is no longer significantly affected by FR in OLS estimations in column (1). This result is at work when using the LSDV estimator in column (2) and the LSDVC estimator in column (3). Moreover, adding control variables in column (4) leaves the effect of fiscal rules unchanged; in particular, governments positively adjust their primary balance when facing larger public debt, as suggested by Bohn (1998), and a higher inflation and real GDP per capita are associated with a higher primary fiscal balance.

Finally, to go one step further, we report in the remaining columns of Table 2 LSDVC estimations for various samples. First, we look in column (5) at the effect of FR on the primary fiscal balance for a sample composed (based on data availability) of nine former communist countries that are not currently part of the EU (non-EU FCC), namely Albania and eight former Soviet Union countries (Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Moldova, Russian Federation and Ukraine). Comparable with our findings for the EU FCC, FR do not exert a significant effect on the primary fiscal balance. Second, we mix the eleven EU FCC and the nine non-EU FCC to obtain a wider sample of twenty FCC. Estimations reported in column (6) confirm the lack of significant effect of FR on the primary fiscal balance in the sample of FCC, be them currently in the EU or not.

Consequently, our analysis reveals that FR do not significantly influence fiscal performance measured by the primary fiscal balance in the group of EU FCC. This finding is all the more important that FR significantly foster the primary fiscal balance in the EU non-FCC and also for all EU countries without (column 7) or with the non-EU FCC (column 8). This finding suggests that the simple presence of FR may not be sufficiently binding to foster fiscal performance in EU FCC. A possible explanation, supported by the lack of a significant effect of FR equally in the non-EU FCC, may be related to the heritage from the communist era, making fiscal institutions not to significantly connect their fiscal performance with the presence of FR.

Given the central role of fiscal rules in the European construction process at least since the Treaty of Maastricht of 1992, this heterogeneity in the response of the primary fiscal balance to FR within the EU should be accounted for from the standpoint of the stability

Table 2: FR and FP in the EU FCC

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Estimator	OLS	LSDV	LSDVC	LSDVC	LSDVC	LSDVC	LSDVC	LSDVC
Sample	FCC	FCC	FCC	FCC	Sov. Un.	FCC&SU	FCC&EU	FCC&EU&SU
Lag PB	0.733***	0.668***	0.776***	0.503***	0.410***	0.552***	0.659***	0.661***
	(0.0575)	(0.0663)	(0.0651)	(0.117)	(0.139)	(0.0861)	(0.0393)	(0.0341)
FR	0.117	0.119	0.0995	0.299	-0.0379	0.0572	1.237***	1.103***
	(0.442)	(0.482)	(0.635)	(0.563)	(3.024)	(0.531)	(0.363)	(0.363)
Debt				0.0628**	0.0232	0.0168	0.0485***	0.0278***
				(0.0276)	(0.0226)	(0.0189)	(0.0122)	(0.0068)
Inflation				18.36**	0.138	2.548	19.78***	3.133*
				(7.136)	(2.698)	(2.882)	(4.525)	(1.902)
RGDPpc				5.915**	0.666	1.274	3.075**	1.304
				(2.417)	(1.836)	(1.199)	(1.276)	(1.032)
Openness				-0.0275	0.0300	-0.000306	-0.0139	-0.0048
				(0.0186)	(0.0236)	(0.00967)	(0.0116)	(0.0099)
N	171	171	171	97	76	173	348	424
R2	0.492	0.391	-	-	-	-	-	-

Notes: Standard errors in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

of the current Euro zone and the perspective of its enlargement to new FCC.

4.3 Robustness

We explore the robustness of the disconnection between FR and FP measured by the primary fiscal balance in the EU FCC in various ways. First, to control for possible outliers, we perform our main estimations by progressively excluding each of the eleven EU FCC. As shown by columns (1)-(11) in Table 3, our previous findings do not seem to be driven by a specific country.

Next, we consider different estimations methods. First, in addition to country-fixed effects, we augment our model with time-fixed effects whose aim is to account for time-varying unobserved events, including changes at the EU level, international shocks and so forth. Column (1) of Table 4 shows that accounting for time-fixed effects does not change our previous findings.[8] Second, for a different look at the issue of endogeneity, we perform

[8]Comparable conclusions arise if we control for the Great Recession period (results are available upon request).

Table 3: FR and FP in the EU FCC: potential outliers

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	drop	drop	drop	drop	drop	drop	drop	drop	drop	drop	drop
	Bulgaria	Cz. Rep.	Svk. Rep.	Estonia	Latvia	Hungary	Lithuania	Croatia	Slovenia	Poland	Romania
Lag PB	0.455***	0.675***	0.519***	0.491***	0.505***	0.202*	0.498***	0.502***	0.504***	0.506***	0.503***
	(0.0885)	(0.113)	(0.118)	(0.0892)	(0.114)	(0.105)	(0.106)	(0.0853)	(0.123)	(0.114)	(0.117)
FR	-0.173	-0.0139	0.396	0.702	0.657	0.167	0.224	0.307	0.618	0.0987	0.299
	(0.753)	(0.711)	(0.654)	(0.652)	(0.638)	(0.693)	(0.713)	(0.735)	(0.840)	(0.892)	(0.563)
Debt	0.134***	0.0623*	0.0497	0.0614**	0.0599**	0.00612	0.0629**	0.0629**	0.0675**	0.0637**	0.0628**
	(0.0361)	(0.0358)	(0.0338)	(0.0279)	(0.0262)	(0.0221)	(0.0317)	(0.0295)	(0.0264)	(0.0275)	(0.0276)
Inflation	15.40**	14.81**	18.30**	21.90***	21.50**	13.98**	20.57***	18.27**	18.43***	21.36***	18.36**
	(7.510)	(6.544)	(7.411)	(8.474)	(9.024)	(6.544)	(6.170)	(8.430)	(6.891)	(7.970)	(7.136)
RGDPpc	7.309***	3.812	5.648**	4.317*	7.059***	4.666*	6.597**	5.948***	6.104*	5.410*	5.915**
	(2.580)	(2.412)	(2.251)	(2.452)	(2.640)	(2.423)	(2.663)	(1.902)	(3.142)	(3.099)	(2.417)
Openness	-0.0394	-0.00701	-0.0318*	-0.0253	-0.0348**	0.00633	-0.0267	-0.0278	-0.0332	-0.0197	-0.0275
	(0.0264)	(0.0233)	(0.0170)	(0.0169)	(0.0155)	(0.0234)	(0.0241)	(0.0244)	(0.0209)	(0.0223)	(0.0186)
N	91	85	87	85	88	85	90	92	85	85	97

Notes: LSDVC estimators. Standard errors in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

two-stage least squares estimations (2SLS), in which we instrument fiscal rules by their one period-lag. As indicated by column (2), the absence of a significant effect of FR is still at work.[9] Third, in our previous regressions we corrected the bias of the LSDV estimator using the correction of Nickell (1981) of order T^{-1}. Subsequent work provides more precise corrections of the bias, of order $N^{-1}T^{-1}$ (Kiviet, 1995) and $N^{-2}T^{-1}$ (Kiviet, 1999). As shown by columns (3) and (4) in Table 4, using the latter two corrections leaves our previous results qualitatively unchanged.

Finally, so far we approached fiscal performance by one of the most popular measures in the existing literature, namely the primary fiscal balance (PB). However, given the complexity of the concept of fiscal performance, PB may seize only some of its dimensions. Consequently, we consider alternative measures of fiscal performance in Table 4. First, by subtracting interest payments (i.e. the debt burden) from the PB, we obtain the overall fiscal balance (OB). Estimations in column (5) show the lack of a significant effect of FR on OB in the EU FCC, corroborating our previous finding. Second, we move away from observed measures of fiscal performance (such as PB or OB), and look at transformed measures. On the one hand, we consider the cyclically-adjusted balance (CAB) and the cyclically-adjusted

[9] These results, which continue to hold if we instrument FR with both their first and second lag, join the conclusions of Caselli and Reynaud (2019) who fail to find a significant effect of fiscal rules on fiscal balances when accounting for endogeneity.

Table 4: FR and FP in the EU FCC: different methods and FP measures

	(1)[a]	(2)[b]	(3)[c]	(4)[d]	(5)	(6)	(7)	(8)
FP Measure	PB	PB	PB	PB	OB	CAPB	CAB	SB
Lag PB	0.390***	0.385***	0.528***	0.540***				
	(0.089)	(0.115)	(0.115)	(0.118)				
FR	0.642	0.0415	0.302	0.308	0.271	0.440	0.250	0.313
	(0.661)	(0.797)	(0.559)	(0.559)	(0.760)	(0.511)	(0.679)	(0.851)
Debt	0.0984***	0.0704*	0.0617**	0.0704*	0.0477	0.0833*	0.0468	0.0395
	(0.0320)	(0.0371)	(0.0275)	(0.0371)	(0.0295)	(0.0494)	(0.0317)	(0.0338)
Inflation	3.963	19.93***	18.04**	19.93***	17.35***	7.815	5.146	9.532
	(8.823)	(7.258)	(7.061)	(7.258)	(5.864)	(5.486)	(5.168)	(10.73)
RGDPpc	9.789***	5.670**	5.969**	5.670**	6.555***	0.143	-0.712	-1.407
	(3.435)	(2.286)	(2.427)	(2.286)	(2.400)	(3.151)	(2.431)	(4.696)
Openness	-0.0111	-0.0183	-0.0286	-0.0183	-0.0148	-0.0195	-0.000153	0.0248
	(0.0225)	(0.0214)	(0.0186)	(0.0214)	(0.0219)	(0.0209)	(0.0170)	(0.0328)
Lag OB					0.425***			
					(0.117)			
Lag CAPB						0.273**		
						(0.124)		
Lag CAB							0.499***	
							(0.103)	
Lag SB								0.327**
								(0.144)
N	97	97	97	97	102	72	114	78
R2	0.542	0.457	-	-	-	-	-	-

Notes: [a] LSDV estimator with time fixed effects. [b] 2SLS estimator with FR instrumented by its lag. [c] and [d] LSDVC estimator with Kiviet (1995, 1999) corrections. Standard errors in parentheses. $*p < 0.10$, $**p < 0.05$, $***p < 0.01$.

primary balance (CAPB). According to columns (6) and (7), FR do not exert a significant effect on these business-cycle corrected measures of fiscal performance. On the other hand, we consider the structural balance (SB), which is corrected for the effects of the business cycle and one off events. Column (8) shows that the effect of FR on the SB is not significant.

Consequently, the absence of a significant effect of FR on fiscal performance in the EU FCC appears robust to the use of alternative methods and measures of fiscal performance. In the following, we investigate if this finding still holds when considering different types of fiscal rules.

5 FR and FP in the EU FCC: different types of FR

The previous section confirmed that FR, measured by a dummy that equals 1 irrespective of the type of FR, do not affect fiscal performance. In the following, we disentangle FR in various ways.

5.1 The fiscal aggregate covered by the fiscal rule

Our general measure of fiscal rules does not differentiate between balanced budget rules (BBR), debt rules (DR), or expenditure rules (ER).[10] Yet, each rule presents particularities related to different objectives, such as operational guidance, economic stabilization functions, linkage to debt sustainability, flexibility and transparency (Schaechter, 2012; Caselli et al., 2018). Therefore, capitalizing on existing studies that highlight different effects of these rules on the fiscal behaviour (e.g. Tapsoba, 2012; Combes et al., 2018), we investigate their effect on the fiscal performance of the EU FCC.

5.1.1 Budget Balance Rules (BBR)

Budget balance rules usually set an explicit limit on the budget deficit, e.g. the well-known 3% target embodied in the SGP. Providing a better response mechanism to output shocks when defined as structural or "over the cycle", BBR may also support economic

[10] We disregard the revenue rules for being fairly rare in our sample.

Table 5: BBR and FP in the EU FCC

	(1)[%]	(2)	(3)[a]	(4)[b]	(5)[c]	(6)	(7)	(8)	(9)
FP Measure	PB	PB	PB	PB	PB	OB	CAPB	CAB	SB
Lag PB	0.707***	0.508***	0.383***	0.533***	0.546***				
	(0.045)	(0.115)	(0.0903)	(0.112)	(0.115)				
BBR	1.894***	0.210	-0.248	0.215	0.222	0.283	0.0171	-0.0132	-0.483
	(0.431)	(0.694)	(0.927)	(0.692)	(0.693)	(0.617)	(1.038)	(0.572)	(0.986)
Lag OB						0.426***			
						(0.120)			
Lag CAPB							0.276**		
							(0.134)		
Lag CAB								0.502***	
								(0.101)	
Lag SB									0.325**
									(0.151)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	251	97	97	97	97	102	72	114	78
R2	-	-	0.537	-	-	-	-	-	-

Notes: [%] estimations performed on the EU non-FCC countries, as benchmark. [a] LSDV estimator with time fixed effects. [b] and [c] LSDVC estimator with Kiviet (1995, 1999) corrections. Standard errors in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

stabilization; however, due to their complexity, such BBR are difficult to be monitored and communicated.

According to column (1) in Table 5, the presence of BBR significantly increases the primary fiscal balance in the group of EU non-FCC countries, consistent with some of the existing studies (see e.g. Debrun et al., 2008; Tapsoba, 2012; Combes et al., 2018). However, column (2) shows that the presence of BBR is not associated with a significant change in the primary fiscal balance for the EU FCC. This lack of a significant effect of BBR is confirmed when using the LSDV estimator with time fixed effects and the LSDVC estimator with the bias corrections of Kiviet (1995, 1999) in columns (3)-(5). Finally, columns (6)-(9) of Table 5 illustrate that the presence of BBR leaves statistically unchanged the various measures of fiscal performance (namely: the overall fiscal balance, the cyclically-adjusted balance, the cyclically-adjusted primary balance and the structural balance). Consequently, contrary to the other EU countries, the simple adoption of BBR appears unrelated to fiscal performance in the EU FCC.

Table 6: DR and FP in EU FCC

	(1)[%]	(2)	(3)[a]	(4)[b]	(5)[c]	(6)	(7)	(8)	(9)
FP Measure	PB	PB	PB	PB	PB	OB	CAPB	CAB	SB
Lag PB	0.707***	0.503***	0.385***	0.526***	0.538***				
	(0.045)	(0.114)	(0.0897)	(0.112)	(0.114)				
DR	1.894***	0.297	0.435	0.304	0.312	0.110	0.200	0.144	-0.181
	(0.432)	(0.556)	(0.697)	(0.549)	(0.547)	(1.001)	(0.664)	(0.661)	(0.866)
Lag OB						0.425***			
						(0.119)			
Lag CAPB							0.274**		
							(0.126)		
Lag CAB								0.500***	
								(0.103)	
Lag SB									0.329**
									(0.145)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	251	97	97	97	97	102	72	114	78
R2	-	-	0.539	-	-	-	-	-	-

Notes: [%] estimations performed on the EU non-FCC countries, as benchmark. [a] LSDV estimator with time fixed effects. [b] and [c] LSDVC estimator with Kiviet (1995, 1999) corrections. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

5.1.2 Debt rules (DR)

Compared with BBR, DR are the most effective type of fiscal rule in terms of setting up a specific target for the public debt-to-GDP ratio (e.g. the 60% target included in the SGP). However, DR may be associated with procyclical behaviours when the economy is hit by shocks (Schaechter et al., 2012), due to their binding nature and the fact that they are not meant to provide short-term operational guidance (Caselli et al., 2018). Even though DR are found to be less discipline-enhancing for public spending behaviour (Guerguil et al., 2017), they act like a commitment device and are easier to monitor and communicate.

Consistent with previous studies (see e.g. Debrun et al., 2008; Bergman et al., 2016), DR are found to significantly increase the fiscal performance of EU non-FCC countries, measured by the primary fiscal balance in column (1) of Table 6. However, DR do not significantly affect the primary fiscal balance of the EU FCC, irrespective of the use of the LSDVC estimator (column 2), the LSDV estimator with time fixed effects (column 3), or the LSDVC estimator with various corrections (columns 4 and 5). In addition, the same holds

Table 7: ER and FP in the EU FCC

	(1)[%]	(2)	(3)[a]	(4)[b]	(5)[c]	(6)	(7)
FP Measure	PB	PB	PB	PB	PB	OB	SB
Lag PB	0.714***	0.492***	0.348***	0.514***	0.528***		
	(0.050)	(0.114)	(0.0895)	(0.112)	(0.114)		
ER	0.454	2.327	3.417*	2.293	2.271	1.712	-0.0630
	(0.593)	(2.149)	(1.718)	(2.134)	(2.126)	(1.893)	(2.634)
Lag OB						0.418***	
						(0.121)	
Lag SB							0.326**
							(0.149)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	251	97	97	97	97	102	78
R2	-	-	0.561	-	-	-	-

Notes: [%] estimations performed on the EU non-FCC countries, as benchmark. [a] LSDV estimator with time fixed effects. [b] and [c] LSDVC estimator with Kiviet (1995, 1999) corrections. Standard errors in parentheses. $*p < 0.10$, $**p < 0.05$, $***p < 0.01$.

when using different measures of fiscal performance in columns (6)-(9) of Table 6. Therefore, similar to BBR, the simple presence of DR does not significantly affect the fiscal performance of the EU FCC, contrary to their favourable effect in the other EU countries.

5.1.3 Expenditure rules (ER)

Compared with the other types of FR, ER aim to limit the current, primary or total government expenditure by setting a numerical ceiling usually expressed in absolute terms or growth rates. Being directly linked to the size of the government and due to their simplicity and flexibility, ER can provide a strong guidance for achieving fiscal discipline and limiting the deficit bias (Schaechter et al., 2012; Eyraud et al., 2018).

As shown by column (1) in Table 7, contrary to BBR and DR, ER do not significantly affect the primary fiscal balance in the group of EU non-FCC countries, a finding consistent with some existing studies (see e.g. Debrun et al., 2008; Reuter, 2015; Bergman et al., 2016). In addition, ER equally leave unaffected fiscal performance in the EU FCC, irrespective of the method used (except for a weakly-significant effect when using the LSDV estimator with no correction, see columns 2-5) or the fiscal performance measure (see columns 6-7).[11]

[11] The LSDVC estimator fails to converge when using the CAPB and the CAB as alternative FP measures.

Table 8: The age of FR and FP in the EU FCC

	(1)[%]	(2)	(3)[a]	(4)[b]	(5)[c]	(6)	(7)	(8)	(9)
FP Measure	PB	PB	PB	PB	PB	OB	CAPB	CAB	SB
Lag PB	0.696***	0.432**	0.337*	0.453***	0.508***				
	(0.0598)	(0.175)	(0.188)	(0.170)	(0.176)				
Age FR	-0.102*	-0.290	-0.126	-0.292	-0.292	-0.280	-0.382	-0.0999	-0.331
	(0.0583)	(0.310)	(0.460)	(0.311)	(0.314)	(0.278)	(0.497)	(0.316)	(0.516)
Lag OB						0.360**			
						(0.157)			
Lag CAPB							0.208		
							(0.147)		
Lag CAB								0.476***	
								(0.153)	
Lag SB									0.558***
									(0.159)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	221	57	57	57	57	61	42	61	47
R2	-	-	0.599	-	-	-	-	-	-

Notes: [%] estimations performed on the EU non-FCC, as benchmark. [a] LSDV estimator with time fixed effects. [b] and [c] LSDVC estimator with Kiviet (1995, 1999) corrections. Standard errors in parentheses. $*p < 0.10$, $**p < 0.05$, $***p < 0.01$.

Altogether, these results show yet again that the simple presence of fiscal rules, which is found to be sufficient in the other EU countries, does not significantly impact fiscal performance in the EU FCC.

5.2 The age and the number of fiscal rules

We now look at two different dimensions of fiscal rules, namely their age and their number. Regarding the former, we measure the age of fiscal rules by a variable equal to the number of years since the adoption of the rule, e.g. equal to 1 the year of adoption, to 2 in the second year and so forth.

According to column (1) in Table 8, the favourable effect of the presence of FR on the primary fiscal balance of the EU non-FCC countries, estimated around 1.9 in Table 1, decreases by around 0.1 for each additional year since the adoption. However, the age of the rule has no significant effect on the primary fiscal balance of the EU FCC, irrespective of the method used (see columns 2-5). Finally, using various FP measures in columns (6)-(9) confirms the lack of significant impact of the age of FR on FP in the EU FCC.

Moving to the number of fiscal rules, in recent years a wide number of countries adopted multiple fiscal rules (Caselli et al., 2018), with the goal of strengthening their fiscal discipline.

Table 9: The number of FR and FP in the EU FCC

	(1)[%]	(2)	(3)[a]	(4)[b]	(5)[c]	(6)	(7)	(8)	(9)
FP Measure	PB	PB	PB	PB	PB	OB	CAPB	CAB	SB
Lag PB	0.685***	0.506***	0.378***	0.530***	0.543***				
	(0.0451)	(0.114)	(0.0903)	(0.111)	(0.114)				
Number FR	0.546***	0.0484	-0.212	0.0510	0.0542	0.0120	-0.225	-0.0704	-0.363
	(0.0968)	(0.263)	(0.312)	(0.261)	(0.261)	(0.278)	(0.291)	(0.178)	(0.348)
Lag OB						0.426***			
						(0.126)			
Lag CAPB							0.269**		
							(0.130)		
Lag CAB								0.506***	
								(0.101)	
Lag SB									0.314**
									(0.151)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	251	97	97	97	97	102	72	114	78
R2	-	-	0.539	-	-	-	-	-	-

Notes: [%] estimations performed on the EU non-FCC, as benchmark. [a] LSDV estimator with time fixed effects. [b] and [c] LSDVC estimator with Kiviet (1995, 1999) corrections. Standard errors in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Therefore, we look if the presence of several fiscal rules affects our previous findings. As shown by column (1) in Table 9, the primary fiscal balance positively responds to a higher number of fiscal rules for the EU non-FCC. Contrasting with this strong effect, column (2) shows that having a higher number of FR does not significantly affect the primary fiscal balance in the EU FCC. This result remains unchanged when considering different methods and corrections in columns (3)-(5) and when employing alternative observed and transformed FP measures in columns (6)-(9). Consequently, extending our benchmark findings, we reveal that adopting several fiscal rules is not a viable solution to significantly improve fiscal performance in the EU FCC. Our finding may provide support to the argument of Eyraud et al. (2018), suggesting that multiple FR are difficult to manage and may raise different issues, including the inconsistency between various targets (for example, the 3% deficit and the 60% public debt ceilings in EU[12]), the overlap between rules (for example, different rules may constrain the same fiscal aggregate to a different degree or may target different measures of the same aggregate[13]), or sub-optimal policies due to over-constrained governments (Cordes et al., 2015).

[12]According to Eyraud et al. (2018), a 3% deficit rule would be consistent with a 60% public debt in the long run provided that the annual nominal GDP growth is high, around 5%; instead, the required nominal GDP growth would be around 3% with a 2% deficit rule.

[13]For example, in Bulgaria and Romania there exist both structural and nominal budget balance rules.

5.3 National and supranational fiscal rules

Both national and supranational fiscal rules underpin fiscal behaviours in the Euro area. On the one hand, an increasing number of countries became subject to supranational rules (such as the 3% deficit and the 60% debt targets of the SGP) following their entrance in the EMU (Caselli et al., 2018). On the other hand, many countries adopted national fiscal rules in response to the fiscal legacy of the global financial crisis and to provide a credible commitment to sound fiscal frameworks (Schaechter et al., 2012). However, supranational rules are often subject of insufficient compliance, as many countries frequently infringe them without considerable sanctions (Tapsoba, 2012). Although the resilience of supranational rules to recessionary shocks outperforms that of national rules, recent studies show that a supranational fiscal framework does not lead to compliance with national rules and thus to more fiscal discipline (Bergman et al., 2016), while the EMU membership may lead to bailout expectation that seem to alter the compliance with supranational FR (e.g. Reuter, 2017).

We consider in Table 10 the impact of national fiscal rules (NFR) on the primary fiscal balance. As shown by LSDVC estimations in columns (1)-(2), both the presence of NFR and a higher number of NFR significantly increase the primary fiscal balance in EU non-FCC. Although weaker in magnitude, a comparable effect is at work when extending the sample by adding the EU FCC (see columns 3-4). However, column (5) shows the lack of a significant effect of NFR on the primary fiscal balance in EU FCC, a finding confirmed when considering the total number of NFR in columns (6). Consequently, neither the presence nor a higher number of NFR are sufficiently binding to increase fiscal performance measured by the primary fiscal balance in EU FCC.

Moving to supranational fiscal rules (SFR), columns (1)-(2) in Table 11 show that the presence of SFR and more SFR significantly increase the primary fiscal balance in the EU non-FCC. While these effects are confirmed, although with a weaker magnitude, when extending the sample to include the EU FCC (see columns 3-4), performing the estimations on the EU FCC alone reveals a different picture: neither the presence of SFR (column 5), nor a higher number of SFR (column 6), significantly affect their primary fiscal balance. This result supports the reforms suggested by Caselli et al. (2018), towards a smaller number of FR that can better combine three guiding principles, namely flexibility, enforceability and simplicity.

Table 10: National FR and FP

	(1)	(2)	(3)	(4)	(5)	(6)
FP measure	NFR	Number NFR	NFR	Number NFR	NFR	Number NFR
Sample	EU non-FCC	EU non-FCC	All EU	All EU	EU FCC	EU FCC
Lag PB	0.690***	0.677***	0.656***	0.638***	0.491***	0.509***
	(0.0466)	(0.0470)	(0.0398)	(0.0367)	(0.117)	(0.119)
NFR	0.829*		0.626**		-0.286	
	(0.425)		(0.316)		(0.708)	
Number NFR		0.563**		0.526**		0.271
		(0.238)		(0.210)		(0.461)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
N	251	251	348	348	97	97

Notes: Standard errors in parentheses. *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.

Table 11: Supranational FR and FP

	(1)	(2)	(3)	(4)	(5)	(6)
FP measure	SFR	Number SFR	SFR	Number SFR	SFR	Number SFR
Sample	EU non-FCC	EU non-FCC	All EU	All EU	EU FCC	EU FCC
Lag PB	0.707***	0.732***	0.659***	0.668***	0.509***	0.510***
	(0.0448)	(0.0462)	(0.0407)	(0.0404)	(0.113)	(0.114)
SFR	1.894***		1.053**		-0.0209	
	(0.432)		(0.418)		(0.648)	
Number SFR		0.671***		0.338*		-0.0101
		(0.134)		(0.173)		(0.281)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
N	251	251	348	348	97	97

Notes: Standard errors in parentheses. *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.

Table 12: MTBF and FP in the EU FCC

	(1)[%]	(2)	(3)[a]	(4)[b]	(5)[c]	(6)	(7)	(8)
FP Measure	PB	PB	PB	PB	PB	OB	CAB	SB
Lag PB	0.435***	0.837***	0.590***	0.829***	0.851***			
	(0.0829)	(0.273)	(0.101)	(0.263)	(0.268)			
MTBF	8.661***	-1.266	3.529	-1.191	-1.269	-1.205	4.542	2.155
	(2.983)	(6.459)	(2.931)	(6.527)	(6.340)	(6.650)	(30.99)	(3.865)
Lag OB						0.862***		
						(0.279)		
Lag CAB							0.548	
							(0.386)	
Lag SB								0.625**
								(0.309)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	119	73	73	73	73	73	67	73
R2	0.670	-	0.709	-	-	-	-	-

Notes: [%] estimations performed on the EU non-FCC countries, as benchmark. [a] LSDV estimator with time fixed effects. [b] and [c] LSDVC estimator with Kiviet (1995, 1999) corrections. Standard errors in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

5.4 Medium Term Budgetary Frameworks

Most EU countries introduced a different form of fiscal constraints, namely the Medium Terms Budgetary Frameworks (MTBF). Narrowly, MTBFs refer to fiscal arrangements covering the preparation, execution and monitoring of multiannual budgets and projections proposed by EU member states. However, compared with fiscal rules, MTBFs represent a slighter form of commitment and are applied in various ways across EU countries (see the summary of Sherwood, 2015).

In this section, we investigate the effect of MTBF on fiscal performance. We draw upon the European Commission's country-specific composite index that captures the quality of the MTBF taking into account five criteria: coverage of the ceilings, the link between the ceilings included in the MTBF plans, the use of the coalition agreement or involvement of parliament in the preparation of the medium-term fiscal plans, the fiscal council's implication in the preparation of the medium-term fiscal plans, and, finally, the level of details included in MTBFs. A higher composite index signals a higher MTBF quality.

Given that MTBFs are not observed on a yearly basis, we estimate a more parsimonious

model with debt and inflation as control variables. As shown by column (1) in Table 12, corroborating the effect of FR, MTBF significantly increase the primary fiscal balance in EU non-FCC. Moving to EU FCC, MTBF are not found to affect their primary fiscal balance (see column 2), a result confirmed when using the LSDV estimator with time fixed effects or the LSDVC estimator with alternative corrections (see columns 3-5). In addition, a lack of significant effect is equally at work when using alternative measures of fiscal discipline, both observed (the overall fiscal balance in column 6) and computed (the cyclically-adjusted balance and the structural balance, in columns 7-8). Consequently, similar to FR, the MTBFs appear unrelated to fiscal performance in the EU FCC.

6 The design of FR and fiscal performance

Keeping in mind that, by and large, the presence of FR was not found to be a significant determinant of fiscal performance in EU FCC, we now adopt a different perspective and look at the design of fiscal rules.[14]

6.1 Conceptual background

Since the late 1990s, an important strand of literature discusses possible ways to improve the operational feature of FR, negatively affected by some of their characteristics, including rigidity, complexity and weak enforceability. First, many studies suggest that rules with more binding features can result into stronger discipline (see e.g. Bohn and Inman 1996; Clemens and Miran, 2012; Follette and Lutz, 2012). Second, stronger rules are more likely to reduce procyclical policies and increase enforceability and transparency (see e.g. Debrun et. al, 2008; Afonso and Hauptmeier, 2009; Bergman et al., 2016). Third, different arguments were put forward to support more flexible fiscal rules; for example, Schick (2010) discusses the "golden rule" that requires a current balanced budget but allows the use of borrowing to finance public investment (see Minea and Villieu, 2009), and Daban (2011) militates for monitoring arrangements and escape clauses as part of a new generation of fiscal rules (Kumar et al.,

[14]Prior to this analysis, we considered additional measures of fiscal performance, namely: government debt, tax revenues, value-added taxes, the fiscal balance in ratio of tax revenues, and sovereign debt maturity. Estimations reveal, yet again, a lack of significant effect of FR on these variables (results are available upon request).

2009; Schaechter et al., 2012). Finally, an impressive effort was put up recently by the IMF staff (Eyraud et al., 2018 and Caselli et al., 2018) to summarize the way fiscal rules can be improved in terms of consistency, compliance, flexibility, accountability and sustainability, in order to deliver better results.[15]

Capitalizing on these studies that emphasize the importance of the features of fiscal rules for fiscal performance, we extend our analysis by looking beyond dummy variables to capture the features of fiscal rules.

6.2 Fiscal Rule Strength Index

Aside from social welfare, fiscal policy may be used by policymakers for a variety of goals, and in particular for electoral purposes. Since election-motivated fiscal policy increases information asymmetry and leads to harmful policy behaviour and large fiscal discretion, better-informed voters, which can sanction bad policies and reward the good ones, lead to stronger outcomes (see e.g. Beetsma et al., 2017, 2018). Although FR are usually associated with better fiscal discipline or more countercyclical fiscal policy (see e.g. Debrun et al., 2008; Tapsoba, 2012; Combes et al., 2017; Guerguil et al., 2017), they may also lead to "one-off" measures, creative accounting, off-budget operations or unproductive spending encouraged by myopic policymakers (see e.g. Milesi-Ferretti, 2003; von Hagen and Wolff, 2006; Koen and Van den Noord, 2006; Debrun et al., 2008). Consequently, poorly-designed FR cannot support fiscal performance and reduce costs related to fiscal discretion, all the more in the EU FCC whose Cold War-inherited institutions may still affect governments' capacity to ensure fiscal sustainability.

To analyze such effects, we draw upon a comprehensive time-varying composite index, namely the Fiscal Rule Strength Index (FRSI) from the DG ECFIN Fiscal Rule Index Database. The methodology used for the construction of the index aims at capturing the influence of the main institutional features that can affect the effectiveness of FR in the

[15] Some of the key benefits include: (i) avoiding excessive deficits and improving international positions (a greater compliance with the rules improves countries' risk profile by reducing reputation costs, which makes borrowing cheaper); (ii) enhancing fiscal transparency and accountability by reducing fiscal gimmickries (the presence of fiscal councils that monitor the compliance with the rule acting as public watch dogs); (iii) incentives for better compliance and flexibility (allowing for past deviations from the target, corrections mechanisms or escape clauses); or (iv) preserving fiscal space (by letting automatic stabilizers to operate over the cycle and allowing for discretionary fiscal support when necessary).

Table 13: FRSI and FP in the EU non-FCC

	(1)	(2)	(3)	(4)[a]	(5)[b]
Estimator	OLS	LSDV	LSDVC	LSDVC	LSDVC
Lag PB	0.663***	0.612***	0.696***	0.710***	0.714***
	(0.0395)	(0.0451)	(0.0485)	(0.0477)	(0.0484)
FRSI	0.459***	0.438**	0.410**	0.403**	0.402**
	(0.151)	(0.219)	(0.167)	(0.166)	(0.166)
Debt	0.0208***	0.0623***	0.0616***	0.0614***	0.0614***
	(0.00433)	(0.0114)	(0.0125)	(0.0125)	(0.0125)
Inflation	3.378	16.78**	17.14**	17.11**	17.12**
	(6.041)	(8.118)	(8.011)	(7.987)	(7.983)
RGDPpc	0.502	0.932	0.934	0.921	0.919
	(0.662)	(1.519)	(1.710)	(1.711)	(1.710)
Openness	0.00436	0.0197	0.0184	0.0183	0.0183
	(0.00277)	(0.0166)	(0.0226)	(0.0227)	(0.0227)
N	251	251	251	251	251
R2	0.671	0.554	-	-	-

Notes: [a] and [b] LSDVC estimator with Kiviet (1995, 1999) corrections. Standard errors in parentheses. Standard errors in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

EU. Based on five criteria, namely: statutory base, binding character, bodies monitoring compliance and the correction mechanisms, correction mechanisms, and resilience to shocks, the FRSI comprises quantitative and qualitative information on various characteristics of the FR going beyond their simple presence.

6.3 Preliminaries: FRSI and FP in the EU non-FCC

We revive the analysis performed in section 4 using the Fiscal Rule Strength Index. We begin by looking at the effects of the FRSI in the EU non-FCC.

As shown by column (1) in Table 13, simple OLS pooled estimations show that a higher strength of the fiscal rule index significantly increases fiscal performance measured by the primary fiscal balance. These findings are confirmed when using the LSDV estimator in column (2), or the LSDVC estimator with the corrections suggested by Bruno (2005a) and Kiviet (1995, 1999) in columns (3), (4) and (5). Using these results as counterfactual, we now look at the EU FCC.

6.4 Main results: FRSI and FP in the EU FCC

The estimated effect of FRSI on the FP of the EU FCC is reported in Table 14. Simple OLS pooled estimations in column (1) show that the coefficient of the FRSI is positive and significantly different from zero, suggesting that FR with stronger features are associated with a better primary fiscal balance in the EU FCC. Various methods considered in the columns (2)-(6), namely the LSDV estimator, the 2SLS estimator with FRSI instrumented by its first lag and the LSDVC estimator with the usual corrections, confirm this finding.[16]

We investigate the strength of our finding when considering alternative measures of fiscal performance, namely the overall fiscal balance, the cyclically-adjusted balance, the cyclically-adjusted primary balance and the structural balance. LSDVC estimations reported in columns (7)-(10) of Table 14 show that the estimated effect of the FRSI is still statistically significant and positive. Corroborating our findings for the primary fiscal balance, these results support a significant effect of the strength of fiscal rules on fiscal performance.

At odds with the lack of significant effect of the simple presence of FR (see section 4), our finding highlights that the effectiveness of FR is related to characteristics that can enforce the compliance with the rule and therefore lead to better fiscal outcomes (see e.g. Bohn and Inman, 1996; Debrun et. al, 2008; Caselli et al., 2018; Heinemann et al., 2018). This seems to be all the more the case under the particular fiscal frameworks of the EU FCC, since the size of the favourable estimated effect of FRSI on the primary fiscal balance is fairly stronger in these countries (for example, 1.339 in LSDVC estimations in column 4 of Table 14), compared with its effect in the EU non-FCC (for example, 0.410 in LSDVC estimations in column 3 of Table 13).

7 Conclusion

Going beyond the literature that focuses on the European Union (EU) as a whole, this paper emphasizes important differences in the effect of fiscal rules on fiscal performance among EU countries. Indeed, contrary to their favourable effect in the EU non-FCC (Former Communist Countries), the presence of FR does not significantly affect fiscal performance in the

[16] We report that our findings are equally supported when adding the FR variable whose effect continues to lack significance (results are available upon request).

Table 14: FRSI and FP in the EU FCC

	(1)[a]	(2)[b]	(3)[c]	(4)	(5)[d]	(6)[e]	(7)	(8)	(9)	(10)
FP Measure	PB	PB	PB	PB	PB	PB	OB	CAPB	CAB	SB
Lag PB	0.558***	0.348***	0.332***	0.457***	0.480***	0.490***				
	(0.0693)	(0.078)	(0.109)	(0.120)	(0.119)	(0.122)				
FRSI	0.680**	1.352***	1.936***	1.339***	1.331***	1.330***	1.195*	1.220**	1.533**	1.291*
	(0.272)	(0.460)	(0.714)	(0.436)	(0.435)	(0.435)	(0.643)	(0.573)	(0.650)	(0.669)
Debt	0.00851	0.0691***	0.0685***	0.0634**	0.0623**	0.0618**	0.0473*	0.0579	0.0564	0.0508
	(0.0105)	(0.0253)	(0.0228)	(0.0283)	(0.0282)	(0.0282)	(0.0285)	(0.0467)	(0.0357)	(0.0346)
Inflation	13.22**	21.82***	22.62***	20.69***	20.43***	20.33***	19.33***	9.636*	6.794	11.71
	(5.239)	(5.789)	(7.937)	(6.760)	(6.695)	(6.689)	(5.715)	(5.528)	(5.166)	(9.699)
RGDPpc	0.235	5.917***	6.020***	6.142***	6.182***	6.202***	6.877***	-1.304	-0.847	-2.265
	(0.710)	(1.901)	(1.953)	(2.294)	(2.302)	(2.305)	(2.420)	(3.223)	(2.240)	(4.554)
Openness	0.0094	-0.0352**	-0.0428**	-0.0395**	-0.0402**	-0.0406**	-0.0246	-0.0190	-0.0166	0.0114
	(0.0065)	(0.0166)	(0.0186)	(0.0171)	(0.0171)	(0.0172)	(0.0216)	(0.0180)	(0.0145)	(0.0284)
Lag OB							0.380***			
							(0.106)			
Lag CAPB								0.249*		
								(0.128)		
Lag CAB									0.450***	
									(0.0950)	
Lag SB										0.301**
										(0.145)
N	97	97	97	97	97	97	102	72	114	78
R2	0.558	0.509	0.401	-	-	-	-	-	-	-

Notes: [a], [b] and [c] OLS, LSDV and 2SLS estimator with FRSI instrumented by its lag. [d] and [e] Kiviet (1995, 1999) corrections. Standard errors in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

EU FCC. This finding, which may be explained by the differences between FCC and other EU countries inherited from the Cold War period (involving, for example, different political practices, procedural arrangements and policymakers' credibility stock), does not change when (i) considering various estimation methods, (ii) dividing FR based on the aggregate they target (deficit, debt and expenditure), their age and number, their coverage (national or supranational), or instead considering medium-term budgetary frameworks, and (iii) using several observed and computed measures of fiscal performance. However, when going beyond the simple presence of FR, we show that an improvement of the strength of fiscal rules significantly affects fiscal performance in EU FCC, with a magnitude higher than that estimated for the EU non-FCC.

Consequently, the main takeaway of our paper is that the simple presence of fiscal rules may not be enough *per se* to affect the fiscal performance of the EU Former Communist Countries. Our finding is particularly important from the perspective of the future Euro zone and European Union enlargements, which involve former communist countries and go along with the adoption of various types of fiscal rules. To avoid potential risks of multi-speed fiscal performance in Europe, the European Commission could pay greater attention to fiscal institutions in these countries. This may be done in at least two ways. First, the technical assistance about the definition and implementation of fiscal rules can be strengthened. As recently proposed by Eyraud et al. (2018), the way fiscal rules are improved in terms of consistency, compliance, and flexibility matters in delivering better fiscal outcomes. In this context, the European Commission may help policymakers to proceed to the aim of ensuring greater enforceability of their rules-based fiscal frameworks by combining the sustainability objective with more flexibility allowing for past deviations from the target, including well-specified escape clauses and corrections mechanisms, promoting greater fiscal space by letting automatic stabilizers to operate over the cycle, or allowing for discretionary fiscal support when necessary. Second, enhancing fiscal transparency and accountability may ensure a better compliance with the rules and reduce fiscal gimmickries. A deeper policy reform could be one in which the European Commission strengthens the requirements regarding the implementation of independent fiscal councils in FCC. As emphasized by the recent work of Beetsma and Debrun (2018) and Beetsma et al. (2018), fiscal councils are technical bodies acting as public watch-dogs aimed at guiding fiscal policymakers' discretion, and their presence may clear the smokescreens related to the budget process, improve countries'

risk profile by reducing reputation costs, or foster and support the compliance with fiscal rules. Such features may be valuable for improving fiscal performance in the EU Former Communist Countries.

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