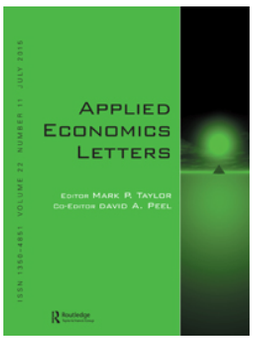

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Applied Economics Letters

ISSN: 1350-4851 (Print) 1466-4291 (Online) Journal homepage: https://www.tandfonline.com/loi/rael20

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To cite this article: António Afonso & Ana Sofia Guimarães (2015) The relevance of fiscal rules for fiscal and sovereign yield developments, Applied Economics Letters, 22:11, 920-924, DOI: 10.1080/13504851.2014.987912

To link to this article: https://doi.org/10.1080/13504851.2014.987912

Applied Economics Letters, 2015
Vol. 22, No. 11, 920–924, http://dx.doi.org/10.1080/13504851.2014.987912

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The relevance of fiscal rules for fiscal and sovereign yield developments

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We assess whether numerical fiscal rules impact budget balances and sovereign yields. For a panel of 27 EU countries between 1990 and 2011, we find that fiscal rules reduce budget deficits, specifically expenditure rules, while countries with better fiscal rules experienced lower sovereign bond yields.

Keywords: fiscal rules; budget balance; yields

JEL Classification: C33; E62; G15; H62

I. Introduction

Generally, numerical fiscal rules improve public finances and that numerical expenditure rules can enhance budgetary discipline (Wierts, 2008; Kumar *et al.*, 2009; Holm-Hadulla *et al.*, 2010; Ayuso, 2012). Furthermore, existing results also show a robust link between numerical fiscal rules and fiscal performance, with stronger rules leading to a higher cyclically adjusted primary balance (CAPB) (Debrun *et al.*, 2008; Pina and Venes, 2011).

In this study we add to the literature notably by using two data sets of numerical fiscal rules, elaborated by the European Commission (EC) and by the IMF, for the EU 27 Member States from 1990 to 2011. We find that fiscal rules reduce fiscal imbalances, specifically expenditure rules, and countries with fiscal rules have lower sovereign bond yields, which supports policy makers pursuing such rule setting, and an alternative to discretionary measures.

II. Data and Variables

Our country set covers: Austria, Belgium, Bulgaria, Cyprus, The Czech Republic, Germany, Denmark, Estonia, Greece, Spain, Finland, France, Hungary, Ireland, Italy, Lithuania, Luxembourg, Latvia, Malta, the Netherlands, Poland, Portugal, Romania, Sweden, Slovenia, Slovakia and the United Kingdom.

All fiscal and macroeconomic variables are from the annual macro-economic database of the European Commission database: CAPB, debt-to-GDP ratio (debt), primary expenditure (pe), output gap measured as the gap between actual and potential gross domestic product (outputgap), 10-year sovereign bond yield (yield), short-term interest rate (I), current account balance (CA), consumer price index (CPI), real effective exchange rate (REER), industrial production (IP) and finally, GDP growth rate (GDPgr). The measurement of international risk aversion is taken from the Chicago Board Options Exchange Market Volatility Index (VIX), from Yahoo! Finance.

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In order to access the impact of particular events, we include a set of dummy variables: run-up to the EMU (1994–1998); SGP (after 1998); EU enlargement (after 2003); election year; change in government ideology.

The EC's fiscal rule index (FRI) is based on information collected directly from Members States, covering fiscal rules for: budget balance, debt, expenditure and revenue rules; and all levels of government, for the period 1990–2011.

The IMF's FRI has a wider coverage, with numerical fiscal rules for 81 countries, for the period 1985–2012. For the purpose of comparability, we consider this index for the countries and for the years available in the EC's index.

Table 1. Results for the CAPB

	EC				IMF			
	OLS	OLS	OLS	2SLS	OLS	OLS	OLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
c	−098**	−0.70**	−0.60	−0.16	−1.37**	−0.88	−0.73	0.01
	(0.42)	(0.30)	(0.47)	(0.54)	(0.56)	(0.52)	(0.65)	(0.95)
capb(−1)	0.63***	0.83***	0.68***	0.71***	0.61***	0.87***	0.75***	0.80***
	(0.10)	(0.06)	(0.12)	(0.13)	(0.10)	(0.08)	(0.15)	(0.17)
debt(−1)	0.02**	0.01**	0.01	0.01	0.01**	0.00	0.01	0.00
	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)
outputgap(−1)	−0.03	−0.02	−0.06	−0.06	−0.06	−0.03	−0.04	−0.04
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)	(0.05)
fri	0.51***	0.25***	0.52***	0.31	0.29*	0.18	0.07	−0.15
	(0.16)	(0.09)	(0.17)	(0.24)	(0.17)	(0.11)	(0.18)	(0.26)
emu		1.19***	2.05***	2.34**		0.89**	3.89***	3.76***
		(0.31)	(0.76)	(1.06)		(0.38)	(0.80)	(0.83)
enlargement		0.20	1.23**	−1.30***		0.25	0.49	1.05
		(0.28)	(0.48)	(0.44)		(0.34)	(0.63)	(0.70)
sgp		−0.06	−0.87*	1.30**		−0.13	−1.00**	−1.01**
		(0.20)	(0.44)	(0.54)		(0.21)	(0.48)	(0.57)
legelec		−0.77***	−0.72***	−0.64***		−0.70***	−0.72***	−0.73***
		(0.17)	(0.17)	(0.18)		(0.18)	(0.19)	(0.20)
gov_new		0.43**	0.50**	0.59**		0.52**	0.66***	0.75***
		(0.20)	(0.23)	(0.25)		(0.24)	(0.25)	(0.27)
mdms		0.00	0.00	0.00**		0.00	0.00*	0.00**
		(0.00)	(0.00)	(0.00)		(0.00)	(0.00)	(0.00)
N	463	437	437	397	420	366	366	324
Adjusted R^2	0.69	0.68	0.73	0.73	0.70	0.66	0.74	0.74
Endogeneity test				0.21				0.74
Fixed effects	1.97***		2.16***		2.55***		2.05***	
Random effects (Hausman test)								
Period		20.66**				15.94		
Cross-section		13.40				9.82		

Notes: Robust SEs in parenthesis *, ** and *** denoting, respectively, significance at the 10, 5 and 1% level. Period: for EC's FRI: 1991–2011 (n = 463), 1991–2010 (n = 437 and n = 397); for IMF's FRI: 1990–2011 (n = 420), 1991–2010 (n = 366 and n = 324). Instrumental variables: FRI own lag and a variable for capturing government commitment.

Table 2. Results for primary expenditure

	OLS	OLS	OLS	2SLS
	(1)	(2)	(3)	(4)
C	12.99***	1.33***	9.41***	40.7***
	(3.42)	(0.46)	(2.71)	(1.00)
pe(−1)	0.70***	0.98***	0.78***	−0.66***
	(0.09)	(0.01)	(0.07)	(0.13)
debt(−1)	−0.01	−0.01**	−0.01	0.00
	(0.01)	(0.00)	(0.01)	(0.01)
outputgap(−1)	0.05	0.05	0.04	0.09
	(0.04)	(0.04)	(0.04)	(0.06)
Eri	−0.33**	−0.18**	−0.37**	−0.88***
	(0.15)	(0.09)	(0.16)	(0.23)
Emu	-	−0.44*	−1.47	−2.64
		(0.25)	(1.02)	(1.65)
Enlargement	-	−0.39*	−0.16	−0.58
		(0.24)	(0.46)	(0.70)
Sgp	-	0.23	0.96**	2.59***
		(0.18)	(0.47)	(0.67)
Legelec	-	0.63***	0.59***	0.62**
		(0.17)	(0.16)	(0.25)
gov_new	-	−0.41**	−0.57***	−0.77***
		(0.19)	(0.21)	(0.29)
mdms	-	0.00	0.00	0.00
		(0.00)	(0.00)	(0.00)
N	464	437	437	397
Adjusted R^2	0.97	0.97	0.97	0.96
Endogeneity test				0.11
Fixed effects	2.56***		1.54**	
Random effects (Hausman test)				
Period		17.88*		
Cross-section		33.09***		

Notes: Robust SEs in parenthesis *, ** and *** denoting, respectively, significance at the 10, 5 and 1% level. Period: 1991–2011 (n = 464), 1991–2010 (n = 437 and n = 397). Instrumental variables: ERI own lag and a variable for capturing government commitment.

III. Analysis

We use a fiscal reaction function to assess the impact of fiscal rules following the common approach in the literature.

$$capb_{it} = \beta i + \delta debt_{it-1} + \lambda outputgap_{it-1} + \phi fri_{it} + \gamma x_{it} + u_{it} \quad (1)$$

where $capb_{it}$ is the CAPB in country i, at time t, β_i represents the country effect i, debt_{it-1} is the debt-to-GDP ratio, $outputgap_{it-1}$ is the output gap, fri_{it} is the fiscal rule index and x_{it} is a set of additional variables. We expect $\phi > 0$, which means that better rules impact the CAPB positively.

In order to have an additional assessment of the importance of numerical fiscal rules for long-term

Table 3. Results for 10-year sovereign yields

	OLS	OLS	2SLS
	(1)	(2)	(3)
c	6.44***	7.57***	6.25***
	(1.02)	(0.92)	(0.82)
capb(−1)	−0.13***	−0.15***	−0.14***
	(0.03)	(0.03)	(0.03)
debt	0.00	0.01*	0.00
	(0.00)	(0.01)	(0.00)
cpi	0.01	−0.02*	0.01
	(0.01)	(0.01)	(0.01)
ca	0.02	0.08***	0.03
	(0.02)	(0.03)	(0.02)
reer	0.00		
	(0.01)		
i	0.53***	0.47***	0.51***
	(0.04)	(0.04)	(0.03)
ip	−0.04***	−0.02***	−0.03***
	(0.01)	(0.01)	(0.01)
fri	−0.25***	−0.30***	−0.34***
	(0.07)	(0.11)	(0.10)
vix	−0.02	−0.02*	−0.02**
	(0.01)	(0.01)	(0.01)
gdpgr	−0.10**	−0.13***	−0.10**
	(0.04)	(0.04)	(0.04)
N	337	362	335
Adjusted R^2	0.62	0.72	0.68
Endogeneity test			0.36
Cross-section fixed effects		3.33***	
Random effects (Hausman test)			
Cross-section	56.78***		

Notes: Robust SEs in parenthesis *, ** and *** denoting, respectively, significance at the 10, 5 and 1% level. Period: 1995–2011 (n = 337), 1991–2010 (n = 362 and n = 335). Instrumental variables are the FRI own lag and a variable for capturing government commitment.

government bond yields, we also estimate a specification for the analysis of the impact of FRI on 10-year maturity bond yields.

$$yield_{it} = \beta_{it} + \rho\bar{X}_{it} + \phi fri_{it} + \gamma vix_{it} + \lambda I_{it} + u_{it} \quad (2)$$

where $yield_{it}$ is the 10-year sovereign yield, $\bar{X}_{it}$ is a vector comprising other determinants of the yields, vix_{it} is the measure of investors' willingness to take risk and I_{it} is the short-term interest rate.

Our main results suggest that the EC's FRI is significant and if the FRI increases by 1 unit, then the CAPB can increase by up to 0.52 percentage points (p.p.) (Table 1).

When we include the run-up to the EMU, election period and ideological change, they all are statistically significant. Therefore, during the years of implementation of the EMU, the CAPB is 1.19 p.p. higher. When ideological changes took place that resulted in an increment of the CAPB of 0.43 p.p., election years have a negative impact of 0.77.

Column 4 reports 2SLS results with the instrument of FRI being its own lag and a variable that captures government commitment.[1] FRI is no longer significant and the p-value of the Wu-Hausman test shows that there are no problems of endogeneity.

The use of the IMF's FRI generates some different results, although for the same period there are only 366 observations. The index is significant only at a 10% level, with no control variables included.

Regarding the IMF Expenditure Rule Index (ERI), we used a calculation based on the methodology provided in the EC's FRI database, which was applied only to rules targeting public expenditure. We also see that numerical expenditure rules contribute to the control of primary public expenditure (Table 2). Indeed, an increase of one unit in the ERI contributes to a decrease of the primary expenditure-to-GDP ratio of 0.18 p.p. in (2), and 0.37 p.p. in (3). The introduction of the SGP, election periods and the changes in government ideology has an impact on public spending. The results remain robust when ERI instruments are used, confirming that the results are not biased on account of reverse causality.

In addition, we assess the impact of fiscal rules on 10-year bond yields. The results imply that if the FRI increases by one unit, then the yield

[1] Similar to Debrun *et al*. (2008), we use a dummy variable that represents governments which, by their nature – coalition governments –, have implemented commitment models, which easily allows for the implementation of fiscal rules. This variable was constructed based on Hallerberg *et al.* (2009).

decreases by 0.25 p.p. (Table 3). In addition, when investors become more risk averse – *vix* increases – the yields decrease by 0.02 p.p. As expected, the variables representing better economic environment – GDPgr and IP – lead to lower values of sovereign bond yields. The endogeneity tests show that the FRI is not endogenous with regard to causality. When considering the yield spread against Germany as the dependent variable, the conclusions are the same (results available on request).

IV. Conclusion

We have assessed the EU-27 to check whether fiscal rules imply better budget balances, and consequently, better debt ratios. Overall, fiscal rules are strongly significant as are the variables capturing developments in the EU and in the EMU. Variables capturing country-specific developments are also important in explaining budget balances. Countries that apply rules to discretionary public expenditure experience lower expenditure ratios. In addition, capital markets react positively to countries that implement rules, implying lower yields. These results can be explained by the commitment with such rules and by greater certainty about fiscal outcomes.

Funding

UECE is supported by the Fundação para a Ciência e a Tecnologia (The Portuguese Foundation for Science and Technology) through the PEst-OE/EGE/UI0436/2011 project.

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