A Quest Between Fiscal and Market Discipline

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Abstract

Using country-specific information on numerical fiscal rules and financial market data for 71 countries over the period 1985-2015, we estimate an "augmented" fiscal reaction function to assess the impact of fiscal discipline and market discipline on the fiscal policy stance. Our results seem to validate the so-called market discipline hypothesis (MDH), as different market signals influence the conduct of fiscal policy. The evidence on the fiscal discipline hypothesis (FDH) is less clear-cut, depending on the quality of market signals and the government sensitivity to market incentives. We also find that numerical fiscal rules are more effective in EU countries than in the Eurozone. Finally, in the EU, market signals complement fiscal rules, thereby, further promoting fiscal discipline.

Keywords: Fiscal rules, market signals, dynamic panel regression.

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1. Introduction

During the last decade, many industrialized economies have experienced large and rising public deficits and debts that increasingly threaten fiscal sustainability. Indeed, the recessionary effects associated with the global financial crisis of 2008 paved the way for the adoption of fiscal discretionary measures aimed at boosting economic activity and the transfer of funds from fiscal authorities to the banking sector with the goal of achieving financial stability (Benbouzid *et al.*, 2017). These policies led to a substantial rise of public debt in a number of developed countries.

In the Eurozone, the sovereign debt crisis has stimulated a political discussion on reforming the fiscal governance framework to strengthen policy guidance, and prompted a renewed debate among researchers about the effectiveness of fiscal rules and market signals as "fiscal discipline-inducing mechanisms".[1]

In one hand, most argue that fiscal rules, defined as a long-lasting constraints on fiscal policy via numerical limits on budgetary aggregates, coupled with the sovereign debt market dynamics, can force government's attitudes towards fiscal discipline. From an empirical point of view, several studies focus on the contribution on numerical fiscal rules to the fiscal stance (Debrun *et al.*, 2008; Wierts, 2008; Afonso and Hauptmeier, 2009; Ayuso-i-Casals *et al.*, 2009; Hauptmeier *et al.*, 2010; Holm-Hadulla *et al.*, 2010; Ayuso-i-Casals, 2012). In general, the results suggest that fiscal rules help to enhance budgetary discipline, albeit their impact on budget deficits appears to be small (von Hagen, 1991, 2002).[2]

[1] This debate ultimately led to the reform of the Stability-Growth Path (SGP) and the introduction of the Fiscal Compact.

[2] This evidence is also supported by some empirical events. For instance, in 1985, the U.S. Congress enacted the Gramm-Rudman-Hollings law, stipulating a target path for the federal deficit and aiming for a balanced budget by 1991. However, that target path was never reached.

On the other hand, the literature on the market-induced discipline channel and its effectiveness is scarce. Iara and Wolff (2014) find that sovereign bond market risk and national fiscal rules are somewhat correlated. Specifically, the authors show that lower sovereign bond spreads are associated with stronger fiscal rules.

In this paper, we try to answer the following questions: *(i)* Do fiscal rules provide incentives for fiscal behaviour correction? *(ii)* Can financial markets and sovereign credit ratings be effective at disciplining fiscal policy, thus, either reinforcing or replacing the role played by fiscal rules? These are important gaps in the literature that we try to fill.

Using country-specific information on numerical fiscal rules and financial market data for a sample of 71 countries over the period 1985-2015, we estimate an "augmented" fiscal policy reaction function with the objective of testing whether the fiscal policy stance is driven by numerical fiscal rules adopted at national and supra-national levels and/or by market pressures and credit rating agencies' perceptions about the government creditworthiness.

Overall, our empirical findings lend support to the so-called market discipline hypothesis (MDH). Thus, market signals coming from sovereign creditworthiness, government bond yields, sovereign CDS spreads and interest payments on debt significantly affect the conduct of fiscal policy.

The evidence on the fiscal discipline hypothesis (FDH) is much less-clear-cut, as it seems to depend on the government sensitivity to different market signals and the sample of countries considered. Specifically, to the extent that a specific market signal (from financial markets or credit risk agencies) provides a strong deterrent against unsound fiscal policies, it may work as a substitute of fiscal rules.

We remark that this result cannot exclude that numerical fiscal rules might be less effective due to the absence of a strong political commitment or because they are not

complemented by national budgetary institutions ensuring appropriate monitoring and enforcement (Wyplosz, 2005; von Hagen, 2005).

Thus, in line with this view, we find that numerical fiscal rule are particularly effective in EU countries. This might accrue to the established convergence criteria for EMU membership and the presence of a strong enforcement mechanism of stringent fiscal rules.

The rest of the paper is organised as follows. Section 2 presents the econometric methodology while Section 3 describes the data. Section 4 summarises the empirical results. Finally, Section 5 concludes.

2. Econometric methodology

To shed light on the contribution of numerical fiscal rules and market signals to the conduct of fiscal policy, we estimate the following "augmented" fiscal policy reaction function:

$$CAB_{it} = \alpha_i + \beta_1 CAB_{it-1} + \beta_2 Growth_{it-1} + \beta_3 Debt_{it-1} + \beta_4 FR_{it-1} + \beta_5 MS_{it-1} + \varepsilon_{it}, \quad (1)$$

where CAB_{it} denotes the Cyclically-Adjusted Budget Balance (as percent of potential GDP), α_i denotes country fixed-effects, ε_{it} is the error term, $i = \{1, \cdots N\}$ and $t = \{1, \cdots T\}$.

The variables $Growth$ and $Debt$ are the GDP growth rate and the government debt-to-GDP ratio, respectively, and they account for output and debt stabilization motives.

The effects of numerical fiscal rule and market signals on CAB are captured by the coefficients β_4 and β_5, which are associated with the variables *FR* (i.e. Fiscal Rule) and *MS* (i.e. Market Signal) and account for the characteristics of fiscal rules in place and the type of market signal considered, respectively.

All right-hand side variables (RHS) enter model (1) in lagged terms. This allows us to properly take into account the timing of fiscal policy decisions implied by the policymaking process. In fact, many discretionary fiscal actions are largely determined the year before they become effective. Moreover, fiscal authorities make their decisions on the basis of cyclical conditions prevailing before the budget is actually implemented (Manasse, 2006).

From an econometric point of view, model (1) requires us to estimate a dynamic panel data model. In principle, the System-Generalized Method of Moments (GMM) estimator should be used (Blundell and Bond, 1998). Nevertheless, an important obstacle to the use of dynamic panel estimators is the proliferation of instruments which, ultimately, causes an over-identification of the model (Roodman, 2009). This problem is directly related with the panel data structure (depending on *N* and *T*) and the number of endogenous terms. In general, the smaller the *N/T* ratio and the higher the number of endogenous variables, the more severe the problem of instruments' proliferation is.

In model (1), all RHS variables are considered to be endogenous. As for the *N/T* ratio, it varies depending on the sample of countries considered. In the sub-sample analysis presented in our work, this ratio is such that the probability of facing the issue of over-identification increases dramatically and the use of the system-GMM estimator is no longer recommended. Therefore, in the sub-sample analysis, we opt for the solution proposed by Mairesse and Griliches (1988), and fit a Least Squares Dummy Variable (LSDV) estimator. Taylor (2000), Galì and Perotti (2003), Golinelli and Momigliano (2006), Krogstrup and Wyplosz (2006) and Debrun *et al.* (2008), among others, use the same strategy to estimate fiscal policy reaction functions. Specifically, we rely on the bias-corrected LSDV estimator proposed by Bruno (2005). This extends the results of Kiviet

(1995, 1999) and Bun and Kiviet (2003), and approximates the bias inherent to dynamic panels.

Summing up, in our estimation strategy, we only use the Blundell-Bond System GMM estimator in the case of the full sample analysis. In the equation in first-differences, all RHS variables are instrumented by their own lags in levels and, in the equation in levels, they are instrumented by their lagged first-differences. We also control for the potential heteroskedasticity of the error terms. For the sub-sample analysis, we rely on the bias-corrected LSDV estimator.

3. Data

We use annual data for a sample of (at most) 71 countries over the period 1985-2015.[3] Data on the Cyclically-Adjusted Budget Balance (as percent of potential GDP) are gathered from the Cross-Country Database of Fiscal Space (CCDFS) constructed by the World Bank's (WB) Development Prospects Group. Information about the real GDP growth rate is retrieved from the World Economic Outlook (WEO) database of the International Monetary Fund (IMF), while data on the government debt-to-GDP ratio are sourced from the historical public debt database produced and maintained by the IMF's Fiscal Affair Department (FAD).

Information about country-specific fiscal rules (FR) and their characteristics are retrieved from the Fiscal Rules Database compiled by IMF's FAD Department. We consider the following indicators:

(i) Rule in place (rule). A dummy variable that takes the value one in the year fiscal rules are in place, and zero otherwise;

[3] Depending on the number of observations of the control variables, the number of countries ranges between 57 and 71.

(ii) Number of rules (nrule). For each year, it counts the number of fiscal rules in force (whether national or supra-national); and

(iii) Strictly national rule (nrule_nat). For each year, it counts the number of fiscal rules set out by national governments.

To track the importance of market signals (MS), we look at the following set of variables:

(i) government bond yields (bond_yield). We refer to the 10-year government bond yield collected from the IMF's WEO dataset.

(ii) Long-term sovereign debt ratings index (nsovrate). This index is retrieved from the WB's CCDFS database. It ranges between 1 to 21, with a higher value of the index corresponding to stronger sovereign creditworthiness.

(iii) interest burden (ninterest_exp). It corresponds to interest payments on government debt - including long-term bonds, long-term loans and other debt instruments - to domestic and foreign residents (expressed as percentage of government expenditures). It provides an indication of the stringency of the debt service ratio.

As a robustness check, we also test for the significance of: *(iv*) the 5-year sovereign CDS spreads (in basis points) retrieved from the WB's CCDFS database; and *(v*) the sovereign credit ratings (of local- and foreign currency-denominated debt) produced by Fitch Ratings Inc.

4. Empirical analysis

This section presents and discusses the main empirical results. In section 4.1, we report the findings for the full sample, while, in section 4.2, we run a sensitivity analysis by estimating model (1) on different sub-samples.

4.1 Main results

The results associated with our baseline model specification are presented in Table 1. The variables entering the model (1) are organized in three blocks. The first one includes a set of "standard" controls that account for the persistence of the CAB and the presence of output and debt stabilization motives. The second refers to the characteristics of numerical fiscal rules. The third block includes market indicators (i.e. sovereign creditworthiness, interest burden and sovereign bond yields). To avoid multicollinearity, these market indicators do not enter simultaneously in the model, but instead one at time.

An assessment of the statistical significance of the coefficients associated to the variables included in the second and the third blocks allows us to test for the validity of the fiscal discipline hypothesis (FDH) and the market-induced discipline hypothesis (MDH), as well as to check whether market discipline complements or substitutes fiscal discipline.

Our results seem to validate the MDH hypothesis. Fiscal adjustments are induced by changes in the sovereign creditworthiness, bond yields and the interest burden. The coefficients associated to such variables have the expected signs. Interestingly, we find that an increase of government bond yields induces a strong reaction of the fiscal policy stance, while the increase of interest payments on debt exerts little pressure on fiscal authorities. This is probably due to the gradual increase of the interest burden if most of the debt has a long-term maturity.

The evidence on the FDH hypothesis is less clear-cut and crucially depends on how much fiscal authorities respond to market signals. In line with Lane (1993), the effectiveness of fiscal rules depends on the sensitivity to market incentives. To the extent that market discipline provides a sufficient deterrent against unsound fiscal policies, it may work as a substitute of fiscal discipline. Therefore, it becomes important to focus on the quality and the magnitude of different market signals.

In this context, if we look at signals coming from bond markets, we conclude that they are an important mechanism device for inducing fiscal adjustments. Consequently, the presence of a numerical fiscal rule is important (namely, statistically significant), but marginal. Thus, bond market-induced fiscal discipline substitutes fiscal rules in the push towards fiscal discipline: the higher bond yields are, the more ambitious the fiscal adjustment must be to secure solvency.

The same conclusion is reached when we replace government bond yields with interest payments on debt (as percentage of government expenditures). In this case, fiscal authorities respond to the rise of the interest bill by increasing CAB.

By contrast, if we consider alternative market signals coming from sovereign ratings, we find that market discipline seems to complement fiscal discipline. In practice, the sovereign creditworthiness is an important but, at the same time, an insufficient indicator to be able to accurately guide the conduct of fiscal policy. Therefore, we conclude that the higher the number of numerical fiscal rules (either national of supranational) and the lower the reputation of sovereigns as good borrowers, the lower the budget flexibility will be.

[Insert Table 1 here.]

The evidence in support of the dominance of the MDH hypothesis is corroborated by the sensitivity analysis presented in Table 2. Specifically, we estimate model (1) after considering an alternative set of market indicators including the 5-year sovereign CDS spreads (*ncds5y*) and the local- (*rating_l*) and foreign currency-denominated debt ratings (*rating_f*).

The results confirm that market pressures are effective at enhancing budgetary discipline, while fiscal rules do not significantly impact the overall fiscal performance. In

other words, we conclude that a positive market sentiment is important to keep public finances on a sustainable path.

[Insert Table 2 here.]

To further test the FDH hypothesis, we distinguish between Budget Balance rules (*BBR*) and Debt rules (*DR*) based on the type of budgetary aggregate that they seek to constrain. More specifically, debt rules set an explicit limit or target for the public debt (as percentage of GDP), while Budget Balance rules can be specified as overall balance, structural or cyclically-adjusted balance rules aimed at balancing "over the cycle" (Turrini, 2008).

We also compare national fiscal rules (*BBR_supra_nat* and *DR_supra_nat*) with those combined with supra-national rules (*BBR_supra_both* and *DR_supra_both*). The latter are designed to constrain individual countries from running fiscal policies that are inconsistent with monetary union membership.

The results reported in Tables 3-4 are broadly in line with the previous ones. However, it can also be seen that debt rules adopted at supra-national level are more stringent that those adopted at the national level. This implies that the former are more effective in preventing governments from pursuing overly expansionary fiscal policies.

[Insert Table 3 here.]

[Insert Table 4 here.]

4.2 Sub-sample analysis

In this section, we re-estimate our baseline model (1) using sub-samples. Specifically, we consider the sample of EU countries (Table 5) and the sample of EMU countries (Table 6).

Our results suggest that numerical fiscal rule are more effective in EU countries than in the Eurozone. This could accrue to the established convergence criteria put in place to measure progress in countries' readiness to adopt the Euro. In this context, numerical fiscal rules are already expected to ensure sound and sustainable public finances.

It also emerges that, whenever market signals are significant, they complement (and, therefore, reinforce) fiscal rules. According to Bishop *et al.* (1989), given that there is no possibility of monetisation of the public debt and due to the no-bail-out commitment, markets signals provide additional incentives to correct irresponsible fiscal behaviour. In particular, sovereign creditworthiness and, to a lesser extent, government bond yields work as additional fiscal constraining devices in keeping public finances on a sustainable path.

[Insert Table 5 here.]

[Insert Table 6 here.]

5. Conclusions

This paper investigates whether (and to which extent) explicit fiscal rules and market signals influence the conduct of fiscal policy. Using the cyclically-adjusted budget balance as a proxy for the fiscal policy stance, we find that markets signals play a much more prominent role at promoting fiscal discipline than fiscal rules. Interestingly, in the EU and, to a lesser extent, in the Eurozone, market signals and fiscal rules reinforce each other, thereby, improving fiscal outcomes.

In one hand, the contribution of both fiscal rules and market-related factors is helpful to keep public finances on a sustainable path. On the other hand, it cannot be excluded that excessive pressures coming from market participants (either bond holders or credit risk agencies) might force governments to respond with fiscal measures that can have destabilizing effects on the economy. We leave this question for further research.

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Table 1. Full sample results.

VARIABLES	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
L.cab	0.5156***	0.4810***	0.4232***	0.8020***	0.7522***	0.8157***	0.8883***	0.8734***	0.8764***
	[0.109]	[0.118]	[0.109]	[0.077]	[0.076]	[0.084]	[0.079]	[0.076]	[0.078]
L. growth	0.1331**	0.1133**	0.1020*	-0.0560	-0.0127	-0.0247	0.0633	0.0710	0.0698
	[0.061]	[0.056]	[0.053]	[0.110]	[0.129]	[0.120]	[0.060]	[0.058]	[0.052]
L.Debt	0.0113	0.0043	0.0022	0.0159**	0.0128	0.0163*	0.0314***	0.0309***	0.0288***
	[0.011]	[0.014]	[0.011]	[0.007]	[0.008]	[0.008]	[0.011]	[0.011]	[0.010]
L.rule	0.9832**			0.5170			0.4983*		
	[0.446]			[0.501]			[0.270]		
L.nrule		0.4240**			0.2212*			0.1269	
		[0.188]			[0.127]			[0.091]	
L.nrule_nat			0.5142*			0.1465			0.2064
			[0.287]			[0.156]			[0.150]
L.nsovrate	-0.3349*	-0.3775*	-0.4621***						
	[0.199]	[0.212]	[0.165]						
L.ninterest_exp				0.1117**	0.1126*	0.0979*			
				[0.043]	[0.058]	[0.049]			
L.bond_yield							0.0517***	0.0489***	0.0449***
							[0.018]	[0.012]	[0.009]
Constant	2.0329	2.9489	4.5588	-2.7795***	-2.8731**	-2.4330**	-2.8766***	-2.7094***	-2.5002***
	[3.255]	[3.585]	[2.932]	[1.034]	[1.321]	[1.049]	[0.696]	[0.632]	[0.607]
Observations	1,309	1,309	1,309	1,183	1,183	1,183	935	935	935
Number of id	71	71	71	68	68	68	57	57	57
Hansen (p-value)	0.165	0.127	0.198	0.196	0.359	0.548	0.358	0.438	0.394

Notes: Robust standard errors in parentheses. Significance level at which the null hypothesis is rejected: * significant at 10%, ** significant at 5%, *** significant at 1%.

Table 2. Alternative market signals.

VARIABLES	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
L.cab	0.8528***	0.9345***	0.8600***	0.5598***	0.5643***	0.5452***	0.6477***	0.6080***	0.6109***
	[0.095]	[0.105]	[0.099]	[0.089]	[0.097]	[0.097]	[0.082]	[0.069]	[0.064]
L. growth	0.0279	0.0202	0.0292	0.0875**	0.0837**	0.0936**	0.1659*	0.0485	0.0609
	[0.056]	[0.057]	[0.046]	[0.038]	[0.040]	[0.039]	[0.098]	[0.039]	[0.039]
L.Debt	0.0261**	0.0250***	0.0321***	0.0139*	0.0148*	0.0123	0.0196*	0.0074	0.0007
	[0.010]	[0.007]	[0.010]	[0.008]	[0.009]	[0.009]	[0.011]	[0.010]	[0.008]
L.rule	0.7492			0.3840			-0.0199		
	[1.009]			[0.541]			[0.508]		
L.nrule		0.1704			0.1442			-0.1624	
		[0.198]			[0.197]			[0.191]	
L.nrule_nat			0.0369			0.1501			-0.1977
			[0.179]			[0.190]			[0.237]
L.ncds5y	0.0001*	0.0001**	0.0001**						
	[0.000]	[0.000]	[0.000]						
L.rating_f				-0.2817**	-0.2572*	-0.2927***			
				[0.124]	[0.136]	[0.101]			
L.rating_lc							-0.2472*	-0.2919**	-0.3499**
							[0.146]	[0.141]	[0.156]
Constant	-2.5804**	-2.1267***	-2.2186***	2.9018	2.2986	3.0960	2.3579	4.6295	6.0582*
	[0.985]	[0.749]	[0.672]	[2.665]	[2.926]	[2.148]	[3.024]	[3.048]	[3.468]
Observations	533	533	533	1,019	1,019	1,019	974	974	974
Number of id	47	47	47	60	60	60	59	59	59
Hansen (p-value)	0.606	0.744	0.821	0.235	0.245	0.702	0.271	0.572	0.554

Notes: Robust standard errors in parentheses. Significance level at which the null hypothesis is rejected: * significant at 10%, ** significant at 5%, *** significant at 1%.

Table 3. Budget Balance rules.

VARIABLES	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
L.cab	0.4787***	0.4675***	0.5501***	0.7496***	0.8225***	0.7395***	0.8731***	0.8466***	0.8454***
	[0.107]	[0.109]	[0.096]	[0.065]	[0.097]	[0.048]	[0.070]	[0.086]	[0.095]
L. growth	0.1167**	0.1101*	0.0574	0.0078	-0.0735	0.0360	0.0631	0.0177	0.0594
	[0.050]	[0.056]	[0.050]	[0.099]	[0.133]	[0.041]	[0.049]	[0.053]	[0.055]
L.Debt	0.0030	0.0041	-0.0032	0.0153**	0.0177***	0.0181***	0.0316***	0.0317***	0.0290*
	[0.010]	[0.010]	[0.010]	[0.007]	[0.006]	[0.006]	[0.011]	[0.011]	[0.015]
L.BBR	0.9580*			0.6022			0.2626		
	[0.496]			[0.460]			[0.266]		
L.BBR_supra_nat		0.3565			-0.1796			0.2791	
		[0.906]			[0.576]			[0.887]	
L.BBR_supra_both			1.3368*			0.4214			0.0666
			[0.693]			[0.413]			[0.357]
L.nsovrate	-0.3913*	-0.3738**	-0.4090**						
	[0.197]	[0.184]	[0.163]						
L.ninterest_exp				0.1023**	0.0788*	0.0623			
				[0.051]	[0.043]	[0.050]			
L.bond_yield							0.0457***	0.0433**	0.0436***
							[0.015]	[0.021]	[0.015]
Constant	3.3965	3.8312	4.7935*	-2.9341***	-2.0345*	-2.4324***	-2.6393***	-2.4839***	-2.4029***
	[3.123]	[3.186]	[2.783]	[0.928]	[1.040]	[0.810]	[0.634]	[0.719]	[0.821]
Observations	1,309	1,309	1,309	1,183	1,183	1,183	935	935	935
Number of id	71	71	71	68	68	68	57	57	57
Hansen (p-value)	0.234	0.676	0.945	0.269	0.973	0.98	0.458	0.975	0.929

Notes: Robust standard errors in parentheses. Significance level at which the null hypothesis is rejected: * significant at 10%, ** significant at 5%, *** significant at 1%.

Table 4. Debt rules.

VARIABLES	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
L.cab	0.5981***	0.5423***	0.4580***	0.8035***	0.8665***	0.7795***	0.8902***	0.8541***	0.8397***
	[0.110]	[0.108]	[0.106]	[0.076]	[0.114]	[0.075]	[0.071]	[0.081]	[0.090]
L. growth	0.0679	0.1058*	0.1272**	-0.0405	-0.1325	-0.0584	0.0648	0.1106*	0.0789
	[0.044]	[0.057]	[0.059]	[0.115]	[0.174]	[0.101]	[0.061]	[0.057]	[0.076]
L.Debt	0.0088	0.0044	0.0023	0.0129*	0.0136*	0.0124*	0.0335**	0.0242	0.0214*
	[0.008]	[0.009]	[0.011]	[0.007]	[0.007]	[0.007]	[0.013]	[0.015]	[0.011]
L.DR	0.2240			0.2206			0.0784		
	[0.476]			[0.477]			[0.338]		
L.DR_supra_nat		-0.7533			-0.3290			0.1417	
		[0.818]			[0.562]			[0.432]	
L.DR_supra_both			0.2928			0.9357***			0.7345***
			[0.672]			[0.343]			[0.253]
L.nsovrate	-0.2784**	-0.3150	-0.3958*						
	[0.126]	[0.202]	[0.232]						
L.ninterest_exp				0.0896*	0.0240	0.0607			
				[0.052]	[0.048]	[0.051]			
L.bond_yield							0.0435***	0.0355**	0.0370***
							[0.010]	[0.014]	[0.011]
Constant	2.5128	3.4927	4.1834	-2.1186*	-0.8786	-1.6897	-2.5628***	-2.2805***	-2.1293***
	[2.124]	[3.505]	[3.896]	[1.100]	[1.290]	[1.090]	[0.762]	[0.757]	[0.657]
Observations	1,309	1,309	1,309	1,183	1,183	1,183	935	935	935
Number of id	71	71	71	68	68	68	57	57	57
Hansen (p-value)	0.564	0.839	0.966	0.373	0.723	0.997	0.412	0.996	0.952

Notes: Robust standard errors in parentheses. Significance level at which the null hypothesis is rejected: * significant at 10%, ** significant at 5%, *** significant at 1%.

Table 5. Sample of EU countries.

VARIABLES	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
L.cab	0.7068***	0.7073***	0.7257***	0.7264***	0.7282***	0.7309***	0.7545***	0.7615***	0.7673***
	[0.038]	[0.038]	[0.039]	[0.044]	[0.046]	[0.047]	[0.042]	[0.044]	[0.044]
L. growth	0.0388	0.0443	0.0335	0.0186	0.0214	0.0248	0.0357	0.0413	0.0329
	[0.033]	[0.033]	[0.034]	[0.032]	[0.032]	[0.032]	[0.029]	[0.029]	[0.029]
L.Debt	0.0145	0.0145	0.0190**	0.0296***	0.0297***	0.0313***	0.0281***	0.0277***	0.0278***
	[0.009]	[0.009]	[0.008]	[0.008]	[0.009]	[0.009]	[0.007]	[0.007]	[0.008]
l_rule	0.9726***			0.7907**			1.1163***		
	[0.276]			[0.336]			[0.369]		
l_nrule		0.2907***			0.2246**			0.3119**	
		[0.097]			[0.095]			[0.130]	
l_nrule_nat			0.3375**			0.3167*			0.3692**
			[0.163]			[0.175]			[0.184]
l_nsovrate	-0.2428***	-0.2491***	-0.1811**						
	[0.078]	[0.080]	[0.074]						
l_ninterest_exp				0.0305	0.0309	0.0189			
				[0.040]	[0.041]	[0.042]			
l_bond_yield							0.0728*	0.0841**	0.0528
							[0.039]	[0.041]	[0.036]
Observations	543	543	543	495	495	495	494	494	494
Number of id	28	28	28	28	28	28	27	27	27

Notes: Robust standard errors in parentheses. Significance level at which the null hypothesis is rejected: * significant at 10%, ** significant at 5%, *** significant at 1%.

Table 6. Sample of EMU countries.

VARIABLES	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
L.cab	0.6702***	0.6801***	0.7032***	0.6805***	0.6943***	0.7021***	0.7149***	0.7248***	0.7334***
	[0.057]	[0.057]	[0.057]	[0.048]	[0.049]	[0.050]	[0.049]	[0.048]	[0.049]
L. growth	0.1099***	0.1091***	0.0945**	0.0713	0.0746*	0.0745	0.0863**	0.0858**	0.0787**
	[0.041]	[0.041]	[0.041]	[0.044]	[0.045]	[0.045]	[0.037]	[0.038]	[0.038]
L.Debt	0.0214***	0.0218***	0.0261***	0.0376***	0.0392***	0.0409***	0.0341***	0.0334***	0.0340***
	[0.007]	[0.007]	[0.007]	[0.009]	[0.009]	[0.009]	[0.006]	[0.007]	[0.007]
l_rule	0.9757***			0.8441**			0.9275**		
	[0.370]			[0.408]			[0.447]		
l_nrule		0.2538**			0.1366			0.2377	
		[0.124]			[0.125]			[0.147]	
l_nrule_nat			0.1455			0.0508			0.1679
			[0.208]			[0.255]			[0.261]
l_nsovrate	-0.2283***	-0.2239***	-0.1735**						
	[0.073]	[0.077]	[0.072]						
l_ninterest_exp				0.0531	0.0363	0.0234			
				[0.054]	[0.053]	[0.053]			
l_bond_yield							0.0863*	0.0854*	0.0548
							[0.050]	[0.051]	[0.048]
Observations	367	367	367	334	334	334	350	350	350
Number of id	17	17	17	17	17	17	17	17	17

Notes: Robust standard errors in parentheses. Significance level at which the null hypothesis is rejected: * significant at 10%, ** significant at 5%, *** significant at 1%.