

Enhancing Prudent Fiscal Policy

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Abstract

The objective of this paper is to derive the characteristics of an effective governance framework ensuring incentives for conducting a prudent fiscal policy. We study this problem with the use of econometric tools and a sample of 28 European Union Member States between 2003 and 2017. By looking at specific reforms and measures, not only we verify the synthetic effectiveness of fiscal constraints but also we analyse specific elements of the governance framework. Our study shows that fiscal balances are affected not only by the economic cycle, but, among others, by the level of public debt and its cost. We find that the existence of numerical fiscal rules, in that specifically revenue and expenditures rules, their strong legal entrenchment, surveillance mechanisms, sanctions, and flexibility with respect to business cycle have a significant impact on curbing deficits.

Keywords: fiscal effort, fiscal rules, cyclically-adjusted balance, fiscal governance

JEL Classification: E62, C23

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1 Introduction

The recent problems of several European Union (EU) Member States (MS) with conducting countercyclical and prudent fiscal policy have called attention to the importance of the proper design of the fiscal governance framework. Despite the proliferation of numerical fiscal rules after 2000, the weak and, in practice, unenforceable constraints did not prevent many EU MS from expansionary policy during upturns, which led to insufficient fiscal space during downturns, and in turn, solvency problems for some MS.

The effort of conducting sustainable fiscal policy becomes especially difficult to exert in monetary unions, where MS might be tempted by moral hazards. With the backing of the entire union and under the limited control of EU institutions, European Monetary Union (EMU) MS have additional incentives to run high deficits. Thus, they may free-load and exploit both own and, to a large extent, common credibility. In such circumstances, strong and credible rules are necessary in order to provide sufficient incentives for conducting countercyclical and prudent fiscal policy.

This paper addresses the problem of the effective design of EU fiscal governance, focusing on the EU's numerical fiscal rules, their enforcement, flexibility, monitoring, and the credibility of the sanctions for their breach. In order to define the properties of the optimal contract between EU institutions and MS, we conduct an econometric analysis of the determinants of the cyclically-adjusted balance (CAB). In contrast to a broad range of literature on Fiscal Response Functions (see e.g. Auerbach and Gorodnichenko (2012), Gali and Perotti (2003) or Ploedt and Reicher (2015)), we focus on determinants of time and cross sectional variation rather than dynamics of the fiscal policy. For this reason we employ fixed effects instrumental variables regression and a large set of explanatory variables. We test significance of 20 variables suspected of being inter-related with countries' fiscal policy and compliance with fiscal rules. Among these variables are macroeconomic indicators, indexes and ratings, data on fiscal rules in place, breach of those rules, and other control variables accounting for macroeconomic situation and institutional setup. We test robustness of the findings by accounting for the possibility of endogeneity across determinants of CAB.

In the following part of the paper, we summarize the reforms in EU fiscal governance carried out since the establishment of the framework in 1997. We analyse the regulatory amendments concerning the strength of the rules, their flexibility, monitoring, and enforcement. The paper continues as follows. Section 3 defines fiscal effort and analyses its development in the EU between 2003 and 2017. Section 4 complements the study by providing the results of the econometric analysis of the fiscal effort. Section 5 concludes.

2 Fiscal governance in the EU: a bird's eye view

The fiscal framework in the EU consists of the EU instruments applicable to all EU MS, the rules applicable to members of the EMU, and national mechanisms. Furthermore, some of the instruments imposed by the EU must also be transposed into national law.

The foundations of EU fiscal governance are set out in the Treaties, whereas the mechanisms themselves are defined in the Stability and Growth Pact (SGP), which was introduced in 1997. The mechanisms have a twofold nature, and thus could be grouped into preventive and corrective mechanisms. The aim of the instruments within the preventive arm is to ensure that fiscal policy is conducted in a sustainable manner over the economic cycle, whereas the preventive arm envisages corrective actions and sanctions in situations when rules are broken.

Since 1997, the SGP has been substantially amended three times. In its seminal version, the SGP defined Medium-Term Budgetary Objectives (MTOs) unilaterally across MS as a nominal deficit or surplus close to the budget balance. From 1997, the monitoring role was taken by both the Commission and the Council. Under the preventive arm, at least three elements were non-existent at the beginning – namely, escape clauses, corrective actions, and sanctions.

The corrective arm – the Excessive Debt Procedure (EDP) – applied to MS that breached the 3% nominal deficit, with an escape clause of special economic circumstances resulting in a 2% contraction in a given year. For MS that breached the limits, the Commission and the Council launched the EDP in order to develop tailored recommendations. In cases when recommendations were not followed, financial sanctions could be implemented. In practice, the procedures for addressing noncompliance with the recommendations were discretionary and lacked automaticity. Moreover, the sanctions were rather late. A fine in the form of a non-interest bearing deposit could be enforced – at the earliest – 16 months after the start of the procedure. In 2005, the first major revision was carried out to introduce more flexibility in the procedures. The reform followed two controversial decisions of the EU Council in 2003–2004 concerning the non-enforcement of sanctions for France and Germany despite persistently breaching the 3% deficit rule. The new feature, which allowed for more flexibility, was the escape clause granted to MS, which introduced costly structural reforms. The adjustment path of the preventive arm was redefined as the adjustment of up to 0.5% of GDP per year with the value dependent on the debt overhang and the aging of society. More flexibility was also introduced within the corrective arm, since exceptional circumstances were redefined as the “below-potential growth”.

After the global financial crisis, the instruments of fiscal governance were reinforced first in 2011 by the introduction of the Six-Pack Directive, and later in 2013 by the introduction of the Two-Pack (Regulation (EU) no 1173/2011 of the European Parliament and of the Council) and Fiscal Compact (Title III of the Treaty on Stability, Coordination and Governance in the Economic and Monetary Union, mandatory for EMU MS only). The new instruments aimed at establishing more

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stringent rules with higher credibility due to the automation of sanctions. Moreover, the amendments aimed at better alignment of the fiscal effort exerted by MS with the business cycle. In addition, increased monitoring was introduced in the form of the autumn draft budget assessments and the mandatory establishment of fiscal councils. To achieve better alignment with the business cycle, the new rule of 0.5% of the CAB was added to the existing numerical rules – namely, to the rule targeting the level of debt and the limit on nominal deficit. Furthermore, since 2011, sanctions have also been present under the preventive arm. Non-compliance with the recommendations may now trigger further steps in the procedures, including the possibility of an interest-bearing deposit amounting to up to 0.2% of MS GDP. Furthermore, the sanctions under the corrective arm in the form of a non-interest bearing deposit amounting to 0.2% of GDP were made more automatic by the introduction of a new voting mechanism. Moreover, the timing was improved as, currently, the first sanctions could already be applied four months after a breach of the rules is detected. The reforms introduced since 1997 affected various parameters of the fiscal framework. To simplify the complexity of the reforms, we summarize the framework by eight features and judge whether the reform might have had a positive or negative impact on each of them (see Table 1).

Table 1: Reforms of the fiscal rules and their enforcement

	2005, SGP Reform	2011, Six-Pack	2013, Fiscal Compact and Two-Pack
Strength of the rules and their legal entrenchment			↑
Flexibility – escape clauses	↑	↑	
Flexibility – alignment to the business cycle		↑	↑
Monitoring	↑	↑	
Corrective actions		↑	
Enforcement – strength of sanctions			↑
Enforcement – automaticity of sanctions			↑

↑ denotes increase in the criterion, source: own, based on Eyraud and Wu (2015)

In recent years, substantial changes were introduced, and not only to the union-wide fiscal framework. The trend of the proliferation of national fiscal instruments along with the increasing number of fiscal councils and the strength of their mandates could be observed in the EU. Already in 2014 there were more than 100 different numerical rules in all EU MS, which is over two times more than in 2014 (Begg 2016). Since

the establishment of the Fiscal Policy Council in Sweden in 2007, almost all EU MS have introduced institutions with similar mandates designed to monitor compliance with the elevated numerical rules.

Simultaneous to the increase in the number of numerical rules, problems concerning commitment and enforceability were often experienced. The methods for non-compliance with the national rules and the limits imposed by the EU varied. In some cases when MS were in dire straits, the rules were simply abandoned. In other cases, the parameters of the rules were recalibrated or the obligations were met thanks to window dressing, like the reclassification of public sector liabilities (Begg et al. 2017).

3 Fiscal effort in the EU and its evolution

The goal of the reforms was to establish appropriate incentives for MS, so that their efforts are aligned with the business cycle. Fiscal effort is a concept that is not directly measurable, as it aims to quantify something as intangible as “the attempt to produce something”. The efforts of governments concerning deleveraging could depend on numerous factors – namely, political environment, percentage of fixed expenses, and, needless to say, economic circumstances. Thus, to have a one-size-fits-all measure, some specificities must be ignored. Traditionally, fiscal effort is defined as the CAB. A more refined concept than the structural budget balance, the CAB is an indicator of the nominal budget balance corrected by a cyclical component plus a broad range of factors, such as asset and commodity prices or output composition effects (Bornhorst 2011).

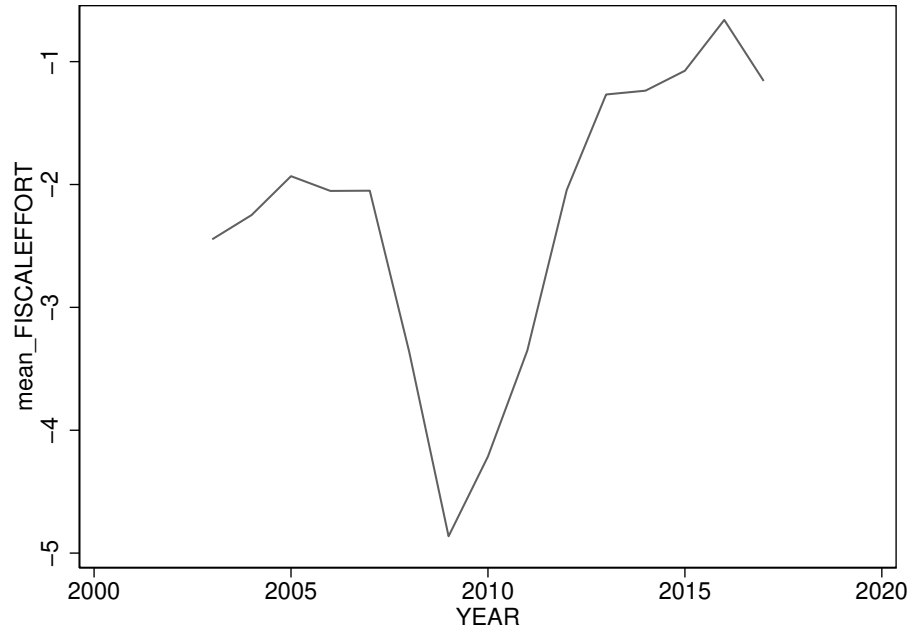
The CAB is estimated using the top-down approach – that is, as the product of the output gap and a parameter reflecting the reaction of the government balance to a change in the output gap (the so-called budgetary semi-elasticity) (Mourrel 2014). A crucial parameter utilized for the estimation is thus potential GDP, along with the semi-elasticities of revenue and expenditure components, which serve to estimate budgetary semi-elasticity.

In this paper, in order to maximize the number of observations, we follow the traditional approach. The fiscal effort used in the subsequent analyses is the top-down estimate of the CAB of general government. The CAB was derived from the AMECO database (The real-time dataset can be freely accessed via the FIRSTUN website <http://www.firstun.eu/>).

Since the measure of the CAB already incorporates the impact of the business cycle on public finance, it could be expected that the level of the so defined fiscal effort shall be independent from the economic cycle. However, it might be suspected that there are other factors that influence the level of exerted fiscal effort but are not linked directly to the MS economic cycle. Against this backdrop, as shown by Figure 1 and 2 in Appendix, the average fiscal effort in the EU was volatile between 2003 and 2017. In other words, it could be suspected that the effort defined as the CAB has been significantly affected by factors other than just the position of the business cycle.

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Figure 1: Average fiscal effort by MS



Source: own, based on AMECO, the ex-post CAB used for the analysis originated from the oldest available vintages, which was a six-year lag for observations from 2003-2011, a five-year lag for 2012, a four-year lag for 2013, a three-year lag for 2014, a two-year for lag 2015, a one-year lag for 2016, and a same assessment for 2017

Over the years preceding the crisis (2003-2007), the CAB fluctuated between -2.05 and -1.93% . In 2009, after the outbreak of the crisis, the value dropped to -4.86% , on average. Since 2013, the values were much more favourable, and the EU country-average ranged from -0.66% in 2015 to -1.26% in 2013. As shown by the graphs, structural deficits have been persistent, especially before the recent reforms of EU fiscal governance. It could be concluded that the strength of the rules and their monitoring and enforcement have failed to encourage the buildup of sufficient buffers in good times. Although the output gap was positive or close to zero from 1999 to 2008, MS recorded, on average, a deficit in the CAB, which was higher than their economic growth. In turn, the level of debt between 2003 and 2014 increased by 26.2 percentage points in the EU-28 and 23.7 percentage points in the EMU (Source: Government Finance Statistics, Eurostat).

The high volatility of the average fiscal effort may suggest that there are other economic factors than the position of the cycle that determine the fiscal effort exerted by EU MS. As the observed fiscal effort was substantially higher before and throughout

the crisis than it was after the crisis, the development of the fiscal effort may also point to the observation that the recent reforms had a positive effect on curbing the government expenditure of EU MS.

Similar interpretations of the development of and cause behind deficits are common in the literature. The problem of the effectiveness of the EU governance framework and the procyclicality of fiscal policy was analysed, among others, by Eyraud and Wu (2015). Despite depicting that the fiscal policy was too expansionary, the authors showed that the fiscal policy was procyclical in the period of 1999-2013. The procyclicality was marked during upturns since 1999, while it was mildly countercyclical during downturns.

4 Determinants of fiscal effort

To verify which particular factors are behind high structural deficits and their volatility, we conduct an econometric analysis. We complement the recent literature by placing the center of gravity on numerical fiscal rules and the effectiveness of the fiscal governance reforms, while controlling for other relevant factors.

Traditionally, to investigate the factors underlying prudent and countercyclical fiscal policy or successful deleveraging, research papers utilize CAB as a dependent variable and focus on a limited group of countries and a rather short time perspective. Nerlich and Reuter (2015) focus, as we do in this paper, on the EU, and analyse the interactions between rules and fiscal space, which is understood as a country's room for manoeuvre concerning fiscal policy. They find strong evidence for fiscal rules being associated with higher fiscal space. They also argue that a country with either low or high fiscal space might introduce fiscal rules to either increase its fiscal space in the future or preserve good conditions. The strongest positive impact could be attributed to expenditure rules and balanced budget rules.

Plekhanov et al. (2007) analyse the determinants of fiscal consolidations in OECD countries using, among other tools, cross-country econometric analysis and model-based simulations. The authors analyse deep factors of successful consolidations and classify these consolidations in order to explain the key factors in their success. The analysis revealed that fiscal consolidations are usually initiated during times of fiscal distress, as reflected in high and rising public debt levels and relatively weak economic activity. Revenue-based fiscal adjustments have tended to be less durable than consolidations, which rely on cuts in current expenditures. According to the results of the econometric analysis, institutions and government stability are important determinants of successful fiscal adjustments.

Cevik and Teksoz (2014) examine the determinants of fiscal policy behavior on a broad sample of countries within the period 1990-2012. Their empirical results show that discretionary fiscal policy has an inertial nature. Namely, debt overhang and output gap determine future balances. In addition, the authors find the role of financial, demographic, and institutional factors to be significant. Importantly, fiscal

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rules and a higher institutional quality reduce the volatility of the fiscal balance over time.

Fiscal rules are in the centre of attention of the recent stream of literature following Debrun and Kumar (2007). As the authors show on the sample of EU MS, fiscal rules, both national and EU enforced, and the type of their design affect fiscal performance (expressed and cyclically adjusted primary balance (CAPB)). Most of the recent literature confirms the effectiveness of fiscal constraints, however, we note exceptions to this strand of the literature in the earlier research on the rules when they were much less prevalent (See e.g. von Hagen (1991)).

More specifically, Debrun and Kumar (2007) finds that debt and deficit rules appear to be more effective than the expenditure rules. Similar results are also reported by Dahan and Strawczynski (2013), who study 22 OECD countries between 1963 and 2010, and Ayuso-i-Casals et al. (2009), who study EU MS over the 1990-2005 period. Nevertheless, in his study focusing on the effectiveness of national expenditure rules, Deroose et al. (2006) finds that the expenditures rule have a significant, negative impact on public expenditure.

Fiscal rules often turn out to be effective despite not being necessarily binding Dahan and Strawczynski (2013). Not only rules are effective in reducing balances but also, as Badinger and Reuter (2017) show, fiscal rules are negatively related to output volatility.

The recent stream of studies investigates not only the effects of fiscal rules' existence but also analyses their properties. For this purpose, indexes indicating synthetic effectiveness of rules, like their statutory base, enforcement mechanisms and monitoring, are utilized. The advantages of using indexes were noted among others by Dahan and Strawczynski (2013) and Maltritz and Wüste (2015).

The analyses of fiscal effort's determinants must be based to large extent on the variables with little variation over time, like the existence or quality of rules. Values of other variables do not differ across countries as there are rules affecting all EU or EMU MS. Despite little variation of some variables over time and across countries, due to heterogeneity, both time and country fixed effects are most often included in the models. (see e.g. Dahan and Strawczynski (2013) and Maltritz and Wüste (2015)).

Another problem in analysing determinants of fiscal effort is the endogeneity. Fiscal rules might be considered as endogenous to the type of policy that is conducted Gali and Perotti (2003). To overcome this hurdle, Badinger and Reuter (2017) used IV approach, where checks and balances, government fragmentation, and inflation targeting serve as instruments. Dahan and Strawczynski (2013) argue that also GDP growth as a determinant of fiscal is endogenous and, thus, use exports growth instead.

In this paper, we build on this stream of the literature and employ an empirical model to explain the inter-relations between fiscal effort and both economic and

institutional factors in a panel of 27 EU MS between 2003 and 2017. As the left-hand side variable, we utilize the CAB from the annual macro-economic database of the European Commission's Directorate General for Economic and Financial Affairs – AMECO (See: <http://www.firststrun.eu/> for real-time data from the AMECO database). We are interested in CAB, rather than CAPB, to have a straightforward link with the budget balance rules, which tend to target overall rather than primary balances. CAB also grasp the dynamic effect of debt accumulation.

To obtain as long a time series as possible, we use the longest possible vintage of the CAB available. Thus, we use a six-year lagged estimate for years 2003-2011, a five-year for 2012, a four-year for 2013, a three-year for 2014, a two-year for 2015, a one-year for 2016, and an ex-ante assessment for 2017. As the estimates of the CAB could be revised quite substantially, we use ex-post estimates in order to have the most accurate indicators of fiscal effort, which is less accurate when estimated in real time (For the discussion of the reasons and magnitude of the CAB revision, see Busse (2017)).

The initial database contained 20 variables suspected of being inter-related with countries' fiscal policy and compliance with fiscal rules (see summary in Table 3 and 4, Appendix). Among these variables are macroeconomic indicators, indexes and ratings, data on fiscal rules in place, breach of those rules, and other control variables, such as the year when the SGP was reinforced, in the form of a dummy variable.

The explanatory variables included in the database could be grouped into macroeconomic and institutional variables. The macroeconomic variables aimed at explaining the internal and external conditions of conducting sustainable fiscal policy, which likely may go beyond the business cycle already incorporated in the CAB. Nevertheless, we use the real GDP growth rate to test whether this impact was fully captured. To account for difficulty in exerting effort, we also include variables related to current debt burden – namely, the current debt-to-GDP ratio, the debt-to-GDP ratio in 2003 (to control for different levels of indebtedness at the beginning of the analysed period), and the cost of debt represented by the yield on government bonds with a 10-year maturity. Furthermore, as a proxy of the current external economic situation, we use the IFO Business Climate Index.

Concerning institutional variables, in the first instance, we include the Fiscal Rules Index (FRI), which is a proxy on how much policy makers are restrained by the fiscal rules. The index is estimated by the EC services and available for the majority of the EU MS. The index encompasses coverage of the various rules, their statutory base, monitoring and enforcement mechanisms, as well as experience with respect to the rule. The FRI covers numerical rules (such as budget balance, debt, expenditure, and revenue rules) on all levels of government.

Finally, we introduced dummy variables for the EDP (being in place in a given year and for a given country), for the EU fiscal reforms (introduced in 2005, 2011, and 2013), and for the well-defined financial sanctions in place – more specifically, for the MS covered by the Fiscal Compact after 2013.

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The large number of potentially correlated covariates available in each of these two vectors means that the model space is limited and allows for comparing only plausible specifications. To verify the link between these time-variant and/or country-specific variables, we use a fixed-effects specifications of the form:

$$FE_{i,t} = \alpha + \beta MACRO_{i,t} + \gamma INST_{i,t} + \epsilon_i + \epsilon_t + u_{i,t}. \quad (1)$$

Both time and country fixed effects were included in the regressions as bear in mind that observable effects might be correlated to some extents with omitted variables, thus hinder to uncover true causal relationship. To avoid the possibility of endogeneity bias, we use lagged values of output growth.

We report five different specifications in Table 2. Specifications I, II and III are the baseline models looking at fiscal governance from different angles. Specification IV and V provide a robustness checks.

Within the macro variables reported in the final specification (see Table 2: Estimation Results), the GDP growth rate, yield on 10-year government bonds and the general government debt ratio were included. As the analysis showed, it is easier to exert effort when the external economic situation is favourable and the debt overhang is low. The one percentage point increase in the level of debt resulted in a 0.011-0.029 percentage point decrease in the CAB, depending on the model specification.

The econometric analysis proved that the fiscal effort depends on the stage of the business cycle. The one percentage point increase in the GDP growth rate resulted in 0.1 percentage point increase in the CAB. MS are tempted to spend more when the world economic situation is worse and when their indebtedness is high. However, the effort is also affected by the debt servicing cost, which usually increases more than proportionally with the increase of debt, or partially to the fact that some long-term features of MS conducting expansionary fiscal policies are not addressed by the set of explanatory variables.

Highly interrelated with fiscal effort is effectiveness of institutions, included in the model in the form of the FRI. All in all, an increase in the index, which ranged from a minimum value of -0.959 to a maximum of 3.868 , resulted in a 0.76-1.03 percentage point improvement in the CAB.

In order to verify whether specific properties of the institutional framework have a role, we also test the significance of specific types of rules. For this purpose, we eliminate the FRI from the right-hand side variables (see Specification II) and include dummies standing for the presence of particular rules. We find that the existence of debt and expenditure rules has a strong impact on fiscal effort. The existence of such resulted, on average, in a 1.6 and 0.8 percentage point improvement of the CAB respectively. In addition, we find that the presence of other rules did not have a statistically significant impact on fiscal effort.

We also test the impacts of the reforms in 2005, 2011, and 2013, bearing in mind the parameters of the fiscal framework, which were affected (see Table 1). We find that

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Table 2: Estimation results

Variable	Specification				
	I	II	III	IV	V
General government debt	-0.024* (0.012)	-0.026* (0.013)	-0.011* (0.012)	-0.029** (0.014)	
General government debt (<i>t-1</i>)					0.09 (0.012)
Cost of debt	0.273 *** (0.086)	0.241 *** (0.088)	0.285 *** (0.086)	0.298 *** (0.087)	0.180 *** (0.086)
GDP growth rate (<i>t-1</i>)	-11.677* (6.609)	-10.473 (6.869)	-6.489 (5.554)	-14.709** (7.216)	-9.816* (6.593)
Fiscal Rules Index	0.838 *** (0.236)			1.033 *** (0.295)	0.761 *** (0.241)
Sanctions in place		0.094 (0.548)			
Expenditure rule		0.831 * (0.477)			
Debt rule		1.613 ** (0.785)			
Balanced budget rule		0.883 (1.564)			
Revenue rule		0.651 (1.860)			
EMU membership		-0.840 (0.831)			
2005 reform			-1.840*** (0.648)		
2011 reform			2.593 *** (0.629)		
2013 reform			1.407 ** (0.624)		
Constant	-1.103 (1.066)	-1.564 (1.750)	-2.330*** (0.777)	-0.831 (1.139)	-3.343*** (1.046)
no. of observations	287	287	287	248	287
R^2	0.361	0.359	0.361	0.376	0.353

Source: own. Note: values in brackets denote p-value ($P > |t|$), * denotes significance at the 10% level, ** denotes significance at the 5% level, while *** denotes significance at the 1% level

the SGP reform in 2005, which provided more flexibility, had a negative influence on the exerted fiscal effort, whereas the changes introduced in 2011 had a substantial positive impact. Due to the 2011 reform, all EU MS have exerted more effort by approximately two percentage points. Amendments to the framework, which have been operational since 2013, were also proven to have a significant impact.

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This result could likely relate to sanctions, whose strength and automaticity was enforced in 2013.

The results provide clear evidence that expenditure rules and the inevitability of sanctions are effective features of the institutional setup that help to curb government expenditure. However, we are modest in interpreting the causality of institutional factors. We bear in mind that institutions may impact fiscal effort and that fiscally responsible governments might be more willing to improve the institutional setup. As the FRI grasps both national and super national instruments, we suspect that the causality is rather of the first type.

To verify whether reverse causality between fiscal policy and economic cycle is not an issue, in Specification IV we exclude three largest EU economies, namely France, Germany and the UK. As there is possibility of an endogeneity problem related to the simultaneity between the change in debt and fiscal effort, we use lagged debt (Specification IV). To verify whether the endogenous of debt is not issue, we also use one period lagged general government debt (Specification V). The robustness check showed that the fiscal effort is somewhat persistent. Compared to the baseline specification, the signs of the alternative specifications remained broadly unchanged.

5 Conclusions

In this paper, we have addressed the problem of the effectiveness of numerical fiscal rules in the EU using econometric tools, complementing this analysis with formal modeling, through the lens of a dynamic principal-agent framework.

The preliminary study showed that CABs have significantly varied across EU MS between 2003 and 2017, indicating that non-CABs depend on factors other than just the economic cycle. According to the econometric analysis, fiscal policy has a substantial degree of inertia. MS with higher levels of public debt conduct more expansionary fiscal policies. Moreover, the external economic situation matters. During sound times for the national economies, EU MS tend to lose their cyclical balances.

Institutional factors play a significant role in determining fiscal effort. The existence of numerical fiscal rules, their strong legal entrenchment, surveillance mechanisms, and envisaged corrective actions tie the hands of governments and provide incentives for ensuring anticyclical and prudent fiscal policy. The most influential instruments proved to be the expenditure rules and the external sanctions for breaching the rules. The econometric analysis has also showed the effectiveness of the Six-Pack Directive, which came into force in 2011, in limiting government profligacy, which proves that fiscal governance framework needs to be flexible with respect to business cycle and envisage escape clauses for extreme events. The analysis has also showed that the effects of 2013 reform focusing on the strength and automaticity of sanctions was positive.

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References

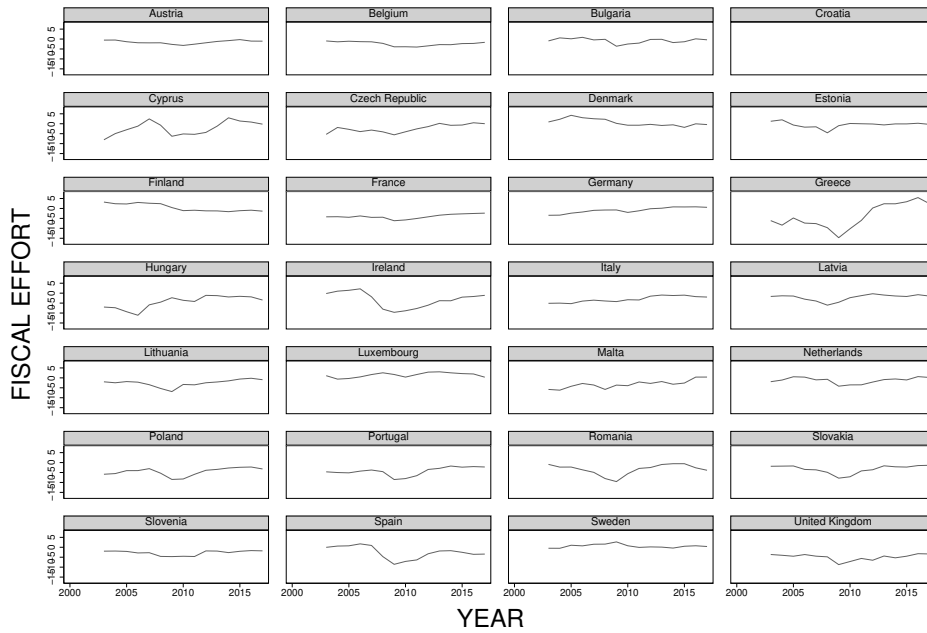
- [1] Auerbach A. J., Gorodnichenko Y., (2012), Measuring the output responses to fiscal policy, *American Economic Journal* 4(2), 1–27.
- [2] Ayuso-i-Casals J., Deroose S., Flores E., Moulini L., (2009), Beyond the SGP: features and effects of EU national-level fiscal rules, [in:] *Policy Instruments for Sound Fiscal Policies. Fiscal Rules and Institutions*, Palgrave Macmillan, Basingstoke.
- [3] Badinger H., Reuter W. H., (2017), The case for fiscal rules, *Economic Modelling* C(60), 334–343.
- [4] Begg I., (2016), Fiscal and other rules in EU economic governance: helpful, largely irrelevant or unenforceable?, *FIRSTRUN Deliverable 6.2*.
- [5] Begg I., Cole A. L., Guerello C., Traficante G., Poniatowski G., Głowacki K., Domanos T., Sikulova I., Palenik V., (2017), Fiscal rules and other rule-based mechanisms in practice: introduction to case studies of four member states, *FIRSTRUN Deliverable 6.5*.
- [6] Bornhorst F., (2011), When and how to adjust beyond the business cycle? A guide to structural fiscal balances, *Technical Notes and Manuals, IMF FAD*.
- [7] Busse M., (2017), Revisions of the cyclically adjusted budget balance: How large are they and how do they impact the European fiscal framework? , *CFIRSTRUN Deliverable 2.4*.
- [8] Cevik S., Teksoz K. (2014), Deep roots of fiscal behavior, *IMF Working Paper Series* WP/14/45.
- [9] Dahan M., Strawczynski M., (2013), Fiscal rules and the composition of expenditures in OECD countries, *Journal of Policy Analysis and Management* 32(3), 484–504.
- [10] Debrun X., Kumar M. S., (2007), The discipline-enhancing role of fiscal institutions: Theory and empirical evidence, *IMF Working Paper Series* WP/07/171.

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- [11] Deroose S., Moulin L., Wierds P. (2006), National expenditure rules and expenditure outcomes: evidence for EU member states, *Wirtsch. Blätter* 1, 27–41.
- [12] Eyraud L., Wu T., (2015), Playing by the rules: reforming fiscal governance in Europe, *IMF Working Paper Series* WP/15/67.
- [13] Gali J., Perotti R., (2003), Fiscal policy and monetary integration in Europe, *Economic Policy* 18, 533–572.
- [14] Maltritz D., Wüste S., (2015), Economic Modellings, *Economic Modelling* 48, 222–236.
- [15] Mourrel G., (2014), Adjusting the budget balance for the business cycle: the EU methodology, *European Economy, Economic Paper* 536.
- [16] Nerlich C., Reuter W. H., (2015), Fiscal rules, fiscal space and procyclical fiscal policy, *Working Paper Series, European Central Bank* 1872.
- [17] Plekhanov A., Kumar M. S., Leigh D., (2007), Fiscal adjustments; determinants and macroeconomic consequences, *IMF Working Papers* 07/178.
- [18] Ploedt M., Reicher C. A., (2015), Estimating fiscal policy response functions: The role of model specification, *Journal of Macroeconomics* 46, 113–128.
- [19] von Hagen J., (1991), A note on the empirical effectiveness of formal fiscal restraints, *Journal of Public Economics* 44(2) 199–210.

A Tables and Figures

Figure 2: Fiscal effort by MS



Graphs by COUNTRY

Source: own elaboration, based on AMECO. Ex-post CAB with the oldest available vintages. Six-year lag for years 2005-2011, five-year for 2012, four-year for 2013, three-year for 2014, two-year for 2015, one-year for 2016, and ex-ante assessment for 2017

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Table 3: Macroeconomic variables

Variable	Source	Observations	Mean	Standard deviation
Fiscal Effort – CAB	AMECO	405	-2.26	2.81
Debt to GDP	Eurostat	602	55.26	32.37
Debt to GDP – initial level	Eurostat	644	47.79	25.20
Real GDP growth (yoy)	Eurostat	588	0.0256	0.0349
General government deficit to GDP	Eurostat	607	-2.80	3.50
Cost of debt – yield on 10y government bonds	ECB	477	4.48	2.50
Business Climate Index	IFO	644	5.99	13.28

 Enhancing Prudent Fiscal Policy

Table 4: Institutional variables

Variable	Source	Observations	Mean	Standard deviation
Polity index	Polity IV	560	8.76	4.87
Executive constraints index	Polity IV	560	6.24	4.39
Fiscal Rules Index	European Commission	588	0.0613	0.929
Existence of national expenditure rule	Fiscal rules database – FAD	588	0.4013	0.4905
Existence of national balanced budget rule	Fiscal rules database – FAD	588	0.7942	0.4046
Existence of national debt rule	Fiscal rules database – FAD	588	0.8163	0.3875
Existence of national revenue rule	Fiscal rules database – FAD	588	0.0935	0.2917
Excessive Deficit Procedure dummy	Own elaboration based on EC	644	-	-
2005 Reform Compact – dummy	Own elaboration based on EC	644	-	-
2011 Six-Pack – dummy	Own elaboration based on EC	644	-	-
2013 Two-Pack and Fiscal Compact – dummy	Own elaboration based on EC	644	-	-
EMU membership dummy	Own elaboration based on EC	644	-	-
EU membership dummy	Own elaboration based on EC	644	-	-
Existence and applicability of applying financial sanctions	Own elaboration based on EC	644	-	-