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Impact of Fiscal Constraints on Budgetary Balance in the European Union Member States

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Abstract

The aim of this paper is to present the impact of fiscal constraints on budgetary balance in the European Union Member States as a whole. Accordingly, the paper includes a short analysis of European fiscal rules and presents fundamentals of European fiscal constraints which are included in the Maastricht Treaty and the Stability and Growth Pact. This study focuses on analysis for twenty-seven European countries during years 2004-2012. The assessment of the impact of European fiscal rule index on budget balance is an important part of this article. According to this study, the average impact of fiscal constraints on budget balance is positive and statistically significant.

Keywords: European Union, fiscal rules, dynamic panel data

1. Introduction

Fiscal constraints constitute an institutional framework for conducting fiscal policy. The constraints are usually presented in the form of fiscal rules which impose numerical limits on selected fiscal variables. Numerical fiscal constraints play an important role in the European Union countries. The need to impose joint rules results from an endeavor to create the Euro Area which exhibits features of an optimum currency area. Thus, there is a need to constraint national fiscal policies in order to achieve and maintain sustainable development of the European Union as a whole.

Fiscal policy in the European Union is country-specific. However, the Member States constrain public finance by supranational rules. The Maastricht Treaty and the Stability and Growth Pact introduced two types of supranational rules which were known as a fiscal convergence criteria. These common rules are as follows: the budget balance rule and the debt rule. It should be noted that recent arrangements have imposed additional constraints on European fiscal policy. The changes are included in the reformed Stability and Growth Pact and other European Community arrangements like two-pack, six-pack or the Treaty on Stability, Coordination and Governance. It should be noted that parallel to the supranational rules each Member State can implement national rules. The expenditure rule, revenue rule, as well as the debt rule and budget balance rule are important rules imposed at the national level by the Member States.

The goal of this paper is to investigate the influence of the fiscal rule index (a measure counted by the European Commission services) on budgetary balance in twenty-seven European countries. We focus on the sample covering the years 2004-2012. According to our results, that impact of fiscal rules on structural primary balance is positive and statistically significant.

This paper is organized as follows. Next chapter provides literature overview. The third chapter includes information concerning two important European documents restricting fiscal policy in the EU. The fourth chapter describes European fiscal rule index. The next part presents selected data describing situation of public finance in the EU. The sixth chapter provides data description, methodology, and results. The last chapter concludes with a brief summary of the main findings of the paper.

2. Literature review

Fiscal rules are part of institutional framework. Fiscal rules are tools which support conducting fiscal policy. According to the most popular definition, fiscal policy rules are permanent constraints on fiscal policy aggregates (e.g. budget balance, debt, government spending, and government revenues) in the form of numerical limits (Kopits and Symansky, 1998). The rules are statutory or constitutional restrictions imposed on fiscal policy, which ensure a specific limit on a fiscal indicator such as the budget balance, government debt, government spending, or taxation revenues (Kennedy et al., 2001). The rules focus on maintaining fiscal discipline, and prevent excessive use of discretionary fiscal policy. Thus, fiscal rules are an important mechanism constraining policymakers' actions. In this sense, fiscal rules are a special tools preventing the deficit bias. The phenomenon of deficit bias is characterized by a large and growing fiscal deficit. The deficit bias is explained on the basis of policymaker's preferences theory (Alesina and Tabellini, 1990), the common pool theory (Velasco 1999, 2000) or the political business cycle theory (Rogoff, 1990). Generally, according to these theories, the increasing deficit is not a consequence of business cycle fluctuations but is caused by weak institutional frameworks and by preferences of politicians.

Fiscal rules are characterized by many features. The most important concepts are presented in Table 1.

Table 1. Properties of fiscal rules

<table>
<tr><th>W.H. Buiter (2003)</th><th>Kopits and Symansky (1998)</th><th>Kilpatric (2001)</th></tr>
<tr><td rowspan="3">• Simple
• Credible
• Impartial and consistent
• Neutral as regards the size of the public sector
• Support the government's solvency
• Concern the consolidated general government
• Prevent pro-cyclicality of fiscal policy and create background for performance of automatic stabilizers
• Possible to continue in the long term
• Possible to take into account structural differences of the economies
• Possible to be implemented at the country level and the EMU as a whole</td><td rowspan="3">• Simple
• Well-defined
• Flexible
• Transparent
• Consistent
• Enforceable
• Adequate with respect to fiscal target
• Supported by an efficient policy actions
• Underpinned by structural reforms</td><td>• Realistic
• Relevant
• Measurable
• Achievable</td></tr>
<tr><td>Kennedy et al. (2001)</td></tr>
<tr><td>• Easy to monitor
• Defined in terms of fiscal indicator</td></tr>
</table>

Source: Author's own work

Summing up, fiscal policy rules should be well-defined, flexible, measurable and prevent excessive values of fiscal variables. Fiscal rules are a part of institutional framework. Thus, appropriate fiscal institutions are one of the most important aspects determining the effectiveness of fiscal rules (Wyplosz, 2012).

The IMF report (2009) presents three main objectives of fiscal rules (debt sustainability, government size, and economic stabilization) and tries to assess the correlation between selected fiscal rules and specified goals. The objectives are presented in Table 2. A positive sign (+) in the table indicates a positive property of a fiscal rule against key objective, while negative signs (-) indicate a negative property. Zero value (0) indicates neutral property with regard to three types of objectives.

Table 2. Correlation between different types and objectives of selected fiscal rules

Type of fiscal rule	Objectives		
	Debt sustainability	Government size	Economic stabilization
Overall balance	++	0	-
Primary balance	+	0	-
Cyclically adjusted balance	++	0	++
Balanced budget over the cycle	++	0	+++
Public debt-to-GDP ratio	+++	-	-
Expenditure	+	++	++
Revenue			
• Revenue ceilings	-	++	-
• Revenue floors	+	-	+
• Limits on revenue windfalls	+	++	++

Source: IMF (2009), p. 6.

The rule expressed as a public debt-to-GDP ratio has a positive impact on maintaining debt sustainability, but it has a negative correlation with government size and economic stabilization. On the other hand, high property of realization of the economic stabilization is possible by rule of balanced budget over the cycle. However, this rule has a neutral impact on government size and relatively high (positive) correlation with debt sustainability. Rules based on revenues have a quite weak impact on public finances. Government size and rules based on public debt-to-GDP ratio are correlated negatively.

Many economist try to find the numerical impact of fiscal rules on fiscal variables. For example, Poterba (1994), based on the US data, finds that fiscal institutions and political factors play an important role in creating short-run deficit dynamics. Eichengreen and Bayoumi (1994) emphasize the negative impact of fiscal rules on the cost of government borrowing. Many studies investigate the positive impact of fiscal constraints on structural surplus. Generally, the stronger rules the larger the government surplus or the lower the deficit (Bayoumi and Eichengreen, 1995; Alesina and Bayoumi, 1996).

Deroose, Mulin and Wierts (2006) find a statistically significant influence of the expenditure rule index on expenditure outcomes. Turrini (2008) analyses the behaviour of fiscal policy in ten Euro Area countries by using the fiscal reaction functions. He points out that fiscal policy generates a pro-cyclical bias in good times, which is shaped by the expenditure side of the budget. Wierts (2008) tries to assess the role of national expenditure rules in reducing expenditure bias. He analyses 15 European Union countries in the years 1998-2005 and investigates that higher values of the institutional strength of expenditure rules lead to an improvement in fiscal performance. The European Commission (2006, 2009) investigates the positive impact of fiscal rule index on the cyclically-adjusted primary balance. Generally, fiscal rules (in the form of European arrangements) lead to an increase in the cyclically-adjusted primary balance and support fiscal discipline. Such results are presented by Debrun et al.(2008) or Afonso and Hauptmeier (2009). In other words, fiscal rules improve the discretionary position of fiscal policy due to numerical constraints. Thus, the presence of fiscal rules increases structural surplus. According to the European Commission (2009) an increase in fiscal rule index by one unit improves the cyclically-adjusted primary balance (expressed as a percentage of trend GDP) by average of 0.48 percentage points (in the years 1990-2008 in the context of 27 EU countries).

3. The fundamentals of European fiscal constraints

In the European Union countries, fiscal policy is realized by each country, however in terms of achieving sound public finances, the European Union implemented joint fiscal rules included in the Stability and Growth Pact and the Treaty on the Functioning of the European Union (henceforth TFEU). The fundamentals of supranational rules were initially included in the Maastricht Treaty and known as fiscal convergence criteria. The Stability and Growth Pact constitutes also a rule-based framework to strengthen fiscal policy in all European Union Member States. The aim of these supranational regulations is to keep public finance discipline and ensure the appropriate functioning of the Euro Area and European Union as a whole.

The Stability and Growth Pact is a declaration which obliges all Member States to avoid excessive deficit. The excess over declared value results in sanctions. The most important reasons for using fiscal regulations are related to the fact that avoiding excessive deficit supports the development of the economy (especially by keeping interest rates at low levels). In order to prevent a misuse of deficit as a stabilization tool, the European Union introduced a special mechanism – the Excessive Deficit Procedure. The Excessive Deficit Procedure (henceforth EDP) is a specific tool that responds to the deviation of the deficit above a certain threshold explicit in the corrective arm of the Stability and Growth Pact. The Stability and Growth Pact, since its establishment in 1997, has been twice reformed. The first reform (in 2005), in principle, softened the original provisions, while the second reform (in 2011), conducted in the face of economic and fiscal crisis of the Euro Area, introduced a stricter discipline of public finance. All Member States are required to fulfil the Stability and Growth Pact and the TFEU fiscal criteria. The thresholds (included in the Protocol No. 12 which is annexed to the TFEU) are as follows: the general government consolidated gross debt cannot be larger than 60% of GDP and deficit cannot exceed 3% of GDP. The Stability and Growth Pact and the TFUE are now the regulations with wide supranational range (28 individual countries of EU). The steps of EDP are formulated in the article 126 of the TFEU and in the corrective arm of the Stability and Growth Pact. Actually, fiscal criteria consist of two main supranational rules for fiscal policy in all Member States.

The preventive arm of the Stability and Growth Pact introduces the so-called MTO, i.e. medium-term budgetary objective, which is country-specific and defined in structural terms. It is required that each country of the European Union must reach its MTO or be on an appropriate adjustment path towards it. In the last case, the annual improvement of country's structural balance (in the context of an adjustment path) must be 0.5% of GDP as a benchmark. A lower bound for the MTO is based on the minimum benchmark, estimated as a lowest value of structural budget balance which is able to provide a safety margin. The role of safety margin is to avoid exceeding the reference value in the context of normal cyclical fluctuations. As emphasized by Balassone and Franco (2001), fiscal rules should allow special margins guarantying a budgetary flexibility during "bad times".

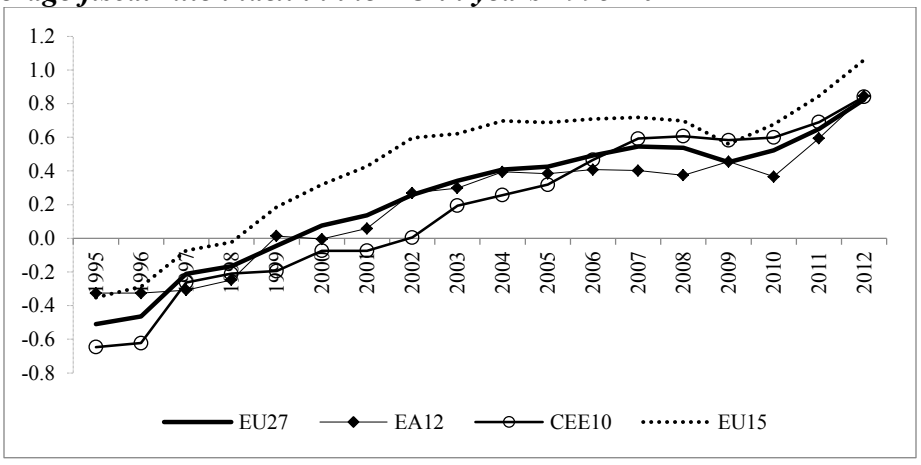
As mentioned above, fiscal policy in the UE is, first of all, limited by budget balance rule, debt rule, and a country-specific MTO. Parallel to these supranational arrangements, each country can implement its own national rules.

4. The European Union fiscal rule index

The Maastricht Treaty and the Stability and Growth Pact were the first solutions which posted numerical fiscal constraints on public finances in the Euro Area. These documents imposed two important supranational rules: the debt rule and budget balance rule. As stated by the European Commission (2010), national budgetary rules should be complementary to supranational rules, however, the national political institutions should play a bigger role in strengthening fiscal discipline. In the European Union mainly two types of supranational rules are implemented: the budget balance rule and the debt rule. However, parallel to the supranational constraints countries can use domestic rules for debt and budget balance. The revenue rule is not popular among EU countries; more attention is paid to the expenditure rule.

On the basis of detailed information concerning rules, the European Commission services construct a particular measure. The fiscal rule index (henceforth FRI) is calculated by the European Commission services on the basis of information collected in a special survey. The questionnaire, completed by each EU country, deals with the description and definition of each implemented fiscal rule and its coverage. First the Fiscal Rule Strength Index (henceforth FRSI) of each rule is calculated, which is a measure of the ability of each fiscal rule to be adhered to (or not). The strength of each rule is related to the institutional framework in a given country. Calculating the FRSI for each rule, the European Commission services consider five criteria and score them. These criteria are as follows: (1) the statutory/legal basis of the rule; (2) the room for revising objectives; (3) the mechanisms for monitoring compliance and enforcement of the rule, (4) the existence of a pre-defined enforcement mechanism, (5) the media visibility of the rule. On the basis of the Fiscal Rule Strength Index a time-varying fiscal rule index is calculated. The construction of the FRI for each respective EU country includes a sum of all fiscal rule strength indices in force in an analyzed country, weighted by the coverage of general government finances of the respective rule. The European Commission fiscal rule index is a standardized measure. Detailed information about the construction of FRI is presented in European Commission (2006) and Ayuso-i-Casals et al. (2007).

Figure 1. Average fiscal rule index in the EU in years 1995-2012



Source: Author's own work based on the European Commission database

Figure 1 shows the average FRI for variously grouped countries over 1995-2012. As is presented, the average FRI for the twenty-seven European Union countries exhibits a growing

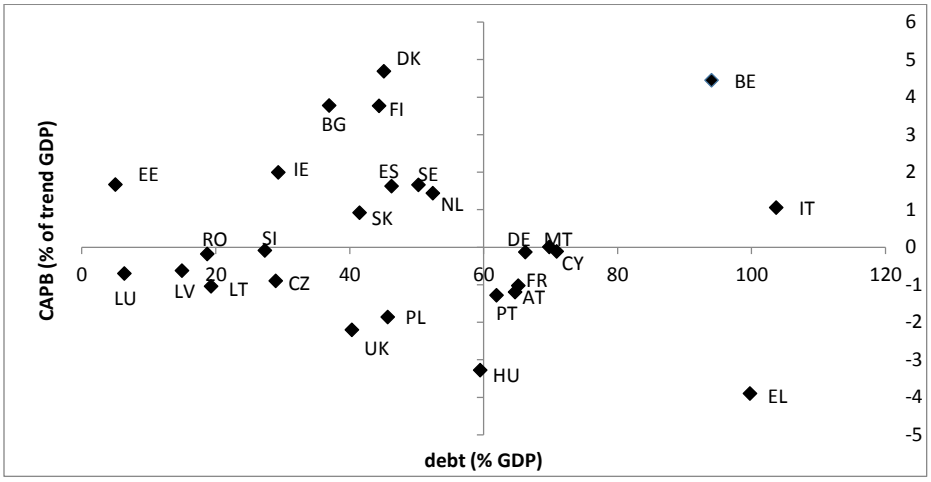
trend (for the list of countries see appendix). The relative higher value of FRI concerns the "old" EU countries rather than the ten Central and Eastern European countries (CEECs). However, in 2009, in both the "old" countries and the ten CEECs, average value of the fiscal rule index weakened. After 2009 the average FRI was increasing. The relatively high FRI in the "old" EU countries in comparison to the Euro Area 12 countries is the result of high constraints in Sweden, Denmark and the UK. These countries aren't included in the average value FRI for the EU12 (see appendix for details).

5. The development of government situation in the European Union Member States in the years 2004-2012: a short analysis

In this chapter we address the development of budget balance and consolidated gross debt in 27 European Union Member States. We focus on the analysis of the cyclically-adjusted primary balance, because it is an approximated measure of discretionary component of fiscal policy. Our goal is to exclude the impact of business cycle fluctuations on budget balance. Thus, we analyze only the cyclically-adjusted components of the budget. The cyclically-adjusted primary balance is presented as a percentage of trend GDP. We also examine the development of the general government consolidated gross debt which is a measure presented as a GDP ratio.

Figures below show the situation of these variables for 27 EU countries. The comparison of these two figures exhibits changes observed between 2004 and 2012.

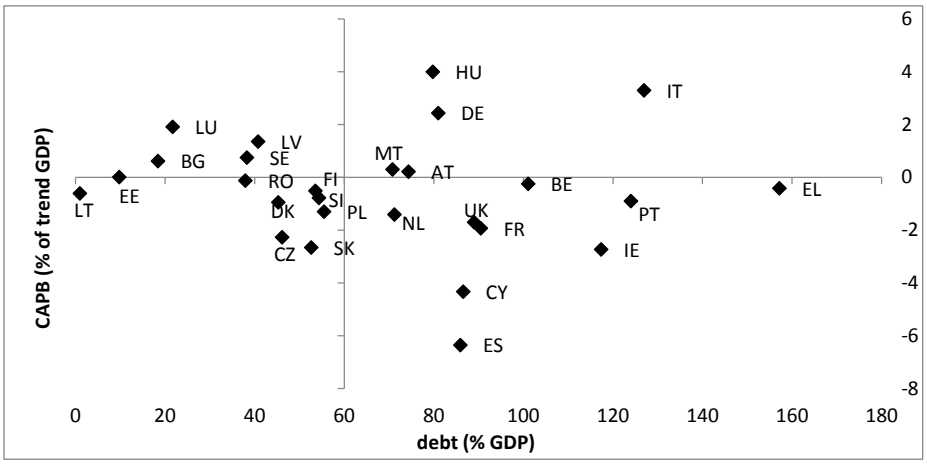
Figure 2. Cyclically-adjusted primary balance and the government debt in the EU countries in 2004



Source: Author's own work based on AMECO database

A comparison of Figure 2 and Figure 3 shows important changes in public finances in the EU. In 2004 nine countries exceed the reference value for public debt, but in 2012 as many as fourteen. The biggest value of debt was in 2012 in Greece – about 157.2% of GDP, Italy – roughly 127% of GDP, and Portugal – about 124.1% of GDP. Between 2004 and 2012 two countries reduced their debts. In 2012 (in comparison to 2004) the debt was lower in Sweden (by 11.9 percentage points) and Bulgaria (by 18.5 percentage points). On the contrary, the significant increase in debt was observed in the case of Ireland (by 88 percentage points), Portugal (by 62.2 percentage points), and Greece (by 57.4 percentage points).

Figure 3. Cyclically-adjusted primary balance and the government debt in the EU countries in 2012



Source: Author's own work based on AMECO database

According to structural primary balance, in 2004, 12 out of 27 countries under study had a positive value of cyclically-adjusted primary balance. In 2012, the positive value of that indicator was observed in 9 out of 27 EU countries. Between 2004 and 2012, the cyclically-adjusted primary balance deteriorated in 14 cases, and improved in 13 cases. Between 2004 and 2012 the cyclically-adjusted primary balance increased significantly in Hungary (by 7.3 percentage points) and Greece (by 3.5 percentage points). The significant decrease was observed in the case of Spain (by roughly 8 percentage points) and Denmark (by 5.6 percentage points).

In 2009, the year of a severe economic downturn in the EU, the budgetary position of most European countries deteriorated. In result, between 2009 and 2010, many governments faced problems with excessive deficits and debts. For example, in 2010, the cyclically-adjusted primary balance in Ireland (an exception in our dataset) was nearly -25.1% of trend GDP while in Estonia a structural primary surplus was observed (about 3.1% of its trend GDP).

In 2004, the Excessive Deficit Procedure was applied in 11 EU Member States, in 2009 in 20 countries, and in 23 countries in 2012. According to article 126 of the TFEU, the procedure, generally, begins either: (i) having breached or being in risk of breaching the actual deficit threshold (i.e. 3% of GDP) or (ii) having violated the debt rule. So far, the procedures have been introduced because of the deficit, not debt.

6. Data, methodology, and results

The calculation below is made for 27 European Union countries for the years 2004-2012. Data are presented in annual frequency. Fiscal variables cover data for general government level. Fiscal data are derived from AMECO database. The output gap is calculated by using HP filter including Eurostat database (GDP in millions of national currency, chain-linked volumes, reference year 2005). Fiscal rule index data are taken from the European Commission database. Information concerning elections comes from the Inter-Parliamentary Union database.

In order to compute the impact of fiscal rule index on the cyclically-adjusted primary balance, an approach is used based on the fiscal reaction function. In the approach, the cyclically-

adjusted primary balance (as a ratio of trend GDP) is a function of: lagged depended variable ($capb_{t-1}$), lagged output gap (gap_{t-1}) lagged debt to GDP ratio ($debt_{t-1}$), fiscal rule index (fri_t), and dummy variables. In our approach we include two types of dummy variables. At first, we introduce a variable named as *ele* which is a dummy variable related to periods in which analyzed countries had a parliamentary type of elections (we do not include presidential elections, referendums or senate elections). This variable equals 1 in election's year, and 0 otherwise. To build this variable, we focus only on parliamentary type of elections (i.e. elections for parliamentary chambers). The information about elections is derived from the Inter-Parliamentary Union database. On the other hand, we observed a large changes in most our dataset in 2010, which were a consequence of the crisis period. The dummy variable for this year is introduced to our model and named $year_{2010}$. Thus, we introduce that dummy variable for the whole sample, and this dummy equals 1 in 2010, and 0 otherwise.

In our estimation procedure we use a dynamic panel data. We employ the Arellano–Bond (1991) linear dynamic panel-data estimation. Our study is based on the European Commission (2009) estimated equation, but we use a different methodology and extend this equation by dummy variables. The European Commission (2009) employs OLS with time and country-fixed effects (the heteroscedasticity robust and adjusted for 27 clusters standard errors). We incorporate the dynamic panel data approach, especially we employ Arellano-Bond estimator. The Arellano and Bond (1991) approach employs a generalized method of moments framework. This approach consists in first-differencing the panel data to remove the time-invariant fixed effects. According to this approach, the values of lagged dependent variables (in levels) are perceived as legitimate instruments for the first-differenced variable. Important is the feature of the residuals which should be free from second-order serial correlation (see for example Verbeek, 2004; Arellano, 2003, Baltagi 2004, who provide an additional discussion). In our estimation methodology we employ the two-step estimator with the Windmeijer (2005) bias-corrected robust. In our equation we use one lag of dependent variable (i.e. cyclically-adjusted primary balance). Results are presented in Table 3.

Table 3. Impact of European fiscal rule index on the cyclically-adjusted primary balance during 2004-2012 in 27 EU countries: estimation results

Variable	Coef.	Standard error	p-value
$capb_{t-1}$	0.2659	0.0768	0.001
gap_{t-1}	-0.1256	0.04716	0.008
$debt_{t-1}$	0.1066	0.0257	0.000
fri_t	0.6274	0.3539	0.076
ele	-0.5088	0.2533	0.045
$year_{2010}$	-1.4600	0.4779	0.002
Sargan test of overidentifying restrictions (H_0: overidentifying restrictions are valid)			
Sargan test value	11.1134	p-value	0.1954
Arellano-Bond test for zero autocorrelation in first-differenced errors (H_0: no autocorrelation)			
$AR_1 -$ value	-2.0169	p-value	0.0437
$AR_2 -$ value	0.2078	p-value	0.8354
Observation (No.) 243		Instruments (No.) 14	

Source: Author's own work

According to our estimation results the impact of European fiscal rule index on cyclically-adjusted primary balance is positive and statistically significant at the 10% significance level. The increase of fiscal rule index by one unit results in increase of the cyclically-adjusted primary balance by roughly 0.63 percentage points (on average in 27 EU countries). The impact of parliamentary elections on structural primary balance is statistically significant. In accordance with our results, in the years in which elections were held the cyclically-adjusted primary balance is averagely lower by 0.51 percentage points in comparison to years without elections. The result informs about the impact of that type of elections on discretionary fiscal policy. In the year 2010, the structural primary balance in the European Union was lower on average by 1.46 percentage points. The impact of lagged output gap is negative and statistically significant. The impact of debt ratio is positive and significant. Our result indicates that fiscal policy (under presence of fiscal rule index) in the EU countries is counter-cyclical.

7. Conclusions

In this paper we investigate the average impact of fiscal rule index on fiscal variables between 2004 and 2012. According to our results, the fiscal rule index had positive and statistically significant impact on cyclically-adjusted primary balance. In the years 2004-2012, an increase of fiscal rule index by one unit improved the structural primary balance (expressed as a percentage of trend GDP) on average by 0.63 percentage points. On the other hand, the presence of fiscal constraints resulted in countercyclical behavior of European fiscal policy as a whole. The increase of measure of the lagged output gap by one percentage point reduced the cyclically-

adjusted primary balance by (on average) 0.13 percentage points. The numerical impact of lagged output gap was quite small, but was statistically significant. In the European Union, the parliamentary elections had an important impact on discretionary budget balance.

A large number of imposed excessive deficit procedures means that EU countries have a big problem with implementation of fiscal criteria which affect the structural primary balance in a positive way. However, probably, the problem lies in the observance of the rules.

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Appendix

CEE10	**EA12**	**EU15 (old EU)**	**EU27**
Bulgaria	Austria	Austria	Austria
Czech Republic	Belgium	Belgium	Belgium
Estonia	Finland	Denmark	Bulgaria
Hungary	France	Finland	Cyprus
Latvia	Germany	France	Czech Republic
Lithuania	Greece	Germany	Denmark
Poland	Ireland	Greece	Estonia
Romania	Italy	Ireland	Finland
Slovakia	Luxembourg	Italy	France
Slovenia	Netherlands	Luxembourg	Germany
	Portugal	Netherlands	Greece
	Spain	Portugal	Hungary
		Spain	Ireland
		Sweden	Italy
		UK	Latvia
			Lithuania
			Luxembourg
			Malta
			Netherlands
			Poland
			Portugal
			Romania
			Slovakia
			Slovenia
			Spain
			Sweden
			UK