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## RULES, FISCAL DECENTRALIZATION AND GOVERNMENT INDEBTEDNESS

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In 2009 all ECB publications feature a motif taken from the €200 banknote.



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## Abstract

We assess the fiscal behaviour in the European Union countries for the period 1990-2005 via the responsiveness of budget balances to several determinants. The results show that the existence of effective fiscal rules, the degree of public spending decentralization, and the electoral cycle can impinge on the country's fiscal position. Furthermore, the results also support the responsiveness of primary balances to government indebtedness.

Keywords: fiscal regimes, fiscal rules, fiscal decentralization, European Union, panel Data

JEL Classification: C23, E62, H62

## Non-technical summary

In this paper we employ panel data analysis to assess the determinants of government's fiscal behaviour for the 27 EU countries for the period between 1990 and 2005. We contribute to the literature by using, in the empirical analysis of government's fiscal behaviour, both a set of fiscal rules and a government decentralisation measure among the determinants of fiscal discipline. For instance, we assess whether a higher degree of government spending decentralization is detrimental for a country's fiscal position, a hypothesis that is corroborated by our empirical analysis.

Considering that cross-country dependence can mirror common changes in the behaviour of fiscal authorities (EU membership, run-up to EMU, SGP, peer pressure, capital markets views), that in recent years there is increased economic synchronization in the EU and that common policy shocks can affect fiscal positions in all EU countries, the use of a panel data approach seems therefore adequate. Moreover, the panel framework allows us to use the information contained in the cross-section dimension and increases the performance and accuracy of the estimated specifications. In addition, cross-country heterogeneity can also be captured by interaction terms, while variables may differ regarding their variances either on the cross-section or on the time series dimensions.

According to our results, the EU 27 governments increase the primary balance surplus as a result of increases in the outstanding stock of government debt. Both EMU and SGP arrangements have a statistically significant positive effect on the improvement of the fiscal position, which may imply an increased effort pursued by the EU countries to comply with the existing EU fiscal framework. On the other hand, we do not observe a statistically significant effect on primary spending. It is also possible to conclude that when the debt-to-GDP ratio is below the debt threshold of 80 percent a stronger overall fiscal rule contributes to improve the primary budget balance. Moreover, parliamentary elections negatively impinge on the improvement of the primary balance.

Regarding public spending decentralization, increasing the ratio of state plus local spending over central government spending contributes to an increase in the total primary spending-to-GDP ratio in the subsequent period, and when the debt ratio is above the 80 percent threshold we observe a more negative effect of the decentralisation proxy on primary balances. For instance, an increase of 1 percentage point of GDP in the decentralisation variable worsens the primary balance by 0.1 percentage points of GDP. Moreover, for a higher level of government indebtedness, the positive effect of spending decentralisation on primary spending is also higher.

All in all, we can say that the existence of fiscal rules, a lower degree of public spending decentralization positively contribute to a higher responsiveness of primary surpluses to government indebtedness (a more Ricardian behaviour of the fiscal authorities in the EU), while the electoral cycle also has the expected effect. In terms of future work, one can think, for instance, of assessing other measures of fiscal decentralization or alternative data regarding the proxy for fiscal rules.

## 1. Introduction

In the context of the European Union (EU), Member States face a fiscal framework that asks for the implementation of sound fiscal policies, notably within the Stability and Growth Pact (SGP) guidelines put forward in 1997. Such fiscal framework is an indispensable tool for the well functioning of the European and Monetary Union (EMU), which has been gradually put in place since 1992. However, the Member States' track records of complying with the fiscal rules laid down in the SGP have been mixed. Therefore, it is relevant to assess what sort of determinants play a role in contributing to the improvement of fiscal discipline in EU countries. Certainly, the degree of national implementation and ownership of the European fiscal framework, i.e. the existence of supportive and effective fiscal rules at the Member State level, seems to be of high relevance in this context.

A recent study by the European Commission[1] points to significant heterogeneity of national fiscal frameworks within the European Union and suggests that 'stronger' fiscal rules indeed are conducive to sound public finances. Moreover, the study argues that there seems to be a recent trend to stronger integration of sub-national levels of government into the national rules framework, an aspect of particular importance in countries like Germany or Spain which are characterised by a pronounced fiscal federalism.[2] In the absence of fiscal policy coordination at the mentioned level, a high level of budget decentralisation, for example, might well interfere with the ability to comply with national or European fiscal targets respectively. Further well-known determinants of governments' fiscal behaviour are the level of government indebtedness, i.e. whether increases of primary surpluses occur as a response to higher government debt ratios, as well as the relevance of electoral budget cycles.

[1] See European Commission (2006).
[2] Dában et al. (2003) review the experience of fiscal rules in several OECD countries.

Therefore, in this paper we employ panel data analysis to assess the determinants of government's fiscal behaviour for the 27 EU countries for the period between 1990 and 2005. We contribute to the literature by using, in the empirical analysis of government's fiscal behaviour, both a set of fiscal rules and a government decentralisation measure among the determinants of fiscal discipline. For instance, we assess whether a higher degree of government spending decentralization is detrimental for a country's fiscal position, a hypothesis that is corroborated by our empirical analysis.

Considering that cross-country dependence can mirror common changes in the behaviour of fiscal authorities (EU membership, run-up to EMU, SGP, peer pressure, capital markets views), that in recent years there is increased economic synchronization in the EU and that common policy shocks can affect fiscal positions in all EU countries, the use of a panel data approach seems therefore adequate. Moreover, the panel framework allows us to use the information contained in the cross-section dimension and increases the performance and accuracy of the estimated specifications. In addition, cross-country heterogeneity can also be captured by interaction terms, while variables may differ regarding their variances either on the cross-section or on the time series dimensions.

The paper is organised as follows. Section Two provides motivation and describes the empirical strategy. Section Three presents and discusses our results. Section Four summarises the paper's main findings.

## 2. Motivation and empirical strategy

When thinking about the determinants of fiscal behaviour it seems pertinent to expect governments to attain primary surpluses if for instance, they want to downsize

the existing stock of general government debt. The underlying idea being that if fiscal authorities are driven by debt stabilization and sustainability motives, a positive response of budget balances to the stock of outstanding government debt should be expected. Therefore, a fiscal policy reaction function where a measure of the primary balance reacts to the debt variable is a possible avenue for such analysis:

$$s_{it} = \beta_i + \delta s_{it-1} + \theta b_{it-1} + \lambda z_{it-1} + \phi f_{it} + \gamma x_{it} + \alpha t + u_{it} . \qquad (1)$$

In (1) the index $i$ ($i$=1,…,$N$) denotes the country, the index $t$ ($t$=1,…,$T$) indicates the period and $\beta_i$ stands for the individual effects to be estimated for each country $i$. $s_{it}$ is the primary balance as a percentage of GDP for country $i$ in period $t$, $s_{it-1}$ is the observation on the same series for the same country $i$ in the previous period, and $b_{it-1}$ is the debt-to-GDP ratio in period $t$-$1$ for country $i$. $z$ is the output gap, computed as the difference between actual GDP and potential GDP as a percentage of potential GDP and, $f$ is a fiscal rule indicator, and $x$ is a vector of additional institutional, political, and other control variables such as the degree of public spending decentralization, and specific dummy variables to signal EU enlargement, the run-up phase to EMU and SGP sub-periods. Additionally, it is assumed that the disturbances $u_{it}$ are independent across countries and time fixed effects are also included.

The use of primary rather than total balances is justified by the fact that the intertemporal government budget constraint relates to the primary surplus. Moreover, the use of the primary balance is logical since primary expenditure is more easily under the discretionary control of the government. Under such a fiscal reaction function, one assumes that the primary balance of period $t$ is dependent on last year's primary balance. Hence, making the primary balance a function of government debt, allows testing, for instance, if $\theta > 0$, in other words, if the government tries to increase the primary balance in order to react to the existing stock of public debt and comply with

the government budget constraint, which could be seen as a sign that primary surpluses positively reacting to government indebtedness.[3] In other words, in such a regime, primary budget balances are expected to react to government debt, in order to ensure fiscal solvency.

The use of a panel framework, apart from allowing the use of the information contained in the cross-section dimension, also increases the performance and accuracy of the estimated specifications. In addition, one should point out that although the variance of the decentralisation measure is more cross-sectional, the variance of government indebtedness is both cross-sectional and time series related.

There are some econometric issues that come up when estimating equation (1). Since our panel has a relatively small time dimension (16 years) with respect to the number of units in the panel (27countries), it then important to check for the absence of a bias related to the dynamic specification. In particular, if the Least Square Dummy Variable estimator (LSDV) is used to estimate a dynamic model, results may suffer from the well-known "Nickell-Bias" (see Nickell, 1981). While a number of consistent Instrumental Variables (IV) and General Method of Moments (GMM) estimators[4] have been proposed to deal with this issue in micro panels characterised by a large number of cross-sectional units, Monte Carlo evidence points to the superiority of bias corrected LSDV estimators (LSDVC) in relatively narrow macro panels. Among others, Judson and Owen (1999) present simulation results showing that when *N* is small bias-corrected LSDV estimators outperform IV-GMM estimators both in terms of bias and root mean squared. Therefore, we estimate equation (1) using a LSDVC estimator proposed by Bruno (2005) which is also suitable for unbalanced panels.

[3] See, for instance, Afonso (2008a) for additional discussions and results on this issue, while Favero (2002) also reports that fiscal policy reacts to increases in debt.
[4] See Anderson and Hsiao (1982), Arellano and Bond (1991) and Blundell and Bond (1998).

### 2.1. The relevance of fiscal rules

As one of the determinants of fiscal behaviour we also used several fiscal rule indicators, as described by Ayuso-i-Casals at al. (2007) and EC (2006), which try to model national numerical fiscal rules in the EU countries from 1990 to 2005. Fiscal rules played a relevant role during the fiscal consolidations in the latter part of the 1990s.[5] Well defined and targeted fiscal rules may help in promoting fiscal consolidation and can help attain and safeguard a sustainable fiscal position. Such indicators can be considered as part of the vector $x$ of institutional and other control variables in (1), and can include, for instance, deficit rules or expenditure rules.

According to Ayuso-i-Casals et al. (2007) there seems to be a link between numerical rules and budgetary outcomes, with an increase in the share of government finances covered by numerical fiscal rules leading to lower deficits. Moreover, they also argue that countries where numerical fiscal rules are designed in such a way as not to hamper the stabilisation function of fiscal policy the fiscal stance appears to behave more counter-cyclically. Debrun and Kumar (2007) and Debrun et al. (2008) also report that stricter and broader fiscal rules are associated with higher cyclically adjusted primary balances and that lower cyclically adjusted primary balances are also observed in election years. Wierts (2008) reports empirical evidence that expenditure rules can limit to some extent the expenditure bias. Additionally, Pina and Venes (2007) provide evidence that expenditure rules are associated to more prudent budget balance forecast errors.

[5] Hauptmeier, Heipertz and Schuknecht (2007) review cases of fiscal reform in several European countries, stressing the gains of ambitious and comprehensive reforms, notably on the expenditure side of budgets, while Afonso (2008b) studies fiscal consolidation episodes in the EU. For instance, Andersend and Minarik (2008) discuss design choices for fiscal rules.

## 2.2. The degree of government spending decentralization

Another piece of information that may influence how successful the fiscal authorities are in determining fiscal policy can be the degree of government fiscal decentralization existing in a given country. The most common gauge for measuring fiscal decentralisation is the sub-national share of government spending and revenue, which varies considerably across countries.[6]

For instance, one could think that in a more centralised country, where most of the government spending occurs at the central government level, may perhaps be less difficult to reign in the budget deficit. In other words, in more decentralised institutional fiscal settings, the less significant could be the responses and improvements in the primary balance, since the coordination/control of the sectors/entities responsible for the final spending actions can be more difficult.[7] Nevertheless, one should be aware that even if data are available regarding the structure of spending within the general government sub-sectors, the mandate to spend may still be allocated at the central level, but such information is then rather difficult to assess empirically.

To assess the validity of the hypothesis that decentralisation at the spending level matters for fiscal behaviour, naturally linked to the existence and importance of sub-national government levels, we have built an indicator of government spending decentralisation, *dec*. This indicator is based on the general government sub-sectors classifications and is computed as the sum of government spending from the state (*StateG*), regional and local governments (*RegLocG*) sub-sectors over central (*CenG*), state, regional and local government spending, therefore, excluding social security

[6] See, for instance, OECD (2003).

[7] For a discussion on financial and spending decentralisation and fiscal federalism see notably Oates (1999). Stegarescu (2005) uses different measures of tax autonomy and revenue decentralisation to conduct revenue based assessment of public sector decentralisations in OECD countries, while von Hagen and Eichengreen (1996) used the share of sub-central government spending financed by revenues from own taxes.

spending. Indeed, we should consider the social security funds sub-sector as providing an overall service that is not directly linked to the spending decisions of the other sub-sectors of the general government. Therefore, we have, for country *i* in period *t*:

$$dec_{it}=(StateG_{it} + RegLocG_{it})/(CenG_{it}+ StateG_{it} + RegLocG_{it}), \qquad (2)$$

which is computed with data from Eurostat. [8] In addition, we will also use a so-called revenue decentralization measure, computed as in (2), both for total revenues and for the sum of direct and indirect taxes.

Table 1 illustrates the share of government spending, government revenue and tax revenue, ascribed to each sub-national government. For instance, it is possible to observe that the decentralisation of government spending was above 50 percent in 2005 for Spain, Germany and Denmark, while being below 20 percent for Ireland, Portugal or Greece.

[Table 1]

From an empirical perspective, the indicator of government spending decentralization can be interacted either with the government debt-to-GDP ratio or with the fiscal rule indicator. This can provide additional insight on how such variable influences overall government fiscal behaviour.

### 2.3. The relevance of the electoral cycle

The differences in government's behaviour, which take into account the electoral cycle, are predicted and discussed by the literature on the relations between elections and fiscal performance, which can be traced back to Nordhaus (1975) and

[8] Using the ESA 95 structure, our government spending decentralisation indicator can be written as *dec=(S1312 + S1313)/(S1311+S1312+S1313)*. The sub-level state government (S1312) is present in federal states such as Austria, Germany and Spain, while in most European Union countries the distinction is essentially between central government (S1311) and local/regional government (S1313).

Hibbs (1977), respectively regarding opportunistic and partisan cycles.[9] We assess the influence of the electoral budget cycle on fiscal behaviour by using a dummy variable, $D_{it}^{E}$, defined as

$$D_{it}^{E} = \begin{cases} 1, \text{ if in country } i \text{ there were elections for the parliament in } t \\ 0, \text{ otherwise} \end{cases} . \quad (3)$$

In order to test the relevance of the electoral cycle, the fiscal policy reaction function can be amended to include an interaction term between, for instance, *b* and the dummy variable for the elections,

$$s_{it} = \beta_i + \delta s_{it-1} + \theta_1 D_{it}^{E} b_{it-1} + \theta_2 (1 - D_{it}^{E}) b_{it-1} + \lambda z_{it-1} + \phi f_{it} + \gamma x_{it} + u_{it} . \quad (4)$$

The hypothesis to be tested is whether when there is an election governments choose to deliver a more expansionary fiscal policy, therefore allowing for a more mitigated response of the primary balance to increases in the government debt. In other words, if indeed electoral budget cycles play a role in the government's fiscal decisions.

For instance, Afonso (2008a) reports results for the period 1970-2003 showing that the EU-15 governments have a tendency to use the primary budget surplus to reduce the public debt-to-GDP ratio. This response seems to be higher the higher is the level of government indebtedness while governments also seem to improve the primary budget balance as a result of increases in the outstanding stock of government debt. Additionally, the results reported by Afonso (2008a) also indicate that primary balances react positively and in a statistically significant way to government debt, when there are no parliamentary elections in the next period, but this is not the overall case if there are elections.

[9] Rogoff and Sibert (1988) and Alesina and Roubini (1992) provided subsequent related work.

## 3. Empirical analysis

### 3.1. Primary balance reaction functions

Our data set is mostly taken from the European Commission Ameco database. Since we are also interested in assessing the relevance of the existence of fiscal rules, the data availability for this variable essentially restrains the time series dimension of our panel to the period 1990-2005.[10] We consider the 27 countries of the European Union at that end of the period under analysis, even if some countries can be excluded in some specifications due to missing data for some variables, which means we estimate a dynamic unbalanced panel specification.[11] The panel unit root test results, reported in Appendix A, reveal that the null unit root hypothesis can be rejected at the ten per cent level of significance for all or most of the cases, thus supporting the stationarity of our fiscal variables and of the output gap.

Table 2 presents the results for the baseline fiscal reaction function, drawing on specification (1) for the primary balance, using the (corrected) least square dummy variable estimator.[12] It is possible to observe that the primary balance reaction to government debt is statistically different from zero and positive, i.e. $\theta>0$. In other words, the EU 27 governments seem to act in accordance with the existing stock of government debt, by increasing the primary balance surplus as a result of increases in the outstanding stock of government debt. This is consistent with the prevalence of a

[10] The data for the fiscal rules were provided by Ayuso-i-Casals et al (2007), and were computed on the basis of the responses to a questionnaire sent by the European Commission to the EU Member States, in the context of the Economic Policy Committee Working Group on the Quality of Public Finances. Data on parliamentary elections were obtained from the following sources: http://www.idea.int/vt/total_number_of_elections.cfm and http://electionresources.org/.

[11] Belgium, Denmark, Germany, Greece, Spain , France, Ireland, Italy, Luxembourg, Netherlands, Austria, Portugal, Finland, Sweden, United Kingdom, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia.

[12] For comparison purposes, selected OLS results are reported in Appendix B.

fiscal regime, where the fiscal authorities respond in a "stabilising" manner by increasing primary balances when the debt ratio increases.

[Table 2]

Still considering Table 2, the fiscal position also improves when the existing general government fiscal rule is stronger, i.e. $\phi$>0, and the same is true for the case of the central and balanced budget fiscal rules. Interestingly, this effect is more absent for the case of sub-national government fiscal rules (see regressions 2 and 5 in Table 2). Moreover, results indicate that the existence of parliamentary elections negatively impinge on the improvement of the fiscal position.

In order to assess the relevance of the run-up to EMU and the importance of the SGP effect, we have included additional explanatory dummy variables in the baseline regression. Therefore, the EMU dummy assumes the value one for EU15 countries between 1994 and 1998, and zero otherwise; the SGP dummy takes the value one after 1997 for the countries that are (adhered) in (to) the EU, and zero otherwise. From Table 2, the results show that both the EMU (only in the LSDVC estimations) and the SGP dummy variables have a statistically significant positive effect on the improvement of the fiscal position, which may imply an increased effort pursued by the EU countries to comply with the existing EU fiscal framework.

The relevance of government indebtedness can be further assessed using interaction terms between the level of the debt-to-GDP ratio and alternative debt ratio thresholds (60, 70, or 80 percent). In other words, the debt threshold dummy variables, $D_{it}^{TH}$, are defined as follows:

$$D_{it}^{TH} = \begin{cases} 1, \text{ if debt ratio} > \text{TH, in country i in period t} \\ 0, \text{ otherwise} \end{cases}, \quad \text{TH}=0.6, 0.7, 0.8 . \quad (5)$$

Table 3 provides the set of results with the above mentioned dummy variables, and it is possible to observe that the responsiveness of the primary balance to government debt is rather similar and only marginally lower when the debt-to-GDP ratio is above the higher threshold. This could imply that the authorities find it more difficult to increase primary surpluses when facing higher government debt ratios. Interestingly, adding an enlargement dummy, which has the value one for the New Member States after they join the EU, and zero otherwise, it is possible to capture a decreasing effect on primary balances.

[Table 3]

Taking advantage of the debt ratio threshold dummy variables defined in (5) we can interact them with the overall fiscal rule at our disposal. The results reported in Table 4 show that when the debt-to-GDP ratio is below the debt thresholds of 60, 70 or 80 percent a stronger overall fiscal rule contributes to improve the primary budget balance (columns 2, 3 and 4 of Table 4). On the other hand, if the debt ratio is above the aforementioned debt thresholds, the existence of the fiscal rule does not statistically contribute to improve the fiscal behaviour of the government. Therefore, both lower debt ratios and strong fiscal rules seem to be a good strategy for a better fiscal response from primary balances. Interestingly, at the debt ratio threshold of 80 percent, the effect of the overall fiscal rule comes out as less relevant for the improvement of the primary balance. In addition, only for the debt ratio threshold of 70 per cent is the null hypothesis of equal responses from the primary balance rejected.

[Table 4]

Table 5 reports the results regarding the analysis of whether government spending decentralisation is relevant for fiscal behaviour using the decentralisation variable constructed above in (2).

[Table 5]

According to Table 5, a higher degree of government spending decentralisation has a statistically significant negative effect on primary balances, when the decentralisation variable is used together with the debt ratio. An increase in the decentralisation variable (an increase in the share of non-central government spending over total government spending, excluding social security funds) worsens the primary balance. A similarly constructed tax decentralisation variable does not show up as statistically significant.

### 3.2. Primary spending reaction functions

In order to complement our analysis, we also specify a fiscal policy reaction function for primary spending, along the lines of the one used so far for the primary balance:

$$ps_{it} = w_i + w_1 ps_{it-1} + w_2 b_{it-1} + w_3 z_{it-1} + w_4 f_{it} + w_5 x_{it} + w_6 t + v_{it}, \quad (6)$$

where *ps* is the primary spending-to-GDP ratio, and the other variables are similar to what was already mentioned for the primary balance specification in (1). Additionally, we now also include in the fiscal rule indicator, *f*, an expenditure rule. Tables 6 to 7 provide the set of results for the alternative estimation of the primary spending reaction function (6). Again, we take account of a potential bias resulting from the dynamic specification of our regression equation by using the bias corrected least square dummy variable estimator.

[Table 6]

From Table 6 we see that the EMU and the SGP dummy variables, in contrast to our results for the primary balance, do not affect primary spending significantly. The overall government fiscal rule exerts a negative impact on primary government

expenditure, which, however, is only statistically significant if we perform standard least square dummy variable estimation. When correcting for the dynamic panel bias the effect turns insignificant. In contrast, the negative impact of fiscal rules at the sub-national level turns out to be robust with regard to the estimation procedure. This suggests a particular relevance of fiscal rules at the regional/local level for containing general government spending. Interestingly, the expenditure rule is not statistically significant, albeit the estimated coefficient has the right sign (columns 3 and 6 in Table 6). On the other hand, elections have the effect of rising primary spending, but this effect is not statistically significant in all specifications.

The interaction terms between the level of government indebtedness and the debt ratio thresholds, reported in Table 7, show that when debt increases the governments decrease primary spending in the next period but essentially if the debt ratio is below the 80 percent threshold. This result is consistent with our previous finding that governments were more able to improve their primary budget balances when government indebtedness was below the debt thresholds.

[Table 7]

The results of the interaction between the overall general government fiscal rule and the debt threshold dummy variables are reported in Table 8. In contrast to the case of the primary balance reaction function, we do not observe that the level of debt matters for the effectiveness of fiscal rules, regarding the effect on primary spending. In addition, there is no evidence that the magnitude of the effect of the fiscal rule in reducing primary spending is higher when the government indebtedness is beyond or below a certain debt threshold.

[Table 8]

Turning now to the issue of spending decentralisation we observe from Table 9 that higher decentralisation increases primary spending, an effect that is mostly statistically significant. In addition, it is possible to conclude that for very high levels of government indebtedness (above 80% of GDP), the positive effect of spending decentralisation on primary spending is also higher (see column 5 in Table 9). Therefore, increasing (decreasing) the share of non-central (central) government spending in total (minus social security) spending contributes to an increase in the total primary spending-to-GDP ratio in the subsequent period.

[Table 9]

We also report in Table 10 the estimated specifications using the election dummy variable, for the fiscal reaction function of primary balance, cyclically adjusted primary balance, and primary spending. Note that we use an alternative version of the election interaction in (4), in order to more easily discriminate the election effects, since the estimated coefficients for the version in (4) are quite close. Thus, we estimated, for instance, the following specification for the primary balance,

$$s_{it} = \alpha_i + \ldots + \alpha b_{it-1} + \pi D_{it}^{E} b_{it-1} + \ldots + u_{it}, \qquad (7)$$

It is possible to observe, from (7) and from (4), that when there are no elections ($D_{it}^{E} = 0$) we have $\alpha = \theta_2$ and when there are elections ($D_{it}^{E} = 1$) we have $\alpha + \pi = \theta_1$.

[Table 10]

According to the results from Table 10 we can see, for instance, that the improvement of the primary balance, as a response to the debt, decreases slightly when an election occurs ($\pi$ is negative and statistically significant). The same result is visible for the cyclically adjusted primary balance. On the other hand, the consolidation effort via the reduction of primary spending, as a result of an increase in the government indebtedness, is not affected in the event of a parliamentary election.

## 4. Conclusion

In this paper we estimated dynamic panel data specifications to assess the determinants of government's fiscal behaviour for the 27 EU countries for the period between 1990 and 2005. Our analysis focussed on the responses, to several determinants, of primary budget balances and primary spending.

According to our results, the EU 27 governments increase the primary balance surplus as a result of increases in the outstanding stock of government debt. Both EMU and SGP arrangements have a statistically significant positive effect on the improvement of the fiscal position, which may imply an increased effort pursued by the EU countries to comply with the existing EU fiscal framework. On the other hand, we do not observe a statistically significant effect on primary spending. It is also possible to conclude that when the debt-to-GDP ratio is below the debt threshold of 80 percent a stronger overall fiscal rule contributes to improve the primary budget balance. Moreover, parliamentary elections negatively impinge on the improvement of the primary balance.

Regarding public spending decentralization, increasing the ratio of state plus local spending over central government spending contributes to an increase in the total primary spending-to-GDP ratio in the subsequent period. Moreover, when the debt ratio is above the 80 percent threshold we observe a more negative effect of the decentralisation proxy on primary balances. For instance, an increase of 1 percentage point of GDP in the decentralisation variable worsens the primary balance by 0.1 percentage points of GDP. In addition, for a higher level of government indebtedness, the positive effect of spending decentralisation on primary spending is also higher.

All in all, we can say that the existence of fiscal rules and a lower degree of public spending decentralization positively contribute to a higher responsiveness of

primary surpluses to government indebtedness (a more Ricardian behaviour of the fiscal authorities in the EU), while the electoral cycle also has the expected effect. In terms of future work, one can think, for instance, of assessing other measures of fiscal decentralization or alternative data regarding the proxy for fiscal rules.

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Table 1 – Share of sub-national spending/revenue in government spending/revenue (State + Local)/(Central+ State + Local), %

| | Spending | | | Revenue | | | Taxes (direct + indirect) | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1990 | 2000 | 2005 | 1990 | 2000 | 2005 | 1990 | 2000 | 2005 |
| Austria | 39.1 | 40.8 | 36.9 | 43.7 | 42.6 | 38.8 | 31.2 | 28.5 | 26.5 |
| Belgium | 34.3 | 39.9 | 42.8 | 39.3 | 40.2 | 43.0 | 8.4 | 8.6 | 13.4 |
| Bulgaria | | | 19.5 | | | 17.3 | | 16.9 | 1.2 |
| Cyprus | | 4.4 | 5.6 | | 5.2 | 6.2 | | 2.1 | 1.5 |
| Czech Republic | | 23.6 | 27.2 | | 24.7 | 29.5 | | 20.8 | 26.2 |
| Denmark | 43.4 | 47.1 | 50.4 | 44.8 | 46.8 | 46.4 | 31.9 | 35.1 | 34.1 |
| Estonia | | 23.4 | 25.5 | | 22.4 | 23.6 | | 21.6 | 20.0 |
| Finland | 44.2 | 41.1 | 43.5 | 43.7 | 38.4 | 42.3 | 29.0 | 29.5 | 29.0 |
| France | 27.9 | 29.4 | 31.6 | 28.7 | 31.8 | 33.9 | 18.6 | 19.5 | 22.1 |
| Germany | | 64.0 | 58.2 | | 61.5 | 60.8 | | 50.8 | 49.8 |
| Greece | | 6.5 | 7.9 | | 7.7 | 9.6 | | 1.3 | 1.5 |
| Hungary | | 28.4 | 28.4 | | 29.9 | 33.1 | | 14.5 | 17.6 |
| Ireland | 25.9 | 32.8 | 18.5 | 27.6 | 29.2 | 18.9 | 2.9 | 2.3 | 2.7 |
| Italy | 26.7 | 35.0 | 36.8 | 31.0 | 35.7 | 39.1 | 7.9 | 20.5 | 23.3 |
| Latvia | | 33.0 | 30.4 | | 34.7 | 31.7 | | 25.5 | 24.3 |
| Lithuania | | 29.8 | 28.3 | | 32.6 | 29.0 | | 32.4 | 15.4 |
| Luxembourg | 19.1 | 16.3 | 15.2 | 18.0 | 16.1 | 15.0 | 8.8 | 7.8 | 6.3 |
| Malta | | 1.7 | 1.3 | | 2.3 | 1.7 | | | |
| Netherlands | 34.7 | 38.6 | 37.5 | 38.6 | 38.2 | 37.1 | 4.3 | 5.6 | 6.3 |
| Poland | | 36.9 | 34.9 | | 37.8 | 39.3 | | 20.4 | 20.4 |
| Portugal | 13.9 | 16.9 | 16.1 | 14.8 | 17.3 | 18.8 | 8.3 | 8.8 | 9.6 |
| Romania | | | 26.5 | | | 27.7 | | | 33.0 |
| Slovakia | | 6.6 | 24.1 | | 10.6 | 26.3 | | 6.6 | 19.3 |
| Slovenia | | 22.2 | 22.6 | | 24.3 | 23.8 | | 11.9 | 11.8 |
| Spain | | 46.7 | 58.2 | | 47.4 | 57.5 | | 24.7 | 45.7 |
| Sweden | | 42.6 | 44.2 | | 39.9 | 44.4 | | 39.4 | 43.7 |
| United Kingdom | 24.0 | 24.4 | 24.3 | 23.9 | 23.1 | 25.3 | 8.7 | 5.0 | 5.8 |

Source: Eurostat.

Table 2 – Fiscal reaction function for the primary balance
(fixed-effects, 1990-2005)

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| | | LSDV[1)] | | | LSDVC[2)] | |
| Primary balance (-1) | 0.40*** | 0.40*** | 0.40*** | 0.48*** | 0.47*** | 0.48*** |
| | (5.59) | (5.47) | (5.57) | (8.09) | (7.91) | (7.95) |
| Debt (-1) | 0.04*** | 0.04*** | 0.04*** | 0.04** | 0.03** | 0.03** |
| | (3.84) | (3.57) | (3.65) | (2.55) | (2.22) | (2.30) |
| Output gap (-1) | 0.04 | 0.04 | 0.03 | 0.03 | 0.04 | 0.02 |
| | (0.61) | (0.70) | (0.49) | (0.49) | (0.54) | (0.34) |
| EMU dummy | 0.78 | 0.86 | 0.81 | 0.87* | 0.94* | 0.90* |
| | (1.30) | (1.43) | (1.35) | (1.75) | (1.86) | (1.78) |
| SGP dummy | 1.04* | 1.02* | 1.13** | 0.99* | 0.98* | 1.08* |
| | (1.96) | (1.90) | (2.10) | (1.80) | (1.78) | (1.94) |
| Election dummy | -0.42* | -0.41* | -0.42* | -0.43* | -0.42* | -0.43* |
| | (-1.97) | (-1.89) | (-1.95) | (-1.83) | (-1.77) | (-1.79) |
| General government fiscal rule (-1) | 0.40*** | | | 0.54** | | |
| | (5.59) | | | (2.56) | | |
| Central government fiscal rule (-1) | | 0.41** | | | 0.37* | |
| | | (2.29) | | | (1.82) | |
| Sub-national government fiscal rule (-1) | | 0.36 | | | 0.37 | |
| | | (1.02) | | | (1.21) | |
| Budget balance fiscal rule (-1) | | | 0.59*** | | | 0.60*** |
| | | | (3.81) | | | (2.82) |
| Observations | 308 | 308 | 308 | 308 | 308 | 308 |
| adj R2 | 0.47 | 0.47 | 0.47 | | | |
| F-test[3)] | 2.31 | 2.31 | 2.52 | | | |

Notes: The t (z) statistics are in parentheses in specifications 1-3 (4-6).
*, **, *** - statistically significant at the 10, 5, and 1 percent level respectively. EMU dummy, 1 for EU15 countries between 1994 and 1998, 0 otherwise. SGP dummy, 1 after 1997 for the countries that are (adhered) in (to) the EU, 0 otherwise.
[1)] Standard least square dummy variable estimator.
[2)] Bias corrected least square dummy variable estimator proposed by Bruno (2005).
[3)] F-statistic tests for fixed effects, H0: fixed effects jointly insignificant. F(24,262)-values reported, 1% critical value = 1.83.

Table 3 – Fiscal reaction function for the primary balance (fixed-effects, 1990-2005), the relevance of debt thresholds (LSDVC)

| | 1 | 2 | 3 |
|---|---|---|---|
| Primary balance (-1) | 0.48*** | 0.48*** | 0.50*** |
| | (8.13) | (8.15) | (8.43) |
| Output gap (-1) | 0.03 | 0.03 | 0.03 |
| | (0.49) | (0.49) | (0.42) |
| EMU dummy | 0.84* | 0.84* | 0.66 |
| | (1.66) | (1.68) | (1.42) |
| SGP dummy | 0.98* | 0.99* | 0.90* |
| | (1.77) | (1.79) | (1.65) |
| Enlargement dummy | -0.43* | -0.43* | -0.41* |
| | (-1.82) | (-1.84) | (-1.74) |
| Election dummy | 0.53** | 0.54** | 0.57*** |
| | (2.49) | (2.54) | (2.67) |
| General government fiscal rule (-1) | 0.48*** | 0.48*** | 0.50*** |
| | (8.13) | (8.15) | (8.43) |
| D60 (-1) x Debt (-1) [a] | 0.04** | | |
| | (2.37) | | |
| (1 - D60 (-1)) x Debt (-1) [b] | 0.04** | | |
| | (2.04) | | |
| D70 (-1) x Debt (-1) [c] | | 0.04** | |
| | | (2.51) | |
| (1 - D70 (-1)) x Debt (-1) [d] | | 0.04** | |
| | | (2.13) | |
| D80 (-1) x Debt (-1) [e] | | | 0.03** |
| | | | (2.46) |
| (1 - D80 (-1)) x Debt (-1) [f] | | | 0.05*** |
| | | | (3.20) |
| Observations | 308 | 308 | 308 |
| Wald test[1)], H0: a=b; c=d; e=f | 0.63 | 0.77 | 0.10 |

Notes: The z statistics are in parentheses.
*, **, *** - statistically significant at the 10, 5, and 1 percent level respectively. EMU dummy, 1 for EU15 countries between 1994 and 1998, 0 otherwise. SGP dummy, 1 after 1997 for the countries that are (adhered) in (to) the EU, 0 otherwise. Enlargement dummy, 1 for the New Member States after entering the EU, 0 otherwise.
[1)] p-values reported.

Table 4 – Fiscal reaction function for the primary balance (fixed-effects, 1990-2005), the relevance of fiscal rules (LSDVC)

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Primary balance (-1) | 0.50*** | 0.47*** | 0.47*** | 0.48*** |
| | (8.22) | (7.95) | (8.10) | (8.16) |
| Debt (-1) | 0.04*** | 0.03** | 0.03** | 0.04** |
| | (2.64) | (2.37) | (2.04) | (2.33) |
| Output gap (-1) | 0.03 | 0.03 | 0.04 | 0.03 |
| | (0.49) | (0.52) | (0.60) | (0.49) |
| EMU dummy | 0.79 | 0.87* | 1.00* | 0.87* |
| | (1.59) | (1.74) | (1.95) | (1.75) |
| SGP dummy | 0.95* | 0.99* | 0.95* | 1.00* |
| | (1.71) | (1.78) | (1.73) | (1.80) |
| Enlargement dummy | -0.44* | -0.44* | -0.45* | -0.43* |
| | (-1.86) | (-1.84) | (-1.94) | (-1.82) |
| Election dummy | 0.50*** | 0.47*** | 0.47*** | 0.48*** |
| | (8.22) | (7.95) | (8.10) | (8.16) |
| Fisrulov (-1) x Debt (-1) | 0.01* | | | |
| | (1.66) | | | |
| Fisrulov (-1) x D60 (-1) [a] | | 0.30 | | |
| | | (1.01) | | |
| Fisrulov (-1) x (1 - D60 (-1)) [b] | | 0.61*** | | |
| | | (2.72) | | |
| Fisrulov (-1) x D70 (-1) [c] | | | -0.05 | |
| | | | (-0.13) | |
| Fisrulov (-1) x (1 - D70 (-1)) [d] | | | 0.64*** | |
| | | | (2.84) | |
| Fisrulov (-1) x D80 (-1) [e] | | | | 0.51 |
| | | | | (0.73) |
| Fisrulov (-1) x (1 - D80 (-1)) [f] | | | | 0.54** |
| | | | | (2.55) |
| Observations | 308 | 308 | 308 | 308 |
| Wald test[1)], H0: a=b; c=d; e=f | | 0.26 | 0.07 | 0.96 |

Notes: The z statistics are in parentheses.
*, **, *** - statistically significant at the 10, 5, and 1 percent level respectively. EMU dummy, 1 for EU15 countries between 1994 and 1998, 0 otherwise. SGP dummy, 1 after 1997 for the countries that are (adhered) in (to) the EU, 0 otherwise. Enlargement dummy, 1 for the New Member States after entering the EU, 0 otherwise.
1) p-values reported.

Table 5 – Fiscal reaction function for the primary balance (fixed-effects, 1990-2005), the relevance of government spending and revenue decentralisation (LSDVC)

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Primary balance (-1) | 0.52*** | 0.50*** | 0.50*** | 0.49*** |
| | (9.43) | (9.89) | (9.57) | (9.19) |
| Debt (-1) | 0.03** | 0.08*** | 0.04*** | 0.05*** |
| | (2.50) | (3.50) | (2.92) | (3.09) |
| Output gap (-1) | 0.07 | 0.08 | 0.07 | 0.07 |
| | (1.17) | (1.35) | (1.15) | (1.19) |
| EMU dummy | 0.58 | 0.32 | 0.53 | 0.48 |
| | (1.00) | (0.56) | (0.91) | (0.82) |
| SGP dummy | 1.17*** | 1.18*** | 1.15*** | 1.12** |
| | (2.65) | (2.84) | (2.61) | (2.57) |
| Enlargement dummy | -0.37* | -0.40* | -0.35* | -0.37* |
| | (-1.71) | (-1.91) | (-1.66) | (-1.73) |
| Election dummy | 0.48*** | 0.43*** | 0.50*** | 0.43** |
| | (2.85) | (2.58) | (2.95) | (2.46) |
| General government fiscal rule (-1) | 0.52*** | 0.50*** | 0.50*** | 0.49*** |
| | (9.43) | (9.89) | (9.57) | (9.19) |
| Subnational expenditure share (-1) | -0.04 | | | |
| | (-0.84) | | | |
| Subn. exp. share (-1) x Debt (-1) | | -0.00** | | |
| | | (-2.46) | | |
| Subnational tax share (-1) | | | -0.00 | |
| | | | (-0.01) | |
| Subn. tax share (-1) x Debt (-1) | | | | -0.00 |
| | | | | (-1.55) |
| Observations | 291 | 291 | 291 | 291 |

Notes: The z statistics are in parentheses.
*, **, *** - statistically significant at the 10, 5, and 1 percent level respectively. EMU dummy, 1 for EU15 countries between 1994 and 1998, 0 otherwise. SGP dummy, 1 after 1997 for the countries that are (adhered) in (to) the EU, 0 otherwise.

Table 6 – Fiscal reaction function for the primary spending
(fixed-effects, 1990-2005)

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| | | LSDV[1)] | | | LSDVC[2)] | |
| Primary expenditure (-1) | 0.67*** | 0.66*** | 0.69*** | 0.76*** | 0.75*** | 0.78*** |
| | (8.16) | (8.33) | (8.62) | (12.70) | (12.45) | (13.09) |
| Debt (-1) | -0.01 | -0.00 | -0.01 | 0.00 | 0.01 | 0.00 |
| | (-0.40) | (-0.00) | (-0.57) | (0.21) | (0.52) | (0.07) |
| Output gap (-1) | 0.08 | 0.09 | 0.07 | 0.07 | 0.08 | 0.06 |
| | (1.05) | (1.19) | (0.91) | (0.95) | (1.08) | (0.84) |
| EMU dummy | -0.39 | -0.52 | -0.27 | -0.26 | -0.40 | -0.16 |
| | (-0.54) | (-0.71) | (-0.37) | (-0.43) | (-0.67) | (-0.27) |
| SGP dummy | -0.23 | -0.27 | -0.15 | -0.12 | -0.18 | -0.08 |
| | (-0.36) | (-0.42) | (-0.23) | (-0.19) | (-0.29) | (-0.13) |
| Election dummy | 0.39 | 0.36 | 0.42 | 0.41 | 0.37 | 0.43 |
| | (1.52) | (1.40) | (1.63) | (1.47) | (1.37) | (1.59) |
| General government fiscal rule (-1) | -0.42** | | | -0.36 | | |
| | (-2.21) | | | (-1.40) | | |
| Central government fiscal rule (-1) | | -0.28 | | | -0.24 | |
| | | (-1.56) | | | (-0.98) | |
| Sub-national government fiscal rule (-1) | | -0.75* | | | -0.70* | |
| | | (-1.93) | | | (-1.88) | |
| Expenditure rule (-1) | | | -0.17 | | | -0.07 |
| | | | (-1.21) | | | (-0.27) |
| Observations | 308 | 308 | 308 | 308 | 308 | 308 |
| adj R2 | 0.56 | 0.56 | 0.55 | | | |

Notes: The t (z) statistics are in parentheses in specifications 1-3 (4-6).
*, **, *** - statistically significant at the 10, 5, and 1 percent level respectively. EMU dummy, 1 for EU15 countries between 1994 and 1998, 0 otherwise. SGP dummy, 1 after 1997 for the countries that are (adhered) in (to) the EU, 0 otherwise.
1) Standard least square dummy variable estimator.
2) Bias corrected least square dummy variable estimator proposed by Bruno (2005).

Table 7 – Fiscal reaction function for the primary spending (fixed-effects, 1990-2005), the relevance of debt thresholds (LSDVC)

| | 1 | 2 | 3 |
|---|---|---|---|
| Primary expenditure (-1) | 0.76*** | 0.74*** | 0.76*** |
| | (12.67) | (12.06) | (12.62) |
| Output gap (-1) | 0.07 | 0.07 | 0.08 |
| | (0.93) | (0.90) | (1.05) |
| EMU dummy | -0.15 | -0.10 | 0.19 |
| | (-0.25) | (-0.17) | (0.34) |
| SGP dummy | -0.10 | -0.09 | 0.01 |
| | (-0.16) | (-0.15) | (0.02) |
| Election dummy | 0.42 | 0.42 | 0.36 |
| | (1.50) | (1.53) | (1.32) |
| General government fiscal rule (-1) | -0.33 | -0.38 | -0.46* |
| | (-1.25) | (-1.48) | (-1.75) |
| D60 (-1) x Debt (-1) [a] | -0.00 | | |
| | (-0.22) | | |
| (1 - D60 (-1)) x Debt (-1) [b] | -0.02 | | |
| | (-0.64) | | |
| D70 (-1) x Debt (-1) [c] | | -0.00 | |
| | | (-0.06) | |
| (1 - D70 (-1)) x Debt (-1) [d] | | -0.02 | |
| | | (-0.90) | |
| D80 (-1) x Debt (-1) [e] | | | 0.00 |
| | | | (0.21) |
| (1 - D80 (-1)) x Debt (-1) [f] | | | -0.03* |
| | | | (-1.69) |
| Observations | 308 | 308 | 308 |
| Wald tes[(1)], H0: a=b; c=d; e=f | 0.19 | 0.04 | 0.00 |

Notes: The z statistics are in parentheses.
*, **, *** - statistically significant at the 10, 5, and 1 percent level respectively. EMU dummy, 1 for EU15 countries between 1994 and 1998, 0 otherwise. SGP dummy, 1 after 1997 for the countries that are (adhered) in (to) the EU, 0 otherwise.
(1) p-values reported.

Table 8 – Fiscal reaction function for the primary spending (fixed-effects, 1990-2005), the relevance of fiscal rules (LSDVC)

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Primary expenditure (-1) | 0.76*** | 0.76*** | 0.76*** | 0.76*** |
| | (12.92) | (12.79) | (13.13) | (12.92) |
| Debt (-1) | 0.00 | 0.00 | 0.00 | -0.00 |
| | (0.02) | (0.19) | (0.26) | (-0.04) |
| Output gap (-1) | 0.07 | 0.07 | 0.07 | 0.07 |
| | (0.98) | (0.96) | (0.94) | (0.97) |
| EMU dummy | -0.24 | -0.25 | -0.27 | -0.21 |
| | (-0.39) | (-0.41) | (-0.43) | (-0.33) |
| SGP dummy | -0.14 | -0.12 | -0.10 | -0.12 |
| | (-0.21) | (-0.19) | (-0.16) | (-0.18) |
| Election dummy | 0.40 | 0.40 | 0.41 | 0.40 |
| | (1.46) | (1.46) | (1.50) | (1.45) |
| Fisrulov (-1) x Debt (-1) | -0.01 | | | |
| | (-1.47) | | | |
| Fisrulov (-1) x D60 (-1)[a] | | -0.44 | | |
| | | (-1.25) | | |
| Fisrulov (-1) x (1 - D60 (-1)) [b] | | -0.35 | | |
| | | (-1.26) | | |
| Fisrulov (-1) x D70 (-1) [c] | | | -0.26 | |
| | | | (-0.58) | |
| Fisrulov (-1) x (1 - D70 (-1)) [d] | | | -0.38 | |
| | | | (-1.36) | |
| Fisrulov (-1) x D80 (-1) [e] | | | | -0.98 |
| | | | | (-1.13) |
| Fisrulov (-1) x (1 - D80 (-1)) [f] | | | | -0.36 |
| | | | | (-1.37) |
| Observations | 308 | 308 | 308 | 308 |
| Wald test(1), H0: a=b; c=d; e=f | 0.79 | 0.81 | 0.46 | 0.79 |

Notes: The z statistics are in parentheses.
*, **, *** - statistically significant at the 10, 5, and 1 percent level respectively. EMU dummy, 1 for EU15 countries between 1994 and 1998, 0 otherwise. SGP dummy, 1 after 1997 for the countries that are (adhered) in (to) the EU, 0 otherwise. (1) p-values reported.

Table 9 – Fiscal reaction function for the primary spending (fixed-effects, 1990-2005), the relevance of government spending decentralisation (LSDVC)

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Primary expenditure (-1) | 0.81*** | 0.80*** | 0.81*** | 0.80*** | 0.80*** |
| | (16.14) | (15.66) | (15.79) | (16.85) | (15.95) |
| Debt (-1) | 0.00 | -0.04 | -0.01 | -0.01 | -0.01 |
| | (0.03) | (-1.33) | (-0.33) | (-0.48) | (-0.82) |
| Output gap (-1) | -0.00 | -0.01 | 0.00 | -0.01 | 0.02 |
| | (-0.00) | (-0.12) | (0.01) | (-0.10) | (0.28) |
| EMU dummy | 0.48 | 0.70 | 0.56 | 0.58 | 0.79 |
| | (0.75) | (1.01) | (0.84) | (0.91) | (1.22) |
| SGP dummy | -0.37 | -0.22 | -0.34 | -0.30 | -0.28 |
| | (-0.69) | (-0.42) | (-0.62) | (-0.59) | (-0.52) |
| Election dummy | 0.34 | 0.33 | 0.34 | 0.35 | 0.32 |
| | (1.40) | (1.35) | (1.42) | (1.47) | (1.33) |
| General government fiscal rule (-1) | -0.18 | -0.16 | -0.14 | -0.18 | -0.26 |
| | (-0.82) | (-0.72) | (-0.62) | (-0.83) | (-1.17) |
| Subnational expenditure share (-1) | 0.12** | | | | |
| | (2.20) | | | | |
| Subn. exp. share (-1) x Debt (-1) | | 0.00 | | | |
| | | (1.34) | | | |
| Subn. exp. share (-1) x D60 (-1) [a] | | | 0.13** | | |
| | | | (2.42) | | |
| Subn. exp. share (-1) x (1 - D60) (-1) [b] | | | 0.12** | | |
| | | | (2.20) | | |
| Subn. exp. share (-1) x D70 (-1) [c] | | | | 0.13** | |
| | | | | (2.26) | |
| Subn. exp. share (-1) x (1 - D70) (-1) [d] | | | | 0.11* | |
| | | | | (1.87) | |
| Subn. exp. share (-1) x D80 (-1) [e] | | | | | 0.17*** |
| | | | | | (2.66) |
| Subn. exp. share (-1) x (1 - D80) (-1) [f] | | | | | 0.10* |
| | | | | | (1.83) |
| Observations | 291 | 291 | 291 | 291 | 291 |
| Wald test[(1)], H0: a=b; c=d; e=f | | | 0.35 | 0.22 | 0.03 |

Notes: The z statistics are in parentheses.
*, **, *** - statistically significant at the 10, 5, and 1 percent level respectively. EMU dummy, 1 for EU15 countries between 1994 and 1998, 0 otherwise. SGP dummy, 1 after 1997 for the countries that are (adhered) in (to) the EU, 0 otherwise. (1) p-values reported.

Table 10 – Fiscal reaction functions (fixed-effects, 1990-2005), the relevance of elections (LSDVC)

| | Primary balance | Cyclically adjusted primary balance | Primary spending |
|---|---|---|---|
| Primary balance (-1) | 0.48*** | 0.51*** | |
| | (8.04) | (8.74) | |
| Cyclically adjusted primary balance (-1) | | | |
| Primary expenditure (-1) | | | 0.76*** |
| | | | (12.70) |
| Output gap (-1) | 0.03 | -0.05 | 0.07 |
| | (0.43) | (-0.80) | (1.00) |
| EMU dummy | 0.90* | 1.18** | -0.30 |
| | (1.83) | (2.43) | (-0.50) |
| SGP dummy | 1.02* | 0.35 | -0.15 |
| | (1.86) | (0.64) | (-0.23) |
| General government fiscal rule (-1) | 0.55*** | 0.48** | -0.38 |
| | (2.63) | (2.33) | (-1.45) |
| Debt (-1) [$\alpha$] | 0.04*** | 0.04*** | 0.00 |
| | (2.68) | (2.69) | (0.13) |
| Election dummy x Debt (-1) [$\pi$] | -0.01* | -0.01* | 0.01 |
| | (-1.65) | (-1.73) | (1.36) |
| Observations | 308 | 308 | 308 |

Notes: The z statistics are in parentheses.
*, **, *** - statistically significant at the 10, 5, and 1 percent level respectively. EMU dummy, 1 for EU15 countries between 1994 and 1998, 0 otherwise. SGP dummy, 1 after 1997 for the countries that are (adhered) in (to) the EU, 0 otherwise.
*, **, *** - statistically significant at the 10, 5, and 1 percent level respectively.

## Appendix A – Panel unit root results

The test proposed by Im, Pesaran and Shin (2003) has been widely implemented in empirical research due to its rather simple methodology and alternative hypothesis of heterogeneity. This test assumes cross-sectional independence among panel units (except for common time effects), but allows for heterogeneity in the form of individual deterministic effects (constant and/or linear time trend), and heterogeneous serial correlation structure of the error terms. We also provide the results of four other panel unit root tests: Levin, Lin and Chu (2002), Breitung (2000), and Fisher-type tests using ADF and PP tests (Maddala and Wu, 1999). The results reveal that the null unit root hypothesis can be rejected at the ten per cent level of significance for all or most of the cases, thus supporting the stationarity of our fiscal variables and of the output gap.

Table A1 – Summary of panel data unit root tests for the primary balance (1989-2007)

| Method | Statistic | P-value* | Cross-sections | Obs |
|---|---|---|---|---|
| Null: Unit root (assumes common unit root process) | | | | |
| Levin, Lin & Chu t stat | -2.96244 | 0.0015 | 27 | 382 |
| Breitung t-stat | -3.83851 | 0.0001 | 27 | 355 |
| Null: Unit root (assumes individual unit root process) | | | | |
| Im, Pesaran and Shin W-stat | -3.33215 | 0.0004 | 27 | 382 |
| ADF - Fisher Chi-square | 90.1764 | 0.0015 | 27 | 382 |
| PP - Fisher Chi-square | 139.209 | 0.0000 | 27 | 409 |

* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.
Automatic selection of lags based on SIC. Newey-West bandwidth selection using a Bartlett kernel

Table A2 – Summary of panel data unit root tests for the cyclically adjusted primary balance (1989-2007)

| Method | Statistic | P-value* | Cross-sections | Obs |
|---|---|---|---|---|
| Null: Unit root (assumes common unit root process) | | | | |
| Levin, Lin & Chu t stat | -2.77439 | 0.0028 | 27 | 362 |
| Breitung t-stat | -2.50251 | 0.0062 | 27 | 335 |
| Null: Unit root (assumes individual unit root process) | | | | |
| Im, Pesaran and Shin W-stat | -2.18863 | 0.0143 | 27 | 362 |
| ADF - Fisher Chi-square | 75.4207 | 0.0287 | 27 | 362 |
| PP - Fisher Chi-square | 122.766 | 0.0000 | 27 | 389 |

* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.
Automatic selection of lags based on SIC. Newey-West bandwidth selection using a Bartlett kernel

Table A3 – Summary of panel data unit root tests for primary spending (1989-2007)

| Method | Statistic | P-value* | Cross-sections | Obs |
|---|---|---|---|---|
| Null: Unit root (assumes common unit root process) | | | | |
| Levin, Lin & Chu t stat | -3.15825 | 0.0008 | 27 | 367 |
| Breitung t-stat | -0.72843 | 0.2332 | 27 | 340 |
| Null: Unit root (assumes individual unit root process) | | | | |
| Im, Pesaran and Shin W-stat | -1.91864 | 0.0275 | 27 | 367 |
| ADF - Fisher Chi-square | 76.1583 | 0.0252 | 27 | 367 |
| PP - Fisher Chi-square | 115.117 | 0.0000 | 27 | 394 |

* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.
Automatic selection of lags based on SIC. Newey-West bandwidth selection using a Bartlett kernel

Table A4 – Summary of panel data unit root tests for government debt (1989-2007)

| Method | Statistic | P-value* | Cross-sections | Obs |
|---|---|---|---|---|
| Null: Unit root (assumes common unit root process) | | | | |
| Levin, Lin & Chu t stat | -4.71615 | 0.0000 | 27 | 374 |
| Breitung t-stat | 1.17238 | 0.8795 | 27 | 347 |
| Null: Unit root (assumes individual unit root process) | | | | |
| Im, Pesaran and Shin W-stat | -4.71615 | 0.0000 | 27 | 374 |
| ADF - Fisher Chi-square | 1.17238 | 0.8795 | 27 | 347 |
| PP - Fisher Chi-square | -4.71615 | 0.0000 | 27 | 374 |

* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.
Automatic selection of lags based on SIC. Newey-West bandwidth selection using a Bartlett kernel

Table A5 – Summary of panel data unit root tests for the output gap (1989-2007)

| Method | Statistic | P-value* | Cross-sections | Obs |
|---|---|---|---|---|
| Null: Unit root (assumes common unit root process) | | | | |
| Levin, Lin & Chu t stat | -8.13987 | 0.0000 | 27 | 385 |
| Breitung t-stat | -2.66883 | 0.0038 | 27 | 358 |
| Null: Unit root (assumes individual unit root process) | | | | |
| Im, Pesaran and Shin W-stat | -6.72503 | 0.0000 | 27 | 385 |
| ADF - Fisher Chi-square | 147.944 | 0.0000 | 27 | 385 |
| PP - Fisher Chi-square | 76.2926 | 0.0246 | 27 | 412 |

* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.
Automatic selection of lags based on SIC. Newey-West bandwidth selection using a Bartlett kernel

## Appendix B – OLS results

Table B1 – Fiscal reaction function for the primary balance
(fixed-effects, 1990-2005)

| | 1 | | 2 | | 3 | |
|---|---|---|---|---|---|---|
| Primary balance (-1) | 0.47 | *** | 0.46 | *** | 0.47 | *** |
| | 6.56 | | 6.31 | | 6.55 | |
| Debt (-1) | 0.05 | *** | 0.04 | *** | 0.05 | *** |
| | 4.17 | | 3.98 | | 4.07 | |
| Output gap (-1) | 0.08 | | 0.08 | | 0.08 | |
| | 1.29 | | 1.31 | | 1.22 | |
| EMU dummy | 0.70 | *** | 0.77 | *** | 0.75 | *** |
| | 3.21 | | 3.57 | | 3.49 | |
| SGP dummy | 0.47 | * | 0.56 | ** | 0.55 | ** |
| | 1.84 | | 2.27 | | 2.23 | |
| Enlargement dummy | 0.33 | | 0.24 | | 0.28 | |
| | 0.74 | | 0.54 | | 0.64 | |
| Election dummy | -0.52 | ** | -0.51 | ** | -0.52 | ** |
| | -2.40 | | -2.34 | | -2.40 | |
| General government fiscal rule (-1) | 0.37 | ** | - | | - | |
| | 2.36 | | | | | |
| Central government fiscal rule (-1) | - | | 0.35 | * | - | |
| | | | 1.85 | | | |
| Sub-national government fiscal rule (-1) | - | | 0.17 | | - | |
| | | | 0.50 | | | |
| Budget balance fiscal rule (-1) | - | | - | | 0.39 | ** |
| | | | | | 2.41 | |
| Observations | 308 | | 308 | | 308 | |
| adj R2 | 0.71 | | 0.71 | | 0.71 | |

Notes: The t statistics are in parentheses.
*, **, *** - statistically significant at the 10, 5, and 1 percent level respectively. EMU dummy, 1 for EU15 countries between 1994 and 1998, 0 otherwise. SGP dummy, 1 after 1997 for the countries that are (adhered) in (to) the EU, 0 otherwise. Enlargement dummy, 1 for the New Member States after entering the EU, 0 otherwise.

Table B2 – Fiscal reaction function for the primary balance (fixed-effects, 1990-2005), the relevance of debt thresholds

| | 1 | 2 | 3 |
|---|---|---|---|
| Primary balance (-1) | 0.47*** | 0.47*** | 0.48*** |
| | 6.52 | 6.50 | 6.47 |
| Debt (-1) | - | - | - |
| Output gap (-1) | 0.08 | 0.08 | 0.08 |
| | 1.29 | 1.29 | 1.17 |
| EMU dummy | 0.69*** | 0.65*** | 0.55** |
| | 3.19 | 2.91 | 2.39 |
| SGP dummy | 0.47* | 0.37 | 0.36 |
| | 1.83 | 1.32 | 1.35 |
| Enlargement dummy | 0.33 | 0.42 | 0.32* |
| | 0.74 | 0.91 | 0.72 |
| Election dummy | -0.52** | -0.53** | -0.49** |
| | -2.41 | -2.41 | -2.25 |
| General government fiscal rule (-1) | 0.36** | 0.36** | 0.41*** |
| | 2.29 | 2.34 | 2.62 |
| D60 (-1) x Debt (-1) | 0.05*** | - | - |
| | 3.93 | | |
| (1 - D60 (-1)) x Debt (-1) | 0.05*** | - | - |
| | 3.23 | | |
| D70 (-1) x Debt (-1) | - | 0.05*** | - |
| | | 4.21 | |
| (1 - D70 (-1)) x Debt (-1) | - | 0.06*** | - |
| | | 3.71 | |
| D80 (-1) x Debt (-1) | - | - | 0.05*** |
| | | | 4.25 |
| (1 - D80 (-1)) x Debt (-1) | - | - | 0.07*** |
| | | | 4.65 |
| Observations | 308 | 308 | 308 |
| adj R2 | 0.71 | 0.71 | 0.72 |

Notes: The t statistics are in parentheses.
*, **, *** - statistically significant at the 10, 5, and 1 percent level respectively. EMU dummy, 1 for EU15 countries between 1994 and 1998, 0 otherwise. SGP dummy, 1 after 1997 for the countries that are (adhered) in (to) the EU, 0 otherwise. Enlargement dummy, 1 for the New Member States after entering the EU, 0 otherwise.

Table B3 – Fiscal reaction function for the primary balance (fixed-effects, 1990-2005), the relevance of fiscal rules

| | 1 | | 2 | | 3 | | 4 | |
|---|---|---|---|---|---|---|---|---|
| Primary balance (-1) | 0.48 | *** | 0.47 | *** | 0.46 | *** | 0.47 | *** |
| | 6.67 | | 6.51 | | 6.49 | | 6.47 | |
| Debt (-1) | 0.05 | | 0.05 | *** | 0.04 | *** | 0.05 | *** |
| | 4.26 | | 4.17 | | 3.77 | | 4.09 | |
| Output gap (-1) | 0.08 | | 0.08 | | 0.08 | | 0.08 | |
| | 1.18 | | 1.29 | | 1.34 | | 1.29 | |
| EMU dummy | 0.65 | | 0.70 | *** | 0.83 | *** | 0.69 | *** |
| | 2.94 | | 3.20 | | 3.67 | | 3.09 | |
| SGP dummy | 0.58 | *** | 0.48 | * | 0.47 | * | 0.47 | * |
| | 2.22 | | 1.84 | | 1.82 | | 1.80 | |
| Enlargement dummy | 0.27 | *** | 0.32 | | 0.28 | | 0.33 | |
| | 0.62 | | 0.72 | | 0.64 | | 0.74 | |
| Election dummy | -0.53 | | -0.52 | ** | -0.54 | ** | -0.52 | ** |
| | -2.43 | | -2.41 | | -2.47 | | -2.4 | |
| Fisrulov (-1) x Debt (-1) | 0.00 | *** | - | | - | | - | |
| | 1.97 | | | | | | | |
| Fisrulov (-1) x D60 (-1) | - | | 0.35 | * | - | | - | |
| | | | 1.69 | | | | | |
| Fisrulov (-1) x (1 - D60 (-1)) | - | | 0.37 | ** | - | | - | |
| | | | 2.16 | | | | | |
| Fisrulov (-1) x D70 (-1) | - | | | | -0.143 | | - | |
| | | | | | -0.55 | | | |
| Fisrulov (-1) x (1 - D70 (-1)) | - | | - | | 0.46 | *** | - | |
| | | | | | 2.71 | | | |
| Fisrulov (-1) x D80 (-1) | - | | - | | - | | 0.51 | |
| | | | | | | | 1.06 | |
| Fisrulov (-1) x (1 - D80 (-1)) | - | | - | | - | | 0.36 | *** |
| | | | | | | | 2.33 | |
| Observations | 319 | | 308 | | 308 | | 308 | |
| adj R2 | 0.72 | | 0.71 | | 0.72 | | 0.71 | |

Notes: The t statistics are in parentheses.
*, **, *** - statistically significant at the 10, 5, and 1 percent level respectively. EMU dummy, 1 for EU15 countries between 1994 and 1998, 0 otherwise. SGP dummy, 1 after 1997 for the countries that are (adhered) in (to) the EU, 0 otherwise. Enlargement dummy, 1 for the New Member States after entering the EU, 0 otherwise.

Table B4 – Fiscal reaction function for the primary balance (fixed-effects, 1990-2005), the relevance of government spending decentralisation

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Primary balance (-1) | 0.53*** | 0.51*** | 0.53*** | 0.53*** | 0.54*** |
| | 8.14 | 7.21 | 8.12 | 8.09 | 8.05 |
| Debt (-1) | 0.04*** | 0.09*** | 0.04*** | 0.04*** | 0.05*** |
| | 3.30 | 4.45 | 2.90 | 3.30 | 3.72 |
| Output gap (-1) | 0.09 | 0.10 | 0.09 | 0.09 | 0.08 |
| | 1.42 | 1.45 | 1.41 | 1.42 | 1.21 |
| EMU dummy | 0.81*** | 0.88*** | 0.81*** | 0.80*** | 0.68*** |
| | 3.97 | 4.31 | 3.97 | 3.88 | 3.07 |
| SGP dummy | 0.73*** | 0.90*** | 0.73*** | 0.67** | 0.64** |
| | 2.69 | 3.16 | 2.64 | 2.37 | 2.30 |
| Enlargement dummy | 0.17 | -0.20 | 0.17 | 0.19 | 0.17 |
| | 0.39 | -0.43 | 0.38 | 0.44 | 0.39 |
| Election dummy | -0.51** | -0.52** | -0.51** | -0.52** | -0.50** |
| | -2.41 | -2.43 | -2.41 | -2.42 | -2.33 |
| General government fiscal rule (-1) | 0.31** | 0.26* | 0.31** | 0.30* | 0.34** |
| | 2.02 | 1.75 | 1.98 | 1.95 | 2.20 |
| Subnational expenditure share (-1) | -0.10** | - | - | - | - |
| | -2.29 | | | | |
| Subn. exp. share (-1) x Debt (-1) | - | 0.00*** | - | - | - |
| | | -2.99 | | | |
| Subn. exp. share (-1) x D60 (-1) | - | - | -0.10** | - | - |
| | | | -2.23 | | |
| Subn. exp. share (-1) x (1 - D60) (-1) | - | - | -0.10** | - | - |
| | | | -2.28 | | |
| Subn. exp. share (-1) x D70 (-1) | - | - | - | -0.10** | - |
| | | | | -2.39 | |
| Subn. exp. share (-1) x (1 - D70) (-1) | - | - | - | -0.09** | - |
| | | | | -2.06 | |
| Subn. exp. share (-1) x D80 (-1) | - | - | - | - | -0.13*** |
| | | | | | -3.03 |
| Subn. exp. share (-1) x (1 - D80) (-1) | - | - | - | - | -0.09** |
| | | | | | -2.00 |
| Observations | 291 | 291 | 291 | 291 | 291 |
| adj R2 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 |

Notes: The t statistics are in parentheses.
*, **, *** - statistically significant at the 10, 5, and 1 percent level respectively. EMU dummy, 1 for EU15 countrie between 1994 and 1998, 0 otherwise. SGP dummy, 1 after 1997 for the countries that are (adhered) in (to) the EU, otherwise. Enlargement dummy, 1 for the New Member States after entering the EU, 0 otherwise.

Table B5 – Fiscal reaction function for the primary balance (fixed-effects, 1990-2005), the relevance of government tax decentralisation

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Primary balance (-1) | 0.51*** | 0.50*** | 0.51*** | 0.50*** | 0.51*** |
| | 7.01 | 6.75 | 6.96 | 6.83 | 6.99 |
| Debt (-1) | 0.05*** | 0.06*** | 0.05*** | 0.05*** | 0.05*** |
| | 4.03 | 4.58 | 3.79 | 4.16 | 4.22 |
| Output gap (-1) | 0.10 | 0.09 | 0.09 | 0.10 | 0.09 |
| | 1.42 | 1.38 | 1.41 | 1.45 | 1.30 |
| EMU dummy | 0.84*** | 0.90*** | 0.85*** | 0.81*** | 0.78*** |
| | 4.07 | 4.32 | 4.08 | 4.15 | 3.71 |
| SGP dummy | 0.62** | 0.81* | 0.63** | 0.60** | 0.62** |
| | 2.40 | 2.84 | 2.32 | 2.35 | 2.41 |
| Enlargement dummy | 0.07 | -0.12 | 0.05 | 0.04 | -0.03 |
| | 0.45 | -0.27 | 0.11 | 0.09 | -0.07 |
| Election dummy | -0.49** | -0.49** | -0.49** | -0.47** | -0.50** |
| | -2.26 | -2.31 | -2.27 | -2.18 | -2.32 |
| General government fiscal rule (-1) | 0.29* | 0.25 | 0.29* | 0.29* | 0.27* |
| | 1.93 | 1.63 | 1.84 | 1.78 | 1.76 |
| Subnational tax share (-1) | -0.03 | - | - | - | - |
| | -1.17 | | | | |
| Subn. tax share (-1) x Debt (-1) | - | 0.00** | - | - | - |
| | | -2.11 | | | |
| Subn. tax share (-1) x D60 (-1) | - | - | -0.03 | - | - |
| | | | -1.06 | | |
| Subn. tax share (-1) x (1 - D60) (-1) | - | - | -0.03 | - | - |
| | | | -1.18 | | |
| Subn. tax share (-1) x D70 (-1) | - | - | - | -0.04* | - |
| | | | | -1.68 | |
| Subn. tax share (-1) x (1 - D70) (-1) | - | - | - | -0.02 | - |
| | | | | -0.94 | |
| Subn. tax share (-1) x D80 (-1) | - | - | - | - | -0.07** |
| | | | | | -2.15 |
| Subn. tax share (-1) x (1 - D80) (-1) | - | - | - | - | -0.01 |
| | | | | | 0.75 |
| Observations | 291 | 291 | 291 | 291 | 291 |
| adj R2 | 0.75 | 0.75 | 0.75 | 0.75 | 0.76 |

Notes: The t statistics are in parentheses.
*, **, *** - statistically significant at the 10, 5, and 1 percent level respectively. EMU dummy, 1 for EU15 countrie between 1994 and 1998, 0 otherwise. SGP dummy, 1 after 1997 for the countries that are (adhered) in (to) the EU, otherwise. Enlargement dummy, 1 for the New Member States after entering the EU, 0 otherwise.

Table B6 – Fiscal reaction function for the primary spending
(fixed-effects, 1990-2005)

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Primary expenditure (-1) | 0.67*** | 0.66 *** | 0.68*** | 0.68*** |
| | 8.23 | 8.31 | 8.54 | 8.44 |
| Debt (-1) | -0.01 | -0.01 | -0.01 | -0.01 |
| | -0.89 | -0.60 | -0.87 | -0.96 |
| Output gap (-1) | 0.05 | 0.06 | 0.06 | 0.06 |
| | 0.72 | 0.80 | 0.82 | 0.76 |
| EMU dummy | -0.64*** | -0.71*** | -0.67*** | -0.63*** |
| | -2.63 | -2.98 | -2.77 | -2.58 |
| SGP dummy | -0.38 | -0.41* | -0.54** | -0.57** |
| | -1.48 | -1.75 | -2.25 | -2.13 |
| Enlargement dummy | 0.15 | 0.23 | 0.28 | 0.31 |
| | 0.32 | 0.48 | 0.60 | 0.66 |
| Election dummy | 0.41 | 0.38 | 0.42* | 0.43* |
| | 1.65 | 1.56 | 1.68 | 1.73 |
| General government fiscal rule (-1) | -0.35* | - | - | - |
| | -2.01 | | | |
| Central government fiscal rule (-1) | - | -0.28 | - | - |
| | | -1.55 | | |
| Sub-national government fiscal rule (-1) | - | -0.55 | - | - |
| | | -1.45 | | |
| Budget balance fiscal rule (-1) | - | - | -0.23 | - |
| | | | -1.32 | |
| Expenditure rule (-1) | - | - | - | -0.18 |
| | | | | -1.22 |
| Observations | 308 | 308 | 308 | 308 |
| adj R2 | 0.92 | 0.92 | 0.92 | 0.92 |

Notes: The t statistics are in parentheses.
*, **, *** - statistically significant at the 10, 5, and 1 percent level respectively. EMU dummy, 1 for EU15 countries between 1994 and 1998, 0 otherwise. SGP dummy, 1 after 1997 for the countries that are (adhered) in (to) the EU, 0 otherwise. Enlargement dummy, 1 for the New Member States after entering the EU, 0 otherwise.

Table B7 – Fiscal reaction functions (fixed-effects, 1990-2005), the relevance of elections

| | Primary balance | Cyclically adjusted primary balance | Primary spending |
|---|---|---|---|
| Primary balance (-1) | 0.47*** | - | - |
| | 6.61 | | |
| Cyclically adjusted primary balance (-1) | - | 0.47*** | - |
| | | 7.23 | |
| Primary expenditure (-1) | - | - | 0.67*** |
| | | | 8.27 |
| Output gap (-1) | 0.08 | - | 0.06 |
| | 1.24 | | 0.75 |
| EMU dummy | 0.70*** | 0.45** | -0.64*** |
| | 3.21 | 2.07 | -2.62 |
| SGP dummy | 0.46* | -0.07 | -0.36 |
| | 1.78 | -0.31 | -1.43 |
| Enlargement dummy | 0.36 | 0.81* | 0.13 |
| | 0.81 | 1.83 | 0.27 |
| General government fiscal rule (-1) | 0.38** | 0.42*** | -0.36** |
| | 2.44 | 2.93 | -2.07 |
| Debt (-1) [$\alpha$] | 0.05*** | 0.048*** | -0.01 |
| | 4.25 | 4.63 | -0.98 |
| Election dummy x Debt (-1) [$\pi$] | -0.0068** | -0.007** | 0.006** |
| | -2.38 | -2.53 | 2.00 |
| Observations | 308 | 308 | 308 |
| adj R2 | 0.71 | 0.74 | 0.92 |

Notes: The t statistics are in parentheses.
*, **, *** - statistically significant at the 10, 5, and 1 percent level respectively. EMU dummy, 1 for EU15 countries between 1994 and 1998, 0 otherwise. SGP dummy, 1 after 1997 for the countries that are (adhered) in (to) the EU, 0 otherwise. Enlargement dummy, 1 for the New Member States after entering the EU, 0 otherwise.

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