The cyclical character and determinants of fiscal policy in old, new and prospective EU member states

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Abstract

This study investigates the cyclical character and determinants of fiscal policy in European countries between 1995 and 2012. It pays particular attention to comparisons of the stance and determinants of fiscal policy between old EU member states, new EU member states from Central and Eastern Europe and prospective members from South-eastern Europe. The baseline specification is extended with numerous political and institutional factors. System GMM is used as the most appropriate estimation method for the sample and model specification. The study finds that there are considerable differences in the cyclical character and determinants of fiscal policy between old EU member states and transition countries. Discretionary policy in both groups of transition countries is pro-cyclical, thus aggravating economic fluctuations, while it is a-cyclical in old EU member states. Further, automatic stabilizers are effective in all country groups. These baseline results are robust to various extensions and robustness checks. There is also considerable evidence that various political and institutional factors have important effects on fiscal policy in European countries, with numerous differences among the three country groups regarding their particular effect.

Keywords: fiscal policy, transition countries, European Union, system GMM

JEL classification: E62, E32, C33, F15

1. Introduction

The two main schools of macroeconomics have different views on the appropriate response of fiscal policy to output movements. Keynesianism prescribes that, in crises, the government should lower taxes and increase public consumption and investment, which amounts to counter-cyclical policy. On the other hand, the neo-classical theory has a more sceptical view on the stabilization properties of fiscal policy. According to the tax-smoothing models initiated by Barro (1979), for a given path of government spending, governments should keep tax rates constant, which means that the overall budget balance would move counter-cyclically.

Empirical research, which intensified since mid-1990s, was yielding results which were often difficult to link to the main theories. For instance, none of them gave any justification for pro-cyclical fiscal policy, which was often found in developing countries, unlike counter- or a-cyclical policies usually found in developed countries. Therefore, various authors propose possible explanations for these findings, such as the role of government borrowing constraints (Gavin and Perotti (1997)), voracity effects (Lane and Tornell (1998) and Tornell and Lane (1999)) and political agency problems in democracies (Alesina et al. (2008)). A related, but distinct body of literature consists of theoretical and empirical studies of political determinants of fiscal policy. This field is not focused on the cyclical character of fiscal policy *per se*, but on the factors behind policy formulation and outcomes. Numerous authors provide various explanations for fiscal outcomes[2], ranging from political and electoral systems to political business cycles and ideology. An increasing attention is also paid to institutional factors, such as fiscal rules, institutional quality and the budgetary process.

Besides these theoretical and empirical explanations for the cyclical character and determinants of fiscal policy, there are some additional aspects which apply to European countries. The process of European economic and monetary integration created a specific environment for fiscal policy and its response to economic fluctuations. In particular, the constraints of the Maastricht Treaty and the Stability and Growth Pact (SGP) directly affect the ability of governments to conduct stabilizing fiscal policies, on which two possibilities are proposed in the literature (e.g. Galì and Perotti (2003), Fatás and Mihov (2009)). The loss of monetary sovereignty to a supranational body means that fiscal policy is the only remaining tool for output stabilisation, so policymakers would use it more aggressively in a counter-cyclical manner. On the other hand, limits in the Maastricht Treaty and the SGP could prevent such an activist policy, since it could threaten the fiscal discipline which is considered essential for the common currency area. If this was the case, the space for counter-cyclical fiscal policy would be greatly limited, so it could become a-cyclical or even pro-cyclical.

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[2] Alesina and Perotti (1995) and Eslava (2006) provide excellent surveys of various theories on political determinants of fiscal policy.

SGP constraints are also relevant for the new member states (NMS), since they have joined or aspire to join the euro area. The SGP will also be applied to current and potential candidates from South-eastern Europe (SEE) once they enter the EU and prospectively the euro area. Various authors argue that the SGP puts additional and specific constraints on transition countries, which are generally considered undue because of their rapid development and their specifics (Nuti, 2006). Coricelli (2004) brings forward three arguments why SGP requirements would be more stringent for the NMS. First, they have a higher potential and more volatile actual GDP growth than old member states, so the deficit ceiling would be binding more often, even if one considers cyclically-adjusted indicators. This will impose a need for frequent fiscal adjustments, thus increasing the volatility and the pro-cyclical bias of fiscal policy. Second, in the original SGP there is lack of consideration for public investments, which are higher in NMS due to the catching-up process. Third, the political element in the Excessive deficit procedure, which was also important in some cases of breaches by old member states, means that larger NMS could have laxer treatment when breaching the SGP.

Most empirical studies of the cyclicality of fiscal policy focus on European or euro area countries. Galì and Perotti (2003) are among the first to provide a more careful investigation of the cyclicality of fiscal policy, including the effects of the single currency. They conclude that discretionary policy in the euro area was pro-cyclical before 1992, but a-cyclical afterwards. Wyplosz (2006) reaches similar results. On the other hand, Candelon et al. (2010) find that discretionary policy in the euro area has been pro-cyclical both before and after 1992, and that pro-cyclicality has increased in recent years. Further, Annett (2006) finds that the SGP has been quite successful in improving fiscal discipline in most countries, and that rules-based frameworks alleviate politically motivated distortions. Afonso and Hauptmeier (2009) conclude that fiscal rules within the Maastricht Treaty and the SGP improve fiscal discipline, while spending decentralisation and elections have a negative effect. Finally, in a comprehensive analysis of cyclicality of fiscal policy in OECD countries, Égert (2010) concludes that overall policy has become more counter-cyclical, particularly in downturns, and that discretionary policy is counter-cyclical mostly in countries with low debts and deficits, and pro-cyclical in others.

Most studies of fiscal policy that also include transition countries pay little attention to modelling their specific circumstances. However, several recent studies provide a more careful analysis of fiscal policy in transition countries. Fabrizio and Mody (2006) find that the quality of institutions is an important determinant of fiscal outcomes, and that political factors are more important than economic ones. However, the omission of cyclical output movements in this study prevents any inference on the cyclical stance of fiscal policy. Staehr (2008) is one of the first to analyse cyclicality in NMS in a manner routinely used in other recent studies. He finds that fiscal policy in NMS between 1995 and 2005 has been less inertial and more counter-cyclical than in old EU member states. The main weakness of the study is that it uses deviations from average

GDP growth as a cyclical indicator, with the simplifying assumption that trend growth is equal to average growth, which is unrealistic due to considerable changes in trend GDP during the transition process. Therefore, it is difficult to interpret these results in terms of cyclicality. Further, Lewis (2009) analyses determinants of overall budget balances in NMS over the 1995-2008 period, including some political variables and EU accession effects. He finds that fiscal policy in NMS is counter-cyclical and less inertial than in old EU members, while most political variables are insignificant. However, the use of GDP growth rates again prevents interpretation of the cyclical stance of fiscal policy, since there are cases when GDP growth is positive and possibly quite high, while the output gap is negative. In addition, the study does not include the public debt and does not consider possible differences between overall policy and discretionary policy or primary balances.

This study aims to expand the empirical literature on the cyclical character and determinants of fiscal policy in several important aspects. First, it includes all the European transition countries, both current and prospective EU members. It provides a comprehensive analysis of discretionary and overall fiscal policy in these countries and of possible differences with old EU member states, which are also included. Related to this, it expands the sample with several years after the accession of transition countries in the EU. Both of these aspects are important extensions of existing studies, most of which pay little attention to transition countries or focus mostly on years before EU-accession. In addition, to the best of our knowledge, the study is the first to shed some light on the cyclical character of fiscal policy in South-eastern Europe (SEE). Second, it analyses the effect of a wide array of political and institutional factors on fiscal policy. Treating these factors in a comprehensive manner enables a richer analysis of fiscal policy determinants, as well a clear distinction between the effects of economic fluctuations and those of other factors. This addresses an important gap in the literature, which mostly ignores these issues or treats only few additional factors. Third, the study uses an appropriate model specification and empirical method for analysing the cyclicality and determinants of fiscal policy. By doing so, it avoids some of the drawbacks of estimation methods applied in existing studies, which might significantly affect their results. Finally, the study provides several robustness checks on the results, which both test their stability and explore additional aspects of fiscal policy.

The study proceeds as follows. The next section presents the model specification, the data and the estimation method. Section 3 presents baseline estimates of the cyclicality and determinants of fiscal policy, while the following section extends them with political and institutional factors. Section 5 provides additional extensions and robustness checks. Section 6 concludes.

2. Model specification, data, and estimation methodology

2.1 Model specification

In line with most of the literature, we decompose overall fiscal policy into automatic stabilizers and discretionary policy. If discretionary measures are undertaken by policymakers in response to cyclical economic movements, they can be considered endogenous or systematic discretionary fiscal policy (Galì and Perotti, 2003). Other discretionary measures are categorised as exogenous discretionary policy, and they may be a result of a wide array of factors.

This classification of fiscal policy has a straightforward translation into a fiscal policy function which has become standard in cyclicality studies and will also be used as our model specification (Equation 1). It reflects the dependence of fiscal outcomes on cyclical output movements and debt, as well as policy inertia. According to Ballabriga and Martinez-Mongay (2002), it is realistic to expect policy inertia, since drastic changes in tax rates or reversals of past spending commitments are usually unfeasible. In addition, this specification enables proper consideration of initial conditions, i.e. whether initial debt and deficit affect current policy decisions. It also enables testing for budget sustainability, since a response of the primary balance to the debt-to-GDP ratio that is strictly positive and at least linear is a sufficient condition for sustainability (Bohn (1998)). Finally, it is common to include additional variables in the fiscal policy reaction function, not only to minimise the omitted variable bias, but also to analyse exogenous policy by testing various factors based on theoretical or practical considerations, which is also one of the main aims of this study. One such variable that will be included in all specifications is inflation. Its omission, which is surprisingly common in cyclicality studies, ignores the fact that budget balances may not reflect real economic movements, but purely the rise of indexed expenditures or tax revenues because of inflation. Therefore, we follow Persson's comment on Gavin and Perotti (1997), that the omission of inflation may significantly bias the coefficient on the cycle, which is in fact the main variable of interest.

$$\text{Bal}_{it} = \alpha + \beta \text{Cycle}_{it} + \gamma \text{Debt}_{it-1} + \delta \text{Bal}_{it-1} + \omega \text{Infl}_{it} + \theta X_{it} + \varepsilon_{it} \qquad \text{Eq. 1}$$

Bal   - budget balance (total or primary, unadjusted or cyclically-adjusted) as a share of nominal GDP
Cycle - indicator for cyclical movements of the economy (output gap)
Debt   - public debt as a share of GDP
Infl   - inflation rate
X   - *1 x m* vector of additional explanatory variables

The interpretation of coefficients in Equation 1 is relatively straightforward. If β is positive, then fiscal policy is counter-cyclical, meaning that it acts in a stabilizing manner by accumulating surpluses in expansions and stimulating demand in recessions. On the other hand, negative β indicates pro-cyclical, destabilizing policies (i.e. policies that are likely to amplify economic fluctuations[3]), while it insignificance points to a-cyclicality. Further, if the dependent variable is defined as overall budget balance, then β shows the combined cyclicality of automatic stabilizers and the endogenous discretionary policy. On the other hand, if the dependent variable is defined as cyclically-adjusted budget balance, than β shows only the effect of the endogenous or systematic discretionary policy. In both cases, the exogenous discretionary policy is captured by the additional explanatory variables and the error term ($X_{it} + \varepsilon_{it}$). As noted before, inflation is added separately, and we add numerous other factors in our analysis.

2.2. Data and sample

Our focus on European countries and data availability restrict the sample to consist of a total of 33 countries: 27 EU member states (EU27) and 6 South-eastern European countries (SEE6[4]). In the analysis of differences between groups, EU members are split in two: 10 Central and Eastern European new member states (NMS10) from the enlargement cohorts of 2004 and 2007, and 15 old EU members plus Cyprus and Malta (labelled EU17 or old member states[5]). The panel is unbalanced because of data availability, which also limits our sample to start in 1995 and end in 2012, although data on SEE countries are shorter. A description of data sources and calculation is provided in Appendix A, and here we present only the definition of key variables.

We focus on primary instead of total balances, since policymakers have little impact on interest payments which are a result of past borrowing. We mostly use cyclically-adjusted primary balance as a fiscal indicator, since we are primarily interested in systematic responses by policymakers. However, we also pay attention to overall fiscal policy by using the overall, unadjusted primary budget balance. The difference between these indicators consists of automatic stabilizers, which should be counter-cyclical by design. Further, in line with the practice in the empirical literature, we use the output gap as a measure of cyclical movements. Official calculations of the output gap for EU members are available using both the production-function potential GDP and the Hodrick-Prescott (HP) trend GDP, but only the latter can be calculated for SEE6 states. Therefore, we use the output gap defined as a percentage deviation of actual from HP trend GDP. The use of the HP output gap means that we also use cyclically-adjusted fiscal indicators which are based on this method (see Appendix A for details).

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[3] The extent to which fiscal policy affects the business cycle in reality is also related to the size of the fiscal multiplier, an important issue which is however beyond the scope of this study.
[4] SEE6 consists of Albania, Bosnia and Herzegovina, Croatia, Macedonia, Montenegro and Serbia.
[5] Cyprus and Malta joined EU in 2004 as well, but they are grouped with old EU member states because their economic structure and history makes them much closer to them than to the NMS.

2.3. Estimation methodology

The estimation method is heavily affected by our model specification and sample, which restricts estimation to panel techniques. The model implies two important sources of endogeneity that must be properly treated: the dynamic specification and the simultaneity between fiscal balances and the contemporaneous output gap. Numerous studies in this area use Least Squares Dummy Variables (LSDV), although it has long been recognised that it yields biased coefficients in dynamic models with a finite time dimension (Nickell (1981)). Cyclicality studies have addressed this "Nickell bias" in various manners. A few appear to ignore it, despite its serious consequences (e.g. Turrini (2008)). Others use LSDV in somewhat longer samples (e.g. Annett (2006) with 25 years), arguing that the bias declines with time. However, in a pioneering Monte Carlo study on panel estimators for macroeconomic data, Judson and Owen (1997) show that LSDV yields considerable bias of the auto-regressive parameter, while there is also a relatively small bias in the parameter of the exogenous regressor. Therefore, this approach is not appropriate for our sample of maximum 18 years. In addition, the bias-corrected LSDV estimator, originally proposed by Kiviet (1995), is also inappropriate, since it rests on the assumption of strict exogeneity of regressors, while in our specification we have a contemporaneous output gap, which is an essential feature of the model. Therefore, the solution by some authors (e.g. Afonso and Hauptmeier (2009) or Debrun et al. (2008)) to side-step this weakness by using the lagged output gap is also not appropriate, since it is reasonable to expect that fiscal outcomes would react to contemporaneous cyclical movements, and not so much to the ones in the previous year.

Therefore, we decided to use the General Method of Moments (GMM), which is being increasingly used in the empirical literature. In particular, we use the 'system GMM' estimator (Arellano and Bover (1995) and Blundell and Bond (1998)). One of the main features of system GMM is that it utilises a bigger subset of instruments, thus using more information. System GMM greatly improves in efficiency over difference GMM, particularly with higher persistence in the dependent variable and lower time dimension (Blundell and Bond, 1998), which are typical for macroeconomic data.

However, GMM estimators are not without their drawbacks. While additional moment conditions are useful in exploiting additional information, they can cause a rapid growth of the instrument count with the time dimension, which can lead to biased coefficients (Roodman, 2008). In addition, a high number of instruments can severely weaken the Sargan/Hansen test of over-identifying restrictions (Bowsher, 2002). Another potential problem of GMM estimators is the fact that they were originally designed and are mostly used for microeconomic panels with large cross-section and short-time dimensions, while their small sample properties may be problematic. However, several recent studies tend to prefer GMM over alternative estimators even in small samples. Based on higher-order asymptotic methods and Monte Carlo simulations, Bun and

Kiviet (2006) conclude that there are no straightforward advices for the estimator to be used in small samples, but system GMM is a relatively safe choice with inertia in the dependent variable and effect stationarity. Further, after a theoretical calculation and numerical simulations of the bias in small samples, Hayakawa (2007) concludes that system GMM is less biased than both difference and level GMM. Finally, on the basis of detailed Monte Carlo simulations, Soto (2010) concludes that, in small samples with high inertia in the dependent variable, system GMM outperforms a wide range of alternative estimators in terms of bias and efficiency, and that it is highly reliable in terms of the power of statistical significance tests.

Bearing all this on mind, we proceed with two-step system GMM as our estimation method, using the *xtabond2* syntax for Stata written by Roodman (2006). We pay particular attention to implementing and reporting diagnostic checks related to instrument validity and the choice of the estimation method. We use internal instruments for the lagged dependent variable and the output gap in order to exploit one of the main strengths of the method and avoid the difficulty of finding valid external instruments. In order to deal with instrument proliferation, we follow the advice of Roodman (2008) for lag limiting and collapsing the instruments. Further, we address the downward bias of standard errors in two-step GMM by using the correction proposed by Windmeijer (2005). Finally, since differences between country groups are also of interest, we extensively use interaction dummy variables for particular groups. In order to facilitate analysis of results, there is no base group and the constant is removed, so the reported coefficient sizes and significances for interaction terms have a direct interpretation.

Before proceeding to estimations, a word is in order regarding the process of investigation. The analysis of baseline results is followed by the investigation of numerous additional determinants, which are added one at a time, for two main reasons. First, the sample and method used imply that we would soon run into problems with degrees of freedom if we start from a general unrestricted model. Second, this bottom-up approach is also dominant in cyclicality studies since, apart from the baseline specification, there is no overall theory of determinants of fiscal policy. Instead, there are various theories and practical considerations about effects of particular factors.

3. Baseline results

We start with the specification from Equation 1, without the part of additional controls (X_{it}), which are added in other sections. What is common to all results in this part is that diagnostic tests never reject the validity of instruments for endogenous variables and of system compared to difference GMM. Table 1 shows our initial results and main diagnostics. In order to account for common shocks, in column 1 we include full year dummies (not shown). However, the inclusion of full year dummies yields 27 instruments in a sample of 33 countries, and there is a reasonable

risk that we will quickly run into a degrees of freedom problem as we extend this initial specification. Therefore, we considered dropping some of the year dummies. Indeed, most of them are insignificant, except for the later years when they probably reflect the effects of the crisis. Detailed sequential tests of dropping one or several year dummies indicated that dummies for 1995-2001 are both individually and jointly insignificant. Therefore, we decided to drop them from further estimations and proceed with dummies for 2002-2012 (column 2), which does not affect the significance and size of coefficients compared to the case with full year dummies.

According to results in column 2, which mostly hold in other columns and specifications, there is a considerable persistence of discretionary fiscal policy, which supports the use of system GMM. The significantly negative coefficient on output gap shows that discretionary policy in the entire sample has been pro-cyclical, i.e. balances have been worsening in expansions and improving in recessions. Further, there is little indication that policymakers are concerned with debt movements. The debt coefficient is significant at 10%, and it moves around that significance level in most future specifications, but in all cases it is very small. Here it shows that a sizable rise of debt ratio to GDP for 10 percentage points results in a higher cyclically-adjusted balance for only 0.1 percentage points. Nevertheless, because of strong theoretical recommendations, we keep public debt in all future specifications. Finally, inflation is also significant and has an expected positive sign, showing that balances rise with inflation, but its effect is fairly small both in this and future specifications.

In columns 3, 4 and 5 we provide an initial analysis of possible differences across country groups. According to column 3, discretionary policy has been much more inertial in old than in new EU member states, which confirms similar findings by Staehr (2008). On the other hand, the auto-regressive coefficient is insignificant for South-eastern European countries. Column 4 shows differences in the cyclicality of discretionary policy across country groups, which is one of our main issues of interest. Discretionary policy has been a-cyclical in old EU member states, but pro-cyclical in NMS10 and even more so in SEE6, which means that in transition countries fiscal policy was exacerbating cyclical economic movements. Indeed, these results indicate that this feature in transition countries is driving the pro-cyclicality in the entire sample (column 2). These findings are in line with expectations and empirical findings of more pro-cyclical policies in less developed countries. Next, column 5 shows differences in reactions to public debt levels. Somewhat surprisingly, in none of the country groups were policymakers reacting to debt movements. However, this relates well to the recent developments, particularly in the euro area, where the high and/or rising debt levels resulted in a deep economic and financial crisis.

Another important issue of interest is the cyclical character of overall fiscal policy. Therefore, in columns 6 and 7 we repeat the first two columns, but now using the overall, unadjusted primary balance as dependent variable. Column 6 shows results with full year dummies, while column 7 shows results when dropping dummies for 1995-2001. Again, their

omission is justified by their individual and joint insignificance and by the unchanged results between columns 6 and 7. Results in column 7 show that overall fiscal policy has also been quite persistent, similar to comparable results on discretionary policy in column 2. However, the most important result here is the insignificant output gap, which indicates that overall fiscal policy in the entire sample has been a-cyclical. This result relates very well to the previous ones: in the entire sample, automatic stabilizers have been exercising their expected counter-cyclical effect, thus offsetting pro-cyclical discretionary policy (column 2) and resulting in an overall a-cyclical fiscal policy. At the same time, while this means that overall fiscal policy was not amplifying cyclical movements, it was not acting in a stabilizing manner either. Finally, the last column shows differences of overall policy across groups. Overall policy in transition countries is a-cyclical, which shows that automatic stabilizers are offsetting pro-cyclical discretionary policies both in new member states and in South-eastern European countries. Automatic stabilizers are also effective in old EU member states, where they shift the a-cyclical discretionary policy into an overall counter-cyclical fiscal policy.

Table 1. Initial estimations of cyclicality of discretionary and overall policy

Columns	1	2	3	4	5	6	7	8
Dependent variable	cyclically-adjusted primary balance (HP trend GDP), % of nominal GDP					overall, unadjusted primary balance, % of nominal GDP		
lagged dependent variable	0.59*** (0.07)	0.59*** (0.08)		0.64*** (0.07)	0.60*** (0.08)	0.66*** (0.08)	0.65*** (0.09)	0.66*** (0.08)
lagged dependent variable*EU17 interaction			0.80*** (0.10)					
lagged dependent variable*NMS10 interaction			0.47*** (0.16)					
lagged dependent variable*SEE6 interaction			0.22 (0.16)					
output gap, % of HP trend GDP	-0.17*** (0.06)	-0.16** (0.06)	-0.19*** (0.07)		-0.16** (0.07)	0.01 (0.06)	0.00 (0.06)	
output gap*EU17 interaction				0.10 (0.12)				0.27** (0.11)
output gap*NMS10 interaction				-0.22*** (0.05)				-0.12 (0.07)
output gap*SEE6 interaction				-0.42*** (0.13)				-0.14 (0.17)
lagged public debt, % of nom GDP	0.01** (0.01)	0.01* (0.01)	0.01 (0.01)	0.01 (0.01)		0.01 (0.01)	0.01 (0.00)	0.01 (0.01)
lagged public debt*EU17 interaction					0.00 (0.01)			
lagged public debt*NMS10 interaction					0.02 (0.01)			
lagged public debt*SEE7 interaction					-0.03 (0.02)			
inflation rate	0.01 (0.01)	0.01** (0.01)	0.02** (0.01)	0.01*** (0.00)	0.02*** (0.01)	0.01 (0.01)	0.00 (0.00)	0.00 (0.00)
dummy for EU17			-0.11 (0.48)	-0.06 (0.71)	0.32 (0.73)			-0.07 (0.67)
dummy for NMS10			-0.43 (0.36)	-0.30 (0.40)	-0.67 (0.50)			-0.11 (0.41)
dummy for SEE6			-1.04* (0.58)	0.13 (0.51)	1.45 (0.93)			0.08 (0.46)
constant	-0.69 (0.75)	-0.21 (0.44)				-0.28 (0.77)	0.03 (0.40)	
Observations	532	532	532	532	532	534	534	534
Number of instruments	27	20	28	28	24	27	20	28
Number of countries	33	33	33	33	33	33	33	33
Countries included (all=EU27+SEE6)	all	all	all	all	all	all	all	all
Period (maximum per country)	1995-2012	1995-2012	1995-2012	1995-2012	1995-2012	1995-2012	1995-2012	1995-2012
Year dummies included (not shown for convenience)	1995-2012	2002-2012	2002-2012	2002-2012	2002-2012	1995-2012	2002-2012	2002-2012
p-value for F-statistics, joint significance test	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arellano-Bond test for AR(1) in differences	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00
Arellano-Bond test for AR(2) in differences	0.76	0.65	0.39	0.53	0.66	0.51	0.52	0.56
Sargan test of overid. restrictions p-value	0.69	0.38	0.42	0.82	0.28	0.26	0.21	0.38
Hansen test of overid. restrictions p-value	0.82	0.50	0.13	0.86	0.35	0.49	0.43	0.62
GMM instruments for levels: Hansen test excluding group p-value	0.56	0.41	0.04	0.56	0.39	0.41	0.42	0.35
GMM instruments for levels: Diff-in-Hansen test of exogeneity of instruments p-value	0.83	0.46	0.66	0.91	0.28	0.43	0.35	0.78

Notes: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1
Internal instruments are used for endogenous variables. Lag limits are 1/2 for the lagged dependent variable, and 2/3 for the output gap. The 'collapse' option is always used.

Before moving to a more detailed analysis of political and institutional determinants of fiscal policy, in Table 2 we analyse several factors which are routinely included in empirical

studies on European countries: parliamentary elections and the effects of the common currency. We do this by successively adding them to column 1, which repeats baseline results on discretionary policy (in column 2 of the previous table). According to column 2 in Table 2, parliamentary elections have a significant negative effect, as discretionary policy in election years is considerably looser for 0.45 percentage points, while the size and significance of other variables are very robust.

We define the effects of the common currency by two indicators, so that we analyse both the convergence process in the old EU15 member states, and the effects of SGP requirements, which effectively apply after countries enter the euro area. In column 3 we add Maastricht convergence criteria, defined as a dummy that equals one for the EU15 member states between 1995 and 1998[6]. Other results are unchanged, while the Maastricht dummy is significant and positive, indicating that these countries implemented considerable fiscal tightening between 1995 and 1998[7]. This support for the role of the convergence process is maintained if we add the SGP dummy, but the latter has no effect on fiscal policy (column 4). In this case, we also want to capture later entrants, so the dummy for SGP is 1 for euro area members from 1999 or from the year of entry. These results show that, once countries enter the euro area, SGP requirements for disciplined fiscal policies have no discernible effect on actual outcomes, which is also supported by the several violations of the SGP prior to the crisis and the inability of SGP requirements to prevent the European debt crisis. Bearing all of this in mind, we decided to omit SGP from further estimations, but maintain the dummy for Maastricht criteria.

We perform two further checks on the results in column 3. First, results in column 5 indicate that the negative effect of elections in the entire group is driven by the 10 new member states, while somewhat surprisingly elections have no effect on fiscal balances in old EU member states and in the Southern-eastern European countries. Further, we are also interested whether the convergence process had any impact on policy cyclicality, besides its direct effect on better fiscal balances. According to column 6, countries did implement counter-cyclical policies during the Maastricht convergence period, while in other countries and periods the discretionary policy was pro-cyclical, as the coefficient on the output gap barely changes compared to column 3.

In the last column we confirm that results on the cyclicality of discretionary policy by groups hold after we add parliamentary elections and Maastricht convergence. Indeed, discretionary policy is again a-cyclical in old EU member states and pro-cyclical in the two groups of transition countries. Besides, the main results in all the options are quite robust, and the diagnostic in all cases show validity of instruments and of system GMM. Therefore, we treat

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[6] There is divergence in the literature whether the Maastricht dummy should include all old EU15 member states or only the ones that proceeded to form the euro area. In our adoption of the former option, we follow Debrun et al. (2008). However, main results in this table hold if the Maastricht dummy is redefined to equal 1 for the eleven founding euro area members only.

[7] Here, as in other regressions, we only include year dummies for the period between 2002 and 2012. However, this effect of Maastricht criteria holds if full year dummies are included.

columns 3 and 7 as our baseline results for cyclicality in the entire sample and in country groups, respectively, and we proceed with the analysis of political and institutional determinants of fiscal policy by extending these baseline specifications.

Table 2. Baseline specification (in bold), including elections and Maastricht criteria

Columns	1	2	3	4	5	6	7
Dependent variable	cyclically-adjusted primary balance (HP trend GDP), % of nominal GDP						
lagged dependent variable	0.59***	0.59***	**0.57*** **	0.57***	0.59***	0.58***	**0.60*** **
	(0.08)	(0.07)	**(0.07)**	(0.07)	(0.07)	(0.07)	**(0.07)**
output gap, % of HP trend GDP	-0.16**	-0.18***	**-0.17** **	-0.17**	-0.18**	-0.20***	
	(0.06)	(0.06)	**(0.07)**	(0.06)	(0.07)	(0.06)	
output gap*EU17 interaction							0.17
							(0.17)
output gap*NMS10 interaction							-0.21***
							(0.05)
output gap*SEE6 interaction							-0.36**
							(0.15)
output gap*Maastricht interaction						0.59**	
						(0.27)	
lagged public debt, % of nom GDP	0.01*	0.01*	**0.01**	0.01	0.01	0.01*	**0.01**
	(0.01)	(0.01)	**(0.01)**	(0.01)	(0.01)	(0.01)	**(0.01)**
inflation rate	0.01**	0.01*	**0.01** **	0.01**	0.01**	0.01***	**0.01*** **
	(0.01)	(0.01)	**(0.01)**	(0.01)	(0.00)	(0.00)	**(0.00)**
dummy for parliamentary elections (1 if elections held in that year)		-0.45**	**-0.44** **	-0.44**		-0.38	-0.25
		(0.21)	**(0.21)**	(0.21)		(0.23)	(0.23)
dummy for Maastricht run-up (95-98)			**0.60** **	0.60*	0.50**	1.38**	**1.15*** **
			(0.23)	(0.31)	(0.22)	(0.54)	**(0.38)**
dummy for SGP (1 from entering euro area)				0.00			
				(0.35)			
elections*EU17 interaction					-0.42		
					(0.31)		
elections*NMS10 interaction					-0.65*		
					(0.33)		
elections*SEE6 interaction					0.14		
					(0.67)		
dummy for EU17					0.14		-0.42
					(0.62)		(0.88)
dummy for NMS10					-0.15		-0.43
					(0.38)		(0.50)
dummy for SEE6					-0.26		-0.08
					(0.42)		(0.62)
constant	-0.21	-0.04	**-0.16**	-0.16		-0.28	
	(0.44)	(0.44)	**(0.44)**	(0.44)		(0.40)	
Observations	532	532	532	532	532	532	532
Number of instruments	20	21	22	23	26	25	30
Number of countries	33	33	33	33	33	33	33
Countries included (all=EU27+SEE6)	all	all	all	all	all	all	all
Period (maximum per country)	1995-2012	1995-2012	1995-2012	1995-2012	1995-2012	1995-2012	1995-2012
Year dummies included (not shown for convenience)	2002-2012	2002-2012	2002-2012	2002-2012	2002-2012	2002-2012	2002-2012
p-value for F-statistics, joint significance test	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arellano-Bond test for AR(1) in differences	0.00	0.01	0.01	0.01	0.01	0.01	0.01
Arellano-Bond test for AR(2) in differences	0.65	0.52	0.60	0.60	0.49	0.84	0.64
Sargan test of overid. restrictions p-value	0.38	0.33	0.25	0.25	0.24	0.15	0.65
Hansen test of overid. restrictions p-value	0.50	0.56	0.45	0.45	0.46	0.44	0.67
GMM instruments for levels: Hansen test excluding group p-value	0.41	0.35	0.35	0.34	0.37	0.17	0.43
GMM instruments for levels: Diff-in-Hansen test of exogeneity of instruments p-value	0.46	0.65	0.46	0.46	0.45	0.85	0.74

Notes: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1
Internal instruments are used for endogenous variables. Lag limits are 1/2 for the lagged dependent variable, and 2/3 for the output gap. The 'collapse' option is always used.

4. Political and institutional determinants of fiscal policy

In this section we add various controls to the baseline specification, i.e. we expand the control variables X_{it}, in Equation 1 in order to explain as much of the exogenous discretionary policy as possible. It should be noted that, regardless of the modifications, baseline results are very robust: there is considerable inertia in fiscal policy and it is pro-cyclical in the entire sample. In the majority of specifications, inflation improves fiscal balances, elections worsen fiscal discipline, while the Maastricht convergence process improves it. The coefficient on debt moves around significance at the 10% level, but is very small in all cases. Diagnostics are satisfactory and Hansen tests indicate that instruments for endogenous variables are valid and that system GMM should be preferred to difference GMM.

4.1 Voracity effects

According to the voracity theory, pro-cyclicality increases with higher dispersion of power or the number of power groups, defined in a broad way (Lane and Tornell (1998) and Tornell and Lane (1999)). Since there is no single definition of power groups, in Table 3 we analyse various measurements of the number of power groups and the dispersion of power using indicators from the World Bank Database of Political Institutions 2012 (WB DPI, Beck et al. (2001) and Keefer and Stasavage (2003)). In column 1 we repeat baseline results from the section 4. In column 2 we omit Montenegro and Serbia because of lack of data in WB DPI, but results are unchanged. In column 3 we add the number of checks and balances in the political system, which is expected to reflect well the idea of multiple power groups. This indicator measures the number of checks in the system defined in a broad way, capturing the effects of divided control of executive power, strong presidential systems, second legislative chambers, opposition control of parliament or number of parties in cabinet needed to maintain the majority. Results from column 2 are unchanged, but we fail to find support that the number of checks and balances has any effect on fiscal policy in the entire sample. However, column 4 shows that voracity effects are significant in South-eastern European countries and borderline significant in new EU member states, with a higher number of checks in the system worsening the cyclically-adjusted budget balance in transition countries.

Next we use government fragmentation from the WB DPI as an indicator of power dispersion. It is measured with a Herfindahl index of government-controlled seats in parliament, with the maximum of 100 for a single party government. Baseline results from column 2 are unchanged, but we fail to find any effect of this indicator in the entire sample in column 5. According to column 6, there are some indications that government fragmentation is affecting fiscal policy in old EU member states, but this coefficient has an unexpected sign and a relatively

small size. It shows that a considerable move towards concentrated governments results in a relatively low worsening of the budget deficit[8]. These findings indicate that more concentrated government majorities in parliament worsen fiscal discipline in old member states, opposite to voracity effects. A possible explanation would be that moving from multiple weak parties to fewer but stronger parties in government in old EU member states enables them to exert stronger pressure for lower discipline and higher spending.

In the last two columns of Table 3 we analyse the effects of government majority, measured as the share of members of parliament supporting the government, regardless of whether they come from a single or multiple parties. This indicator ignores the composition of government and hence is not linked directly to voracity effects, but it offers some interesting insights. Column 7 shows that stronger government majorities implement more disciplined policies, while the last column shows that this effect is driven by the new EU member states, indicating that strong governments in more advanced transition countries are an important factor in carrying out successful programs of fiscal adjustment.

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[8] For instance, a move from a coalition government consisted of parties controlling 60%, 30% and 10% of government seats in parliament respectively to a single-party government worsens the budget balance for 0.9 percentage points.

Table 3. Voracity effects

Columns	1	2	3	4	5	6	7	8
Dependent variable	cyclically-adjusted primary balance (HP trend GDP), % of nominal GDP							
lagged dependent variable	0.57***	0.59***	0.59***	0.60***	0.59***	0.59***	0.57***	0.59***
	(0.07)	(0.08)	(0.08)	(0.07)	(0.08)	(0.08)	(0.08)	(0.08)
output gap, % of HP trend GDP	-0.17**	-0.17**	-0.18***	-0.18***	-0.17***	-0.19***	-0.17**	-0.18***
	(0.07)	(0.07)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
lagged public debt, % of nom GDP	0.01	0.01	0.01	0.01	0.01*	0.01	0.01*	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
inflation rate	0.01**	0.01**	0.01**	0.02***	0.01**	0.02**	0.02***	0.02***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
dummy for Maastricht run-up (95-98)	0.60**	0.57**	0.65**	0.42*	0.56**	0.48*	0.57**	0.40*
	(0.23)	(0.23)	(0.26)	(0.23)	(0.24)	(0.25)	(0.27)	(0.23)
dummy for parliamentary elections (1 if elections held in that year)	-0.44**	-0.53**	-0.54**	-0.52**	-0.51**	-0.52**	-0.48**	-0.45*
	(0.21)	(0.22)	(0.22)	(0.22)	(0.22)	(0.22)	(0.21)	(0.22)
number of checks in the system			-0.10					
			(0.11)					
number of checks*EU17 interaction				0.16				
				(0.11)				
number of checks*NMS10 interaction				-0.34				
				(0.21)				
number of checks*SEE6 interaction				-0.43**				
				(0.16)				
fragmentation of government seats in parliament (1 party=100)					-0.01			
					(0.01)			
fragmentation of government seats*EU17						-0.02***		
						(0.00)		
fragmentation of government seats*NMS10						0.01		
						(0.01)		
fragmentation of government seats*SEE6						0.00		
						(0.01)		
government majority in parliament, % of seats							0.05*	
							(0.02)	
government majority*EU17 interaction								0.03
								(0.02)
government majority*NMS10 interaction								0.08*
								(0.05)
government majority*SEE6 interaction								-0.01
								(0.02)
dummy for EU17				-0.48		1.25*		-1.18
				(0.71)		(0.63)		(1.46)
dummy for NMS10				1.11		-0.94		-4.79*
				(0.83)		(0.95)		(2.59)
dummy for SEE6				1.34*		-0.23		0.94
				(0.74)		(0.70)		(1.33)
constant	-0.16	-0.15	0.22		0.14		-2.77*	
	(0.44)	(0.43)	(0.58)		(0.54)		(1.47)	
Observations	532	515	512	512	514	514	514	514
Number of instruments	22	22	23	27	23	27	23	27
Number of countries	33	31	31	31	31	31	31	31
Countries included (all=EU27+SEE6)	all	all w/o Serbia, Montenegro	all w/o Serbia, Montenegro	all w/o Serbia, Montenegro	all w/o Serbia, Montenegro	all w/o Serbia, Montenegro	all w/o Serbia, Montenegro	all w/o Serbia, Montenegro
Period (maximum per country)	1995-2012	1995-2012	1995-2012	1995-2012	1995-2012	1995-2012	1995-2012	1995-2012
Year dummies included (not shown for convenience)	2002-2012	2002-2012	2002-2012	2002-2012	2002-2012	2002-2012	2002-2012	2002-2012
p-value for F-statistics, joint significance test	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arellano-Bond test for AR(1) in differences	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Arellano-Bond test for AR(2) in differences	0.60	0.33	0.33	0.29	0.32	0.28	0.43	0.44
Sargan test of overid. restrictions p-value	0.25	0.13	0.18	0.20	0.17	0.14	0.26	0.22
Hansen test of overid. restrictions p-value	0.45	0.40	0.51	0.52	0.46	0.39	0.59	0.53
GMM instruments for levels: Hansen test excluding group p-value	0.35	0.25	0.24	0.25	0.25	0.25	0.27	0.24
GMM instruments for levels: Diff-in-Hansen test of exogeneity of instruments p-value	0.46	0.52	0.81	0.80	0.63	0.52	0.91	0.85

Notes: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Internal instruments are used for endogenous variables. Lag limits are 1/2 for the lagged dependent variable, and 2/3 for the output gap. The 'collapse' option is always used.

4.2. Institutional, political and ideological factors

We start this subsection by the analysis of "deeper" systemic factors which are broadly based on the literature on the political economy of fiscal policy. Table 4 starts by repeating baseline results in column 1. In the second column we add a dummy variable which equals 1 if most or all members of the legislature are elected by some kind of a plurality electoral system. Its effect is significant, but negative, showing that plurality electoral systems yield less disciplined fiscal policies. Column 3 shows that this effect is driven by the old EU member states. This result contradicts the literature on the political economy of budget deficits, which predicts that it is proportional systems that result in less disciplined fiscal policy, since they usually yield coalition governments where various parties are able to condition their entry or stay in the coalition with demands for higher spending. However, we already rejected that hypothesis for the entire sample when we controlled directly for the government concentration in the previous subsection. In particular, higher government concentration there led to worse balances in old EU member states, so these results on the electoral system lend additional support to those findings of absence of voracity effects in EU countries. While we are unable to pinpoint the exact source of these results on the electoral system, we suspect they might be due to pork-barrel projects, when members of parliament elected by relatively narrow constituencies make pressure for higher government spending in their regions, aiming to boost their chances for re-election. Pork-barrel projects feature regularly in American politics, but these results indicate that the old EU member states employing this electoral system might also not be entirely immune from this phenomenon.

Next we analyse possible effects of the political system on fiscal policy by using a dummy variable for presidential systems from WB DPI. In column 4 we find that countries with presidential systems have lower discipline. This is somewhat surprising, since it would be expected that executive power concentrated in a single person would yield more disciplined policies than the typical outcome of governments and parliaments consisted of several parties. However, this finding should be qualified for two reasons. First, in reality power is often not entirely concentrated in the president, but divided between the president and the legislature or the government. In those cases, the president can be viewed as one more power group, in which case these results lend some indirect support to the voracity theory. Second, our sample has very few presidential systems, mostly in transition countries. This explains the result in column 5 that presidential systems significantly worsen budget balances both in new member states and South-eastern European countries. Indeed, if presidents are treated as one more power group, this lends additional support to voracity effects in transition countries, which were also found when analysing the number of checks and balances in Table 3.

In the last two columns of Table 4 we analyse the effects of fiscal decentralisation in EU member states using Eurostat data, which are not available for SEE countries. We present the

results using expenditure decentralisation, whereas revenue decentralisation has no effect on fiscal outcomes (not shown). According to column 6, expenditure decentralisation has a significantly positive effect on fiscal balances, while column 7 shows that this result is entirely driven by old EU member states, but in any case the effects of decentralisation are quite small.

Table 4. Effects of the political and electoral system and fiscal decentralisation

Columns	1	2	3	4	5	6	7
Dependent variable		cyclically-adjusted primary balance (HP trend GDP), % of nominal GDP					
lagged dependent variable	0.57***	0.57***	0.58***	0.57***	0.57***	0.60***	0.60***
	(0.07)	(0.07)	(0.08)	(0.07)	(0.07)	(0.10)	(0.10)
output gap, % of HP trend GDP	-0.17**	-0.17**	-0.18**	-0.17***	-0.19***	-0.18**	-0.19**
	(0.07)	(0.07)	(0.07)	(0.06)	(0.06)	(0.07)	(0.07)
lagged public debt, % of nom GDP	0.01	0.01	0.01	0.01	0.00	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
inflation rate	0.01**	0.01*	0.01**	0.01*	0.01**	0.01**	0.02**
	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)
dummy for Maastricht run-up (95-98)	0.60**	0.60**	0.48**	0.55**	-0.03	0.32	0.27
	(0.23)	(0.23)	(0.22)	(0.23)	(0.57)	(0.22)	(0.20)
dummy for parliamentary elections (1 if elections held in that year)	-0.44**	-0.45**	-0.45**	-0.43**	-0.39*	-0.54**	-0.53**
	(0.21)	(0.21)	(0.22)	(0.21)	(0.21)	(0.24)	(0.24)
dummy for electoral system (1 if plurality)		-0.56***					
		(0.20)					
dummy for electoral system*EU17 interaction			-0.43*				
			(0.23)				
dummy for electoral system*NMS10 interaction			-0.43				
			(0.33)				
dummy for electoral system*SEE6 interaction			-1.03				
			(0.74)				
dummy for political system (1 if presidential)				-0.56***			
				(0.19)			
dummy for political system*EU17 interaction					-8.84		
					(7.54)		
dummy for political system*NMS10 interaction					-0.50**		
					(0.21)		
dummy for political system*SEE6 interaction					-0.33*		
					(0.19)		
decentralisation of expenditures						0.03*	
						(0.01)	
decentralisation of expenditures*EU17 interaction							0.03*
							(0.01)
decentralisation of expenditures*NMS10 interaction							0.05
							(0.05)
dummy for EU17			0.26		0.91		-0.57
			(0.66)		(0.98)		(0.89)
dummy for NMS10			-0.13		-0.12		-1.51
			(0.39)		(0.36)		(1.45)
dummy for SEE6			0.15		0.07		
			(0.41)		(0.42)		
constant	-0.16	-0.05		-0.05		-0.79	
	(0.44)	(0.44)		(0.43)		(0.69)	
Observations	532	532	532	532	532	469	469
Number of instruments	22	23	27	23	27	23	25
Number of countries	33	33	33	33	33	27	27
Countries included (all=EU27+SEE6)	all	all	all	all	all	EU27	EU27
Period (maximum per country)	1995-2012	1995-2012	1995-2012	1995-2012	1995-2012	1995-2012	1995-2012
Year dummies included (not shown for convenience)	2002-2012	2002-2012	2002-2012	2002-2012	2002-2012	2002-2012	2002-2012
p-value for F-statistics, joint significance test	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arellano-Bond test for AR(1) in differences	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Arellano-Bond test for AR(2) in differences	0.60	0.58	0.54	0.61	0.60	0.14	0.15
Sargan test of overid. restrictions p-value	0.25	0.21	0.19	0.28	0.27	0.04	0.04
Hansen test of overid. restrictions p-value	0.45	0.41	0.37	0.51	0.70	0.28	0.29
GMM instruments for levels: Hansen test excluding group p-value	0.35	0.33	0.32	0.34	0.35	0.12	0.12
GMM instruments for levels: Diff-in-Hansen test of exogeneity of instruments p-value	0.46	0.42	0.37	0.55	0.94	0.66	0.67

Notes: Standard errors in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Internal instruments are used for endogenous variables. Lag limits are 1/2 for the lagged dependent variable, and 2/3 for the output gap. The 'collapse' option is always used.

In Table 5 we check the idea put forward by Alesina et al. (2008) for less disciplined and more pro-cyclical policies in democracies with corruption. After repeating the baseline results in column 1, in the second column we introduce an indicator for the level of democratisation from the Polity IV database. Results indicate that countries with higher level of democratisation have more disciplined fiscal policy. Column 3 suggests that this is entirely driven by South-eastern European countries, where changes in this variable are bigger during the analysed period compared to the old and new EU member states, which already had a higher level of democratisation. We proceed with the effects of control of corruption, as measured by the World Bank Worldwide Governance Indicators 2011 (Kaufmann et al., 2010), where a higher score means lower corruption[9]. Column 4 shows that countries with better control of corruption have more disciplined fiscal policies, while column 5 shows that this result is driven by the old EU member states. In the final two columns we check whether corrupt democracies have more pro-cyclical and less disciplined policies. In column 6 we add both measures for democratisation and for control of corruption. However, it turns out that only control of corruption matters, while democratisation loses its significance. This change from the results obtained when introducing them separately is probably related to the highly significant positive correlation between them of 58%, reflecting the fact that stronger democracies tend to have lower levels of corruption. We proceed by adding an interaction term between them, but results in the last column show lack of support for the idea that fiscal policy is less disciplined in "corrupt democracies", since the interaction term and the two individual variables are all insignificant. Moreover, the output gap has an unchanged size and significance and the other coefficients are also quite robust. Therefore, while both democratisation and the control of corruption separately improve fiscal discipline, there is no evidence that "corrupt democracies" affect fiscal policy either directly or by changing its cyclical character.

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[9] These data are available for 1996-2011, which shortens our sample for the first and the last year. However, this has no effect on the other results.

Table 5. Effects of democratisation and control of corruption

Columns	1	2	3	4	5	6	7
Dependent variable	cyclically-adjusted primary balance (HP trend GDP), % of nominal GDP						
lagged dependent variable	0.57***	0.56***	0.58***	0.59***	0.56***	0.58***	0.58***
	(0.07)	(0.08)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
output gap, % of HP trend GDP	-0.17**	-0.18***	-0.18***	-0.21***	-0.20***	-0.21***	-0.21***
	(0.07)	(0.07)	(0.06)	(0.05)	(0.05)	(0.05)	(0.05)
lagged public debt, % of nom GDP	0.01	0.01	0.01	0.01*	0.02**	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)
inflation rate	0.01**	0.01***	0.01***	0.02***	0.02***	0.02***	0.02***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
dummy for Maastricht run-up (95-98)	0.60**	0.47**	0.41*	0.59***	0.52**	0.53**	0.53**
	(0.23)	(0.22)	(0.21)	(0.21)	(0.19)	(0.21)	(0.21)
dummy for parliamentary elections (1 if elections held in that year)	-0.44**	-0.45**	-0.47**	-0.45*	-0.46*	-0.47*	-0.47*
	(0.21)	(0.21)	(0.22)	(0.24)	(0.23)	(0.25)	(0.25)
democratisation (rise=higher democratisation)		0.35***				0.16	0.17
		(0.12)				(0.12)	(0.12)
democratisation * EU17 interaction			0.31				
			(0.21)				
democratisation * NMS10 interaction			0.13				
			(0.17)				
democratisation * SEE6 interaction			0.73***				
			(0.19)				
control of corruption (higher=less corruption)				0.47***		0.42**	0.10
				(0.15)		(0.18)	(1.59)
control of corruption * EU17 interaction					1.19***		
					(0.32)		
control of corruption * NMS10 interaction					0.43		
					(0.53)		
control of corruption * SEE6 interaction					0.78		
					(0.85)		
democratisation * control of corruption interaction							0.03
							(0.17)
dummy for EU17			-2.80		-2.36**		
			(1.97)		(0.88)		
dummy for NMS10			-1.35		-0.87**		
			(1.44)		(0.39)		
dummy for SEE6			-6.28***		-0.40		
			(1.68)		(0.49)		
constant	-0.16	-3.28***		-0.56*		-1.99*	-2.02*
	(0.44)	(0.96)		(0.31)		(1.00)	(1.05)
Observations	532	524	524	486	486	478	478
Number of instruments	22	23	27	22	26	23	24
Number of countries	33	32	32	33	33	32	32
Countries included (all=EU27+SEE6)	all	all w/o Bosnia and Herz.	all w/o Bosnia and Herz.	all	all	all w/o Bosnia and Herz.	all w/o Bosnia and Herz.
Period (maximum per country)	1995-2012	1995-2012	1995-2012	1996-2011	1996-2011	1996-2011	1996-2011
Year dummies included (not shown for convenience)	2002-2012	2002-2012	2002-2012	2002-2011	2002-2011	2002-2011	2002-2011
p-value for F-statistics, joint significance test	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arellano-Bond test for AR(1) in differences	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Arellano-Bond test for AR(2) in differences	0.60	0.46	0.39	0.58	0.58	0.76	0.76
Sargan test of overid. restrictions p-value	0.25	0.21	0.18	0.39	0.48	0.36	0.37
Hansen test of overid. restrictions p-value	0.45	0.40	0.40	0.74	0.76	0.67	0.67
GMM instruments for levels: Hansen test excluding group p-value	0.35	0.34	0.37	0.48	0.53	0.43	0.43
GMM instruments for levels: Diff-in-Hansen test of exogeneity of instruments p-value	0.46	0.39	0.36	0.77	0.75	0.72	0.72

Notes: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Internal instruments are used for endogenous variables. Lag limits are 1/2 for the lagged dependent variable, and 2/3 for the output gap. The 'collapse' option is always used.

In the last part of this subsection we analyse effects of ideology using data from the Comparative Political Data Set III (Armingeon et al., 2012), which are available only for EU27 member states until 2010. Baseline results for the entire sample in column 1 of Table 6 do not change when we restrict the sample to EU27 countries between 1995 and 2010 in column 2. We proceed by adding the ideological composition of the cabinet, ranging from 1 for hegemony of right and centre parties, to 5 for hegemony of left parties. This factor is insignificant both in the entire EU27 in column 3, and in the old and new member states in column 4. In columns 5 and 6 we use a dummy variable to check whether changes in the ideological composition of government affect fiscal policy, regardless of the direction of change, but we fail to find any effect, either for EU27, or for the two groups of member states separately. However, the final two columns show what is important is precisely the direction of change. In column 7 we add the "ideological gap", defined as the difference between the old and the new ideological composition of government (positive if moving to the left), and find that it is insignificant in the entire sample. However, its interaction with dummies for country groups in column 8 shows that the direction of ideological change is important in old EU member states, where moves to the left result in worse budget balances. On the other hand, the absence of any ideological effects in new member states can be explained by the fact that ideological definitions are less clear-cut in these countries, and thus confirms similar findings by Lewis (2009). Certainly, political parties in NMS10 do describe themselves along ideological lines, but the actual impact this has on fiscal policy is blurred, as opposed to the old EU member states, which have longer traditions of ideological definitions of political parties and governments.

Table 6. Effects of the ideological composition of the government cabinet

Columns	1	2	3	4	5	6	7	8
Dependent variable		cyclically-adjusted primary balance (HP trend GDP), % of nominal GDP						
lagged dependent variable	0.57***	0.68***	0.68***	0.68***	0.68***	0.69***	0.68***	0.70***
	(0.07)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)
output gap, % of HP trend GDP	-0.17**	-0.19***	-0.19***	-0.20***	-0.19***	-0.19***	-0.19***	-0.19***
	(0.07)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
lagged public debt, % of nom GDP	0.01	0.01**	0.01**	0.01	0.01**	0.01	0.01*	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
inflation rate	0.01**	0.01**	0.01**	0.02***	0.01**	0.02***	0.02**	0.02***
	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)	(0.01)
dummy for Maastricht run-up (95-98)	0.60**	0.38*	0.38*	0.28	0.38*	0.27	0.34*	0.37
	(0.23)	(0.19)	(0.20)	(0.22)	(0.19)	(0.20)	(0.19)	(0.24)
dummy for parliamentary elections (1 if elections held in that year)	-0.44**	-0.66**	-0.66**	-0.64**	-0.69**	-0.67**	-0.66**	-0.63**
	(0.21)	(0.28)	(0.28)	(0.28)	(0.30)	(0.30)	(0.28)	(0.28)
ideological composition of cabinet (higher=left)			-0.00					
			(0.08)					
ideological composition * EU17 interaction				-0.10				
				(0.07)				
ideological composition * NMS10 interaction				0.25				
				(0.15)				
dummy for change in ideological composition of cabinet					0.16			
					(0.27)			
dummy for ideological change * EU17 interaction						0.28		
						(0.25)		
dummy for ideological change * NMS10 interaction						0.04		
						(0.51)		
ideological gap between new and old cabinet (rise=moving left)							0.07	
							(0.22)	
ideological gap * EU17 interaction								-0.26*
								(0.15)
ideological gap * NMS10 interaction								0.57
								(0.35)
dummy for EU17				0.45		0.08		0.07
				(0.50)		(0.49)		(0.47)
dummy for NMS10				-0.93		-0.28		-0.34
				(0.55)		(0.39)		(0.34)
constant	-0.16	-0.19	-0.18		-0.23		-0.19	
	(0.44)	(0.35)	(0.46)		(0.36)		(0.37)	
Observations	532	415	414	414	415	415	413	413
Number of instruments	22	20	21	23	21	23	21	23
Number of countries	33	27	27	27	27	27	27	27
Countries included (all=EU27+SEE6)	all	EU27	EU27	EU27	EU27	EU27	EU27	EU27
Period (maximum per country)	1995-2012	1995-2010	1995-2010	1995-2010	1995-2010	1995-2010	1995-2010	1995-2010
Year dummies included (not shown for convenience)	2002-2012	2002-2010	2002-2010	2002-2010	2002-2010	2002-2010	2002-2010	2002-2010
p-value for F-statistics, joint significance test	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arellano-Bond test for AR(1) in differences	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arellano-Bond test for AR(2) in differences	0.60	0.10	0.10	0.11	0.11	0.11	0.11	0.14
Sargan test of overid. restrictions p-value	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hansen test of overid. restrictions p-value	0.45	0.38	0.38	0.36	0.38	0.39	0.37	0.35
GMM instruments for levels: Hansen test excluding group p-value	0.35	0.17	0.16	0.14	0.17	0.16	0.16	0.14
GMM instruments for levels: Diff-in-Hansen test of exogeneity of instruments p-value	0.46	0.74	0.76	0.80	0.73	0.77	0.75	0.77

Notes: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Internal instruments are used for endogenous variables. Lag limits are 1/2 for the lagged dependent variable, and 2/3 for the output gap. The 'collapse' option is always used.

In Table 7 we analyse the effects of fiscal rules and governance. Due to lack of data for SEE, this investigation is limited to EU countries until 2011. Therefore, in column 2 we reproduce the baseline results on EU27 until 2011, while in column 3 we add the standardised fiscal rule index of the European Commission, which shows the effect of various types of national fiscal rules which constraint fiscal policy beyond the wider SGP. As expected, countries with stronger rules implement more disciplined policies. Column 4 indicates that fiscal rules have a similar effect in both old and new member states, although in the latter group it is significant only slightly above 10%. Further, in the last two columns of Table 7 we investigate the effects of fiscal governance. These indicators draw on the work by von Hagen (1992), Hallerberg and von Hagen (1999), Gleich (2003) and Fabrizio and Mody (2006). Broadly speaking, this literature measure various aspects of the institutional setup and the budgeting process to create two main governance types: delegation and contracts. In countries where delegation dominates, most of the authority on budget drafting and implementation is concentrated in a single person (typically the finance minister), who tends to have strong discretionary power over other ministers. On the other hand, in countries with the 'contract' type, the budgetary process is more subjected to contracts and commitments by government parties. In practice, the two types of fiscal governance are not completely exclusive, so we add both indicators in column 6. We use indicators from Hallerberg et al. (2009) for old EU member states and Hallerberg and Yläoutinen (2010) for NMS10[10], and their availability shortens our sample to 1995-2007 for old and 1998-2007 for new member states. Findings suggest that the 'contract' type results in more disciplined policies, while the 'delegation' type has no impact on fiscal outcomes. However, results in column 7 indicate that there are significant differences across country groups. The disciplining effect of the 'contract' type is present only in NMS10 countries, which could be explained by the fact that they tend to have coalition governments and are hence expected to adopt the 'contract' type of governance more often. On the other hand, the 'delegation' type of governance has a significantly negative effect on fiscal outcomes in old member states, which argues against the prevalent practice of vesting powers of budget drafting and implementation in one person in these countries.

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[10] We are grateful to Mark Hallerberg for providing additional information on the data on fiscal governance.

Table 7. Effects of fiscal rules and types of fiscal governance

Columns	1	2	3	4	5	6
Dependent variable	cyclically-adjusted primary balance (HP trend GDP), % of nominal GDP					
lagged dependent variable	0.57***	0.63***	0.62***	0.63***	0.49***	0.43***
	(0.07)	(0.10)	(0.10)	(0.10)	(0.11)	(0.11)
output gap, % of HP trend GDP	-0.17**	-0.15**	-0.17**	-0.16**	-0.12*	-0.12
	(0.07)	(0.07)	(0.07)	(0.07)	(0.06)	(0.08)
lagged public debt, % of nom GDP	0.01	0.01	0.02**	0.02*	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
inflation rate	0.01**	0.01*	0.02**	0.02***	0.00	0.03
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
dummy for Maastricht run-up (95-98)	0.60**	0.42**	0.44*	0.42*	0.34	-0.15
	(0.23)	(0.20)	(0.23)	(0.22)	(0.22)	(0.28)
dummy for parliamentary elections (1 if elections held in that year)	-0.44**	-0.61*	-0.63*	-0.62*	-0.47**	-0.40**
	(0.21)	(0.31)	(0.31)	(0.31)	(0.17)	(0.17)
fiscal rules index (higher=stronger rules)			0.60***			
			(0.17)			
fiscal rules index * EU17 interaction				0.58***		
				(0.17)		
fiscal rules index * NMS10 interaction				0.58		
				(0.34)		
delegation in fiscal governance					-0.84	
					(0.83)	
delegation * EU17 interaction						-2.52**
						(1.01)
delegation * NMS10 interaction						1.41
						(1.30)
contracts in fiscal governance					1.63***	
					(0.54)	
contracts * EU17 interaction						0.61
						(0.50)
contracts * NMS10 interaction						1.99**
						(0.90)
dummy for EU17				-0.39		2.19*
				(0.67)		(1.16)
dummy for NMS10				-0.56		-1.49
				(0.45)		(0.89)
constant	-0.16	-0.14	-0.52		-0.05	
	(0.44)	(0.51)	(0.49)		(0.72)	
Observations	532	442	442	442	292	292
Number of instruments	22	21	22	24	19	22
Number of countries	33	27	27	27	25	25
Countries included (all=EU27+SEE6)	all	EU27	EU27	EU27	EU27 w/o Cyprus and	EU27 w/o Cyprus and
Period (maximum per country)	1995-2012	1995-2011	1995-2011	1995-2011	1995-2007	1995-2007
Year dummies included (not shown for convenience)	2002-2012	2002-2011	2002-2011	2002-2011	2002-2007	2002-2007
p-value for F-statistics, joint significance test	0.00	0.00	0.00	0.00	0.00	0.00
Arellano-Bond test for AR(1) in differences	0.01	0.01	0.01	0.01	0.00	0.00
Arellano-Bond test for AR(2) in differences	0.60	0.11	0.11	0.11	0.20	0.22
Sargan test of overid. restrictions p-value	0.25	0.01	0.02	0.02	0.50	0.49
Hansen test of overid. restrictions p-value	0.45	0.13	0.14	0.14	0.67	0.40
GMM instruments for levels: Hansen test excluding group p-value	0.35	0.12	0.14	0.14	0.78	0.71
GMM instruments for levels: Diff-in-Hansen test of exogeneity of instruments p-value	0.46	0.23	0.21	0.22	0.39	0.19

Notes: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Internal instruments are used for endogenous variables. Lag limits are 1/2 for the lagged dependent variable, and 2/3 for the output gap. The 'collapse' option is always used.

5. Additional extensions and robustness checks

5.1. Sources and asymmetries in the cyclicality of fiscal policy

In Table 8 we analyse the sources of cyclicality, i.e. whether the particular character of fiscal policy is a result of cyclically-adjusted revenues or cyclically-adjusted primary expenditures, and whether there are differences in expansions and recessions. In the first column we reproduce baseline results, while in columns 2 and 3 we use the same specification to investigate revenues and expenditures respectively in the entire sample. The results indicate that the pro-cyclicality of budget balances is a reflection of pro-cyclical primary expenditures (rising in expansions), whereas revenues are a-cyclical. Further, expenditures rise with the increase in debt, which implies unsustainable fiscal policy, although this effect is again very small. In addition, the borderline positive effect of debt on revenues indicates that the two effects neutralise each other to yield improving balances with higher debt, albeit with a very small size and significance just above 10%. Finally, these results indicate that inflation, elections and Maastricht convergence have no effect on either revenues or expenditures, which is counterintuitive due to their significant influence on budget balances. While we were unable to find a reasonable explanation for the insignificance of Maastricht convergence and inflation in both revenue and expenditure equations, we return to the issue of elections in the next subsection.

We delve into the sources of cyclicality further by reproducing in column 4 the analysis of the cyclically-adjusted primary balance by country groups, while in the next two columns we carry out the same analysis for revenues and primary expenditures. The insignificant effect of output gap on both revenues and expenditures for old member states in columns 5 and 6 shows that they were both a-cyclical, thus explaining the a-cyclical balances for this group in column 4. On the other hand, the pro-cyclical fiscal policy in NMS10 and South-eastern European countries from column 4 is completely explained by pro-cyclical expenditures in column 6. These results can further be related to the first 3 columns. Pro-cyclical balances in the entire sample are driven by transition countries, and pro-cyclical expenditures in the entire sample are also driven by the two groups of transition countries. Finally, the a-cyclicality of revenues in the entire sample reflects a-cyclicality in all three country groups.

In the last three columns we check for asymmetries in fiscal policy, i.e. whether policymakers' reaction to cyclical movements is different in expansions and recessions, defined as dummy variables for positive and negative output gaps, respectively, and then interacted with the output gap. According to results in column 7, there is considerable asymmetry in policy reactions. In expansions, policymakers react pro-cyclically by reducing budget balances, while the policy in recessions is a-cyclical. In the final two columns we check whether this asymmetric reaction is due to revenues or primary expenditures, but fail discover the source, since both

revenues and expenditures are a-cyclical in expansions and recessions. Indeed, this is another puzzle to which we return in the next subsection.

Table 8. Sources and asymmetries of fiscal policy

Columns Dependent variable	1 Cyclically adjusted primary balance, % of nom. GDP	2 Cyclically adjusted revenues, % of nom. GDP	3 Cyclically adjusted primary expenditures, % of nom. GDP	4 Cyclically adjusted primary balance, % of nom. GDP	5 Cyclically adjusted revenues, % of nom. GDP	6 Cyclically adjusted primary expenditures, % of nom. GDP	7 Cyclically adjusted primary balance, % of nom. GDP	8 Cyclically adjusted revenues, % of nom. GDP	9 Cyclically adjusted primary expenditures, % of nom. GDP
lagged dependent variable	0.57***	0.96***	0.71***	0.60***	0.93***	0.68***	0.59***	0.97***	0.65***
	(0.07)	(0.12)	(0.12)	(0.07)	(0.17)	(0.10)	(0.08)	(0.22)	(0.11)
output gap, % of HP trend GDP	-0.17**	-0.03	0.18*						
	(0.07)	(0.05)	(0.09)						
output gap*EU17 interaction				0.17	-0.04	-0.15			
				(0.17)	(0.07)	(0.13)			
output gap*NMS10 interaction				-0.21***	0.01	0.20***			
				(0.05)	(0.04)	(0.07)			
output gap*SEE6 interaction				-0.36**	-0.14	0.21*			
				(0.15)	(0.15)	(0.12)			
output gap*expansions interaction							-0.25*	0.04	0.25
							(0.14)	(0.17)	(0.18)
output gap*recessions interaction							-0.20	-0.16	0.14
							(0.17)	(0.20)	(0.20)
lagged public debt, % of nom GDP	0.01	0.01	0.02**	0.01	0.01	0.01	0.01	0.01	0.01**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
inflation rate	0.01**	-0.00	-0.04	0.01***	-0.01	-0.03*	0.01	0.00	-0.06*
	(0.01)	(0.02)	(0.03)	(0.00)	(0.01)	(0.01)	(0.01)	(0.02)	(0.03)
dummy for Maastricht run-up (95-98)	0.60**	0.10	0.22	1.15***	0.05	-0.80*	0.72***	0.17	0.26
	(0.23)	(0.33)	(0.33)	(0.38)	(0.30)	(0.45)	(0.25)	(0.40)	(0.41)
dummy for parliamentary elections (1 if elections held in that year)	-0.44**	-0.15	0.27	-0.25	-0.17	0.25	-0.45**	-0.15	0.32*
	(0.21)	(0.12)	(0.20)	(0.23)	(0.14)	(0.18)	(0.20)	(0.15)	(0.17)
dummy for EU17				-0.42	2.49	13.47***			
				(0.88)	(7.22)	(4.00)			
dummy for NMS10				-0.43	2.22	11.99***			
				(0.50)	(6.56)	(3.91)			
dummy for SEE6				-0.08	2.35	10.87***			
				(0.62)	(5.78)	(3.77)			
dummy for expansions							0.16	0.62	13.51***
							(0.51)	(8.17)	(4.43)
dummy for recessions							-0.22	0.27	13.69***
							(0.62)	(8.41)	(4.32)
constant	-0.16	1.05	11.17**						
	(0.44)	(4.79)	(4.80)						
Observations	532	539	532	532	539	532	532	539	532
Number of instruments	22	22	22	30	30	30	26	26	26
Number of countries	33	33	33	33	33	33	33	33	33
Countries included (all=EU27+SEE6)	all	all	all	all	all	all	all	all	all
Period (maximum per country)	1995-2012	1995-2012	1995-2012	1995-2012	1995-2012	1995-2012	1995-2012	1995-2012	1995-2012
Year dummies included (not shown)	2002-2012	2002-2012	2002-2012	2002-2012	2002-2012	2002-2012	2002-2012	2002-2012	2002-2012
p-value for F-statistics, joint significance test	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arellano-Bond test for AR(1) in differences	0.01	0.00	0.02	0.01	0.00	0.02	0.01	0.00	0.02
Arellano-Bond test for AR(2) in differences	0.60	0.31	0.13	0.64	0.36	0.15	0.75	0.23	0.16
Sargan test of overid. restrictions p-value	0.25	0.29	0.04	0.65	0.26	0.16	0.27	0.21	0.18
Hansen test of overid. restrictions p-value	0.45	0.57	0.29	0.67	0.36	0.59	0.63	0.41	0.60
GMM instruments for levels: Hansen test excluding group p-value	0.35	0.43	0.87	0.43	0.42	0.76	0.28	0.76	0.30
GMM instruments for levels: Diff-in-Hansen test of exogeneity of instruments p-value	0.46	0.54	0.09	0.74	0.30	0.32	0.92	0.17	0.82

Notes: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1
Internal instruments are used for endogenous variables. Lag limits are 1/2 for the lagged dependent variable, and 2/3 for the output gap. The 'collapse' option is always used.

5.2. Effects of crisis and 'transformational recession'

Table 8 yielded two puzzles to which we turn next. First, elections worsen budget balances, but they have an insignificant effect on both revenues and expenditures. Second, there are asymmetries in fiscal policy, but it is unclear whether this is coming from the asymmetry of revenues or expenditures. We suspect that these puzzles might be related to the European fiscal crisis in the recent years. During this period, governments in several European countries had to increase revenues and decrease spending regardless of the business cycle or attempts to affect elections. Therefore, in Table 9 we omit the final two years when most governments were enacting considerable austerity measures, and reproduce the analysis in the first three and the last three columns of the previous table for the period 1995-2010.

The first three columns of Table 9 clarify the puzzle regarding elections. Column 1 shows that, even when ignoring the austerity years, fiscal policy was heavily utilised to affect electoral outcomes. In addition, with the shorter sample we again find pro-cyclicality of budget balances, indicating that it is not simply a reflection of austerity in the most recent years. Columns 2 and 3 indicate that the effect of elections on balances was entirely a result of higher expenditures in election years, while the election dummy is insignificant in the revenue equation. As for the second puzzle, according to column 4, in the pre-crisis years there was also a considerable asymmetry in fiscal policy, with a pro-cyclical stance in expansions and a-cyclical stance in recessions. The final two columns show that this was a result of considerable asymmetry in both revenues and expenditures. Indeed, column 5 indicates that revenues responded a-cyclically in expansions and counter-cyclically in recessions. On the other hand, the last column shows that there was an opposite asymmetry in expenditures: they were pro-cyclical in expansions and a-cyclical in recessions. The combined results of the last two columns thus explain the asymmetry of budget balances with the dominant effect of expenditures over revenues in both expansions and recessions.

Table 9. Sources and asymmetries of fiscal policy prior to the European fiscal crisis

Columns Dependent variable	1 Cyclically adjusted primary balance, % of nom. GDP	2 Cyclically adjusted revenues, % of nom. GDP	3 Cyclically adjusted primary expenditures, % of nom. GDP	4 Cyclically adjusted primary balance, % of nom. GDP	5 Cyclically adjusted revenues, % of nom. GDP	6 Cyclically adjusted primary expenditures, % of nom. GDP
lagged dependent variable	0.61***	0.97***	0.57*	0.65***	0.78***	0.47**
	(0.08)	(0.19)	(0.33)	(0.07)	(0.16)	(0.20)
output gap, % of HP trend GDP	-0.21***	-0.05	0.13*			
	(0.05)	(0.06)	(0.07)			
output gap*expansions interaction				-0.37*	0.23	0.50***
				(0.20)	(0.16)	(0.12)
output gap*recessions interaction				-0.23	-0.41*	-0.09
				(0.20)	(0.24)	(0.15)
lagged public debt, % of nom GDP	0.01*	0.01	0.02*	0.01	0.02**	0.03**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
inflation rate	0.01**	0.00	-0.05*	0.01*	-0.02	-0.05
	(0.01)	(0.03)	(0.02)	(0.01)	(0.02)	(0.03)
dummy for Maastricht run-up (95-98)	0.57**	0.09	0.32	0.65**	0.64	0.51
	(0.22)	(0.53)	(0.63)	(0.28)	(0.53)	(0.74)
dummy for parliamentary elections (1 if elections held in that year)	-0.52**	-0.18	0.42**	-0.63***	-0.24	0.41**
	(0.23)	(0.14)	(0.16)	(0.22)	(0.15)	(0.16)
dummy for expansions				0.33	7.40	19.44**
				(0.68)	(6.01)	(8.07)
dummy for recessions				-0.24	6.79	19.62**
				(0.84)	(6.23)	(7.95)
constant	-0.20	0.80	16.50			
	(0.38)	(7.30)	(12.94)			
Observations	467	474	467	467	474	467
Number of instruments	20	20	22	24	24	24
Number of countries	33	33	33	33	33	33
Countries included (all=EU27+SEE6)	all	all	all	all	all	all
Period (maximum per country)	1995-2010	1995-2010	1995-2010	1995-2010	1995-2010	1995-2010
Year dummies included (not shown for convenience)	2002-2010	2002-2010	2002-2010	2002-2010	2002-2010	2002-2010
p-value for F-statistics, joint significance test	0.00	0.00	0.00	0.00	0.00	0.00
Arellano-Bond test for AR(1) in differences	0.00	0.00	0.11	0.00	0.00	0.03
Arellano-Bond test for AR(2) in differences	0.73	0.16	0.06	0.96	0.15	0.09
Sargan test of overid. restrictions p-value	0.00	0.16	0.52	0.00	0.07	0.18
Hansen test of overid. restrictions p-value	0.64	0.39	0.66	0.67	0.11	0.71
GMM instruments for levels: Hansen test excluding group p-value	0.50	0.32	0.41	0.53	0.48	0.50
GMM instruments for levels: Diff-in-Hansen test of exogeneity of instruments p-value	0.56	0.40	0.93	0.61	0.05	0.70

Notes: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Internal instruments are used for endogenous variables. Lag limits are 1/2 for the lagged dependent variable (2/5 in Column 3), and 2/3 for the output gap. The 'collapse' option is always used.

A particular issue relevant for transition countries is related to the unprecedented economic, political and structural transformation in these countries, particularly in the early transition years. Indeed, almost all transition countries went through the process of 'transformational recession' (Kornai, 1994), which included deep recessions, fairly different from the common economic cycles in developed economies. In addition, in most Southeast European

countries, GDP growth and fiscal policy in the early years were affected by wars and significant political instability. It is expected that these developments would have profound effects on fiscal policy, in particular regarding the (in)ability of fiscal policy to respond to economic cycles in the early transition years. While a considerable part of the period of 'transformational recession' is omitted from our sample, it is possible that this process had prolonged effects, and hence also affected fiscal policy in the years included in the estimation. Therefore, in Table 10 we perform several checks for possible effects of 'transformational recession' on the response of fiscal policy in those early years, as opposed to the more common 'cyclical' response in the latter years. In order to do so, we define the 'transformation period' via a dummy variable that equals one for all the years when the GDP level in transition countries was below the pre-transition peak, which typically occurred in 1988 and 1989. The dummy is zero for periods after the level of GDP exceeds this threshold, as well as for all periods in old EU member states[11].

The first column of Table 10 reproduces previous results on the cyclicality of discretionary fiscal policy across the three country groups. In order to maximise degrees of freedom and to avoid the problem of instrument proliferation, in column 2 we merge the new EU member states and South-eastern European countries into a single group of transition countries, but the results are unchanged. In column 3 we introduce an interaction term of the output gap with the dummy on 'transformational recession'. Discretionary policy in transition countries is again pro-cyclical in 'normal' years, as indicated by the significant negative coefficient on the output gap, which has the same size as in column 2. However, there is no evidence of different policies in the transformational period, since the interaction coefficient with the gap is insignificant. Furthermore, additional tests show that equality of the two coefficients for transition countries can not be rejected. As an additional check, in column 4 we drop the country-years when the GDP level was below the pre-transition peak. This yields a significantly lower number of observations and the omission of 3 South-eastern European countries from estimation (as well as a problematic Hansen test of instrument validity). However, there is again no evidence that the stabilisation properties of discretionary policy were constrained by the 'transformational recession', since the omission of that period yields a significantly pro-cyclical policy in transition countries, with almost the same coefficient size as in baseline results in column 2. In the last 4 columns we repeat the same exercise with the overall primary budget balance. There is again no evidence of any effect of the 'transformational recession'. Indeed, columns 5 and 6 indicate that overall policy in transition countries was a-cyclical, i.e. that automatic stabilizers were effective in neutralising the pro-cyclical stance of discretionary policy. Further, column 7 shows that the interaction between the output gap and the 'transformational recession' dummy is again insignificant, while the last column yields unchanged results when dropping the transformation period altogether.

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[11] We also tried an alternative dummy for the 'transformational recession' using thresholds in EBRD transition indicators. This specification yields unchanged results, which are not shown.

Table 10. Effects of 'transformational recession' in transition countries

| Columns	1	2	3	4	5	6	7	8
Dependent variable	Cyclically adjusted primary balance, % of nominal GDP				overall, unadjusted primary balance, % of nominal GDP			
lagged dependent variable	0.60***	0.59***	0.61***	0.65***	0.64***	0.64***	0.64***	0.75***
	(0.07)	(0.07)	(0.07)	(0.10)	(0.08)	(0.08)	(0.08)	(0.09)
output gap*EU17 interaction	0.17	0.18	0.16	0.07	0.35**	0.34**	0.33**	0.21*
	(0.17)	(0.16)	(0.16)	(0.16)	(0.15)	(0.14)	(0.14)	(0.12)
output gap*NMS10 interaction	-0.21***				-0.10			
	(0.05)				(0.07)			
output gap*SEE6 interaction	-0.36**				-0.09			
	(0.15)				(0.13)			
output gap*transition countries interaction		-0.22***	-0.22***	-0.21***		-0.10	-0.08	-0.10
		(0.05)	(0.04)	(0.04)		(0.07)	(0.07)	(0.06)
output gap * 'transformational recession' interaction			-0.15				-0.05	
			(0.11)				(0.10)	
lagged public debt, % of nom GDP	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
inflation rate	0.01***	0.02***	0.01**	-0.01	0.00	0.00	0.00	-0.02
	(0.00)	(0.00)	(0.01)	(0.08)	(0.01)	(0.00)	(0.01)	(0.07)
dummy for Maastricht run-up (95-98)	1.15***	1.21***	1.19***	0.80*	1.22***	1.20***	1.16***	0.89***
	(0.38)	(0.39)	(0.38)	(0.41)	(0.33)	(0.33)	(0.32)	(0.32)
dummy for parliamentary elections (1 if elections held in that year)	-0.25	-0.30	-0.37	-0.48*	-0.20	-0.22	-0.25	-0.42*
	(0.23)	(0.23)	(0.22)	(0.26)	(0.20)	(0.21)	(0.20)	(0.23)
dummy for EU17	-0.42	-0.33	-0.19	0.13	-0.26	-0.16	-0.10	0.11
	(0.88)	(0.82)	(0.75)	(0.89)	(0.82)	(0.79)	(0.78)	(0.63)
dummy for NMS10	-0.43				-0.15			
	(0.50)				(0.49)			
dummy for SEE6	-0.08				-0.04			
	(0.62)				(0.56)			
dummy for transition countries (NMS10 or SEE6)		-0.37	-0.29	0.09		-0.07	-0.05	0.27
		(0.49)	(0.46)	(0.69)		(0.48)	(0.56)	(0.59)
dummy for 'transformational recession'			0.11				-0.01	
			(0.22)				(0.32)	
Observations	532	532	532	443	534	534	534	443
Number of instruments	30	26	30	26	30	26	30	26
Number of countries	33	33	33	30	33	33	33	30
Countries included (all=EU27+SEE6)	all	all	all	all w/o Bosnia, Serbia, Montenegro	all	all	all	all w/o Bosnia, Serbia, Montenegro
Period (maximum per country)	1995-2012	1995-2012	1995-2012	1995-2012	1995-2012	1995-2012	1995-2012	1995-2012
Year dummies included (not shown for convenience)	2002-2012	2002-2012	2002-2012	2002-2012	2002-2012	2002-2012	2002-2012	2002-2012
p-value for F-statistics, joint significance test	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arellano-Bond test for AR(1) in differences	0.01	0.01	0.01	0.02	0.00	0.00	0.00	0.02
Arellano-Bond test for AR(2) in differences	0.64	0.69	0.58	0.14	0.64	0.63	0.59	0.15
Sargan test of overid. restrictions p-value	0.65	0.56	0.70	0.01	0.33	0.27	0.41	0.10
Hansen test of overid. restrictions p-value	0.67	0.65	0.70	0.09	0.58	0.43	0.57	0.31
GMM instruments for levels: Hansen test excluding group p-value	0.43	0.42	0.57	0.21	0.26	0.36	0.47	0.23
GMM instruments for levels: Diff-in-Hansen test of exogeneity of instruments p-value	0.74	0.71	0.62	0.09	0.86	0.43	0.54	0.42

Notes: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Internal instruments are used for endogenous variables. Lag limits are 1/2 for the lagged dependent variable, and 2/3 for the output gap. The 'collapse' option is always used.

5.3. Jack-knifing

In this subsection we use jack-knifing to check the robustness of baseline results and to analyse whether they are driven by any particular country. We start by reproducing baseline results for the entire sample in column 1 of Table 11, while column 2 reports results from the jack-knifing procedure. The jack-knifed standard errors are similar to the baseline, so there is no change in significance of any variable. In columns 3 and 4 we repeat the same procedure with baseline results across country groups. Jack-knifing removes the pro-cyclicality in South-eastern European countries, which is probably a reflection of the low number of countries in this group.

Table 11. Jack-knifing of baseline results for cyclicality in the entire sample and across country groups

Columns	1	2	3	4
Dependent variable	Cyclically adjusted primary balance, % of nom. GDP			
Estimation	baseline	jack-knifed standard errors	baseline	jack-knifed standard errors
lagged dependent variable	0.57***	0.57***	0.60***	0.60***
	(0.07)	(0.09)	(0.07)	(0.09)
output gap, % of HP trend GDP	-0.17**	-0.17**		
	(0.07)	(0.06)		
output gap*EU17 interaction			0.17	0.17
			(0.17)	(0.24)
output gap*NMS10 interaction			-0.21***	-0.21***
			(0.05)	(0.08)
output gap*SEE6 interaction			-0.36**	-0.36
			(0.15)	(0.24)
lagged public debt, % of nom GDP	0.01	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)
inflation rate	0.01**	0.01**	0.01***	0.01
	(0.01)	(0.00)	(0.00)	(0.02)
dummy for Maastricht run-up (95-98)	0.60**	0.60**	1.15***	1.15**
	(0.23)	(0.28)	(0.38)	(0.55)
dummy for parliamentary elections (1 if elections held in that year)	-0.44**	-0.44*	-0.25	-0.25
	(0.21)	(0.23)	(0.23)	(0.28)
dummy for EU17			-0.42	-0.42
			(0.88)	(1.12)
dummy for NMS10			-0.43	-0.43
			(0.50)	(0.66)
dummy for SEE6			-0.08	-0.08
			(0.62)	(0.76)
constant	-0.16	-0.16		
	(0.44)	(0.47)		
Observations	532	532	532	532
Number of instruments	22	22	30	30
Number of countries	33	33	33	33
Countries included (all=EU27+SEE6)	all	all	all	all
Period (maximum per country)	1995-2012	1995-2012	1995-2012	1995-2012
Year dummies included (not shown for convenience)	2002-2012	2002-2012	2002-2012	2002-2012
p-value for F-statistics, joint significance test	0.00	0.00	0.00	0.00
Arellano-Bond test for AR(1) in differences	0.01		0.01	
Arellano-Bond test for AR(2) in differences	0.60		0.64	
Sargan test of overid. restrictions p-value	0.25		0.65	
Hansen test of overid. restrictions p-value	0.45		0.67	
GMM instruments for levels: Hansen test excluding group p-value	0.35		0.43	
GMM instruments for levels: Diff-in-Hansen test of exogeneity of instruments p-value	0.46		0.74	

Notes: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Internal instruments are used for endogenous variables. Lag limits are 1/2 for the lagged dependent variable, and 2/3 for the output gap. The 'collapse' option is always used.

Further, we use pseudo-values obtained from jack-knifing to investigate whether particular countries are driving the results. Pseudo-coefficients and associated standard errors are the values obtained when dropping one country at a time and re-estimating using the same specification and time period. In our case this procedure yields 33 pseudo-coefficients and accompanying standard errors for each variable. Figure 1 reports pseudo-values for each variable in the baseline estimation of discretionary policy in the entire sample, thus corresponding to column 2 in Table 11. Panel (a) shows that policy inertia is very robust to dropping any country from the sample, since all pseudo-coefficients are significant and close to the point estimate. According to panel (b), the negative coefficient on output gap is also quote robust, since in most cases the point estimate is very close to the estimate for the entire sample and confidence intervals do not cross the zero line. Further, in panel (c), in all cases the debt coefficient is close to the estimate for the entire sample and remains very small. However, the confidence interval on the debt coefficient does not include the zero line if Greece or Luxembourg were dropped, indicating that their omission would result in the coefficient on debt becoming significant at 10%, although it would again be very small. Panels (d) and (e) show that baseline results on elections and Maastricht criteria are also quite robust. However, the omission of Greece or Hungary would move the significance of elections to just above 10%. On the other hand, panel (f) shows that pseudo-values for the coefficient on inflation are significant and very close to the baseline estimate when dropping any country except Romania, in which case inflation would be insignificant. We suspect that this reflects the continuously high inflation in Romania, which has the highest average inflation in the sample of 28.3% between 1995 and 2012. However, in line with the previous discussion, we are reluctant to drop inflation from our baseline specification.

In Figure 2 we perform a similar check on baseline results of the cyclicality of discretionary policy across country groups (column 4 in Table 11). Panel (a) shows that the result of a-cyclical discretionary policy in old EU member states is entirely driven by Greece. Indeed, dropping Greece has substantial effects, as the pseudo-coefficient of the output gap in EU17 countries almost doubles and becomes significant. Therefore, if we dropped Greece, we would find counter-cyclical discretionary policy in old EU member states instead of a-cyclical as in baseline. The omission of any other country yields pseudo-coefficients that are fairly close to the baseline point estimate, and they are all insignificant, thus supporting the baseline result of a-cyclical discretionary policy in old member states. Further, panel (b) of Figure 2 shows that pro-cyclicality in new EU member states is very robust to country omissions, with minimal variations in the coefficient size. On the other hand, panel (c) shows that pro-cyclicality in South-eastern European countries is driven by Macedonia, since its omission would yield a-cyclical policy in this group. However, as noted before, the fact that the result is driven by a single country in this case could probably be explained by the low number of countries in this group.
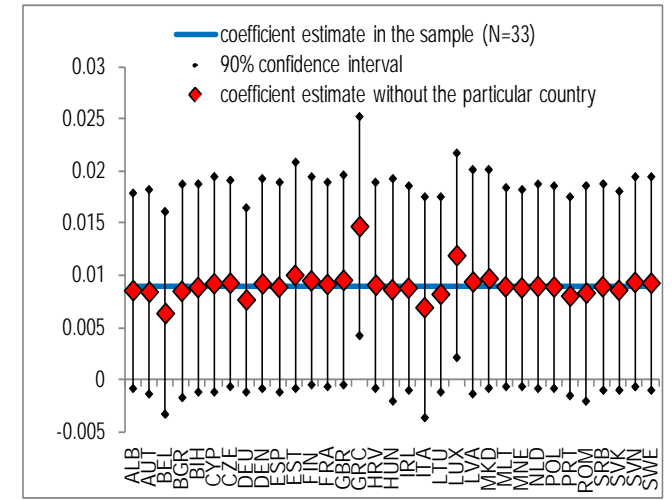
Figure 1. Robustness of baseline results on the cyclicality of discretionary policy in the entire sample to country omissions from the sample (jack-knifing)
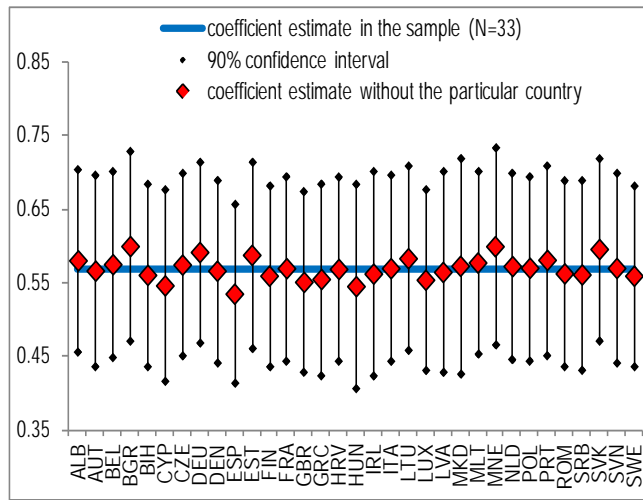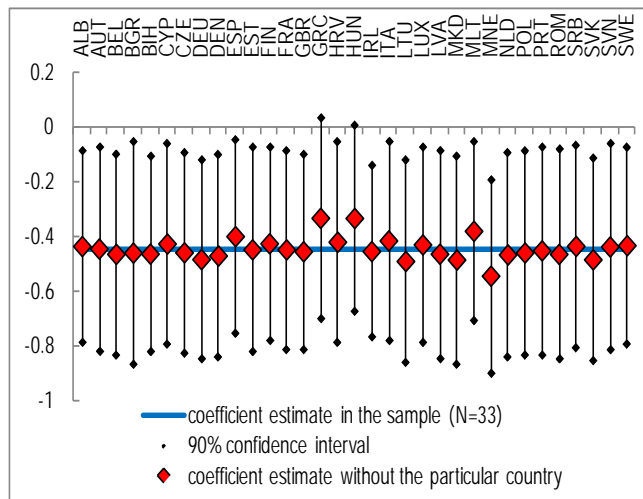
a. lagged dependent variable
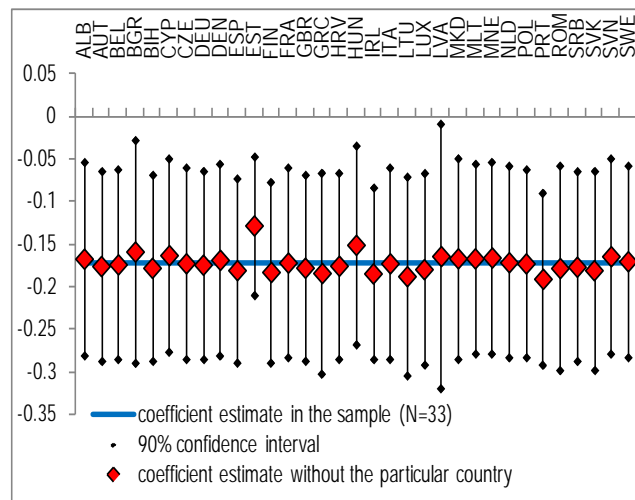
b. output gap
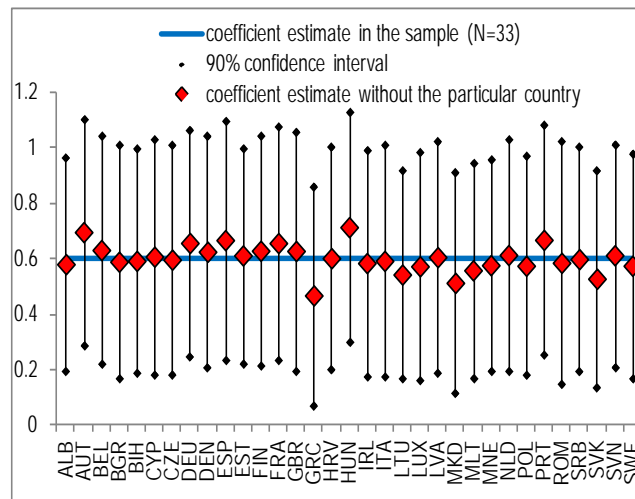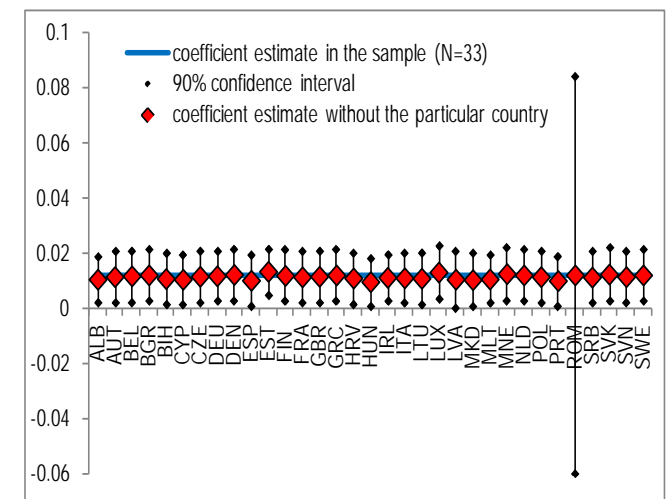
c. lagged debt to GDP ratio
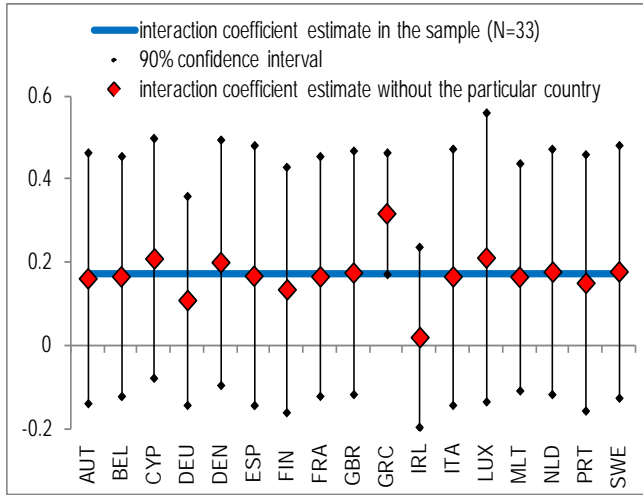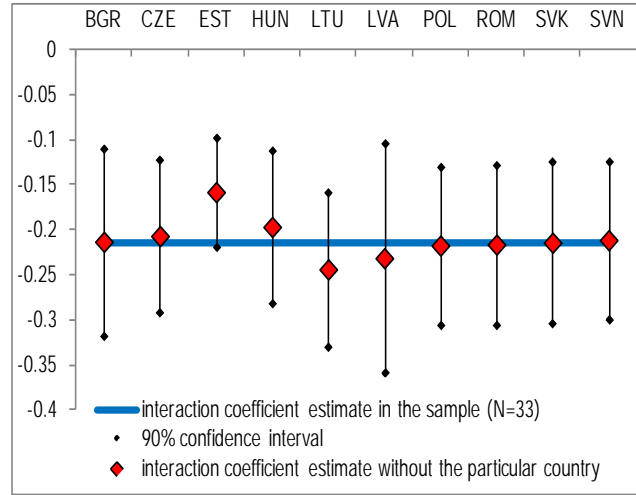
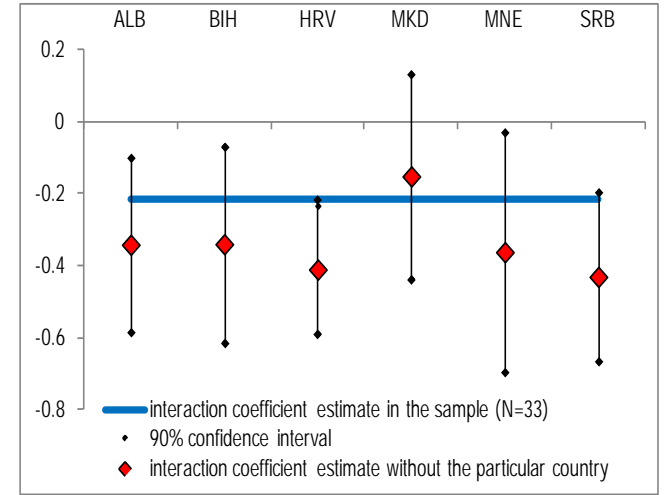**d. election dummy**

e. Maastricht criteria

f. inflation

Figure 2. Robustness of baseline results on the cyclicality of discretionary policy across country groups to country omissions from the sample (jack-knifing)

a. output gap * EU17 interaction

b. output gap * NMS10 interaction

c. output gap * SEE6 interaction

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6. Concluding remarks

Results of this study show that there are considerable differences in the cyclical character and determinants of fiscal policy among old, new and prospective EU member states. In transition countries, overall fiscal policy is a-cyclical, but discretionary policy is pro-cyclical, which means that policymakers are exacerbating economic fluctuations. On the other hand, discretionary policy in old EU member states is a-cyclical, while automatic stabilizers shift overall policy to a counter-cyclical stance. Further, discretionary policy is considerably more relaxed in election years. In addition, the old EU member states undertook significant fiscal adjustment before the euro introduction, but there is little evidence that the common currency in itself is imposing more discipline. Finally, baseline results show that policymakers in all country groups pay little attention to public debt, which is a worrying sign for debt sustainability.

The baseline specification is extended with numerous political and institutional factors. These extensions confirm the robustness of baseline results, and also show that determinants of fiscal policy differ among country groups. In transition countries, the number of checks in the system and presidential political systems worsen fiscal outcomes, thus providing some evidence for voracity effects, which are however not found in old member states. The strength of government in new EU member states is an important factor for successful fiscal adjustment. In old member states, plurality electoral systems result in lower fiscal discipline. Further, we find no evidence of less disciplined and more pro-cyclical fiscal policies in corrupt democracies, although democracy and corruption have separate positive effects on fiscal outcomes. Changes in the ideological composition of cabinet to the left in old member states result in lower budget balances. However, this factor plays no role in transition countries, which probably reflects more blurred ideological definitions in these countries. Finally, fiscal rules impose more disciplined policies in both old and new EU member states, while particular types of fiscal governance have different effects in old and new member states.

We also find that the a-cyclical discretionary policy in old EU member states reflects a-cyclical revenues and a-cyclical expenditures. On the other hand, pro-cyclicality in both groups of transition countries is completely driven by expenditures. In addition, there is considerable asymmetry in policymakers' reaction in the entire sample, since they react pro-cyclically in expansions and a-cyclically in recessions. While this result can not be traced to either revenues or expenditures for the entire sample, results on asymmetries before the European fiscal crisis are more intuitive. Indeed, until 2010, the asymmetry of discretionary policy was a reflection of pro-cyclical expenditures in expansions and a-cyclical expenditures in recessions. Various measures of 'transformational recession' in transition countries indicate that there is no difference in the cyclical stance of fiscal policy between the early transformational period and more 'normal' later years. Finally, robustness checks using jack-knifing confirm the baseline results.

Appendix A – Data sources and definitions

Table A.1. Data sources and definitions

Series	Description	Source/calculation
overall, unadjusted primary balance, % of nominal GDP	overall, cyclically unadjusted primary budget balance as a share of nominal GDP	AMECO Database of the European Commission (May 2013) for EU27. For SEE6, author's calculation based on data from national statistical offices, central banks or finance ministries, and the IMF World Economic Outlook Database (April 2013)
cyclically-adjusted primary balance (HP trend GDP), % of nominal GDP	cyclially-adjusted primary balance as a share of nominal GDP (cyclical adjustment using the Hodrick-Prescott trend GDP)	AMECO Database for EU27. For SEE6, author's calculation based on data from national statistical offices, central banks or finance ministries, and the IMF World Economic Outlook Database. The cyclical adjustment is done following the methodology described in Fedelino et al. (2009), and using author's calculation of Hodrick-Prescott trend real GDP. In absence of relevant information, revenue and expenditure elasticities are approximated by using respective averages for NMS calculated from country elasticities in EC (2005).
cyclically-adjusted revenues, % of nominal GDP	cyclially-adjusted revenues as a share of nominal GDP (cyclical adjustment using the Hodrick-Prescott trend GDP)	
cyclically-adjusted primary expenditures, % of nominal GDP	cyclially-adjusted primary expenditures as a share of nominal GDP (cyclical adjustment using the Hodrick-Prescott trend GDP)	
output gap, % of HP trend GDP	output gap as a share of Hodrick-Prescott trend real GDP	AMECO Database for EU27 and Croatia. For other SEE countries, author's calculation based on data from national statistical offices, central banks or finance ministries, and the IMF World Economic Outlook Database.
public debt, % of nominal GDP	public debt as a share of nominal GDP	
inflation rate	average annual CPI inflation, in %	AMECO Database, except Albania, Bosnia and Herzegovina and Serbia from IMF WEO Database (April 2013)
dummy for Maastricht criteria	dummy=1 for the the EU15 member states between 1995 and 1998, 0 otherwise	European Central Bank
dummy for SGP	dummy=1 if the country is a member of the euro area in that year, 0 otherwise	
dummy for parliamentary elections	dummy=1 if there were parliamentary elections in that year, 0 otherwise	World Bank Database of Political Institutions 2012, except Montenegro and Serbia from www.parties-and-elections.eu
number of checks in the system	number of checks and balances in the political system (ranging from 1 to 11)	World Bank Database of Political Institutions 2012
fragmentation of government seats in parliament	sum of squares of the share of parliament seats controlled by each government party in total government-controlled seats in parliament (100=single-party government)	
government majority in parliament	government-controlled seats in parliament as a share of total seats	
dummy for electoral system	dummy=1 if most parliament seats are elected by the plurality system, 0 otherwise	World Bank Database of Political Institutions 2012, except Montenegro and Serbia from the Inter-Parliementary Union (http://www.ipu.org/english/home.htm)
dummy for political system	dummy=1 if the political system is presidential, 0 otherwise	World Bank Database of Political Institutions 2012, except Montenegro and Serbia based on author's information
decentralisation of expenditures	share of expenditures of local and regional and sub-national state governments in total expenditures (sum of local and regional, state and central government expenditures)	Eurostat

Series	Description	Source/calculation
ideological composition of cabinet	cabinet posts by ideological orientation of parties as a share of total posts, weighted by the number of days the government was in office in a given year; ranging from hegemony of right-wing and centre parties to hegemony of left parties (range is 1 to 5, according to thresholds of shares of 0%, 33,3%, 66,6% and 100%)	Comparative Political Data Set III (1990-2010)
dummy for change in ideological composition of cabinet	dummy=1 if the ideological composition of government cabinet changed from the previous year, 0 otherwise	
ideological gap between new and old cabinet	ideological gap between the old and new cabinet, calculated as differences in the ideological composition of the cabinet indicator (positive=move to the left)	
democratisation	level of institutionalised democracy, ranging from 0 to 10 for the highest level	Polity IV database 2012
control of corruption	perception of corruption, ranging from -2.5 to 2.5 for highest to lowest corruption, respectively	World Bank Worldwide Governance Indicators 2011; between 1996 and 2002, data are reported for every second year, so values for 1997, 1999 and 2001 calculated as averages of adjacent years
dummy for program or loan with IMF	dummy=1 if the country had in place an IMF program or a loan during the year, 0 otherwise	IMF Annual Reports (various issues) and IMF International Financial Statistics
actual purchases & loans from IMF, share of nominal GDP	purchases and loan disbursements from the IMF as a share of nominal GDP	IMF Annual Reports (various issues) and IMF International Financial Statistics; nominal GDP from AMECO for EU27, Croatia, Macedonia and Montenegro, and from the IMF WEO Database for Albania, Bosnia and Herzegovina and Serbia
exchange rate regime	exchange rate regime according to IMF classification, ranging from 1 to 8 for free floating	IMF Annual Reports from 1998; for the period before 1998, data from von Hagen and Zhou (2002), Reinhart and Rogoff (2004) and their website and author's information
fiscal rules index	standardised index of the strength and coverage of national and sub-national fiscal rules, ranging from -1 to 2.5 for strongest rules	European Commission, Directorate General for Economic and Financial Affairs
delegation in fiscal governance	index of delegation in fiscal governance, ranging between 0 and 1 for countries with all rules and norms associated with delegation	Hallerberg et al. (2009) for old EU member states and Hallerberg and Yläoutinen (2010) for new EU member states
contracts in fiscal governance	index of contracts in fiscal governance, ranging between 0 and 1	
dummy for expansions	dummy = 1 if output gap is positive, 0 otherwise	author's calculation from output gap (see above)
dummy for recessions	dummy = 1 if output gap is negative, 0 otherwise	
dummy for EU17	dummy=1 for the old EU15 member-states, Cyprus and Malta, 0 otherwise	
dummy for NMS10	dummy=1 for 10 countries from Central and Eastern Europe that gained EU membership in 2004 or 2007, 0 otherwise	
dummy for SEE6	dummy=1 for South-eastern European countries (Albania, Bosnia and Herzegovina, Croatia, Macedonia, Montenegro and Serbia), 0 otherwise	
dummy for transition countries	dummy=1 for transition countries (NMS10 and SEE6), 0 otherwise	
dummy for 'transformational recession'	dummy=1 for transition countries (NMS10 and SEE6) before overcoming the peak level of GDP in the pre-transition period, 0 otherwise (including EU17 countries in all periods)	

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