

# Political budget cycles in the European Union and the impact of political pressures

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**Abstract** This paper investigates the presence of political budget cycles (PBCs) in the European Union using data from all 27 member states over the period 1997–2008, and explores their variability across countries and over time. Three basic results emerge: First, incumbent governments across the EU tend to engineer PBCs in order to enhance their re-election prospects. Second, PBCs are much larger and statistically more robust in the Eurozone countries than in the countries that have not yet adopted the euro. Third, the degree to which governments manipulate fiscal policy is negatively correlated with non-economic voting and positively correlated with electoral competitiveness.

**Keywords** Political budget cycles · Fiscal policy · Elections · Opinion polls · European Union

**JEL Classification** D72 · E62 · P16 · C33

## 1 Introduction

The term “political budget cycle” (PBC) is used to describe a cyclical fluctuation in fiscal policies induced by the timing of elections. The direct cause of PBCs lies in governments’ opportunistic behavior: incumbent politicians, regardless of their ideology, try to use expansionary fiscal policies before elections to please the voters, maximize their popularity and increase their re-election chances.

The presence of PBCs in the European Union (EU) is conceptually ambiguous. On the one hand, the fiscal policy of EU member countries is restricted by the Stability and Growth Pact (SGP), but on the other hand, fiscal policy is the only remaining instrument, at least for the Eurozone countries, for influencing voters’ perceptions before elections. The empirical evidence is also contradictory. After a thorough empirical study covering the years 1970–1998, Andrikopoulos et al. (2004) fail to find electoral cycle regularities in fiscal instruments

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in 14 EU member states (see also Warin and Donahue 2006). On the other hand, Buti and van den Noord (2003), von Hagen (2003, 2006) and Mink and de Haan (2006), who focus on fiscal behavior in more recent years, show that the discipline requirements of the SGP are insufficient to curb the temptation to run politically-motivated fiscal policies before elections. Although these studies have provided some important insights, the results obtained are not representative of the enlarged EU of 27 members and the current developments in the European politico-economic environment. In particular, none of the data sets contains the 12 “newest” member states, and thus, little is known about the cross-sectional variation of PBCs in the EU. Furthermore, the studies cited above treat the timing of elections as exogenous, use a univariate model or univariate detrending procedures (von Hagen 2003; Buti and van den Noord 2003; Andrikopoulos et al. 2004) or focus on the detection of electoral effects in the overall budget deficits (von Hagen 2003, 2006; Mink and de Haan 2006; Warin and Donahue 2006). To address these issues, this paper assembles a panel data set covering all 27 current EU (EU-27) member countries and examines the presence of PBCs in several fiscal policy variables by employing GMM estimation techniques in a set of multivariate models. Moreover, it investigates how PBCs vary across the EU member states and whether they are influenced by the endogeneity of election timing and politico-institutional conditions that have been shown to correlate with fiscal policy measures.

Another serious limitation of the existing literature on PBCs is its inability to appreciate all political repercussions and adequately conceptualize the power of politicians’ incentives to stimulate the economy prior to elections. PBCs models rely on the assumption that the electorate evaluates the government solely on the basis of its competence to deal with economic matters and, as a result, a government can secure re-election by signaling this competence through specific fiscal policy decisions. In practice, however, economic matters are not always at the top of the public’s political agenda and voters’ evaluation of government performance depends also on non-economic matters for which the government is responsible (for example, fighting terrorism and crime, dealing with certain socio-political problems and managing foreign affairs). Since the importance of certain issues is a significant source of heterogeneity in political decision-making (Rivers 1988; Brody 1991), there is good reason to believe that politicians’ incentives to manipulate the economy in general, and fiscal policy in particular, is influenced by “non-economic voting”; that is, the relative impact that non-economic issues have on voter choice. Furthermore, a correct specification of the government’s reaction function at election times should also take into account the uncertainty over the electoral outcome. As first suggested by Frey and Shneider (1978a, 1978b, 1979, 1981) and later by Schultz (1995), the tighter the electoral competition, the higher the marginal benefits of winning additional votes, and thus, of engineering a pre-electoral boom. Put simply, when governments are afraid of losing the election, they have strong incentives to stimulate the economy in the hope of bolstering their re-election chances. In contrast, when they are confident of winning the election (or equally, almost certain of losing the election<sup>1</sup> because of a political scandal or a foreign policy defeat), they are less induced to do so, as the costs associated with this kind of behavior<sup>2</sup> may greatly exceed the benefits. These observations imply that (i) PBCs may vary

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<sup>1</sup>Notice that in contrast to Frey and Shneider (1978a, 1978b, 1979, 1981) and Schultz (1995), we assume that there is a nonlinear (inverted U-shape) relationship between the government’s popularity and fiscal policy manipulations, that is, very unpopular governments have also weak incentives to generate PBCs. As suggested by Price (1998), the costly macroeconomic manipulation required to restore popularity and win elections becomes increasingly large as the popularity gap between opposition and government rises.

<sup>2</sup>These costs arise because such behavior can potentially damage the governing party’s reputation and lead to poor macroeconomic performance in the future (see Schultz 1995).

from one election to the next (and consequently across countries) even after controlling for all politico-institutional constraints associated with the process of fiscal policy formation, and (ii) this variance will be a function of non-economic voting and electoral competitiveness. Therefore, the second objective of this paper is to construct proxies for the levels of non-economic voting and electoral competitiveness using public opinion reports and pre-electoral polls, and investigate whether the resulting indicators can explain differences in PBCs across and within the EU-27 member states.

Three basic results emerge from our empirical analysis. First, incumbent governments across the EU tend to manipulate fiscal policy in order to maximize their chances of being re-elected. In particular, fiscal deficit increases by 1% of GDP in election years through increases in government expenditure of similar magnitude. These fiscal policy manipulations do not seem to be the outcome of endogenously determined election timing nor to be mitigated in the period following the EU enlargement of 2004. Second, PBCs in the EU appear to be uniquely associated with the Eurozone countries. And third, the relative importance of non-economic issues prior to elections and the uncertainty over the electoral outcome can explain, to a large extent, the variability in the size of PBCs across and within the EU countries. Once we account for this fact, PBCs become more pronounced (fiscal deficit increases by almost 3% of GDP) and can also appear in the non-Eurozone countries.

The paper proceeds as follows: Sect. 2 discusses the theoretical background and the related empirical literature on PBCs while Sect. 3 offers some theoretical considerations; Sect. 4 describes the data and outlines the empirical model specification; Sect. 5 reports the results of various tests on the presence of PBCs in the EU and investigates their robustness; Sect. 6 discusses the variables used to proxy for non-economic voting and electoral competitiveness and tests whether these two features can explain the variability in PBCs across and within the EU countries; Sect. 7 concludes.

## 2 Literature review

### 2.1 From the political business cycle to the political budget cycle

The literature on PBCs is a part of a broad body of research on opportunistic cycles originally formulated in the mid-1970s. The most popular politico-economic approach to macroeconomic policy is known as the political business cycle model of Nordhaus (1975) and Lindbeck (1976). According to this model, opportunistic policymakers artificially stimulate the economy immediately before each election and eliminate the resulting inflation with a post-electoral downturn or recession.<sup>3</sup> The Nordhaus–Lindbeck approach was refined in the 1980s by Kirchgassner (1983), Lachler (1984), Cukierman and Meltzer (1986), Rogoff and Sibert (1988), Rogoff (1990) and Persson and Tabellini (1990) to incorporate rational expectations and to emphasize the limits in the policymakers' ability to influence the state of the economy. The primary implication of these rational variants is that, though informational advantages enjoyed by politicians may provide incentives for the manipulation of policy instruments in the pre-electoral period, this will not necessarily have an impact on employment or growth (Alesina and Roubini 1992).

The theories based on the paradigms of rational choice and rational expectations are empirically more successful than their predecessors: there is considerably more evidence

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<sup>3</sup>For the first formal tests of the political business cycle hypothesis see McCallum (1978), Amacher and Boyes (1982), Beck (1982) and Laney and Willett (1983).

of electoral manipulation of monetary and fiscal instruments than has been the case for real economic outcomes (Hibbs 1977; Tufle 1978; Paldam 1979, 1981; Alesina 1988; Lewis-Beck 1990; Alesina et al. 1997).<sup>4</sup> Much of this empirical work has focused on monetary policy in the United States and several OECD countries. However, as argued by Clark (2003), the link between elections and monetary policy is deeply context-dependent: elections may result in monetary expansions only when the exchange rate is allowed to fluctuate and the central bank is not independent. On the other hand, explanations based on fiscal policy seem to conform much better to the data and to form a stronger basis for a convincing theoretical model (Blais and Nadeau 1992; Drazen 2000). Several studies, both at single-country and multi-country level,<sup>5</sup> provide evidence in favor of such election-driven fiscal policy manipulations. However, the econometric techniques applied and the estimated size and composition of electoral effects vary across these studies. Moreover, the fact that they use data from countries with different politico-economic backgrounds renders it difficult to conclude that PBCs are a universal phenomenon. Taking these issues into account, the recent empirical literature has turned its attention to answering the question of where PBCs exist and explaining their cross-sectional variation. Shi and Svensson (2002, 2006), for instance, show that the magnitude of PBCs is higher in developing countries than in developed countries. On the other hand, Persson and Tabellini (2002) present evidence that the composition of PBCs is affected by electoral rules (majoritarian versus proportional) and the form of government (presidential versus parliamentary). Brender and Drazen (2005) suggest that the results of these studies are driven by the first elections in countries that are “new democracies”.

## 2.2 The Frey–Schneider hypothesis

Frey and Schneider were the first to suggest that opinion polls should be included in models of the political business cycle, in a series of papers published in the late 1970s (Frey and Schneider, 1978a, 1978b, 1979, 1981). By integrating the “popularity function”<sup>6</sup> into a set of policy reaction functions, Frey and Schneider advanced the hypothesis that politicians respond to their popularity level when making economic policy decisions. In particular, their model assumes that the government employs a “satisficing” strategy which differentiates between two basic states. In the state of popularity surplus, the government pursues its ideological goals; in the state of popularity deficit, it engages in expansionary fiscal policies. As current popularity is an indicator of probable election outcome, the government reacts much more strongly when a popularity deficit appears shortly before an election date than when it appears a long time in advance. In other words, politicians behave opportunistically only when their re-election is in danger and when elections come nearer. Frey and Schneider (1978a, 1978b, 1979) find support for this theory in German, UK and US data, while Pommerhne and Schneider (1980) find Australian government expenditure and transfers related positively, and total tax revenue negatively, to the popularity deficit.

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<sup>4</sup>In contrast to these studies, Grier (2008) provides strong evidence of sizeable opportunistic effects in US real GDP growth over the period 1961–2004.

<sup>5</sup>See Alesina et al. (1997), Drazen (2000), Franzese (2002) and Shi and Svensson (2004) for extensive reviews of the empirical literature.

<sup>6</sup>The “popularity function” explains the support for the government as a function of economic and political outcomes. For an extensive review of this literature and a summary of the most important findings see Nannestad and Paldam (1994) and Paldam (2008).

Despite its intuitive plausibility, Frey and Schneider's approach did not catch on particularly well in the subsequent empirical studies on political business cycles. Carlsen (1997) suggests that this may have happened partly because their ideas were not based on formal models with rational and forward-looking agents, and partly because the robustness of their results was questioned by other scholars. A number of authors, however, returned to this theme in the 1990s and showed that Frey and Schneider's ideas are not inconsistent with historical experience. Specifically, Schultz (1995) and Price (1998) find strong evidence of electoral cycles in UK transfer payments conditioned by the expected closeness of elections. Likewise, Carlsen (1997) provides evidence that a decrease in the incumbent party's re-election probability in the United States is associated with a higher rate of money growth.<sup>7</sup> While this recent line of empirical research strongly indicates that electoral manipulations of economic policies will vary inversely with the government's security going into an election, the tests implemented consider just one country and involve only one policy instrument. Further work along these lines, that includes cross-country panel data, a variety of policy instruments and a more complete analysis of governments' decision-making (that allows manipulation incentives to depend also on the relative weight voters assign to non-economic issues) is required. The present article seeks to do this.

### 3 Theoretical considerations

The first paper to explain the existence of political cycles as a complicated budgetary process, which can, at least temporarily, fool voters is by Rogoff and Sibert (1988). Rogoff and Sibert propose a model of adverse selection that emphasizes the idea of competence, coupled with asymmetric information. More precisely, this model assumes that each politician has a competence type (high or low), which is considered to be private information. Voters want to elect the political candidate who maximizes their expected utility, and can assess the incumbent's type only by observing fiscal policy outcomes. Before the election, the high-type incumbent attempts to signal his competence by engaging in expansionary fiscal policy, which is less "costly" for him than it is for the low-type. Rogoff (1990) presents a related model that focuses on the composition of government spending: the more competent policymaker engineers a PBC that shifts government outlays to favor transfers and more visible programs. As pointed out by Shi and Svensson (2004), some of the implications of these models seem to be at odds with empirical evidence. For example, since only the more competent politician distorts the economy prior to an election, only he can be re-elected, which, in turn, implies that additional information is needed to test the relevant predictions. This drawback does not apply to the new generation of PBCs proposed by Persson and Tabellini (2000) and Shi and Svensson (2006). The key assumptions of these new models are that (i) neither the electorate nor the politician can observe the latter's competence contemporaneously, and (ii) the policymaker can exert a hidden effort, that is, use a policy instrument unobservable to the public (or only observable with a delay), which is a substitute for competence. Elections take place after the incumbent politician's hidden effort and competence

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<sup>7</sup>Davidson et al. (1992) find that increases in US inflation and unemployment rates and decreases in the US growth rate of the monetary base early in the presidential term are followed by reversals later in the term. These results are interpreted as evidence that politicians interfere with the macroeconomy only when economic problems are so acute as to have lowered their chances of re-election significantly. However, the authors do not test whether policy changes are associated with the closeness of elections or the weight voters assign to economic versus non-economic issues. Thus, as also pointed out by Carlsen (1997), it is not clear whether their results reflect opportunistic behavior or standard counter-cyclical policies.

have jointly determined the observable fiscal policy outcome. In the equilibrium, there is excessive effort (for example, more borrowing), and as a result, an increase in budget deficit prior to an election.

While the various versions of PBCs employ different assumptions, all share the same idea: re-election motives create incentives for incumbent politicians to appear competent just ahead of elections. Having that in mind, there is good reason to believe that politicians' incentives to manipulate fiscal policy may vary from one election to the other, depending on how sensitive the re-election probability is to their competence level. As already mentioned in Sect. 1, two factors may determine the degree of this re-election-to-competence sensitivity: non-economic voting and electoral competitiveness. The higher the level of non-economic voting, the weaker should be politicians' incentives to manipulate fiscal policy, as fewer voters can be influenced by an electoral expenditure boom. On the other hand, the tighter the electoral competition, the higher should be the marginal benefits of winning additional votes, and hence of inducing a budget cycle. Efthyvoulou (2010) presents the simplified two-period electoral model with seignorage developed by Persson and Tabellini (2000), and deals with an extension of this model that allows the re-election-to-competence sensitivity to depend on the levels of non-economic voting and electoral competitiveness (see also Appendix to this paper, footnote 9). The central result of this extension is that the magnitude of PBCs will not be constant over time and across countries, but will instead vary as a function of the two aforementioned factors. Before moving to test this hypothesis in the EU-27 context, we first need to examine whether PBCs vary across the member states, and if so, whether this variability can be explained by politico-institutional constraints.

## 4 Data and empirical strategy

### 4.1 Data

We consider annual time series data for all EU-27 member states over the period 1997–2008.<sup>8</sup> The resulting panel includes a number of economic, socio-economic and political variables. Government fiscal policy data and statistics regarding economic outcomes are obtained from the Statistical Annex to European Economy, published in Spring 2009. Data on demographic variables are extracted from the online version of the US Census Bureau International Data Base and the World Bank's World Development Indicators. Information on each country's election dates, forms of government, electoral rules, government fragmentation and government position on a left-right scale are retrieved from the World Bank's Database of Political Institutions (Beck et al. 2001; Keefer and Stasavage 2003), and complemented, where needed, by the online version of the Europa Yearbook, Adam Carr's Election Archive and the author's personal research. The "proxy" for the relative importance of economic and non-economic issues before elections is constructed from reports of public opinion as provided by the Eurobarometer. Finally, poll data on voting intention and support ratings for political parties (or political candidates) are obtained from the Angus Reid Global Monitor and the official websites of national market research centers and polling organizations. More details of variable definitions, country classifications, and data sources can be found in the Appendix to this paper.<sup>9</sup>

<sup>8</sup>A larger time period is not used due to the lack of data for all EU-27 member states.

<sup>9</sup>The Appendix to this paper is provided at URL: <http://epapers.bham.ac.uk/771/>.

## 4.2 Empirical model specification

In order to estimate the relationship between elections and fiscal behavior, we employ an empirical specification that builds on the work of Shi and Svensson (2002, 2006) and Persson and Tabellini (2002) and takes the following form:

$$Y_{it} = \sum_{j=1}^2 \alpha_j Y_{it-j} + \beta \mathbf{X}_{it} + \gamma GROWTH_{it} + \delta ELE_{it} + \mu_i + \varepsilon_{it} \quad (\text{M.1})$$

where  $Y_{it}$  is a fiscal policy instrument in country  $i$  and year  $t$ ,  $\mathbf{X}_{it}$  is a vector of control variables,  $GROWTH_{it}$  is the GDP growth rate,  $ELE_{it}$  is an electoral variable,  $\mu_i$  are unobserved country-specific effects and  $\varepsilon_{it}$  is an *i.i.d.* error term. We focus on seven fiscal policy instruments, all scaled to GDP and expressed as percentages, namely net lending ( $NL_{it}$ ), total expenditure and revenue ( $TEXP_{it}$ ,  $TREV_{it}$ ), current expenditure and revenue ( $CEXP_{it}$ ,  $CREV_{it}$ ), final consumption expenditure ( $FCE_{it}$ ) and total taxes ( $TAX_{it}$ ). Our control variables include the level of development ( $LnGDP_{it}$ ), measured by the logarithm of real GDP per capita,<sup>10</sup> the trade shock ( $TRADESK_{it}$ ), measured by the deviation of trade share from its trend value (derived using the Hodrick–Prescot filter), two demographic variables representing the percentage of population aged 15–64 and 65+ ( $PROPI564_{it}$  and  $PROP65_{it}$ ), the fractionalization of government ( $FRAC_{it}$ ), measured by the probability that two deputies picked at random among the government parties will be of different parties, and finally the positioning of the government on a left-right scale ( $EXECLRC_{it}$ ), measured by a dummy variable that equals  $-1$  for left governments,  $0$  for centrist governments, and  $+1$  for right governments. These variables have been shown to be correlated with fiscal policy outcomes in previous studies, such as Cameron (1978), Rodrick (1998), Persson and Tabellini (1999), Perotti and Kontopoulos (2002), Hibbs (1977) and Alesina (1987). Moreover, we control for the GDP growth rate to capture fluctuations in fiscal policy induced by the domestic business cycle. In order to ensure that this model specification is the most appropriate one, we carry out several tests of statistical significance using both  $t$ -test and  $F$ -test methods. The coefficient estimates on  $TRADESK_{it}$  and  $FRAC_{it}$  appear to have no robust significant relationship with the government fiscal policy instruments, and be uncorrelated with the timing of elections. Since including them reduces the sample size and generates a great many instruments in the GMM estimation, we leave them out of the model specification.

The electoral variable  $ELE_{it}$  codes the year the executive is elected. In other words, it equals 1 in the years of legislative elections in parliamentary countries and in the years of presidential elections in presidential countries, and 0 in all other years. A potential econometric problem that arises here is that treating all executive elections as predetermined may bias our estimates of electoral cycles. Reid (1998) and Persson and Tabellini (2002) point out that incumbent governments may strategically choose the timing of elections depending on fiscal policy outcomes and call early elections when the economy is doing well. On the other hand, when the election date is known well in advance, incumbent governments have more time and far greater opportunity to manipulate fiscal policy in order to get re-elected, than when there are “snap” elections, with a short lag between elections being called and being held (see Brender and Drazen 2005). Although mitigated through the inclusion of GDP growth in the empirical model, the first problem is addressed by looking at two alternative

<sup>10</sup>A logarithm transformation is used because real GDP per capita is highly positively skewed.



election indicators that separately identify the elections whose timing is predetermined<sup>11</sup> and the elections whose timing is not predetermined. That is, we replace the variable  $ELE_{it}$  in (M.1) with the variables  $ELEP_{it}$  and  $ELENP_{it}$  respectively. To address the second problem, we consider a weighted electoral variable that assigns a smaller weight to non-predetermined elections, denoted by  $WELE_{it}$  and computed as  $ELEP_{it} + wELENP_{it}$ , where  $0 < w < 1$  (to be specified later).

Since we are also interested in studying cross-country variations in PBCs, we partition the sample into subsamples of (i) plurality and non-plurality countries, (ii) presidential and parliamentary countries, (iii) established and new democracies, and (iv) Eurozone and non-Eurozone countries, and estimate the following version of regression model (M.1):

$$\begin{aligned}
 Y_{it} = & \sum_{j=1}^2 \alpha_j Y_{it-j} + \beta X_{it} + \gamma GROWTH_{it} + \gamma^1 (GROWTH_t^1 - GROWTH_t^0) \\
 & + \delta^1 D_1 ELE_{it} + \delta^0 D_0 ELE_{it} + \mu_i + \varepsilon_{it}
 \end{aligned}
 \tag{M.2}$$

where  $D_k, k \in \{0, 1\}$ , is one of the four indicator (dummy) variables  $PLUR_k, PRES_k, DEM_k$  and  $EURO_k$ .  $PLUR_1$  refers to the EU-27 member states with a plurality rule in legislative elections (this includes both strictly plurality and mixed plurality-proportional electoral systems), while  $PLUR_0 (1 - PLUR_1)$  to the EU-27 member states with strictly proportional electoral systems.  $PRES_1$  refers to the EU-27 member states where the executive is not accountable to the legislature (presidential regimes), while  $PRES_0 (1 - PRES_1)$  to the EU-27 member states where it is, regardless of whether or not there is a directly elected president (parliamentary regimes).  $DEM_1$  refers to the EU-27 member states which have been democratic for more than two decades (established democracies), while  $DEM_0 (1 - DEM_1)$  to EU-27 member states which became democracies in 1989 or later (new democracies). Finally,  $EURO_1$  refers to the EU-27 member states which have adopted the euro currency as their sole legal tender as of January 2009, while  $EURO_0 (1 - EURO_1)$  to the remaining EU-27 member states. Notice that in model (M.2) we allow the output growth to differ across these subsamples, that is, we include a term that captures the annual difference in the average GDP growth rate between the countries defined by  $D_1$  and the ones defined by  $D_0 (GROWTH_t^1 - GROWTH_t^0)$ . This is important to ensure that our estimated results will not draw misleading inferences regarding the cross-country variations of PBCs, if these are driven by different levels of economic growth across the various country groups.

Equations (M.1) and (M.2) are standard dynamic panel data specifications. The presence of country specific effects and lagged dependent variables among the regressors means that ordinary least squares and fixed effects (FE) estimations are severely biased and inconsistent unless the time dimension  $T$  is large (see Nickell 1981; Kiviet 1995). The time dimension in our data set is relatively small (at most 12 years) and, hence, the bias from using a FE estimator is non-negligible. To address this problem we adopt the system GMM estimator proposed by Blundell and Bond (1998), which extends the first differencing GMM estimator proposed by Arellano and Bond (1991) by using lagged differences as instruments for equations in levels, in addition to lagged levels as instruments for equations in first differences. Bun and Kiviet (2006), who analyse the finite sample properties of various least squares

<sup>11</sup>To do so, we follow an approach similar to that adopted by Shi and Svensson (2002, 2006) and classify an election to be predetermined if either (i) the election occurs in the last year of a constitutional fixed term for the legislature, or (ii) the election is announced at least a year in advance. Among the 76 elections in the sample, 67 are classified as predetermined.



and GMM estimators in dynamic panel data models, show that if  $T$  and  $N$  are small, the system GMM estimator is a “relatively safe choice”, except when the autoregressive process of the dependent variable is small, which is not the case in our data set.<sup>12</sup> Given our choice of system GMM as an estimation technique, we need to resolve two key issues. First, the asymptotic standard errors of the two-step GMM estimator have been shown to have a severe downward bias in small samples. To evaluate the precision of the two-step estimators for hypothesis testing, we apply the “Windmeijer finite-sample correction” (see Windmeijer 2005) to these standard errors. Second, it has often been pointed out that using too many instruments can make some asymptotic results about the GMM estimators and related specification tests misleading (see Roodman 2009). To reduce this risk we use only a subset of the available instrument matrix (see notes at the bottom of Table 2); separate instruments are still generated for each period, but the number per period is capped, so the instrument count is linear in  $T$ . The consistency of the GMM estimator depends on the condition of no second-order serial correlation and on the validity of instruments. We thus perform two tests: the Arellano–Bond test for second-order serial correlation of the differenced residuals, and the Hansen test for over-identifying restrictions.

## 5 Evidence on political budget cycles in the EU

This section presents the results of tests corresponding to the various PBCs hypotheses, as discussed in Sect. 4. The existence of an election-motivated fiscal cycle is confirmed when the regression coefficient on the electoral variable is correctly signed (negative in the surplus and revenue regressions, and positive in the expenditure regressions) and statistically significant at conventional levels of significance. For a description of the various variants of the electoral variable that will be used throughout this section see Table 1, and for a summary of the key results see Table 6.

### 5.1 Basic findings

We start with tests on the government budget surplus/deficit as measured by the net lending/borrowing figure of the government. Column (1) in Table 2 reports the results of fixed effects estimation of model (M.1) and presents evidence in favor of a PBC: the coefficient on the electoral dummy  $ELE_{it}$  has the expected sign (fiscal deficits are higher in election years) and is statistically significant at the 1% confidence level. This result is confirmed when we estimate the model using the two-step Arellano–Bond procedure (column (2)) and the two-step Blundell–Bond procedure<sup>13</sup> (column (3)). Since the system GMM estimator is asymptotically more efficient than the first differencing GMM estimator, and the inclusion of time-specific fixed effects does not change the significance of the electoral dummy<sup>14</sup>

<sup>12</sup>The preference of system GMM in this context is discussed more extensively in Bernoth et al. (2008), who compare fiscal policy reaction functions for 14 European countries over the period 1995–2006.

<sup>13</sup>It must be stressed that the one-step GMM estimators provide results that sometimes reject the null hypothesis of valid over-identifying restrictions, while the two-step GMM estimators yield almost a perfect Hansen statistic. However, the reported results on the electoral variables are robust to alternative specifications with reduced instrument counts (for example, allowing the level of development to be an exogenous variable), and to shorter time periods (see Sect. 6) which both produce a lower Hansen  $p$ -value.

<sup>14</sup>In addition, the estimated coefficients on the time-specific fixed effects appear to be statistically insignificant in all regressions.

**Table 1** Electoral variables

Variable	Description
<i>ELE</i>	Executive elections. Equals 1 in a year when the executive is elected, and 0 otherwise.
<i>ELEP</i>	Predetermined executive elections. Equals 1 in a year when a predetermined election takes place, and 0 otherwise.
<i>ELENP</i>	Non-predetermined executive elections. Equals 1 in a year when a non-predetermined election takes place, and 0 otherwise.
<i>WELE</i>	Weighted variable for executive elections. Equals 1 in a year when a predetermined election takes place, 0.5 when a non-predetermined executive election takes place, and 0 otherwise.
<i>WELE * D<sub>1</sub></i>	Executive elections in countries defined by $D_1 \in \{PLUR_1, PRES_1, DEM_1, EURO_1\}$ . Shows the interaction between the weighted electoral variable <i>WELE</i> and plurality systems (when $D_1 = PLUR_1$ ), presidential regimes (when $D_1 = PRES_1$ ), established democracies (when $D_1 = DEM_1$ ) and Eurozone countries (when $D_1 = EURO_1$ ).
<i>WELE * D<sub>0</sub></i>	Executive elections in countries defined by $D_0 \in \{PLUR_0, PRES_0, DEM_0, EURO_0\}$ . Shows the interaction between the weighted electoral variable <i>WELE</i> and strictly proportional systems (when $D_0 = PLUR_0$ ), parliamentary regimes (when $D_0 = PRES_0$ ), new democracies (when $D_0 = DEM_0$ ) and non-Eurozone countries (when $D_0 = EURO_0$ ).

(see column (4)), we consider the regression setting of column (3) for the subsequent analysis. In column (5) we re-estimate the original fiscal balance equation with  $ELE_{it}$  replaced by  $ELEP_{it}$  (coding predetermined elections) and  $ELENP_{it}$  (coding non-predetermined elections). Both  $ELEP_{it}$  and  $ELENP_{it}$  enter the regression negatively, but only the former variable is statistically significant. This suggests that the presence of a PBC is not driven by strategically timed elections and that fiscal manipulation is stronger when the election date is exogenously fixed by the law. Given that treating each election as predetermined underestimates the size of PBCs, we continue our analysis using the weighted electoral variable  $WELE_{it}$  which assigns a weight of 0.5 to non-predetermined elections.<sup>15</sup> The coefficient estimate on  $WELE_{it}$  in column (6) implies that, on average, fiscal deficit increases by 0.87% of GDP in election years.

Having acceded to the EU, in either 2004 or 2007, the 12 new members had to adjust their fiscal policies to EU standards and comply with the SGP rules. Therefore, PBCs may be weaker in the period following the EU enlargement of 2004. To investigate this issue, we restrict the sample to include the post-2004 period and run the same regression as before. Column (7) reports the results and presents evidence that politically-motivated fiscal actions are not only a pre-2004 phenomenon: the coefficient value on  $WELE_{it}$  in column (7) is qualitatively the same as the corresponding value in column (6) and remains statistically significant at the 1% confidence level. Testing the hypothesis that the coefficients on  $WELE_{it}$  in the post-2004 period and the pre-2004 period are equal<sup>16</sup> yields a two-tailed *p*-value of 0.64 (column (7)), suggesting that there is no reason to reject the null hypothesis. Moreover, controlling for fiscal behavior in pre-election and post-election years using the one-year leads and lags of the executive election dates, does not change the basic findings, as reported

<sup>15</sup>Notice that the  $\chi^2$  statistic for testing the hypothesis that the coefficient on  $ELEP_{it}$  equals two times the coefficient on  $ELENP_{it}$  is 0, while the corresponding *p*-value is close to 1 (see column (5) in Table 2).

<sup>16</sup>Assuming that the coefficients on the electoral dummy for the two sample periods are independent, the *z*-statistic (the ratio of the difference of the coefficient estimates to the standard error of the difference) is asymptotically normal.

**Table 2** Political budget cycles: budget surplus/deficit. Dependent Variable: net lending over GDP (*NL*). Method: Fixed Effects (column (1)), Generalized Method of Moments (columns (2)–(7))

	FE	Diff. <sup>a</sup>	System <sup>b</sup>		(5)	(6)	(7)
	(1)	(2)	(3)	(4) <sup>c</sup>			
							post-2004
<i>NL</i> (−1)	0.63*** (8.86)	0.61*** (6.52)	0.63*** (7.82)	0.76*** (2.92)	0.63*** (6.15)	0.56*** (5.35)	0.63*** (5.98)
<i>NL</i> (−2)	−0.13** (2.18)	−0.23* (1.76)	−0.17* (1.94)	−0.13 (1.04)	−0.17* (1.91)	−0.14 (1.57)	−0.45** (2.40)
<i>GROWTH</i>	0.36*** (6.73)	0.51*** (3.67)	0.36*** (4.22)	0.28 (1.05)	0.36*** (5.23)	0.35*** (4.28)	0.39*** (3.51)
<i>LnGDP</i>	0.90 (0.68)	5.48 (0.86)	1.15*** (3.34)	0.10 (0.04)	1.25*** (3.11)	1.23*** (3.32)	1.50** (2.52)
<i>PROP1564</i>	−0.15 (0.65)	−0.78 (1.02)	−0.16*** (3.64)	−0.43 (0.38)	−0.16*** (2.95)	−0.18** (2.52)	−0.21*** (5.85)
<i>PROP65</i>	0.02 (0.18)	0.15 (0.42)	0.40** (2.34)	0.12 (0.22)	0.35* (1.71)	0.45 (1.62)	0.50** (2.42)
<i>EXECLRC</i>	−0.04 (0.41)	−0.23 (1.15)	−0.76** (2.02)	−0.36* (1.91)	−0.35* (1.72)	−0.43** (2.02)	−0.21 (0.73)
<i>ELE</i>	−0.93*** (4.14)	−0.73*** (3.26)	−0.86*** (3.78)	−0.81*** (2.67)			
<i>ELEP</i>					−0.79*** (2.83)		
<i>ELENP</i>					−0.42 (0.42)		
<i>WELE</i>						−0.87*** (3.46)	−0.95*** (2.69)
Hansen test <sup>d</sup>		22.14 [0.51]	21.34 [1.00]	14.73 [1.00]	20.98 [1.00]	23.56 [0.99]	21.22 [0.57]
Corr. test <sup>e</sup>		1.26 [0.21]	1.12 [0.26]	0.89 [0.37]	1.12 [0.26]	0.95 [0.34]	0.43 [0.66]
Sign. test					0.00 <sup>f</sup> [0.98]		0.46 <sup>g</sup> [0.64]
No. countries	27	27	27	27	27	27	27
No. observ.	269	242	269	269	269	269	135
Overall <i>R</i> <sup>2</sup>	0.68						

Columns report estimated coefficients (*z*-statistics). \*\*\*, \*\*, \* Statistically significant at the 1%, 5% and 10% confidence level respectively

<sup>a</sup>First differencing GMM regression

<sup>b</sup>System GMM regression. The instruments used in the system GMM regression are lagged levels (two periods) of the dependent variable and the endogenous covariates *GROWTH*<sub>*it*</sub> and *LnGDP*<sub>*it*</sub> for the differenced equation, and lagged difference (one period) of these variables for the level equation. The electoral dummies and the strictly exogenous covariates are instrumented by themselves in the differenced equation

<sup>c</sup>Includes time-specific effects

<sup>d</sup>Reports the Hansen test for over-identifying restrictions [*p*-values]

<sup>e</sup>Reports the Arellano–Bond test for second-order serial correlation of the differenced residuals [*p*-values]

<sup>f</sup>Reports the  $\chi^2$ -statistic [*p*-value], where *H*<sub>0</sub>: the coefficient on *ELEP*<sub>*it*</sub> equals two times the coefficient on *ELENP*<sub>*it*</sub>

<sup>g</sup>Reports the *z*-statistic [*p*-value], where *H*<sub>0</sub>: the coefficients on *WELE*<sub>*it*</sub> in the pre and post 2004 periods are equal

in column (6). In fact, both pre-election and post-election variables appear to be statistically insignificant when added to the model, implying that fiscal policy manipulations are only observable in election years. This finding is consistent with the new generation PBCs models (see Sect. 3), where governments use short-term excess borrowing as a hidden effort in order to increase their performance index. As pointed out by Mink and de Haan (2006), borrowing extra money is less easy to hide during a pre-election year, compared to an election year, since information on the pre-election year's budget deficit is likely to be published prior to the election date. Consequently, engaging in fiscal manipulation too early may harm the chances of re-election faced by the incumbent.

Does the PBC displayed in Table 2 derive from increased spending or reduced revenue? To answer this question we perform similar tests on the total expenditure and the total revenue figures of the government. Bearing in mind that some policy instruments may be more easily and productively manipulated than others in elections years (see Rogoff 1990; Efthyvoulou 2011), we also try to find electoral effects in components and subcomponents of expenditure and revenue, namely current expenditure and current revenue, and final consumption expenditure and total taxes<sup>17</sup> respectively. Table 3 presents the results of these regressions. The deficit cycle in the EU-27 over the period 1997–2008 appears to be clearly driven by higher election-year expenditure: the estimated coefficient on the electoral variable  $WELE_{it}$  has the expected sign and is statistically significant at the 10% confidence level or better in the  $TEXP_{it}$ ,  $CEXP_{it}$  and  $FCE_{it}$  equations (columns (1)–(3)). The estimates suggest that, on average, total expenditure, current expenditure and final consumption expenditure, increase by 0.75%, 0.36% and 0.19% of GDP respectively during an election year. On the other hand, the electoral variable  $WELE_{it}$  enters the equations of  $TREV_{it}$ ,  $CREV_{it}$  and  $TAX_{it}$  (columns (4)–(6)) with the appropriate sign (revenue-to-GDP measures are lower in election years), but the coefficient estimates are not statistically significant. One interpretation is that tax codes are more difficult to change and control for short-run purposes compared to certain politically-sensitive expenditure programs. In addition, the effect of a tax cut on voter welfare is not very direct, immediate and visible, which makes it difficult for governments to reap the political benefits from the resulting economic stimulation (Schuknecht 2000).

## 5.2 Do PBCs vary over time? Evidence for the period 1980–2008

The data sources used for this study provide annual observations on fiscal policy instruments and economic outcomes for nearly 30 years for 10 EU member states.<sup>18</sup> Therefore, considering this subsample of countries, we can check the robustness of our results over a much longer time span (1980–2008). Columns (1) through (3) of Table 4 show the corresponding FE estimates<sup>19</sup> of the regressions on  $NL_{it}$ ,  $CEXP_{it}$  and  $CREV_{it}$ .<sup>20</sup> Overall, the

<sup>17</sup>We also consider other components of current expenditure and revenue. However, final consumption expenditure and taxes appear to have the most pronounced electoral cycle.

<sup>18</sup>These countries are Austria, Belgium, Denmark, Finland, France, Germany, Italy, the Netherlands, Portugal and the United Kingdom.

<sup>19</sup>If the time length is relatively large, the dynamic panel bias, reported in Sect. 4, becomes insignificant and the more straightforward FE estimator performs better (Roodman 2006). In addition, if the time length is large, the system GMM estimator may cause instrument proliferation, that is, the instrument count may grow very large relative to the sample size. If the number of countries is very small, the Arellano–Bond autocorrelation test may also become unreliable. In this section, we thus report only the results from conventional FE estimation.

<sup>20</sup>Using  $TEXP_{it}$  or  $FCE_{it}$ , instead of  $CEXP_{it}$ , and  $TREV_{it}$  or  $TAX_{it}$ , instead of  $CREV_{it}$ , as fiscal policy outcome produces similar results and leads to the same conclusions.

**Table 3** Political budget cycles: compositional effects. Dependent Variable: total expenditure (*TEXP*), current expenditure (*CEXP*), final cons expenditure (*FCE*), total revenue (*TREV*), current revenue (*CREV*), total taxes (*TAX*) (all shares of GDP). Method: System Generalized Method of Moments

	<i>TEXP</i>	<i>CEXP</i>	<i>FCE</i>	<i>TREV</i>	<i>CREV</i>	<i>TAX</i>
	(1)	(2)	(3)	(4)	(5)	(6)
$Y(-1)^a$	0.66*** (7.11)	0.68*** (4.54)	0.58*** (4.15)	0.92*** (7.97)	0.97*** (4.70)	0.96*** (7.05)
$Y(-2)^a$	0.03 (0.23)	-0.01 (0.08)	0.11 (1.64)	-0.02 (0.25)	-0.02 (0.14)	-0.07 (0.48)
<i>GROWTH</i>	-0.51*** (5.56)	-0.41*** (15.41)	-0.22*** (6.10)	0.01 (0.08)	0.04 (0.99)	0.14*** (3.27)
<i>LnGDP</i>	0.65 (1.54)	1.07*** (2.74)	0.24 (1.26)	0.81** (2.16)	0.55 (0.97)	0.88*** (4.05)
<i>PROP1564</i>	0.20** (2.51)	0.17*** (3.34)	0.09*** (5.11)	0.01 (0.11)	-0.02 (0.45)	-0.05 (1.50)
<i>PROP65</i>	-0.06 (0.36)	-0.06 (0.50)	-0.02 (0.34)	0.04 (0.35)	0.09 (1.15)	0.16 (1.40)
<i>EXECRLC</i>	0.08 (0.53)	-0.08 (0.97)	0.16** (2.26)	-0.01 (0.04)	0.04 (0.25)	-0.01 (0.05)
<i>WELE</i>	0.75** (2.49)	0.36** (2.37)	0.19* (1.95)	-0.20 (0.88)	-0.32 (1.63)	-0.21 (1.18)
Hansen test	20.62 [1.00]	20.49 [1.00]	19.32 [1.00]	22.84 [0.99]	18.96 [1.00]	21.38 [1.00]
Corr. test	0.96 [0.34]	0.71 [0.48]	-0.36 [0.71]	0.40 [0.69]	0.13 [0.90]	0.56 [0.57]
No. countries	27	27	27	27	27	27
No. observ.	267	269	269	267	267	269

<sup>a</sup> $Y(-j)$  denotes the autoregressive coefficient at lag  $j$ , where  $j = 1, 2$ . Columns report estimated coefficients ( $z$ -statistics). \*\*\*, \*\*, \* Statistically significant at the 1%, 5% and 10% confidence level respectively. For details of the instruments used in the system GMM regression and the related post-estimation tests see notes for Table 2

results confirm what was obtained for the whole sample of EU countries in the more recent years 1997–2008: a large and highly significant election-year reduction in fiscal surplus deriving from a large and highly significant election-year rise in government expenditure. Notice that the estimated coefficient on  $WELE_{it}$  in the equation of  $CREV_{it}$  has, once again, the expected negative sign, but is now marginally statistically significant, adding evidence that current revenue may also be manipulated in a discretionary way around elections.

One key advantage of having a long-term data set is that we can also assess the role of globalization and institutional constraints in determining the size of PBCs, since a higher level of these two features may reduce governments' ability to manipulate fiscal policy prior to elections (see Potrafke 2009, 2010). For this reason, we add to the regressions of

**Table 4** Political budget cycles: variation over time (1980–2008). Dependent Variable: net lending (*NL*), current expenditure (*CEXP*), current revenue (*CREV*) (all shares of GDP). Method: Fixed Effects

	<i>NL</i>	<i>CEXP</i>	<i>CREV</i>	<i>NL</i>	<i>CEXP</i>	<i>CREV</i>
	(1)	(2)	(3)	(4)	(5)	(6)
$Y(-1)^a$	0.88*** (9.14)	1.30*** (37.91)	0.92*** (14.82)	0.86*** (9.08)	1.28*** (36.56)	0.90*** (16.96)
$Y(-2)^a$	-0.18* (1.88)	-0.43*** (11.93)	-0.05 (0.73)	-0.16 (1.70)	-0.41*** (10.69)	-0.06 (0.85)
<i>GROWTH</i>	0.08** (2.52)	-0.06* (1.99)	0.01 (0.18)	0.09*** (2.99)	-0.07** (2.25)	0.01 (0.07)
<i>LnGDP</i>	1.55*** (3.53)	-0.71 (1.12)	0.44 (1.06)	2.74** (2.33)	-1.25 (1.71)	0.87 (1.65)
<i>PROP1564</i>	-0.09 (0.70)	0.25 (1.77)	0.06 (0.53)	-0.12 (0.87)	0.27* (2.00)	0.08 (0.88)
<i>PROP65</i>	0.27*** (3.38)	-0.06 (0.85)	0.11 (1.13)	0.25*** (3.03)	-0.01 (0.05)	0.06 (0.76)
<i>EXECRLC</i>	0.15** (2.60)	0.01 (0.12)	0.09 (1.00)	0.24*** (3.77)	-0.04 (0.55)	0.11 (1.10)
<i>LnGLOB</i>				4.81 (1.36)	-2.01 (0.93)	2.33 (1.26)
<i>LnCONS</i>				0.94* (1.92)	-0.98 (1.35)	-0.75 (1.54)
<i>WELE</i>	-0.69*** (3.28)	0.35*** (3.65)	-0.31* (1.95)	-0.67*** (3.46)	0.33*** (3.74)	-0.30* (1.90)
No. countries	10	10	10	10	10	10
No. observ.	270	270	264	270	270	264
Overall $R^2$	0.76	0.96	0.97	0.77	0.96	0.97

<sup>a</sup> $Y(-j)$  denotes the autoregressive coefficient at lag  $j$ , where  $j = 1, 2$ . Columns report estimated coefficients ( $t$ -statistics). \*\*\*, \*\*, \* Statistically significant at the 1%, 5% and 10% confidence level respectively

columns (1) through (3) the variable  $LnGLOB_{it}$ , representing the logarithm of the KOF index of globalization, and the variable  $LnCONS_{it}$ , representing the logarithm of the POLCON index of political constraints.<sup>21</sup> The two variables do not reach statistical significance (with the exception of  $LnCONS_{it}$  in the equation of  $NL_{it}$ ) and do not seem to affect the inferences of the electoral variables (see columns (4)–(6)). The reported results are invariant to further tests of robustness, such as, running separate regressions for the two controls, using

<sup>21</sup>The KOF index of globalization was introduced by Dreher (2006) and embraces the economic, social and political dimensions of globalization. The POLCON index of political constraints was introduced by Henisz (2000) and measures the degree of institutional constraints on the executive branch of the government. The POLCON is available until 2007, and thus, we update this index for 2008 using information from the related index CHECKS, retrieved from the World Bank's Database of Political Institutions (Beck et al. 2001; Keefer and Stasavage 2003).

subindices instead of the overall index of globalization, and including the trade shock and government fractionalization among the explanatory variables.<sup>22</sup>

### 5.3 Do PBCs vary across the EU-27 member states?

Persson and Tabellini (2002, 2003) argue that the nature of the political system may shape fiscal policy outcomes. More precisely, they suggest that electoral accountability and incentives to perform well are stronger under plurality rule than under proportional rule (as the electoral outcome is more sensitive to marginal changes in votes) and thus “plurality elections” should exhibit larger variation in spending and taxes. Furthermore, they suggest that legislators’ incentives to stick together and to vote along party or coalition lines is weaker in presidential systems than in parliamentary systems (as the executive cannot be brought down by the legislature), and thus, one should observe larger overall spending and larger broad programs in parliamentary regimes. On the other hand, Brender and Drazen (2005) explain that electoral fiscal manipulations may work only when voters lack the necessary information to draw inferences about governments’ opportunistic behavior. Hence, PBCs are more likely to occur in countries with a shorter electoral history, namely new democracies. Following this discussion, we investigate whether the PBCs found in Tables 2 and 3 vary systematically with electoral rules, the form of government and the length of time a country has been a democracy. In addition, we examine whether the Eurozone countries induce more pronounced PBCs than the non-Eurozone countries, as fiscal policy is the only instrument for the former to influence voters’ perceptions around elections. To carry out this analysis, we estimate the same regression as in Sect. 5.1, using the specification suggested in model (M.2).

Table 5 reports the findings on  $NL_{it}$ ,  $CEXP_{it}$  and  $CREV_{it}$ . Different electoral rules do not seem to generate different PBCs in the EU-27. We find that the election-year reduction in budget surplus and current revenue, and the election-year rise in current expenditure identified in Sect. 5.1 are common to both plurality and non-plurality elections (see columns (1)–(3)), even though the estimated coefficients on  $WELE * D_{1it}$  (coding executive elections in countries with plurality rule) are uniformly higher than those on  $WELE * D_{0it}$  (coding executive elections in countries with proportional rule). On the other hand, the division according to the form of government suggests that the existence of PBCs in the EU-27 is due predominantly to the parliamentary regimes: only the coefficients on  $WELE * D_{0it}$  (coding executive elections in parliamentary countries) have the correct sign and are statistically significant at conventional levels of significance (see columns (4)–(6)). However, these estimates may be biased due to the significantly lower frequency of presidential countries in our sample (only 3 countries have presidential systems: Cyprus, Lithuania and Poland). As the electoral effects for the parliamentary countries are similar to those for the whole panel (as presented in Tables 2 and 3), one has to be very cautious in drawing inferences about differences in PBCs in the EU-27 across different forms of government. Continuing with the partition of the sample in established and new democracies, we find evidence against the argument of Brender and Drazen (2005) that election-driven fiscal policy manipulations are

<sup>22</sup>Adding to the model the interaction term between the government’s political orientation and globalization ( $EXECRLC * LnGLOB_{it}$ ), provides evidence that the significant deepening of globalization, which occurred in the 1990s, resulted in a shift in the direction of partisan cycles. This may explain why the coefficient on  $EXECRLC_{it}$  in the equation of  $NL_{it}$  is positive (budget deficits are higher during left-wing administrations) for the longer time period 1980–2008 and negative for the more recent period 1997–2008. However, the study of ideology-driven fiscal cycles is beyond the scope of this paper.



**Table 5** Political budget cycles: variation across country groups. Dependent Variable: net lending (NL), current expenditure (CEXP), current revenue (CREV) (all shares of GDP). Method: System Generalized Method of Moments

	Plurality/non-Plurality			Presidential/Parliamentary			Established/New Democracies			Eurozone/non-Eurozone		
	NL (1)	CEXP (2)	CREV (3)	NL (4)	CEXP (5)	CREV (6)	NL (7)	CEXP (8)	CREV (9)	NL (10)	CEXP (11)	CREV (12)
<i>GROWTH</i>	0.26** (2.30)	-0.38*** (8.96)	-0.05 (0.81)	0.35*** (5.01)	-0.40*** (9.16)	0.04 (0.78)	0.46*** (3.99)	-0.42*** (10.76)	0.09* (1.77)	0.41*** (5.32)	-0.42*** (11.76)	-0.01 (0.36)
<i>LnGDP</i>	1.07 (1.04)	2.37** (2.37)	0.50 (1.63)	0.66 (1.38)	1.08* (1.85)	0.62 (0.91)	0.71** (1.99)	1.14*** (2.46)	1.06* (1.90)	1.12*** (2.63)	1.08*** (2.78)	0.98** (2.07)
<i>PROP1564</i>	-0.16 (1.38)	0.15** (2.28)	-0.02 (0.35)	-0.22*** (2.65)	0.16** (2.07)	-0.02 (0.41)	-0.17* (1.95)	0.15*** (3.17)	-0.04 (0.60)	-0.28*** (2.85)	0.17*** (3.48)	-0.05 (0.77)
<i>PROP65</i>	0.39 (1.37)	-0.06 (0.43)	0.16 (1.17)	0.77* (1.89)	-0.09 (0.44)	0.11 (0.76)	0.58 (1.47)	-0.08 (0.51)	0.27** (1.99)	0.93** (2.25)	-0.10 (0.60)	0.32** (1.97)
<i>EXECLRC</i>	-0.45*** (2.60)	-0.02 (0.25)	-0.05 (0.54)	-1.08 (1.22)	-0.03 (0.30)	0.03 (0.22)	-1.69 (1.25)	0.08 (0.25)	0.09 (0.72)	-1.62 (1.16)	0.12 (0.47)	-0.03 (0.33)
<i>WELE * D<sub>1</sub><sup>a</sup></i>	-1.26*** (2.88)	0.41* (1.89)	-0.46 (1.54)	0.45 (0.23)	1.47 (0.90)	0.05 (0.04)	-0.90** (2.43)	0.47*** (2.86)	-0.26 (1.24)	-1.25*** (4.40)	0.52*** (3.28)	-0.36* (1.94)
<i>WELE * D<sub>0</sub><sup>a</sup></i>	-0.72** (2.20)	0.38* (1.94)	-0.27 (1.42)	-0.82*** (2.98)	0.39*** (2.77)	-0.34 (1.58)	-1.67 (1.37)	0.37 (0.90)	-1.16 (1.33)	-1.40 (1.03)	-0.11 (0.18)	0.06 (0.15)
<i>DEVGR<sup>b</sup></i>	-0.48** (2.19)	0.10 (1.64)	-0.26** (2.17)	-0.27 (1.46)	0.02 (0.46)	-0.02 (0.20)	0.16** (2.39)	-0.02 (0.56)	0.06 (1.30)	0.16* (1.73)	-0.05* (1.67)	0.08* (1.85)

**Table 5** (Continued)

	Plurality/non-Plurality		Presidential/Parliamentary		Established/New Democracies		Eurozone/non-Eurozone					
	NL (1)	CREV (3)	NL (4)	CEXP (5)	CREV (6)	NL (7)	CEXP (8)	CREV (9)	NL (10)	CEXP (11)	CREV (12)	
Hansen test	20.55 [1.00]	18.54 [1.00]	16.58 [1.00]	18.23 [1.00]	20.33 [1.00]	18.84 [1.00]	18.23 [1.00]	22.07 [0.99]	13.03 [1.00]	17.39 [1.00]	19.63 [1.00]	15.02 [1.00]
Corr. test	0.83 [0.41]	0.66 [0.51]	0.69 [0.49]	0.57 [0.57]	0.97 [0.33]	0.11 [0.91]	0.61 [0.54]	0.78 [0.44]	-0.06 [0.95]	1.11 [0.26]	0.47 [0.64]	-0.39 [0.70]
No. countries	27	27	27	27	27	27	27	27	27	27	27	27
No. observ.	269	269	267	269	269	267	269	269	267	269	269	267

<sup>a</sup>*WELE* \* *D*<sub>1</sub> and *WELE* \* *D*<sub>0</sub> are interaction terms between the electoral dummy *WELE* and *D*<sub>1</sub> and *D*<sub>0</sub> respectively, where *D*<sub>1</sub> ∈ {*PLUR*<sub>1</sub>, *PRES*<sub>1</sub>, *DEM*<sub>1</sub>, *EURO*<sub>1</sub>} and *D*<sub>0</sub> ∈ {*PLUR*<sub>0</sub>, *PRES*<sub>0</sub>, *DEM*<sub>0</sub>, *EURO*<sub>0</sub>}. <sup>b</sup>*DEVGR* denotes the annual difference in the GDP growth rate between the various country groups as defined by *D*<sub>1</sub> and *D*<sub>0</sub>. Columns report estimated coefficients (z-statistics). For brevity, autoregressive coefficients at lags 1 and 2 are not displayed. <sup>\*\*\*</sup>, <sup>\*\*</sup>, <sup>\*</sup> Statistically significant at the 1%, 5% and 10% confidence level respectively. For details of the instruments used in the system GMM regression and the related post-estimation tests see notes for Table 2

**Table 6** (Unconditional) electoral effects

	<i>NL</i>	<i>TEXP</i>	<i>CEXP</i>	<i>FCE</i>
All elections (EU-27)	−0.87*** (3.46)	+0.75** (2.49)	+0.36** (2.37)	+0.19* (1.95)
All elections (Eurozone)	−1.25*** (4.40)	+1.06*** (4.46)	+0.52*** (3.28)	+0.30*** (2.95)
All elections (non-Eurozone)	−1.40 (1.03)	+0.43 (0.30)	−0.11 (0.18)	−0.02 (0.11)

Columns report estimated coefficients (*t*-statistics). \*\*\*, \*\*, \* Statistically significant at the 1%, 5% and 10% confidence level respectively

only a phenomenon of new democracies. In fact, the results displayed in columns (7) through (9) indicate stronger electoral effects among the established democracies: the coefficients on both  $WELE * D_{1it}$  (coding executive elections in established democracies) and  $WELE * D_{0it}$  (coding executive elections in new democracies) have the expected sign, but only the former variable is statistically significant in the equations of  $NL_{it}$  and  $CEXP_{it}$ . However, this is not so surprising if we take into account that 14 out of the 17 established democracies have also adopted the euro, and therefore, as the above discussion suggests, electoral effects may be stronger in these countries. Indeed, the results in columns (10) through (12) imply that the reported PBCs in the EU-27 are driven by the countries in the euro area. The estimated coefficients on  $WELE * D_{1it}$  (coding executive elections in the Eurozone) are larger than those on  $WELE_{it}$  (as presented in Tables 2 and 3) and are statistically significant at conventional levels of significance. Specifically, the estimated election-year reduction in budget surplus amounts to 1.25% of GDP, while the estimated election-year rise in current expenditure to 0.52% of GDP (see Table 6 for the other two expenditure measures). In contrast, the estimated coefficients on  $WELE * D_{0it}$  (coding executive elections in the non-Eurozone countries) are all statistically insignificant and, in some cases, have the wrong sign. As already mentioned, one interpretation of this finding is that the countries that have not yet adopted the euro may use a different combination of instruments (monetary and fiscal) to generate politically-motivated economic outcomes, and this combination may change over time. Another possible explanation is that politicians' incentives to manipulate fiscal policy may vary greatly over time and across countries depending upon the political pressures at the time of elections. Hence, once we identify and control for the determinants of this variance, PBCs may become detectable in all countries. We now turn to this possibility.

## 6 PBCs with non-economic voting and competitiveness

The empirical analysis carried out in Sect. 5 relies on the assumption that politicians' incentives may only be shaped by different electoral rules and different forms of government. However, if the prediction of Sect. 3 is correct, that is, if governments manipulate fiscal policy to different degrees according to the re-election-to-competence sensitivity, our previous results may not have adequately captured the true dimension of PBCs. To the extent that the power of politicians' incentives to engineer a pre-election expenditure boom depends on the levels of non-economic voting and electoral competitiveness, a puzzle emerges: to

**Table 7** Electoral variables

Variable	Description
$WELE * IVPOL$	Shows the interaction between executive elections and non-economic voting, when either $IVBET$ or $IVNEC$ is used as a proxy for non-economic voting.
$WELE * \overline{IVPOL}$	Shows the interaction between executive elections and non-economic voting, when the standardized average of $IVBET$ and $IVNEC$ is used as a proxy for non-economic voting.
$WELE * C_j, j = 1, 2, 3$	Executive elections at high ( $j = 1$ ), average ( $j = 2$ ) and low ( $j = 3$ ) level of competitiveness, when $VOT$ is used as a proxy for competitiveness.
$WELE * R_j, j = 1, 2, 3$	Executive elections at high ( $j = 1$ ), average ( $j = 2$ ) and low ( $j = 3$ ) level of competitiveness, when $DVOT$ is used as a proxy for competitiveness.
$WELE * EURO_1 * R12$	Executive elections in the Eurozone countries at high and average level of competitiveness, when $DVOT$ is used as a proxy for competitiveness.
$WELE * EURO_0 * R12$	Executive elections in the non-Eurozone countries at high and average level of competitiveness, when $DVOT$ is used as a proxy for competitiveness.

what extent do these two features influence the size and significance of PBCs? The aim of this section is to answer this question empirically using data from the EU-27 member states. This will be done by interacting the election variable with the level of non-economic voting and competitiveness and considering the conditional electoral effects. Table 7 describes the interaction terms that will be used throughout this section, while Table 8 summarizes the quantitative and qualitative significance of the empirical findings. Before moving to present these findings, we first need to explain how we proxy for the levels of non-economic voting and competitiveness and how the resulting variables are introduced in the empirical model specification.

### 6.1 Proxies and empirical model specification

We start with the level of non-economic voting. We construct two proxies based on responses to Eurobarometer survey items<sup>23</sup> concerning economic and social aspects of EU citizens' lives for the period 2003–2008.<sup>24</sup> The first proxy, denoted by  $BET_{it}$ , relies on the following question linked to pocketbook and prospective voting<sup>25</sup>: “Looking ahead to the next year, do you think that the financial situation of your household will be better, worse or stay the same?”. We expect that respondents who think that their financial situation will improve over the coming year are less likely to base their votes predominately on economic criteria, compared to those who think that it will deteriorate. This implies that, in countries which are generally optimistic (with respect to citizens' personal financial well-being), the impact of non-economic issues on voter choice will be relatively larger. The variable  $BET_{it}$  is computed as the percentage of the respondents whose answer is “better” (as a share of the

<sup>23</sup>The “Standard Eurobarometer” is conducted between 2 and 5 times per year, with reports published twice yearly. The proxies constructed for this analysis depend on yearly averages of the survey items taken into consideration.

<sup>24</sup>Data for the new EU member states is not available before 2003. Thus, our analysis focuses mainly on how the level of non-economic voting varies across countries, and relatively less on how it varies over time (only 13 countries have two executive elections during the period 2003–2008).

<sup>25</sup>Pocketbook voting refers to the conventional wisdom among politicians and the public that voters vote according to their personal or household financial conditions. Prospective voting involves the theoretical prediction that voters look to the future, instead of the past (retrospective voting), and vote according to economic expectations. See Lewis-Beck and Stegmaier (2007) for the relevant literature on economic voting.

respondents whose answer is either “better” or “worse”) in country  $i$  and year  $t$ , rescaled by subtracting the mean of this index across all 27 countries in year  $t$ . The latter rescaling procedure is important to reduce measurement errors caused by the existence of an “economic ill-being factor” in European public opinion during particular time periods (for example, during the global economic crisis of 2008). The second proxy, denoted by  $NEC_{it}$ , relies on a more direct question on issue importance linked to sociotropic voting,<sup>26</sup> namely, “What do you think are the two most important issues facing your country at the moment?”. Survey participants have the option to choose from fourteen items reflecting a broad range of social, cultural, and policy issues. The variable  $NEC_{it}$  is computed as the proportion of responses in country  $i$  and year  $t$  to items associated with non-economic issues,<sup>27</sup> rescaled, as before, by subtracting the mean across all 27 countries in year  $t$ .

To test whether the level of non-economic voting can explain the variation in the size of PBCs across the EU-27 member states, we augment model (M.1) with the public opinion variable  $POL_{it} \in \{BET_{it}, NEC_{it}\}$  and its interaction term with the electoral dummy,  $WELE * POL_{it}$ . In this way, it is possible to estimate the impact of each election conditional on the level of non-economic voting. A potential econometric problem is that the variable  $POL_{it}$  may not be exogenous relative to the dependent variable, and it may therefore create endogeneity bias from reverse causality: voters assigning higher (lower) weight to non-economic issues during periods of expansionary (contractionary) fiscal policies. To address this problem we replace the problematic causal variable  $POL_{it}$  with the instrumental variable  $IVPOL_{it} \in \{IVBET_{it}, IVNEC_{it}\}$ , constructed using the predicted values from country-by-country regressions on the exogenous variables of the model.<sup>28</sup> Finally, in order to examine the impact of the two public opinion indicators simultaneously, we substitute the variable  $IVPOL_{it}$  with the composite variable  $\overline{IVPOL}_{it}$ , computed as the standardized average of  $IVBET_{it}$  and  $IVNEC_{it}$ .<sup>29</sup>

We continue with the level of competitiveness. We employ pre-electoral poll data on voting intention for the (adjusted) sample period 2004–2008 and construct a proxy based on the difference in the polled vote share between the government and the opposition (after adjusting for the allocation of undecided voters). In countries with single-party governments,

<sup>26</sup>Sociotropic voting involves the theoretical prediction that national economic conditions matter to individual voter choice. According to the literature on popularity functions, in most countries voters are both sociotropic and egotropic (Paldam 2008).

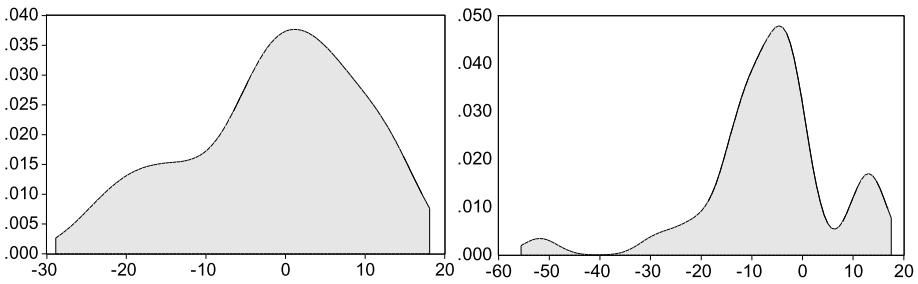
<sup>27</sup>To divide the issues into “economic” and “non-economic”, we use a classification framework similar to that of Lewis-Beck (1990). More precisely, the list of economic issues includes items related to macroeconomic outcomes or fiscal policy instruments, namely, the economic situation, inflation, unemployment, taxation and pensions. The list of non-economic issues includes items with a social, political or cultural dimension (even if they are indirectly influenced by the government’s economic policies), namely, crime, terrorism, foreign affairs, immigration, housing, the healthcare system, the educational system, the environment, and energy related issues.

<sup>28</sup>The predicted values are estimates of the mean of  $POL_{it}$  conditional upon the exogenous variables of the model (obtained separately for each country which provides identification):

$$\widehat{POL}_{it} = \hat{\pi}_{0i} + \hat{\pi}_{1i}PROPI564_{it} + \hat{\pi}_{2i}PROP65_{it} + \hat{\pi}_{3i}EXECRLC_{it} + \hat{\pi}_{4i}WELE_{it}$$

Note that these first-stage regressions all have high adjusted- $R^2$  values (almost all are more than 0.40). Moreover, including the responses to other Eurobarometer survey items (for example, the level of trust in national political institutions) as instruments, does not change the overall significance of these regressions, nor the significance of the results to be presented later on.

<sup>29</sup>Specifically,  $\overline{IVPOL}_{it} = \frac{1}{2} \times \left[ \frac{IVBET_{it} - \overline{IVBET}_{it}}{StD(IVBET_{it})} + \frac{IVNEC_{it} - \overline{IVNEC}_{it}}{StD(IVNEC_{it})} \right]$ , where  $\bar{x}$  is the mean of  $x$  and  $StD(x)$  is the standard deviation of  $x$ .



**Fig. 1** Probability density functions of  $VOT_{it}$  (left) and  $DVOT_{it}$  (right)

constructing this index is quite simple. However, in countries with multi-party coalition governments, the classification of all parties along government-opposition lines is more difficult (as party alliances are usually reshaped around elections). To avoid measurement errors related to such ambiguities, we focus on the largest government party and the largest opposition party. More precisely, the “competitiveness proxy”, denoted by  $VOT_{it}$ , is calculated as the mean monthly difference in the polled vote share between the largest government party and the largest opposition party,<sup>30</sup> plus the mean monthly change in this difference (to capture upward or downward trends). Using the sampling distribution of  $VOT_{it}$  (see Fig. 1), we divide the 34 executive elections over the (adjusted) sample period 2004–2008 into three groups and create the following election dummy variables<sup>31</sup>:  $C1$ , coding elections with a high level of competitiveness (when  $|VOT_{it}| < 6\%$ ),  $C2$ , coding elections with an average level of competitiveness (when  $6\% \leq |VOT_{it}| < 15\%$ ), and  $C3$ , coding elections with a low level of competitiveness (when  $|VOT_{it}| \geq 15\%$ ).<sup>32</sup> Thus, in order to examine whether the uncertainty over the electoral outcome affects the dimension of PBCs (after controlling for non-economic voting), we re-estimate our model with  $WELE_{it}$  replaced by  $WELE * C1_{it}$ ,  $WELE * C2_{it}$  and  $WELE * C3_{it}$ . Furthermore, we subtract from the variable  $VOT_{it}$  the actual vote share difference between the two parties in the previous executive election, and use the resulting variable  $DVOT_{it}$  as an “alternative competitiveness proxy”. A positive value of  $DVOT_{it}$  implies a stronger pre-electoral support for the incumbent government compared to

<sup>30</sup>The polled vote share difference is calculated from data available to the market up to 12 months before the election. This includes 21 and 48 polls for the Austrian elections in 2006 and 2008 respectively, 7 for the Belgian elections in 2007, 16 for the Bulgarian elections in 2005, 8 for the Cypriot elections in 2008, 27 for the Czech elections in 2006, 12 and 28 for the Danish elections in 2005 and 2007 respectively, 7 for the Estonian elections in 2007, 17 for the Finnish elections in 2007, 25 for the French elections in 2007, 348 for the German elections in 2005, 6 and 35 for the Greek elections in 2004 and 2007 respectively, 16 for the Hungarian elections in 2006, 22 for the Irish elections in 2007, 55 and 10 for the Italian elections in 2006 and 2008 respectively, 6 for the Latvian elections in 2006, 5 for the Lithuanian elections in 2004, 14 for the Maltese elections in 2008, 46 for the Dutch elections in 2006, 19 for the Polish elections in 2005, 8 for the Portuguese elections in 2005, 5 and 15 for the Romanian elections in 2004 and 2008 respectively, 15 for the Slovak elections in 2006, 3 and 7 for the Slovenian elections in 2004 and 2008 respectively, 16 and 38 for the Spanish elections in 2004 and 2008 respectively, 54 for the Swedish elections in 2006 and 75 for the UK elections in 2005. Since opinion polls for the Luxembourgian elections in 2004 are not available, we use the actual vote share difference as a measure.

<sup>31</sup>Even though the use of dummy variables reduces the informational content of  $VOT_{it}$ , it can minimize the noise created by various electoral laws across countries (which may determine the number of seats controlled by each party), and provides results that are not so sensitive to outliers.

<sup>32</sup>The use of absolute values is consistent with the hypothesis that there is a nonlinear (inverted U-shape) relationship between the government’s poll lead and the degree of fiscal policy manipulation.

**Table 8** Conditional electoral effects at min and max level of non-economic voting

Sample	<i>NL</i>		<i>TEXP</i>		<i>CEXP</i>		<i>FCE</i>	
	min	max	min	max	min	max	min	max
All elections (EU-27)	-1.80*** (3.46)	0.66 (1.23)	1.91*** (5.56)	-0.65* (1.91)	1.11*** (3.59)	0.03 (0.11)	0.63*** (2.91)	-0.26 (0.61)
Elect at high competitiveness (EU-27)	-2.66*** (3.92)	0.47 (0.95)	2.41*** (6.96)	-0.08 (0.12)	1.47*** (4.59)	0.13 (0.27)	0.67** (2.25)	0.04 (0.10)
Elect at high/avg competitiveness (Eurozone)	-2.46*** (3.69)	0.73 (1.27)	2.10*** (6.02)	-0.88* (1.70)	1.25*** (3.31)	-0.50 (1.03)	0.47 (1.61)	-0.34 (0.65)
Elect at high/avg competitiveness (non-Eurozone)	-2.26*** (2.62)	0.93 (1.43)	2.25*** (3.18)	-0.73* (1.69)	1.55*** (3.05)	-0.20 (0.66)	0.64 (1.21)	-0.17 (0.48)

Columns report estimated conditional coefficients (conditional  $t$ -statistics). The methods of calculating the conditional coefficients and the conditional  $t$ -statistics are outlined by Friedrich (1982). The minimum (-1.22) and the maximum (+2.08) level of non-economic voting correspond to the minimum and maximum value of  $IVPOL_{it}$  in election years. The level of competitiveness (high, average, low) is based on the sampling distribution of  $DVOT_{it}$ . \*\*\*, \*\*, \* Statistically significant at the 1%, 5% and 10% confidence level respectively

the previous election, and thus should be associated with a relatively high probability of re-election. The advantage of this proxy is that it has a time-series dimension and can therefore mitigate concerns regarding cross-country heterogeneities in constructing  $VOT_{it}$ . Following the same procedure as before, we use the sampling distribution of  $DVOT_{it}$  (see Fig. 1) to create the election indicators  $R1$ ,  $R2$  and  $R3$ ,<sup>33</sup> and consider the impact of the interaction terms  $WELE * R1_{it}$ ,  $WELE * R2_{it}$  and  $WELE * R3_{it}$  on the various fiscal policy instruments.

## 6.2 Empirical results

### 6.2.1 Basic findings

Table 9 reports the results of the GMM estimation when the proxies for non-economic voting  $IVBET_{it}$ ,  $IVNEC_{it}$  and  $IVPOL_{it}$ , as well as their interaction terms with the electoral dummy  $WELE_{it}$ , are added to the baseline equations of  $NL_{it}$ ,  $TEXP_{it}$ ,  $CEXP_{it}$  and  $FCE_{it}$ , for the (adjusted) sample period 2004–2008. Table 9 also reports the  $\chi^2$ -statistic for a test of the hypothesis that the coefficients on these added regressors are jointly equal to zero. Because the coefficient estimate on the interaction term measures how the electoral effect varies among countries/years with different levels of non-economic voting, we expect this to be opposite in sign to the coefficient estimate on  $WELE_{it}$ . The results of the regressions

<sup>33</sup> $R1$  codes elections with  $-7\% < DVOT_{it} < 0\%$ ,  $R2$  codes elections with  $-17\% < DVOT_{it} \leq -7\%$  or  $0\% \leq DVOT_{it} < 10\%$  and  $R3$  codes elections with  $DVOT_{it} \leq -17\%$  or  $DVOT_{it} \geq 10\%$ . Notice that  $DVOT_{it}$  value of zero provides an indication that support for the incumbent government has not changed since it was elected, and hence should be associated with a lower level of competitiveness compared to a  $VOT_{it}$  value of zero.



**Table 9** Political budget cycles: non-economic voting. Dependent Variable: net lending (*NL*), total expenditure (*TEXP*), current expenditure (*CEXP*), final cons expenditure (*FCE*) (all shares of GDP). Method: System Generalized Method of Moments

	Controls based on <i>IVBET</i>				Controls based on <i>IVNEC</i>				Controls based on <i>IVPOL</i>			
	<i>NL</i> (1)	<i>TEXP</i> (2)	<i>CEXP</i> (3)	<i>FCE</i> (4)	<i>NL</i> (5)	<i>TEXP</i> (6)	<i>CEXP</i> (7)	<i>FCE</i> (8)	<i>NL</i> (9)	<i>TEXP</i> (10)	<i>CEXP</i> (11)	<i>FCE</i> (12)
<i>GROWTH</i>	0.40 <sup>***</sup> (5.35)	-0.46 <sup>***</sup> (5.87)	-0.42 <sup>***</sup> (10.97)	-0.21 <sup>***</sup> (8.71)	0.44 <sup>***</sup> (6.66)	-0.48 <sup>***</sup> (6.20)	-0.45 <sup>***</sup> (13.84)	-0.22 <sup>***</sup> (7.16)	0.40 <sup>***</sup> (7.27)	-0.47 <sup>***</sup> (6.78)	-0.43 <sup>***</sup> (12.45)	-0.22 <sup>***</sup> (7.83)
<i>WELE</i>	-0.95 <sup>***</sup> (2.60)	1.00 <sup>***</sup> (5.32)	0.68 <sup>***</sup> (3.71)	0.29 <sup>***</sup> (2.74)	-0.85 <sup>***</sup> (3.48)	0.91 <sup>***</sup> (3.72)	0.66 <sup>***</sup> (2.58)	0.36 <sup>***</sup> (2.38)	-0.90 <sup>***</sup> (3.25)	0.96 <sup>***</sup> (4.60)	0.71 <sup>***</sup> (3.55)	0.30 <sup>***</sup> (2.53)
<i>WELE * IVBET</i>	0.05 <sup>***</sup> (2.13)	-0.05 <sup>***</sup> (4.43)	-0.03 <sup>***</sup> (2.10)	-0.02 <sup>***</sup> (3.94)								
<i>IVBET</i>	-0.03 (0.62)	0.03 (1.24)	0.02 (1.37)	0.03 (3.33)								
<i>WELE * IVNEC</i>					0.04 <sup>**</sup> (2.44)	-0.03 (1.56)	-0.01 (0.39)	-0.01 (0.05)				
<i>IVNEC</i>					0.04 (0.80)	0.02 (1.04)	0.01 (0.63)	0.02 (1.43)				
<i>WELE * IVPOL</i>									0.75 <sup>***</sup> (2.64)	-0.77 <sup>***</sup> (4.47)	-0.33 <sup>**</sup> (2.56)	-0.30 (1.48)
<i>IVPOL</i>									0.33 (0.29)	0.54 (1.09)	0.42 <sup>**</sup> (2.00)	0.45 <sup>**</sup> (2.40)

**Table 9** (Continued)

	Controls based on <i>IVBET</i>				Controls based on <i>IVNEC</i>				Controls based on <i>IVPOL</i>			
	<i>NL</i> (1)	<i>TEXP</i> (2)	<i>CEXP</i> (3)	<i>FCE</i> (4)	<i>NL</i> (5)	<i>TEXP</i> (6)	<i>CEXP</i> (7)	<i>FCE</i> (8)	<i>NL</i> (9)	<i>TEXP</i> (10)	<i>CEXP</i> (11)	<i>FCE</i> (12)
Hansen test	18.00 [0.76]	17.83 [0.77]	16.35 [0.84]	15.91 [0.86]	15.84 [0.86]	19.01 [0.70]	17.61 [0.78]	21.00 [0.58]	17.21 [0.80]	19.07 [0.70]	14.90 [0.90]	19.41 [0.68]
Corr. test	0.47 [0.64]	-1.47 [0.14]	-0.67 [0.51]	-1.71 [0.09]	0.03 [0.97]	-1.80 [0.07]	-0.73 [0.47]	-1.42 [0.16]	0.06 [0.95]	-1.74 [0.08]	-0.77 [0.44]	-1.59 [0.11]
Sign. test <sup>a</sup>	5.07 [0.08]	22.24 [0.00]	5.28 [0.07]	29.02 [0.00]	6.78 [0.03]	3.59 [0.17]	0.47 [0.79]	2.33 [0.31]	7.16 [0.03]	20.32 [0.00]	6.16 [0.05]	6.13 [0.05]
No. countries	27	27	27	27	27	27	27	27	27	27	27	27
No. observ.	135	135	135	135	135	135	135	135	135	135	135	135

Columns report estimated coefficients (*z*-statistics). For brevity, autoregressive coefficients at lags 1 and 2 and coefficients on *LnGDP<sub>it</sub>*, *PROP1564<sub>it</sub>*, *PROP65<sub>it</sub>* and *EXECRLC<sub>it</sub>* are not displayed. <sup>a</sup> Statistically significant at the 1%, 5% and 10% confidence level respectively. <sup>a</sup> Reports the  $\chi^2$ -statistic [*p*-value], where  $H_0$ : the coefficients on *WELE \* IVPOL<sub>it</sub>* and *IVPOL<sub>it</sub>*, and analogously those on *WELE \* IVPOL<sub>it</sub>* and *IVPOL<sub>it</sub>*, are jointly equal to zero, where  $IVPOL_{it} \in \{IVBET_{it}, IVNEC_{it}\}$ . For details of the instruments used in the system GMM regression and the related post-estimation tests see notes for Table 2

with  $IVBET_{it}$  (columns (1)–(4)) are in line with these predictions: both the election dummy  $WELE_{it}$  and the interaction term  $WELE * IVBET_{it}$  enter with the appropriate signs and are statistically highly significant, suggesting that higher levels of non-economic voting are associated with smaller PBCs. On the other hand, the results of the regressions with  $IVNEC_{it}$  (columns (5)–(8)) validate the aforementioned hypothesis for the overall budget deficit, but fail to do the same for the three expenditure measures: the interaction term  $WELE * IVNEC_{it}$  has the expected sign but is not statistically significant at conventional levels of significance (the highest  $z$ -statistic, obtained in the equation of  $TEXP_{it}$ , is 1.56). However, when we consider the standardized average of  $IVBET_{it}$  and  $IVNEC_{it}$  (columns (9)–(12)), the results are similar to those displayed in columns (1) through (4) and in three out of four cases the interaction term  $WELE * IVPOL_{it}$  appears to have a higher  $z$ -statistic.<sup>34</sup> The latter implies that a composite variable (that combines pocketbook and sociotropic effects) can more adequately capture the impact of non-economic voting on PBCs. The findings are also qualitatively important. As shown in Table 8, elections matter only at the levels of non-economic voting that warrant measurable manipulations of fiscal policy: when we evaluate the electoral effects at the minimum level of non-economic voting, the election-induced change in fiscal policy variables is large (−1.80% of GDP in budget surplus, +1.91% of GDP in total expenditure, +1.11% of GDP in current expenditure and +0.63% of GDP in final consumption expenditure) and highly statistically significant; when we evaluate the electoral effects at the maximum level of non-economic voting, the election-induced change in fiscal policy variables is small, reversed, and in most cases, statistically insignificant. Notice that the conditional electoral effects at the minimum level of non-economic voting are twice as large as the marginal electoral effects, which were obtained before entering the related interaction term in the model.

Columns (5) through (8) of Table 10 present the results when the electoral dummy  $WELE_{it}$  in columns (9) through (12) of Table 9 is replaced by the interaction terms  $WELE * C1_{it}$ ,  $WELE * C2_{it}$  and  $WELE * C3_{it}$  (coding elections with high, average and low levels of competitiveness, as determined by the variable  $VOT_{it}$ ). We can see that all three election indicators appear to have the correct sign but only  $WELE * C1_{it}$  is statistically significant at conventional levels of significance in all four equations. This result is in line with the general proposition put forward in Sects. 1 and 3, namely, that politicians are more responsive to public demands (and thus generate more pronounced PBCs) when electoral competition is intense. Considering the alternative election indicators  $WELE * R1_{it}$ ,  $WELE * R2_{it}$  and  $WELE * R3_{it}$  (coding elections with high, average and low level of competitiveness, as determined by the variable  $DVOT_{it}$ ), produces even stronger results. As shown in columns (9) through (12) of Table 10, the estimated coefficient on  $WELE * R1_{it}$  is statistically significant in all four equations (at the 5% confidence level or better), the one on  $WELE * R2_{it}$  is statistically significant in the equation of  $NL_{it}$  only (at the 10% confidence level), whereas the one on  $WELE * R3_{it}$  does not appear to be statistically significant in any of the equations. It must be stressed that the coefficients on  $WELE * IVPOL_{it}$  in columns (5) through (12) remain economically and statistically significant (or jointly statistically significant with  $IVPOL_{it}$ ). This lends support to the view that both competitiveness and non-economic voting shape politicians' incentives around elections and simultaneously determine the size of PBCs. Qualitatively, the findings suggest that when we evaluate the electoral effects at the minimum level of non-economic voting and focus on elections with high electoral competitiveness, the election-induced change in fiscal policy variables is larger than before (−2.66%

<sup>34</sup> Although  $WELE * IVPOL_{it}$  does not enter the regression of  $FCE_{it}$  significantly, it remains jointly statistically significant with the separate regressor  $IVPOL_{it}$ .

**Table 10** Political budget cycles: non-economic voting and competitiveness. Dependent Variable: net lending (NL), total expenditure (TEXP), current expenditure (CEXP), final cons expenditure (FCE) (all shares of GDP). Method: System Generalized Method of Moments

	No controls				Electoral variables based on VOT				Electoral variables based on DVOT			
	NL (1)	TEXP (2)	CEXP (3)	FCE (4)	NL (5)	TEXP (6)	CEXP (7)	FCE (8)	NL (9)	TEXP (10)	CEXP (11)	FCE (12)
<i>GROWTH</i>	0.39*** (3.51)	-0.48*** (4.72)	-0.45*** (13.78)	-0.22*** (7.18)	0.40*** (5.53)	-0.47*** (5.80)	-0.43*** (12.92)	-0.22*** (8.68)	0.41*** (6.13)	-0.46*** (5.57)	-0.43*** (12.38)	-0.23*** (10.19)
<i>WELE</i>	-0.95*** (2.69)	0.90*** (3.49)	0.65*** (2.40)	0.33*** (2.10)								
<i>WELE * C1</i>					-1.30*** (2.64)	1.22*** (4.01)	0.70*** (2.84)	0.47*** (2.29)				
<i>WELE * C2</i>					-0.99*** (1.97)	0.65*** (1.42)	0.73*** (2.47)	0.05 (0.34)				
<i>WELE * C3</i>					-0.31 (0.51)	0.32 (0.84)	0.49 (0.47)	0.20 (0.43)				
<i>WELE * R1</i>									-1.50*** (3.11)	1.49*** (4.41)	0.97*** (3.50)	0.44*** (2.21)
<i>WELE * R2</i>									-0.89* (1.76)	0.53 (1.38)	0.38 (1.00)	0.01 (0.05)
<i>WELE * R3</i>									-0.34 (0.62)	0.64 (0.50)	0.66 (0.56)	0.31 (0.69)
<i>WELE * IVPOL</i>					0.97*** (3.81)	-0.69*** (2.33)	-0.45*** (3.08)	-0.19 (1.12)	0.95*** (3.92)	-0.76*** (3.21)	-0.41*** (2.46)	-0.19 (0.99)
<i>IVPOL</i>					0.15 (0.19)	0.69 (1.11)	0.28 (1.30)	0.35 (1.32)	0.25 (0.31)	0.76 (1.15)	0.35 (1.64)	0.47*** (2.62)

**Table 10** (Continued)

	No controls				Electoral variables based on VOT				Electoral variables based on DVOT			
	NL (1)	TEXP (2)	CEXP (3)	FCE (4)	NL (5)	TEXP (6)	CEXP (7)	FCE (8)	NL (9)	TEXP (10)	CEXP (11)	FCE (12)
Hansen test	21.21 [0.57]	22.15 [0.51]	17.61 [0.78]	22.84 [0.45]	16.05 [0.85]	17.48 [0.78]	13.06 [0.95]	17.25 [0.80]	15.70 [0.87]	19.05 [0.70]	15.60 [0.87]	17.00 [0.81]
Corr. test	0.43 [0.66]	-1.42 [0.15]	-0.88 [0.38]	-1.68 [0.10]	0.17 [0.87]	-1.37 [0.17]	-0.81 [0.42]	-1.55 [0.12]	0.30 [0.77]	-1.22 [0.22]	-0.63 [0.53]	-1.50 [0.13]
Sign. test					16.42 [0.00]	6.37 [0.04]	14.71 [0.00]	2.00 [0.37]	16.31 [0.00]	11.57 [0.00]	8.35 [0.02]	6.92 [0.03]
No. countries	27	27	27	27	27	27	27	27	27	27	27	27
No. observ.	135	135	135	135	135	135	135	135	135	135	135	135

See notes for Table 9

**Table 11** Political budget cycles: Eurozone/non-Eurozone. Dependent Variable: net lending (*NL*), total expenditure (*TEXP*), current expenditure (*CEXP*), final cons expenditure (*FCE*) (all shares of GDP). Method: System Generalized Method of Moments

	<i>NL</i>	<i>TEXP</i>	<i>CEXP</i>	<i>FCE</i>
	(1)	(2)	(3)	(4)
<i>GROWTH</i>	0.39*** (6.03)	-0.46*** (5.01)	-0.43*** (13.53)	-0.23*** (11.21)
<i>WELE * EURO<sub>1</sub> * R12</i>	-1.28*** (2.69)	1.00*** (3.83)	0.61** (2.14)	0.17 (1.08)
<i>WELE * EURO<sub>0</sub> * R12</i>	-1.08* (1.83)	1.15** (2.18)	0.91*** (2.87)	0.34 (1.10)
<i>WELE * R3</i>	-0.46 (0.79)	0.84 (0.51)	0.60 (0.60)	0.79 (1.00)
<i>WELE * <math>\overline{IVPOL}</math></i>	0.97*** (3.68)	-0.90*** (4.34)	-0.53*** (2.71)	-0.25 (1.09)
<i><math>\overline{IVPOL}</math></i>	0.27 (0.34)	0.71 (1.00)	0.22 (1.02)	0.42** (2.13)
Hansen test	15.89 [0.86]	18.16 [0.75]	12.98 [0.95]	16.65 [0.83]
Corr. test	-1.16 [0.87]	-1.67 [0.10]	-0.92 [0.36]	-1.47 [0.14]
Sign. test	15.10 [0.00]	20.54 [0.00]	8.18 [0.02]	5.85 [0.05]
No. countries	27	27	27	27
No. observ.	135	135	135	135

See notes for Table 9

of GDP in budget surplus, +2.41% of GDP in total expenditure, +1.47% of GDP in current expenditure and +0.67% of GDP in final consumption expenditure). The variability of PBCs with respect to the level of competitiveness is also confirmed when we leave the interaction term associated with non-economic voting out of the model specification. However, as expected, the electoral effects are lower in absolute value.

### 6.2.2 Do PBCs still vary across Eurozone/non-Eurozone countries?

Among the key findings in Sect. 5.3 is that the PBCs in the EU-27 are uniquely associated with the Eurozone countries. This finding appears to persist when we consider the shorter (adjusted) sample period 2004–2008. Bearing in mind that non-economic voting and competitiveness may differ substantially between (and within) the two country groups, it may be asked whether, after controlling for these two features, there are still differences in PBCs between Eurozone and non-Eurozone countries. To answer this question, we create two pairs of indicator variables following the approach of Sect. 6.2.1: *WELE \* EURO<sub>1</sub> \* R12<sub>it</sub>* (coding elections in the Eurozone with high or average level of competitiveness) and *WELE \* EURO<sub>0</sub> \* R12<sub>it</sub>* (coding elections in the non-Eurozone countries with high or average level of competitiveness). Columns (1) through (4) in Table 11 display the results

when we use these new indicators to estimate the same regression package as in Table 10. It seems that non-economic voting and competitiveness can indeed account, to a large extent, for differences in election-driven fiscal policy manipulations between the two subsamples of EU countries. More precisely, once we add to the baseline regression the variables for non-economic voting  $WELE * \overline{IVPOL}_{it}$  and  $\overline{IVPOL}_{it}$  and drop the elections with low levels of competitiveness (captured by  $WELE * R3_{it}$ ), PBCs become uniformly statistically significant across the two country groups. From a qualitative point of view the results are also similar. As Table 8 illustrates, when we evaluate the electoral effects at the minimum level of non-economic voting and focus on elections with high and average competitiveness, there is no substantial difference in the size of PBCs between Eurozone and non-Eurozone countries. Replacing the variables  $WELE * EURO_1 * R12_{it}$ ,  $WELE * EURO_0 * R12_{it}$  and  $WELE * R3_{it}$  with analogous variables based on  $VOT_{it}$  (instead of  $DVOT_{it}$ ), and running the same regressions, leaves the results in Table 11 virtually unchanged. The findings of this subsection clearly indicate the importance of understanding and appreciating the factors that determine politicians' incentives prior to elections, before we draw conclusions regarding which national and supranational politico-institutional features are linked to the appearance of PBCs.

### 6.2.3 Further robustness checks

Following the analysis of Sect. 5.2, we include the POLCON index of political constraints among the explanatory variables to address potential differences in fiscal policy manipulation due to the structure of a country's political institutions and the preferences of the actors that inhabit them. However, this indicator turns out to be statistically insignificant in all regressions and the key findings reported above remain essentially intact. We also control for the debt-to-GDP ratio as this may reflect concerns on the sustainability of fiscal policy (Tujula and Wolswijk 2004). The coefficient on the debt-to-GDP ratio fails to reach statistical significance and does not seem to be correlated with the electoral variables. Finally, we test whether our results are sensitive to the inclusion/exclusion of particular countries. In line with our findings, PBCs appear to be more pronounced when the countries with the highest, on average, level of non-economic voting (namely, Denmark, Sweden, Finland and the United Kingdom) are excluded, and less pronounced, when the countries with the lowest, on average, level of non-economic voting (namely, Hungary, Greece, Bulgaria and Portugal) are excluded.<sup>35</sup> Similarly, dropping a number of elections/countries associated with a high (low) level of competitiveness weakens (strengthens) the magnitude of PBCs. However, in no case does the inclusion/exclusion of a single country change the inferences on the electoral variables, as presented in Table 8.

## 7 Conclusions

This paper contributes to the literature on PBCs in three main respects. First, we use data from all EU-27 member states and we find strong evidence that incumbent governments across the EU tend to manipulate fiscal policy in order to enhance their re-election prospects.

<sup>35</sup>One should note that the proxies for non-economic voting are constructed using information from all EU-27 member states, and therefore excluding a country or group of countries may bias our estimates of the interaction term and lead to lower *z*-statistics (as the spread of elections with respect to the level of non-economic voting may become smaller).



The estimates for the 1997–2008 period suggest that fiscal deficit increases by about 1% of GDP, whereas, total expenditure, current expenditure, and final consumption expenditure by about 0.8%, 0.4% and 0.2% of GDP, respectively, during an election year. Second, we detect significantly larger, and statistically more robust, electoral effects in the Eurozone countries than in the countries that have not yet adopted the euro. Finally, we show that the degree to which governments manipulate fiscal policy depends on their incentive structure at each election: the size of PBCs is negatively correlated with non-economic voting and positively correlated with electoral competitiveness. When we evaluate the electoral effects at the minimum level of non-economic voting and concentrate on highly competitive elections, PBCs become three times larger and there is no longer a substantial difference between Eurozone and non-Eurozone countries.

Our empirical results also provide further evidence that the SGP is not a credible constraint capable of preventing governments from overspending in election years. According to Hallerberg et al. (2002), its main problems are the timing of the process, and therefore its credibility. The penalties laid down by the SGP begin only after the elections have taken place, and for an election held early in the year, any potential fines will not be levied until up to 18 months after the election is over. This observation rhymes well with the ideas developed in this paper. If the probability of re-election is sensitive to economic stimulation (due to low levels of non-economic voting and/or high levels of competitiveness), governments will manipulate fiscal policy in the hope of winning, and thus of being able to “correct” the budget in a non-electoral period. On the other hand, if engineering an electoral boom cannot improve the chances of remaining in office (due to high levels of non-economic voting and/or low levels of competitiveness), governments will have a strong reason to forgo fiscal policy manipulations, and thus to avoid the costs involved in violating the SGP rules. Even for incumbents who expect defeat, such opportunistic behavior may incur substantial political cost as it may promote a reputation of irresponsibility and opportunism which can lead to losses in long-term partisan support (see also Price 1998). Consequently, the degree to which politicians are willing to generate PBCs, and break certain fiscal rules, depends on the trade-off between the benefits of re-election and the costs incurred by fiscal misbehavior. This, in turn, implies that unless the government’s reaction function is correctly specified, any conclusions about the presence, magnitude and variability of PBCs are bound to be flawed. As Public Choice scholars point out, theoretical and empirical models that do not take account of the interests and actions of politicians and fail to capture all aspects of politico-economic interdependence may be subject to serious misspecification errors (see Frey and Schneider, 1978a, 1978b; Schneider 1991).

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