Political Budget Cycles in the European Union and the Impact of Political Pressures: A dynamic panel regression analysis

Georgios Efthyvoulou*

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Abstract

This paper investigates the presence of political budget cycles (PBCs) in the European Union using a data set encompassing all 27 current member states over the period 1997-2008, and analyzes what may explain their variability across countries and over time. Conditioning on partisan considerations and several socio-economic variables, we find evidence in favor of a systematic electoral cycle in fiscal policy (i.e. spending and budget deficits are raised in election years). Furthermore, we find that PBCs are much larger in the Eurozone countries than in the countries that have not yet adopted the euro. Finally, we discuss an interesting area for future research, namely, fiscal policy manipulations are influenced by the information available to the market before elections. Specifically, we show that the size of PBCs is inversely proportional to the relative weight voters assign to non-economic issues prior to an election and positively correlated with the uncertainty over the electoral outcome. Once we account for these two features, the aforementioned differences between the Eurozone and the non-Eurozone countries seem to disappear.

JEL classification: D72; E62; P16; C33
Keywords: political budget cycles; fiscal policy, elections, opinion polls; European Union

*Department of Economics, Mathematics and Statistics, Birkbeck College, University of London, Malet Street, London, WC1E 7HX, UK; email: g.efthyvoulou@ems.bbk.ac.uk; tel: +44 (0) 20 7631 6426; fax: +44 (0) 20 7631 6416

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 a PBC lies in government's opportunistic behaviour: incumbent politicians, regardless of their ideology, try to use expansionary fiscal policies before elections to please the voters, maximize their popularity and increase their reelection chances.

Several empirical studies, both at single-country and multi-country level[1], find evidence in favor of such election-driven fiscal policy manipulations. However, the econometric techniques applied and the estimated size and composition (expenditures versus spending) of electoral effects vary across these studies. Moreover, the fact that they use data from different types of countries renders it difficult to conclude whether PBCs are a universal phenomenon. Taking these issues into account, the recent empirical literature has turned its attention to answer the question of where PBCs exist and what explains their cross-sectional variation. For instance, Shi & Svensson (2002, 2006) show that the magnitude of PBCs is higher in developing countries than in developed countries for a large panel data set of 85 countries over the period 1975-1995, and that this difference is driven by two institutional features, namely government's rents from remaining in power and voters' access to free media. Likewise, Gonzalez (2002), who examine the relationship between the level of democracy (the cost of removing a policymaker from office) and the magnitude of PBCs in a sample of 43 countries over the period 1950-1997, shows that PBCs are larger in countries with an intermediate level of democracy[2]. On the other hand, Persson & Tabellini (2002), using a dataset of 60 democracies for the period 1960-1998, present evidence that the composition of PBCs is affected by electoral rules (majoritarian versus proportional) and the form of government (presidential versus parliamentary)[3]. Brender & Drazen (2005) suggest that the results of these studies are driven by the first few elections in countries that are "new democracies", where fiscal manipulation may work because of lack of experience with electoral politics or lack of information that is available in established democracies and used by experienced voters.

The presence of PBCs in the European Union (EU) has also received a considerable research attention over the last 10 years and remains an interesting topic for study. On one hand the fiscal policy of the EU member countries is restricted by the Stability and Growth Pact (SGP) but on the other hand it is the only remaining instrument, at least for the Eurozone countries, to influence voters' perceptions before elections (as monetary policy is not an option in the context of the monetary union) and, hence, the existence of PBCs in the EU is theoretically questionable. The empirical evidence

[1] For individual country studies, see Alesina (1988); Alesina & Roubini (1992); Alesina *et al.* (1997) for the United States over the period 1946-1994, Krueger & Turan (1993) for Turkey over the period 1950-1980, Gonzalez (2002) for Mexico over the period 1958-1997, and Efthyvoulou (2008) for Cyprus over the period 1978-2006. For multi-country studies, see Ames (1987); Kraemer (1997); Rojas-Suarez *et al.* (1998) for different samples of Latin American countries, Alesina *et al.* (1997); Franzese (2000); Tujula & Wolswijk (2004) for different samples of OECD countries, Schuknecht (1996) for a panel of 35 developing countries over the period 1970-1992 and Block (2002) for a cross-section of 44 Sub-Saharan African countries. See also Alesina *et al.* (1997); Drazen (2000); Franzese (2002); Shi & Svensson (2004) for extensive reviews of the empirical literature.

[2] Also Alt & Lassen (2003) and Akhmedov & Zhuravskaya (2004) find that greater fiscal transparency (the probability that voters learn the incumbent's characteristics costlessly) is associated with smaller PBCs.

[3] More precisely, they show that (i) preelection tax cuts are present in all democracies while postelection fiscal adjustments (spending cuts, tax hikes and rises in surplus) are only present in presidential democracies and (ii) majoritarian electoral rules are associated with preelectoral spending cuts while proportional electoral rules are associated with expansions of welfare spending both before and after elections.

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 in 14 EU member states. On the other hand, Buti & van den Noord (2003), von Hagen (2003) and Mink & de Haan (2005), who focus on the fiscal behaviour in more recent years (1998-2004), show that the discipline requirements of the SGP are insufficient to curb the temptation to run politically-motivated fiscal policies before elections. This result is not confirmed by Warin & Donahue (2006) who argue that the implementation of the Maastricht Treaty and the SGP prevented the occurence of a PBC during the years 1993-2005[4]. 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 datasets contains the 12 "newest" member states and, thus, little is known about the cross-sectional variation in the size and composition of PBCs (e.g. between the established and new democracies or between the Eurozone countries and the ones that have not yet adopted the euro). Furthermore, the studies cited above treat the timing of elections as exogenous (i.e. elections occur at fixed time intervals), use a univariate model or univariate detrending procedures (von Hagen, 2003; Buti & van den Noord, 2003; Andrikopoulos *et al.*, 2004) or focus on the detection of electoral effects in the overall budget deficits (von Hagen, 2003; Mink & de Haan, 2005; Warin & Donahue, 2006). To address all these issues, this paper assembles a panel data set consisting of all 27 current EU (to be referred to as EU-27) member countries over the period 1997-2008 and examines the presence of PBCs in several fiscal policy variables using the system GMM estimation technique. Moreover, it investigates how PBCs vary across the EU member states and whether they are influenced by the endogeneity of election timing, partisan considerations and politico-institutional conditions that have been shown to correlate with measures of fiscal policy.

Another serious limitation of the existing literature on PBCs is the inability to take all political repercussions into account and formulate a more realistic approach to government's reaction function around elections. PBC models rely on the assumption that the electorate evaluates the government solely on the basis of its competency to deal with economic matters and, as a result, a government can secure re-election by signaling this competency through specific fiscal policy decisions. In practice, though, economic matters are not always on 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 (i.e. fight of terrorism and crime, dealing with certain socio-political problems, management of foreign affairs, etc). Since issue importance is a significant source of heterogeneity in political decision-making (Rivers, 1988; Brody, 1991), it is reasonable to assume 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 vote choice. Furthermore, a correct specification of the government's reaction function around elections should also take into account the uncertainty over the electoral outcome, as captured by the information available to the market prior to an election. As Boix & Strokes (2007) point out, where competitiveness[5] is intense, politicians make greater efforts to mobilize

[4]However, the evidence of Warin & Donahue (2006) is not very convincing. For instance, they search for electoral effects through partisan interaction terms, i.e. the votes for all political parties in the previous election, which do not necessarily capture intenal political pressures in the subsequent preelectoral period and might also be affected by the absence of partisan cycles.

[5]Competitiveness is often measured as the ex-ante closeness of two candidates in the electoral race, i.e. the expected margin of victory.

support and voters pay more attention to politics. Put differently, when governments are afraid of losing an election, they are more induced to influence the economy in order to increase their popularity, and on the contrary, when they are confident of winning the election (or equivalently, almost certain of losing the election, e.g. because of a political scandal), they allow themselves to pursue ideologically-oriented policies, which need not always be popular with the electorate (see also Frey & Schneider, 1978). These observations imply (i) that PBCs may vary across countries and over time, even after controlling for all the aforementioned aspects associated with the process of fiscal policy formation, and (ii) that the magnitude of PBCs is inversely proportional to the relative weight voters assign to non-economic issues prior to an election and positively correlated with the uncertainty over the electoral outcome. Therefore, the second objective of this paper is to construct proxies for these two factors using public opinion reports and preelectoral polls and investigate whether such indicators can also explain a part of the difference in the size of PBCs across the EU-27 member states.

The main findings of the paper can be summarized as follows. First, incumbent governments across the EU tend to manipulate fiscal policy in order to maximize their chances of being reelected. In particular, fiscal deficit increases by 1% of GDP in election years through increases in components and subcomponents of 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, 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. And third, differences in PBCs across subsamples of countries (i.e. the Eurozone and the non-Eurozone coutnries) can disappear once we combine the data on fiscal policy with the information available to the market before the elections.

The paper proceeds as follows. Section 1.1 provides a brief theoretical overview of the PBCs literature. Section 2 describes the data and the relevant sources. Section 3 outlines the empirical model specification and presents the fiscal policy instruments, the control variables and the econometric methodology used for our analysis. Section 4 introduces the concepts of non-economic voting and competitiveness into the study of PBCs, discusses the data and variables used to proxy for these two features and tests empirically whether these can actually explain the variability in the size and composition of PBCs across the EU countries. Section 6 concludes.

1.1 Theoretical Overview

A large theoretical literature on political business cycles goes back to Nordhaus (1975) and Lindbeck (1976). Opportunistic policymakers take advantage of the exploitable Phillips curve and choose policies to please the voters and remain in office. That is, they artificially stimulate the economy immediately before each election and eliminate the resulting inflation with a postelectoral recession. The first paper to study PBCs[6] is by Rogoff & Sibert (1988), who propose a model of adverse selection that emphasizes the idea of competency (ability to handle the economy) coupled with asymmetric information. More precisely, this model assumes that each politician has a competence[7] type (high or low), which is considered to be private information: only the politician

[6]That is, to extend Nordhadus-Lindbeck theory to rational voters, while explaining the existence of political cycles as sufficiently complicated budgetary process, which can, at least temporarily, fool voters.

[7]In this model, competence is interpreted as the ability to limit waste in the budget process, so that the required amount of spending can be financed with a smaller amount of total revenues.

knows his own competency. Voters, who want to elect the political candidate (either the incumbent or the challenger) who maximizes their expected utility, 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" to him than it is for the low-type. This behavior leads to a PBC when the more competent politician is in office, that resembles, although with important differences, the Nordhaus-Lindbeck political business cycle. Rogoff (1990) presents a related model that empasizes the composition of government spending. Specifically, he argues that the more competent policymaker engineers a PBC that shifts government outlays to favor transfers and more visible programs instead of investment projects and possibly tax cuts. As pointed out by Shi & Svensson (2004), some of the implications of these models (also referred to as "adverse-selection PBCs 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 reelected, which, in turn, implies that additional information is needed (on the incumbent's type) to test the predictions of PBCs.

These drawbacks do not apply to the new generation of PBCs proposed by Persson & Tabellini (2000) and Shi & Svensson (2006) (also referred to as "moral-hazard PBCs models"). The key assumptions of these 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. For example, if competence measures how well the politician can convert revenues into public goods, then the hidden effort can be interpreted as the government's short-term excess borrowing. Elections take place after the incumbent politician's hidden effort and competence have jointly determined the observable fiscal policy outcome. In the equilibrium of this game, there is an excessive effort (e.g. more borrowing), and as a result, an increase in the budget deficit prior to an election. Note that, in contrast to adverse selection models, all incumbent politicians can generate PBCs regardless of their competence level, and hence, one can test the relevant empirical implications for all governments and for all countries that have elections.

2 Data

We consider annual time series data for all EU-27 member states over the period 1997-2008[8]. 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 2005 and in Spring 2009. Data on demographic variables are extracted from the online version of US Census Bureau International Data Base (IDB). 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 Database of Political Institutions of the World Bank (Beck *et al.*, 2001) and complemented, where needed, by the online version of the Europa Yearbook, Adam Carr's Election Archive[9] 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

[8] A larger time period is not available due to the lack of statistical data concerning various categories of the variables employed in the countries of the sample.

[9] An online comprehensive archive of federal elections statistics since 1901, and state and territory statistics since 1990.

opinion as provided by the Eurobarometer[10]. Finally, poll data on voting intention and support ratings for political parties (or political candidates) are obtained from the Angus Reid Global Monitor[11] and the official websites of national market research centers and polling organizations. More details on variable definitions and data sources can be found in Table A.3.3 on page 33.

3 Empirical Model Specification

In order to estimate the relationship between elections and government fiscal policies, we employ an empirical specification that builds on the work of Shi & Svensson (2002, 2006) and Persson & Tabellini (2002) and takes the following form[12]:

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

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 dummy variable, μ_i are unobserved country-specific effects and ε_{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 capital, the trade shock ($TRADESK_{it}$), measured by the deviation of trade share[13] from its trend value (derived using the Hodrick-Prescot filter with $\lambda = 100$), two demographic variables representing the percentage of population aged 15-64 and 65+ ($PROP1564_{it}$ and $PROP65_{it}$), the fractionalisation of government ($FRAC_{it}$), measured by the probability that two deputies picked at random among the government parties will be of different parties[14] and finally the positioning of the government on a left-right scale ($EXECRLC_{it}$), measured by a dummy variable that equals -1 for left governments, 0 for centrist governments and +1 for right governments[15]. These variables have been shown to correlated with fiscal policy outcomes in previous studies, such as Cameron (1978), Rodrick (1998), Persson

[10] A series of surveys regularly performed on behalf of the European Commission that measure the evolution of public opinion on key issues in all EU member states.

[11] One of the world's largest online public opinion database - includes surveys from all countries on a wide range of topics.

[12] As Persson & Tabellini (2002) point out, when we want to find evidence of electoral cycles, it is important to allow for reasonably rich dynamics in the policy variables. Because the fiscal instruments display a great deal of inertia, we need to include lagged dependent variables on the right hand side. And, because fiscal instruments tend to be highly cyclical, we also need to include a measure of cyclical fluctuations.

[13] Trade share is the sum of exports and imports of goods and services over GDP ($TRADE_{it}$). Notice that the inclusion of $TRADE_{it}$, instead of $TRADESK_{it}$, in the model specification poses a multicollinearity threat due to high collinearity between the former variable and $GROWTH_{it}$.

[14] This probability is calculated using a concentration measure normalized to lie between 0 and 1, i.e. $1 - \sum_{n=1}^{N} S_n^2$, where S_n is the seat share of government party n in the legislature, and N is the number of government parties.

[15] To identify government orientation, we consider the chief executive's party name and use the following rules: (i) right: for parties that are defined as conservative, Christian democratic, or right-wing, (ii) left: for parties that are defined as communist, socialist, social-democratic, or left-wing and (iii) center: for parties that are defined as centrist or when party position can be best described as centrist (e.g. party advocates strengthening private enterprise in a social-liberal context). The variable $EXECRLC_{i,t}$ takes also the value zero when the chief executive appears to be independent.

& Tabellini (1999), Perotti & Kontopoulos (2002), Hibbs (1977) and Alesina (1987). Moreover, we control for the GDP growth rate to reflect 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 (i.e. t-tests and F-tests). 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, we leave them out of the model specification[16].

The electoral dummy 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[17] 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. Persson & Tabellini (2002) point out that incumbent governments may strategically choose the timing of elections conditional on fiscal policy outcomes[18] and call early elections when the economy is doing well - causing endogeneity bias from reverse causality[19]. On the other hand, when the election date is known well in advance, incumbent governments have sufficient time and far greater opportunity to manipulate fiscal policy in order to get reelected, than when there are "snap" elections, with a short lag between elections being called and being held (see Brender & Drazen, 2005). Although mitigated through the inclusion of GDP growth in the empirical model, the first problem is addressed by looking at two alternative election indicators that identify separately the elections whose timing is predetermined[20] and the elections whose timing is not predetermined. That is, we replace the variable $ELE_{i,t}$ in equation (1) with the variables $ELEP_{it}$ and $ELENP_{it}$[21] respectively. To cope with 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

[16] In addition, treating $TRADESK_{it}$ as an endogenous variable in the estimation of the model by the system GMM procedure generates a great many instruments (see Appendix A.2).

[17] Notice that in parliamentary democracies, elections of the legislative and the executive coincide, while in presidential democracies, the executive is separately elected and legislative elections may take place in between years of presidential elections. However, as Persson & Tabellini (2002) show, such "mid-term" legislative elections are not significant determinants of fiscal policy in presidential regimes.

[18] Especially in parliamentary democracies where elections are not typically held on a fixed schedule with, say, four or five years in between elections.

[19] Another potential problem is that both timing of elections and fiscal policies may be affected by a number of unobserved variables, such as crises or social unrest, which are not included in our regression - causing an omitted variable bias (see Shi & Svensson, 2002, 2006). We deal with this problem in Section 5 by controlling for the information available to the market prior to elections.

[20] To do so, we follow an approach similar to the one of Shi & 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.

[21] $ELEP_{it}$ equals 1 in country i and year t if an election that is predetermined takes place, 0 otherwise; while $ELENP_{it}$ equals 1 in country i and year t if an election that is not predetermined takes place, 0 otherwise.

model (M.1):

$$Y_{it} = \sum_{j=1}^{2} \alpha_j Y_{it-j} + \beta \mathbf{X}_{it} + \gamma GROWTH_{it} + \sum_{k=0}^{1} \left(D_k \gamma_k [GROWTH_{kt} - GROWTH_{(1-k)t}] + [D_k \delta_k + (1 - D_k)\delta_{1-k}] ELE_{it} \right) + \mu_i + \varepsilon_{it} \quad \text{(M.2)}$$

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[22] in legislative (lower house) elections (includes both strictly plurality and mixed plurality-proportional electoral systems) while MAJ_0 to the EU-27 member states with strictly proportional electoral systems[23]. $PRES_1$ refers to the EU-27 member states where the executive is not accountable to the legislature (presidential regimes) while $PRES_0$ to the EU-27 member states where it is, regardless of whether or not there is a directly elected president (parliamentary regimes)[24]. DEM_1 refers to the EU-27 member states which have been democratic for more than 20 years (established democracies) while DEM_0 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 $EURO_0$ to the remaining EU-27 member states (for more details on country classification see Table A.3.1 on page 32). 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. 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 subsamples.

Equations (M.1) and (M.2) are standard dynamic panel data (DPD) specifications. It is well known that when the unobserved country-specific effects are different across countries, the simple Ordinary Least Squares (OLS) estimator is biased. One way to allow for cross-country differences in the time average of the dependent variable is to employ Fixed Effects (FE) estimators. However, the inclusion of lagged depended variables in equations (M.1) and (M.2) poses another source of bias with the OLS estimation that cannot be eliminated by a FE regression, even if the number of countries N tends to infinity. This bias arises because the initial condition, Y_{i0}, is correlated with the fixed-component μ_i, which creates correlation of order $\frac{1}{T}$ (where T is the length of the panel) between the lagged depended variable and the error term, ε_{it}[25] (see Nickell, 1981; Kiviet, 1995). The length of the time series in our panel is relatively short (at most 12 years when we consider the full sample period) and, hence, the bias from using a FE estimator in these regressions is non-negligible. To address this problem we adopt the difference GMM estimator developed by Arellano & Bond (1991) and the system

[22] Also known as winner-take-all/first past the post rule.

[23] In proportional representation candidates are elected based on the percent of votes received by their party.

[24] Specifically, in systems with both a prime minister and a president, the system is classified as presidential if either (i) the president can veto legislation and the parliament need a supermajority to override the veto or (ii) the president can appoint and dismiss prime minister (and/or other ministers), dissolve parliament and call for new elections.

[25] This bias could also spill over to our parameters of interest (parameters on electoral dummies) and result in misleading inferences.

GMM estimator outlined by Arellano & Bover (1995) and fully developed by Blundell & Bond (1998). These estimators are designed for short, wide panels, and to fit linear models with one dynamic dependent variable, additional controls and fixed effects (see Appendix A.2 for an extensive discussion and the notes at the bottom of each Table for details on the precise specification used). The consistency of the GMM estimator depends on the validity of the assumption of no serial correlation in the error term (i.e. no second-order autocorrelation in the first-differenced idiosyncratic errors) and on the validity of the instruments. To check for serial correlation and that the instruments are correctly specified, we perform two tests: the Arellano-Bond test for second-order serial correlation of the differenced residuals, and the Hansen test for over-identifying restrictions. Full details regarding these tests and the estimation procedure can be found in Arellano & Bover (1995).

4 Evidence on Political Budget Cycles in the EU-27

4.1 Basic Findings

We start with tests on the government budget surplus/deficit as measured by the net lending/borrowing figure of the general government. Column (1) in Table 4.1 reports the results of the FE estimation of model (M.1) (page 6) and presents evidence in favor of a PBC: the coefficient on the electoral dummy ELE_{it} has the expected sign (i.e. fiscal deficits are higher in elections 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 Arellano-Bover/Blundell-Bond procedure[26] (column (3)). Since the system GMM estimator is asymptotically more efficient than the difference GMM estimator and the inclusion of time-specific fixed effects does not change the significance of the electoral dummy[27] (see column (4)) we stick to the benchmark regression of column (3) for the subsequent analysis. In column (5) we reestimate the original fiscal balance equation with ELE_{it} replaced by $ELEP_{it}$ (coding predetermined elections) and $ELEN_{it}$ (coding non-predetermined elections). Both $ELEP_{it}$ and $ELEN_{it}$ enter the regression negatively but only the former variable is statistically significant (and qualitatively similar to ELE_{it} in column (3)). This suggests that the presence of PBC is not driven by strategically timed elections[28] and that fiscal manipulation is stronger when the election date is exogenously fixed by the law. Having in mind 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[29]. The coefficient estimate on $WELE_{it}$ in column (6) implies that, on average, fiscal deficit increases by about 0.9% of GDP in election years, once we weigh the impact of non-predetermined elections[30].

An important issue is the robustness of this result over time. Once acceded to the EU, in either 2004 or 2007, the 12 new members had to adjust their fiscal policies to the

[26] It worths mentioning that the one-step variant of the difference and system GMM estimators produce results that sometimes reject the null hypothesis of valid overidentifying restrictions.

[27] In addition, the estimated coefficients on the time-specific fixed effects appear to be statistically insignificant in all regressions.

[28] Endogenous election dates, which may be correlated with the economic cycle, are less likely to be classified as predetermined.

[29] Notice that the χ^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 4.1).

[30] This estimate is remarkably similar to the one reported in Shi & Svensson (2002, 2006) for a panel data set consisting of 85 countries over a 21-year period (1975-1995).

Table 4.1: Political Budget Cycles: Budget Surplus/Deficit

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

Columns report estimated coefficients (z-statistics). Equations estimated using Windmeijer WC-robust standard errors and covariance. ***,**,* Statistically significant at the 1%, 5% and 10% confidence level respectively. [a] Difference GMM regression (Arellano-Bond). [b] System GMM regressions (Arellano-Bover/Blundell-Bond). The instruments used in the difference GMM regression are lagged levels (two periods) of the dependent variable and the endogenous covariates $GROWTH_{it}$ and $LnGDP_{it}$, and differences of the electoral dummies and the strictly exogenous covariates $PROP1564_{it}$, $PROP65_{it}$ and $EXECRLC_{it}$. The instruments used in the system GMM regression are lagged levels (two periods) of the dependent variable and the endogenous covariates $GROWTH_{it}$ and $LnGDP_{it}$ for the differenced equation, and lagged difference (one period) of these variables for the level equation. The electoral dummies and the strictly exogenous covariates $PROP1564_{it}$, $PROP65_{it}$ and $EXECRLC_{it}$ are instrumented by themselves in the differenced equation. [c] Time-specific effects included as regressors. [d] Reports the Hansen test of the overidentifying restrictions [p-values], where H_0: overidentifying restrictions are valid. [e] Reports the Arellano-Bond test for serial correlation of order two in the first-differenced residuals [p-values], where H_0: no autocorrelation. [f] Reports the χ^2-statistic [p-value], where H_0: the coefficient on $ELEP_{it}$ equals two times the coefficient on $ELENP_{it}$. [g] Reports the z-statistic [p-value], where H_0: the coefficient on $WELE_{it}$ in the post-2004 period equals the coefficient on $WELE_{it}$ in pre-2004 period.

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 corresponding 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), though slightly larger in absolute value, is qualitatively the same as the one in column (6) and remains statistically significant at the 1% confidence level. We also test the hypothesis that the coefficients on $WELE_{it}$ in the post-2004 period and the pre-2004 period are equal[31]. As the two-tailed p-value for this test is 0.64 (column (7)) there is no reason to reject the null hypothesis. It is worth mentioning that the estimated coefficient on the partisan dummy $EXECRLC_{it}$ in columns (3) through (6) has a negative sign (i.e. deficits are higher during left-wing administrations) and is statistically significant at conventional levels of significance, but once we consider the 2004-2008 period it becomes insignificant (column (7)). This observation reinforces the argument of Efthyvoulou (2008) that the adoption of fiscal consolidation policies during the run-up to EU accession may not prevent PBCs but it can reduce the effect of partisanship on fiscal policy outcomes.

We also experiment with an alternative election indicator that takes the timing of an election in the course of the year into account[32] ($ELET_{it}$) but this variable fails to capture electoral effects as accurately as $WELE_{it}$. Moreover, controlling for fiscal behavior in preelection and postelection years using the one-year leads and lags of the executive election dates (labelled $FWELE_{it}$ and $LWELE_{it}$) does not change the basic findings, as reported in column (6). In fact, both $FWELE_{it}$ and $LWELE_{it}$ 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 Section 1.1) where governments use short-term excess borrowing as a hidden effort in order to increase their performance index. As pointed out by Mink & de Haan (2005), borrowing extra money is less easy to hide during a preelection year, compared to an election year, since information on the preelection 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 reelection faced by the incumbent, especially if the electorate strongly prefers budgetary discipline.

Does the PBC displayed in Table 4.1 derive from fluctuations in expenditure or in revenue? Conceptually, the answer is ambiguous. The choice of whether to increase expenditure or reduce revenue around elections in any single country may vary over time and over different elections, and hence, such effects may be difficult to detect in a large panel of countries (see Alesina *et al.*, 1997). Moreover, the predictions of PBCs theories for expenditure and revenue differ. As emphasized by Persson & Tabellini (2002), the precise predictions depend on the assumptions about the policy process, the motivation of incumbents, and the information set of voters. Thus, we attempt to answer the aforementioned question empirically with tests on the total expenditure and the total revenue figures of the general government. Having in mind that some policy instruments may be more easily and productively manipulated than others in elections years (see Rogoff, 1990; Efthyvoulou, 2008), 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[33] respectively. Table 4.2 presents the results of these regressions. The deficit cycle in the EU-27 over the period 1999-2008 appears to be clearly driven by higher election-year expenditure:

[31] 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.

[32] This indicator has been developed by Franzese (2000) and is calculated as $ELET_{it} = \frac{(M-1)+\frac{d}{D}}{12}$ where M is the month of election, d is the day of election and D is the number of days in that month.

[33] We also consider other components of current expenditure and revenue but these two (i.e. final consumption expenditure and taxes) seem to have the most pronounced electoral cycle. For the detailed partition of expenditure and revenue into components and subcomponents see Table A.3.2 on page 32.

Table 4.2: 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 (Arellano-Bover/Blundell-Bond)

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

[a] Y(-j) denotes the autoregressive coefficient at lag j, where $j = 1, 2$. Columns report estimated coefficients (z-statistics). Equations estimated using Windmeijer WC-robust standard errors and covariance. ***,**,* Statistically significant at the 1%, 5% and 10% confidence level respectively. The instruments used in the system GMM regression are lagged levels (two periods) of the dependent variable and the endogenous covariates $GROWTH_{it}$ and $LnGDP_{it}$ for the differenced equation, and lagged difference (one period) of these variables for the level equation. The electoral dummy $WELE_{it}$ and the strictly exogenous covariates $PROP1564_{it}$, $PROP65_{it}$ and $EXECRLC_{it}$ are instrumented by themselves in the differenced equation. [b] Reports the Hansen test of the overidentifying restrictions [p-values], where H_0: overidentifying restrictions are valid. [c] Reports the Arellano-Bond test for serial correlation of order two in the first-differenced residuals [p-values], where H_0: no autocorrelation.

the estimated coefficient on the electoral variable $WELE_{it}$ has the expected sign and is statistically significant at the 5% confidence level in the $TEXP_{it}$ and $CEXP_{it}$ equations (column (1) and (2)) and at the 10% confidence level in the FCE_{it} equation (column (3)). The estimates suggest that, on average, total expenditure, current expenditure and final consumption expenditure, increase by about 0.8%, 0.4% and 0.2% 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 (i.e. revenue measures relative to GDP tend to reduce in election years) but the coefficient estimates are not statistically significant (the highest z-statistic is 1.63 and is obtained when we test for electoral effects in current revenue)[34]. These findings seem to persist when we run the same regressions for the post-2004 period and when we control for fiscal behavior in preelection years. However, when we add to the basic regressions the variable $LWELE_{it}$ (coding postelection years), the estimated coefficient

[34] One interpretation is that tax codes are more difficult to change and controlled for short-run purposes compared to certain visible and politically sensitive expenditure programs (i.e. transfer payments).

on $WELE_{it}$ in the equations of $CEXP_{it}$ and TAX_{it} becomes statistically significant at the 10% confidence level and retains its negative sign, adding evidence that current revenue and taxes may also be manipulated in a discretionary way around elections.

4.2 Do PBCs vary across the EU-27 member states?

Persson & 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 according to party or coalition lines is weaker in presidential systems than in parliamentary systems (as the executive can not be brought down by the legislature) and thus, one should observe larger overall spending and larger broad programs (i.e. social transfers, national public goods) in parliamentary regimes. Persson, Tabellini and several co-authors find empirical support for these predictions. On the other hand, Brender & Drazen (2005) explain that electoral fiscal manipulations may work only when voters lack the necessary information to draw inferences about government performance from economic outcomes, as well as the ability to process that information correctly, and hence PBCs are more likely to occur in countries with less of an electoral history, namely new democracies. Moreover, they show empirically that only in these new democracies the political system matters, consistent with Persson and Tabellini's arguments. Following this discussion, we investigate whether the PBCs found in Table 4.1 and Table 4.2 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 compared to the non-Eurozone countries, as fiscal policy is the only instrument for them to influence voters perceptions around elections. To carry out this analysis, we estimate the same regression as in the previous section using the specification suggested in model (M.2) (page 8).

Table 4.3 reports the findings on NL_{it}, $CEXP_{it}$ and $CREV_{it}$[35]. 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 the previous subsection 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 split 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 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 quite the same with the ones for all countries (as presented in Table 4.1 and Table 4.2), 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

[35] Using $TEXP_{it}$ or FCE_{it}, instead of $CEXP_{it}$, and $TREV_{it}$ or TAX_{it}, instead of $CREV_{it}$, as a fiscal policy outcome produces similar results and leads to the same conclusions.

find evidence against the argument of Brender & Drazen (2005) that election-driven fiscal policy manipulations are 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 as the above discussion suggests electoral effects may be stronger in these countries. Indeed, the results in columns (10) through (12) imply that the PBCs in the EU-27 identified in the previous subsection 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 the ones on $WELE_{it}$ (as presented in Table 4.1 and Table 4.2) and statistically significant at conventional levels of significance (even the one in the equation of $CREV_{it}$). Specifically, the estimated election-year reductions in budget surplus and current revenue amount to about 1.3% and 0.4% of GDP respectively while the estimated election-year rise in current expenditure to about 0.5% of GDP. In contrast, the estimated coefficients on $WELE{*}D_{0it}$ (coding executive elections in the non-Eurozone countries) are all statistically insignificant and, in two cases, have the wrong sign. As already mentioned, one interpretation of this finding is that the countries that haven't 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 there are also some other features that may affect politicians' incentives and willingness to manipulate fiscal policy prior to elections, and once we identify and control for these features PBCs may become detectable in all countries. We now turn to this possibility.

Table 4.3: Political Budget Cycles: Variation Across Subsamples

Dependent Variable: net lending (+) or borrowing (-) (NL), current expenditure ($CEXP$), current revenue (REV) (all shares of GDP)
Method: System Generalised Method of Moments (Arellano-Bover/Blundell-Bond)

	Plurality/non-Plurality			Presidential/Parliamentary			Established/New Democracies			Eurozone/non-Eurozone		
	NL	$CEXP$	$CREV$	NL	$CEXP$	$CREV$	NL	$CEXP$	$CREV$	NL	$CEXP$	$CREV$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$GROWTH$	0.26**	-0.38***	-0.05	0.35***	-0.40***	0.04	0.46***	-0.42***	0.09*	0.41***	-0.42***	-0.01
	(2.30)	(8.96)	(0.81)	(5.01)	(9.16)	(0.78)	(3.99)	(10.76)	(1.77)	(5.32)	(11.76)	(0.36)
$LnGDP$	1.07	2.37**	0.50	0.66	1.08*	0.62	0.71**	1.14**	1.06*	1.12***	1.08***	0.98**
	(1.04)	(2.37)	(1.63)	(1.38)	(1.85)	(0.91)	(1.99)	(2.46)	(1.90)	(2.63)	(2.78)	(2.07)
$PROP1564$	-0.16	0.15*	-0.02	-0.22***	0.16**	-0.02	-0.17*	0.15***	-0.04	-0.28***	0.17***	-0.05
	(1.38)	(2.28)	(0.35)	(2.65)	(2.07)	(0.41)	(1.95)	(3.17)	(0.60)	(2.85)	(3.48)	(0.77)
$PROP65$	0.39	-0.06	0.16	0.77*	-0.09	0.11	0.58	-0.08	0.27**	0.93**	-0.10	0.32**
	(1.37)	(0.43)	(1.17)	(1.89)	(0.44)	(0.76)	(1.47)	(0.51)	(1.99)	(2.25)	(0.60)	(1.97)
$EXECRLC$	-0.45***	-0.02	-0.05	-1.08	-0.03	0.03	-1.69	0.08	0.09	-1.62	0.12	-0.03
	(2.60)	(0.25)	(0.54)	(1.22)	(0.30)	(0.22)	(1.25)	(0.25)	(0.72)	(1.16)	(0.47)	(0.33)
$WELE{*}D_1$[a]	-1.26***	0.41*	-0.46	0.45	1.47	0.05	-0.90**	0.47***	-0.26	-1.25***	0.52***	-0.36*
	(2.88)	(1.89)	(1.54)	(0.23)	(0.90)	(0.04)	(2.43)	(2.86)	(1.24)	(4.40)	(3.28)	(1.94)
$WELE{*}D_0$[a]	-0.72**	0.38*	-0.27	-0.82***	0.39***	-0.34	-1.67	0.37	-1.16	-1.40	-0.11	0.06
	(2.20)	(1.94)	(1.42)	(2.98)	(2.77)	(1.58)	(1.37)	(0.90)	(1.33)	(1.03)	(0.18)	(0.15)
$DEVGR$[b]	-0.48**	0.10	-0.26**	-0.27	0.02	-0.02	0.16**	-0.02	0.06	0.16*	-0.05*	0.08*
	(2.19)	(1.64)	(2.17)	(1.46)	(0.46)	(0.20)	(2.39)	(0.56)	(1.30)	(1.73)	(1.67)	(1.85)
Hansen test[c]	20.55	18.54	16.58	18.23	20.33	18.84	18.23	22.07	13.03	17.39	19.63	15.02
	[1.00]	[1.00]	[1.00]	[1.00]	[1.00]	[1.00]	[1.00]	[0.99]	[1.00]	[1.00]	[1.00]	[1.00]
Corr. test[d]	0.83	0.66	0.69	0.57	0.97	0.11	0.61	0.78	-0.06	1.11	0.47	-0.39
	[0.41]	[0.51]	[0.49]	[0.57]	[0.33]	[0.91]	[0.54]	[0.44]	[0.95]	[0.26]	[0.64]	[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

[a] $WELE{*}D_1$ and $WELE{*}D_0$ are interaction terms between the electoral dummy $WELE$ and D_1 and D_0 respectively, where $D_1 \in \{PLUR_1, PRES_1, DEM_1, EURO_1\}$ and $D_0 \in \{PLUR_0, PRES_0, DEM_0, EURO_0\}$. [b] $DEVGR$ denotes the annual difference in the GDP growth rate between the various subsamples as defined by D_1 and D_0.

Columns report estimated coefficients (z-statistics). For brevity, autoregressive coefficients at lags 1 and 2 are not displayed. Equations estimated using Windmeijer WC-robust standard errors and covariance. ***,**,* Statistically significant at the 1%, 5% and 10% confidence level respectively. The instruments used in the system GMM regression are lagged levels (two periods) of the dependent variable and the endogenous covariates $GROWTH_{it}$ and $LnGDP_{it}$ for the differenced equation, and lagged difference (one period) of these variables for the level equation. The electoral dummies and the strictly exogenous covariates $PROP1564_{it}$, $PROP65_{it}$ and $EXECRLC_{it}$ are instrumented by themselves in the differenced equation. [c] Reports the Hansen test of the overidentifying restrictions [p-values], where H_0: overidentifying restrictions are valid. [d] Reports the Arellano-Bond test for serial correlation of order two in the first-differenced residuals [p-values], where H_0: no autocorrelation.

5 PBCs with Non-Economic Voting and Competitiveness

The underlying feature of PBCs models is that rational but uninformed voters reward good performance in office with their vote, creating incentives for incumbent politicians to appear competent (and perform well) just ahead of elections. Having that in mind, it is reasonable to assume that politicians' incentives to manipulate fiscal policy prior to an election depend on how sensitive the reelection probability is to their competence level. The empirical model specification in Section 3 and the empirical analysis conducted in Section 4, rely on the assumption that neither politicians nor the electorate observe this sensitivity parameter and that politicians' incentives may only be shaped by different electoral rules and different forms of government (as suggested by the existing line of theoretical and empirical research on PBCs). However, with the development of more extensive public opinion surveys in the late nineteenth century, information related to voters' perceptions and voting intentions has become readily available, leading to a precise evaluation of the aforementioned sensitivity parameter (through evaluation of the relative weight voters assign to non-economic issues and of the uncertainty over the electoral outcome). To the extent that a higher level of non-economic voting and a lower level of competitiveness reduce the power of politicians' incentives to appear competent prior to elections[36] (see also Section 1), a puzzle emerges: To what extent do these two features explain the variability in the size and composition of PBCs? This question takes on particular importance in the EU context, where the citizens have full access to free media, and hence to all the information required to draw such inferences. Thus, the aim of this section is to answer this question empirically using data drawn from the EU-27 member states. To do so, we first describe the variables used to proxy for the levels of non-economic voting and competitiveness and explain how these variables are introduced in the empirical model specification, and then present the corresponding results. For a detailed discussion on how these two features (i.e non-economic voting and competitiveness) affect the size of PBCs within a theoretical framework, see Appendix A.1.

5.1 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[37] concerning economic and social aspects of the EU citizens' lives for the period 2003-2008[38]. The first one, denoted by BET_{it}, relies on the following question linked to pocketbook and prospective voting[39]: "Looking ahead

[36]Specifically, the higher the level of non-economic voting, the weaker are politicians' incentives to manipulate fiscal policy in order to enhance their chance of reelection, as fewer voters can be influenced by an electoral expenditure boom. A lower level of competitiveness (i.e. the closeness of the incumbent and the challenger in the electoral race) has the same effect, as the electoral outcome becomes less sensitive to marginal changes in votes.

[37]The "Standard Eurobarometer" is conducted between 2 and 5 times per year, with reports published twice yearly (Spring and Autumn issues). Each survey consists in approximately 1000 face-to-face interviews per member state (except Germany: 1500, Luxembourg: 600, United Kingdom: 1300 including 300 in Northern Ireland). The proxies constructed for this analysis depend on yearly averages of the survey items taken into consideration.

[38]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).

[39]Pocketbook voting captures 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 & Stegmaier (2007) for extensive reviews of the

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 the 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 for the most part optimistic (with respect to citizens' personal financial well-being), the impact that non-economic issues have on vote choice will be relatively larger. The variable BET_{it} is computed as the percentage of the responders whose answer is "better" (as a share of the responders 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 (e.g. 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[40], 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 fifteen items touching a broad range of social, cultural, and policy issues: crime, economic situation, inflation, taxation, unemployment, terrorism, foreign affairs, housing, immigration, healthcare system, the educational system, pensions, environment, energy related issues, and other (spontaneous). The variable NEC_{it} is computed as the proportion of responses in country i and year t to items associated with non-economic issues[41], rescaled, just like 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) (page 6) with the public opinion variable $POL_{it} \in \{BET_{it}, NEC_{it}\}$ and its interaction term with the electoral dummy, $WELE{*}POL_{it}$. A potential econometric problem is that the variable POL_{it} may not be exogenous relative to the dependent variable and thus it may create endogeneity bias from reverse causation: voters assigning higher (lower) weight to non-economic issues during periods of expansionary (contractionary) fiscal policy. To cope with 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

theoretical and empirical literature on economic voting.

[40] Sociotropic voting involves the theoretical prediction that national economic predictions matter to individual vote choice. In the majority of political studies on economic voting, researchers find that instead of personal finances, voters are more likely to be considering the national economic situation when casting their vote (Lewis-Beck & Stegmaier, 2007).

[41] To divide the issues into "economic" and "non-economic", we use a classification framework similar to the one of Lewis-Beck (1990). More precisely, the list of economic issues includes items related to macroeconomic outcomes or fiscal policy instruments, i.e. economic situation, inflation, unemployment, taxation and pensions, while the list of non-economic issues includes items with a social, political or cultural dimension (even if they are indirectly influenced by government's economic policies), i.e. crime, terrorism, foreign affairs, immigration, housing, healthcare system, the educational system, environment, and energy related issues.

the model[42], and run dynamic panel regressions of the following form:

$$Y_{it} = \sum_{j=1}^{2} \alpha_j Y_{it-j} + \beta \mathbf{X}_{it} + \gamma GROWTH_{it} + \delta WELE_{it} + \zeta_1 WELE{*}IVPOL_{it} + \zeta_2 IVPOL_{it} + \mu_i + \varepsilon_{it} \quad \text{(M.3)}$$

Finally, in order to examine the impact of the two public opinion indicators simultaneously, we substitute the first two variables on the second line of model (M.3) with the variables $COMP_{it}$ and $WELE{*}COMP_{it}$, where $COMP_{it}$ is the standardized average of $IVBET_{it}$ and $IVNEC_{it}$[43].

We continue with the level of competitiveness[44]. We employ preelectoral poll data on voting intention for the 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 two leading parties (such as the United Kingdom, Greece and Malta), constructing this index is quite simple. In the remaining countries though, multiparty coalitions form governments, and the classification of all parties along government-opposition lines is more difficult; 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[45]. 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, plus the mean monthly change of this difference[46] - to capture upward

[42]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):

$$\widehat{POL}_{it} = \hat{\pi}_{0i} + \hat{\pi}_{1i} PROP1564_{it} + \hat{\pi}_{2i} PROP65_{it} + \hat{\pi}_{3i} EXECRLC_{it} + \hat{\pi}_{4i} WELE_{it}$$

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

[43]Specifically, $COMP_{it} = \frac{1}{2} \times [\frac{IVBET_{it} - \overline{IVBET}_{it}}{StD(IVBET_{it})} + \frac{IVNEC_{it} - \overline{IVNEC}_{it}}{StD(IVNEC_{it})}]$, where $\bar{x}$ is the mean of x and $StD(x)$ is the standard deviation of x.

[44]Given the complexity of the conditions that affect the competitiveness of elections both from the perspective of politicians' as well as voters' incentives to make an effort in the electoral contest, simple measures, such as party system fragmentation cannot serve as empirical tracers of competitiveness. As Boix & Strokes (2007) point out, while party system fragmentation has often been considered to boost electoral competitiveness by increasing uncertainty of electoral victory, the opposite may be true because fragmentation tends to reduce the identifiability of governing coalitions.

[45]Information on the largest government and opposition parties is retrieved from the Database of Political Institutions of the World Bank (Beck *et al.*, 2001). Note that in 94% of the cases, the chief executive comes from (or is not nominated by) the largest party in the coalition.

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

or downward trends[47]. Using the sampling distribution of VOT_{it} (see Figure 5.1), we divide the 34 executive elections in the EU-27 over the sample period 2004-2008 into three groups and create the following election indicators (dummy variables)[48]: $C1$, coding elections with a high level of competitiveness (i.e. $|VOT_{it}| < 6\%$), $C2$, coding elections with an average level of competitiveness (i.e. $6\% \leq |VOT_{it}| < 15\%$), and $C3$, coding elections with a low level of competitiveness (i.e. $|VOT_{it}| \geq 15\%$). Thus, in order to examine whether the uncertainty over the electoral outcome affects the dimension of PBCs (after controlling for non-economic voting), we reestimate model (M.3) with $WELE_{it}$ (on the first line) replaced by $WELE{*}C1_{it}$, $WELE{*}C2_{it}$ and $WELE{*}C3_{it}$.

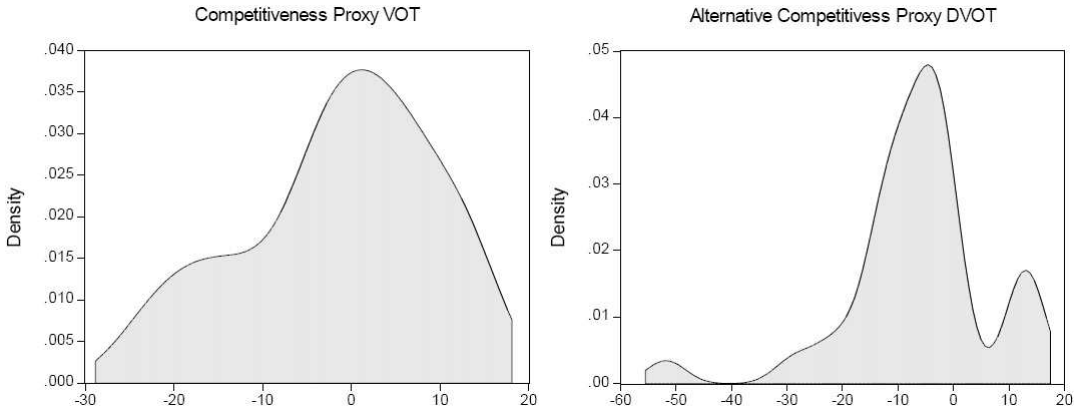

Figure 5.1: Probability Density Functions of VOT_{it} and $DVOT_{it}$

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"[49]. A positive value of $DVOT_{it}$ implies a stronger preelectoral support for the incumbent government compared to the previous election, and thus should be associated with a relatively high probability of reelection. Following the same procedure as before, we use the sampling distribution of $DVOT_{it}$ (see Figure 5.1) to create the election indicators $R1$, $R2$ and $R3$[50], and consider the impact of the interaction terms $WELE{*}R1_{it}$, $WELE{*}R2_{it}$ and $WELE{*}R3_{it}$ on the various fiscal policy instruments.

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opposition party - the correlation coefficient between VOT_{it} and the corresponding actual index across all countries is 0.77. However, excluding Luxembourg from the panel of countries does not change the results to be presented in Section 5.3.

[47] For a nontechnical discussion on how to convert preelectoral polls into probabilities see Alesina *et al.* (1997).

[48] Even though the use of dummy variables reduces the informational content of VOT_{it}, it can block 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.

[49] It worths mentioning that any incumbency advantage is already incorporated into the polling results. That is, the party of a popular chief executive should do well in the polls, and therefore the variable $DVOT_{it}$ reflects that popularity.

[50] $R1$ 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 the 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.

5.2 Empirical Results

Table 5.1 reports the results of the GMM estimation of model (M.3) (page 18), that is, when $IVBET_{it}$, $IVNEC_{it}$ and $COMP_{it}$, 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[51]. Table 5.1 also reports the χ^2-statistic for a test of the hypothesis that the coefficients on these added regressors are jointly equal to zero. As 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 $WELE_{it}$ (i.e. positive in the equation of budget surplus/deficit and negative in the equations of the three expenditure measures). The results of the regressions 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 (and thus weaker incentives for politicians to influence voters' perceptions before elections) 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)[52]. However, when we consider the standardized average of $IVBET_{it}$ and $IVNEC$ (columns (9)-(12)), the results are similar to the ones displayed in columns (1) through (4) and in three out of four cases the interaction term $WELE{*}COMP_{it}$ appears to have a higher z-statistic[53]. The latter implies that a combination of the two public opinion indicators provides a better measure to capture the level of non-economic and evaluate its impact on the size of PBCs. The findings are also qualitatively important. For example, the pattern of estimates in column (9) implies that the election-induced increase in budget deficit in the country/year with the lowest level of non-economic voting (i.e. $COMP_{it} = -1.22$) is 2.5% of GDP higher than in the country/year with the highest level of non-economic voting (i.e. $COMP_{it} = 2.08$). The corresponding figures for $TEXP_{it}$, $CEXP_{it}$ and FCE_{it} (as calculated from the estimates in columns (10), (11) and (12)) are 2.5%, 0.9% and 1.0% of GDP respectively. Note that once again we fail to find any evidence in favor of a PBC in the three revenue measures: controlling for the impact of non-economic voting does not improve the results presented in Section 4 for $TREV_{it}$, $CREV_{it}$ and TAX_{it}.

Columns (5) through (8) of Table 5.2 report the results when the electoral dummy $WELE_{it}$ in columns (9) through (12) of Table 5.1 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 rhymes well with the general idea mentioned in the introduction and emphasized in the first paragraph of Section 5, namely, politicians are more responsive to public demands (and thus generate more pronounced PBCs) when electoral competition is high (i.e. the difference in the polled vote share between the government and the opposi-

[51] See columns (1) through (4) in Table 5.2.

[52] These findings may be driven to some extent by the relative importance of pocketbook versus sociotropic effects.

[53] Although $WELE{*}COMP_{it}$ does not enter the regression of FCE_{it} significantly, it remains jointly statistically significant with the separate regressor $COMP_{it}$.

tion is relatively small). 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 5.2, the estimated coefficient on $WELE{*}R1_{it}$ is statistical significant in all four equations (at the 5% confidence level or better), the one on $WELE{*}R2_{it}$ is statistical 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. The latter is not surprising since politicians have no reason to manipulate fiscal policy when they are certain of winning or losing an election. Qualitatively, the findings suggest that when we focus on elections with high electoral competition[54], the estimated election-year increases in budget deficit, total expenditure, current expenditure and final consumption expenditure amount on average to 1.5%, 1.5%, 1.0% and 0.4% of GDP respectively, that is, 0.5%, 0.5%, 0.3% and 0.1% of GDP above the ones reported in the baseline regressions for all executive elections (columns (1)-(4) in Table 5.2). It is worth mentioning that the coefficients on $WELE{*}COMP_{it}$ in columns (5) through (12) remain economically and statistically significant (or jointly statistically significant with $COMP_{it}$)[55], which lends support to the view that both competitiveness and non-economic voting shape politicians' incentives around elections and simultaneously determine the size of PBCs. Several robustness tests, such as using alternative specifications with $IVBET_{it}$ and $IVNEC_{it}$, or leaving the two variables on non-economic voting out of the model specification, do not change the variability of PBCs with respect to the level of competitiveness. Finally, repeating the same analysis for the three revenue measures (i.e. introducing competitiveness into the regressions of $TREV_{it}$, $CREV_{it}$ and TAX_{it}) reveals no modification of previous results.

5.2.1 Do PBCs still vary across Eurozone / non-Eurozone countries?

Among the key findings in Section 4.2 is that PBCs in the EU-27 over the full sample period are uniquely associated with the Eurozone countries. This result seems to persist when we consider the shorter sample period 2004-2008 (see columns (1)-(4) in Table 5.3): both $WELE{*}EURO_{1it}$ (coding executive elections in the Eurozone) and $WELE{*}EURO_{0it}$ (coding executive elections in the non-Eurozone countries) have the expected signs but only the former variable is statistically significant at conventional levels of significance in the equations of NL_{it}, $TEXP_{it}$ and $CEXP_{it}$. Having in mind that the average levels of non-economic voting and competitiveness may differ between the two subsamples[56], the reader may legitimately ask whether after controlling for variations in these two features across countries, there is still a difference in the size of PBCs between the Eurozone and the non-Eurozone countries. To answer this question, we create two pairs of indicator variables following the approach of the previous subsection: $WELE{*}C12{*}EURO_1$ (coding elections in the Eurozone with high or average level of competitiveness) and $WELE{*}C12{*}EURO_0$ (coding elections in the non-Eurozone countries with high or average level of competitiveness), and analogously, $WELE{*}R12{*}EURO_{1it}$ and $WELE{*}R12{*}EURO_{0it}$. Columns (5) through (12) in Ta-

[54] In this case when the support for the incumbent government has declined by a relatively small percentage since it was elected.

[55] With the exception of the specification in column (8).

[56] In fact, the average level of non-economic voting is lower and the average level of competitiveness is higher for the Eurozone countries, compared to the non-Eurozone countries. For example, the difference in the average $COMP_{it}$ values and in the average $DVOT_{it}$ values between the two groups is 0.5 and 0.7 standard deviations of the pooled sample, respectively.

ble 5.3 display the results when we use these new indicators[57] to estimate the same regression package as in Table 5.2. It seems that non-economic voting and competitiveness can indeed account (to a large extent) for the difference in the dimension of election-driven fiscal policy manipulations between the two subsamples of EU countries. More precisely, once we add to the baseline regression the variables $WELE{*}COMP_{it}$ and $COMP_{it}$ and drop the elections with low level of competitiveness (captured by $WELE{*}C3_{it}$ or $WELE{*}R3_{it}$), PBCs become identifiable in both Eurozone and non-Eurozone countries: both $WELE{*}C12{*}EURO_1$ and $WELE{*}C12{*}EURO_0$, and analogously $WELE{*}R12{*}EURO_{1it}$ and $WELE{*}R12{*}EURO_{0it}$, appear to be statistically significant at conventional levels of significance in the equations of NL_{it}, $TEXP_{it}$ and $CEXP_{it}$ (see columns (5)-(7) and columns (9)-(11) respectively). The latter finding clearly indicates that it is very important to evaluate the information available to the market prior to an election, before we draw conclusions regarding which national and supranational politico-institutional features matter for the appearance of PBCs.

[57] Together with $WELE{*}C3_{it}$ (or analogously, $WELE{*}R3_{it}$) - coding elections with low level of competitiveness - for which we found no electoral effects in the previous subsection.

Table 5.1: 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 Generalised Method of Moments (Arellano-Bover/Blundell-Bond)

	Controls based on $IVBET$				Controls based on $IVNEC$				Controls based on $COMP$			
	NL	$TEXP$	$CEXP$	FCE	NL	$TEXP$	$CEXP$	FCE	NL	$TEXP$	$CEXP$	FCE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$GROWTH$	0.40***	-0.46***	-0.42***	-0.21***	0.44***	-0.48***	-0.45***	-0.22***	0.40***	-0.47***	-0.43***	-0.22***
	(5.35)	(5.87)	(10.97)	(8.71)	(6.66)	(6.20)	(13.84)	(7.16)	(7.27)	(6.78)	(12.45)	(7.83)
$WELE$	-0.95***	1.00***	0.68***	0.29***	-0.85***	0.91***	0.66***	0.36**	-0.90***	0.96***	0.71***	0.30**
	(2.60)	(5.32)	(3.71)	(2.74)	(3.48)	(3.72)	(2.58)	(2.38)	(3.25)	(4.60)	(3.55)	(2.53)
$WELE{*}IVBET$	0.05**	-0.05***	-0.03**	-0.02***								
	(2.13)	(4.43)	(2.10)	(3.94)								
$IVBET$	-0.03	0.03	0.02	0.03***								
	(0.62)	(1.24)	(1.37)	(3.33)								
$WELE{*}IVNEC$					0.04**	-0.03	-0.01	-0.01				
					(2.44)	(1.56)	(0.39)	(0.05)				
$IVNEC$					0.04	0.02	0.01	0.02				
					(0.80)	(1.04)	(0.63)	(1.43)				
$WELE{*}COMP$									0.75***	-0.77***	-0.33**	-0.30
									(2.64)	(4.47)	(2.56)	(1.48)
$COMP$									0.33	0.54	0.42**	0.45**
									(0.29)	(1.09)	(2.00)	(2.40)
Hansen test[a]	18.00	17.83	16.35	15.91	15.84	19.01	17.61	21.00	17.21	19.07	14.90	19.41
	[0.76]	[0.77]	[0.84]	[0.86]	[0.86]	[0.70]	[0.78]	[0.58]	[0.80]	[0.70]	[0.90]	[0.68]
Corr. test[b]	0.47	-1.47	-0.67	-1.71	0.03	-1.80	-0.73	-1.42	0.06	-1.74	-0.77	-1.59
	[0.64]	[0.14]	[0.51]	[0.09]	[0.97]	[0.07]	[0.47]	[0.16]	[0.95]	[0.08]	[0.44]	[0.11]
Sign. test[c]	5.07	22.24	5.28	29.02	6.78	3.59	0.47	2.33	7.16	20.32	6.16	6.13
	[0.08]	[0.00]	[0.07]	[0.00]	[0.03]	[0.17]	[0.79]	[0.31]	[0.03]	[0.00]	[0.05]	[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 $LnGDP_{it}$, $PROP1564_{it}$, $PROP65_{it}$ and $EXECRLC_{it}$ are not displayed. Equations estimated using Windmeijer WC-robust standard errors and covariance. ***,**,* Statistically significant at the 1%, 5% and 10% confidence level respectively. The instruments used in the system GMM regression are lagged levels (two periods) of the dependent variable and the endogenous covariates $GROWTH_{it}$ and $LnGDP_{it}$ for the differenced equation, and lagged difference (one period) of these variables for the level equation. The electoral dummies, the control variables for non-economic voting, and the strictly exogenous covariates $PROP1564_{it}$, $PROP65_{it}$ and $EXECRLC_{it}$ are instrumented by themselves in the differenced equation. [a] Reports the Hansen test of the overidentifying restrictions [p-values], where H_0: overidentifying restrictions are valid. [b] Reports the Arellano-Bond test for serial correlation of order two in the first-differenced residuals [p-values], where H_0: no autocorrelation. [c] Reports the χ^2-statistic [p-value], where H_0: the coefficients on $WELE{*}IVPOL_{it}$ and $IVPOL_{it}$ are jointly equal to zero, where $IVPOL_{it} \in \{IVBET_{it}, IVNEC_{it}, COMP_{it}\}$.

Table 5.2: Political Budget Cycles: Competitiveness

Dependent Variable: net lending (NL), total expenditure ($TEXP$), current expenditure ($CEXP$); final cons expenditure (FCE) (all shares of GDP)
Method: System Generalised Method of Moments (Arellano-Bover/Blundell-Bond)

	No Controls				Electoral Variables based on VOT				Electoral Variables based on $DVOT$			
	NL	$TEXP$	$CEXP$	FCE	NL	$TEXP$	$CEXP$	FCE	NL	$TEXP$	$CEXP$	FCE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$GROWTH$	0.39***	-0.48***	-0.45***	-0.22***	0.40***	-0.47***	-0.43***	-0.22***	0.41***	-0.46***	-0.43***	-0.23***
	(3.51)	(4.72)	(13.78)	(7.18)	(5.53)	(5.80)	(12.92)	(8.68)	(6.13)	(5.57)	(12.38)	(10.19)
$WELE$	-0.95***	0.90***	0.65**	0.33**								
	(2.69)	(3.49)	(2.40)	(2.10)								
$WELE{*}C1$					-1.30***	1.22***	0.70***	0.47**				
					(2.64)	(4.01)	(2.84)	(2.29)				
$WELE{*}C2$					-0.99**	0.65	0.73**	0.05				
					(1.97)	(1.42)	(2.47)	(0.34)				
$WELE{*}C3$					-0.31	0.32	0.49	0.20				
					(0.51)	(0.84)	(0.47)	(0.43)				
$WELE{*}R1$									-1.50***	1.49***	0.97***	0.44**
									(3.11)	(4.41)	(3.50)	(2.21)
$WELE{*}R2$									-0.89*	0.53	0.38	0.01
									(1.76)	(1.38)	(1.00)	(0.05)
$WELE{*}R3$									-0.34	0.64	0.66	0.31
									(0.62)	(0.50)	(0.56)	(0.69)
$WELE{*}COMP$					0.97***	-0.69**	-0.45***	-0.19	0.95***	-0.76***	-0.41**	-0.19
					(3.81)	(2.33)	(3.08)	(1.12)	(3.92)	(3.21)	(2.46)	(0.99)
$COMP$					0.15	0.69	0.28	0.35	0.25	0.76	0.35	0.47***
					(0.19)	(1.11)	(1.30)	(1.32)	(0.31)	(1.15)	(1.64)	(2.62)
Hansen test[a]	21.21	22.15	17.61	22.84	16.05	17.48	13.06	17.25	15.70	19.05	15.60	17.00
	[0.57]	[0.51]	[0.78]	[0.45]	[0.85]	[0.78]	[0.95]	[0.80]	[0.87]	[0.70]	[0.87]	[0.81]
Corr. test[b]	0.43	-1.42	-0.88	-1.68	0.17	-1.37	-0.81	-1.55	0.30	-1.22	-0.63	-1.50
	[0.66]	[0.15]	[0.38]	[0.10]	[0.87]	[0.17]	[0.42]	[0.12]	[0.77]	[0.22]	[0.53]	[0.13]
Sign. test[c]					16.42	6.37	14.71	2.00	16.31	11.57	8.35	6.92
					[0.00]	[0.04]	[0.00]	[0.37]	[0.00]	[0.00]	[0.02]	[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

Columns report estimated coefficients (z-statistics). For brevity, autoregressive coefficients at lags 1 and 2 and coefficients on $LnGDP_{it}$, $PROP1564_{it}$, $PROP65_{it}$ and $EXECRLC_{it}$ are not displayed. Equations estimated using Windmeijer WC-robust standard errors and covariance. ***,**,* Statistically significant at the 1%, 5% and 10% confidence level respectively. The instruments used in the system GMM regression are lagged levels (two periods) of the dependent variable and the endogenous covariates $GROWTH_{it}$ and $LnGDP_{it}$ for the differenced equation, and lagged difference (one period) of these variables for the level equation. The electoral dummies, the control variables for non-economic voting, and the strictly exogenous covariates $PROP1564_{it}$, $PROP65_{it}$ and $EXECRLC_{it}$ are instrumented by themselves in the differenced equation. [a] Reports the Hansen test of the overidentifying restrictions [p-values], where H_0: overidentifying restrictions are valid. [b] Reports the Arellano-Bond test for serial correlation of order two in the first-differenced residuals [p-values], where H_0: no autocorrelation. [c] Reports the χ^2-statistic [p-value], where H_0: the coefficients on $WELE{*}COMP_{it}$ and $COMP_{it}$ are jointly equal to zero.

Table 5.3: Political Budget Cycles: Competitiveness (Eurozone/ non-Eurozone)

Dependent Variable: net lending (NL), total expenditure ($TEXP$), current expenditure ($CEXP$); final cons expenditure (FCE) (all shares of GDP)
Method: System Generalised Method of Moments (Arellano-Bover/Blundell-Bond)

	No Controls				Electoral Variables based on VOT				Electoral Variables based on $DVOT$			
	NL	$TEXP$	$CEXP$	FCE	NL	$TEXP$	$CEXP$	FCE	NL	$TEXP$	$CEXP$	FCE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$GROWTH$	0.41***	-0.46***	-0.45***	-0.23***	0.38***	-0.46***	-0.43***	-0.24***	0.39***	-0.46***	-0.43***	-0.23***
	(4.94)	(4.58)	(12.59)	(6.74)	(5.63)	(5.42)	(13.69)	(10.86)	(6.03)	(5.01)	(13.53)	(11.21)
$WELE{*}EURO_1$	-1.04**	0.97***	0.61*	0.34								
	(2.48)	(3.22)	(1.83)	(1.35)								
$WELE{*}EURO_0$	-0.55	0.96	0.71	0.36								
	(1.08)	(1.41)	(1.44)	(1.46)								
$WELE{*}C12{*}EURO_1$					-1.19***	0.98***	0.60**	0.18				
					(2.84)	(4.00)	(2.19)	(1.08)				
$WELE{*}C12{*}EURO_0$					-1.19**	1.17**	0.92***	0.38				
					(2.07)	(2.24)	(2.89)	(1.35)				
$WELE{*}C3$					-0.49	0.69	0.48	0.69				
					(0.71)	(0.45)	(0.50)	(0.86)				
$WELE{*}R12{*}EURO_1$									-1.28***	1.00***	0.61**	0.17
									(2.69)	(3.83)	(2.14)	(1.08)
$WELE{*}R12{*}EURO_0$									-1.08*	1.15**	0.91***	0.34
									(1.83)	(2.18)	(2.87)	(1.10)
$WELE{*}R3$									-0.46	0.84	0.60	0.79
									(0.79)	(0.51)	(0.60)	(1.00)
$WELE{*}COMP$					0.94***	-0.91***	-0.54***	-0.27	0.97***	-0.90***	-0.53***	-0.25
					(3.10)	(4.33)	(2.83)	(1.26)	(3.68)	(4.34)	(2.71)	(1.09)
$COMP$					0.32	0.66	0.24	0.42**	0.27	0.71	0.22	0.42**
					(0.35)	(0.94)	(1.08)	(2.01)	(0.34)	(1.00)	(1.02)	(2.13)
Hansen test[a]	18.53	23.82	17.25	22.12	16.98	17.90	12.70	17.14	15.89	18.16	12.98	16.65
	[0.73]	[0.41]	[0.80]	[0.51]	[0.81]	[0.76]	[0.96]	[0.80]	[0.86]	[0.75]	[0.95]	[0.83]
Corr. test[b]	0.49	-1.25	-0.95	-1.62	-0.09	-1.72	-0.97	-1.55	-1.16	-1.67	-0.92	-1.47
	[0.62]	[0.21]	[0.34]	[0.11]	[0.93]	[0.09]	[0.33]	[0.12]	[0.87]	[0.10]	[0.36]	[0.14]
Sign. test[c]					9.60	19.57	9.10	5.41	15.10	20.54	8.18	5.85
					[0.00]	[0.00]	[0.01]	[0.07]	[0.00]	[0.00]	[0.02]	[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 $LnGDP_{it}$, $PROP1564_{it}$, $PROP65_{it}$ and $EXECRLC_{it}$ are not displayed. Equations estimated using Windmeijer WC-robust standard errors and covariance. ***,**,* Statistically significant at the 1%, 5% and 10% confidence level respectively. The instruments used in the system GMM regression are lagged levels (two periods) of the dependent variable and the endogenous covariates $GROWTH_{it}$ and $LnGDP_{it}$ for the differenced equation, and lagged difference (one period) of these variables for the level equation. The electoral dummies, the control variables for non-economic voting, and the strictly exogenous covariates $PROP1564_{it}$, $PROP65_{it}$ and $EXECRLC_{it}$ are instrumented by themselves in the differenced equation. [a] Reports the Hansen test of the overidentifying restrictions [p-values], where H_0: overidentifying restrictions are valid. [b] Reports the Arellano-Bond test for serial correlation of order two in the first-differenced residuals [p-values], where H_0: no autocorrelation. [c] Reports the χ^2-statistic [p-value], where H_0: the coefficients on $WELE{*}COMP_{it}$ and $COMP_{it}$ are jointly equal to zero.

6 Conclusions

This paper examines how incumbent governments across the EU tend to manipulate fiscal policy in order to enhance their reelection perspectives. Using a data set encompassing all 27 current member states and employing a system GMM estimation technique, we find strong evidence in favor of a systematic electoral cycle in the overall budget deficit, derived mainly from increased government expenditure. More precisely, 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. These effects seem to persist when we restrict the sample to include the post-2004 period, and when we control for the impact of non-predetermined (strategically timed) elections. Furthermore, we find hardly any evidence that PBCs in the EU vary under different electoral rules nor that they are driven by the experience of new democracies, as suggested by Brender & Drazen (2005). On the other hand, 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. To further analyze the variability in the size of PBCs across countries and identify which factors account for their existence, this paper also attempts to formulate a more realistic approach to government's reaction function around elections. More precisely, we argue that the relative weight voters assign to non-economic issues and the uncertainty over the electoral outcome (or electoral competitiveness) may shape politicians incentives when they face elections and thus should be capable of capturing variations in the size of PBCs across countries. In light of these arguments, we construct suitable proxies for these two features and provide evidence that incumbent governments in the EU tend to generate more pronounced PBCs when the level of non-economic voting is relatively low and when electoral competitiveness is intense. Finally, we show that these two features can explain, to a large extent, the difference in the size of PBCs between the Eurozone and the non-Eurozone countries. The latter findings imply that we need to dig deeper into the individual characteristics of each electoral competition, and take into account all the information available to the market prior to an election to answer the question of where (or when) PBCs are expected to appear. Thus, generalizations linked to standard politico-institutional aspects (which affect the process of fiscal policy formation), may sometimes produce misleading results.

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A Appendix

A.1 Theoretical Model

In this section we describe a simple version of the model of electoral cycles with seignorage developed by Persson & Tabellini (2000)[58]. We consider an economy with two main actors: a government (or an incumbent politician) and voters (who also play the role of consumers). Let us write the government budget constraint as

$$g_t = \eta_t(\bar{\tau}y + s_t) \tag{A.1}$$

where g_t is the government expenditure in period t, $\bar{\tau}$ is the fixed percentage rate of taxes, y is the average income, s_t denotes "seignorage" or, more generally, a hidden and distorting tax observed and paid by the voters only after the elections, and η_t represents the incumbent's competence level (ability to handle the economy; increase government expenditure using the given tax revenue). Voters' welfare in period t, denoted by w_t, is given by

$$w_t = y(1-\bar{\tau}) - s_t - V(s_t) + \lambda g_t \tag{A.2}$$

where $V(.)$ is a function capturing the distortions of seignorage[59], so that $V(0) = 0$, $V'(.) > 0$ for $s_t > 0$ and $V''(.) > 0$, and $\lambda \geq 1$ is an exogenous parameter. To simplify the analysis, the voters' marginal utility from public consumption is assumed constant (i.e. voters are risk-neutral). As is common in these models, the competence is a moving average process of order 1[60], determined by

$$\eta_t = \vartheta_t + \vartheta_{t-1} \tag{A.3}$$

where ϑ_t is drawn from a continuous uniform distribution with support that covers $[1-\frac{1}{2\varphi}, 1+\frac{1}{2\varphi}]$ and is serially uncorrelated. Thus, its mean value is equal to 1 and its probability density is equal to φ. Notice that φ represents the sensitivity of reelection probability to the level of incumbent's competence, which is assumed to be constant over time. We further assume that policy decisions in each period t are made before knowing the realization of ϑ_t and that the realization of ϑ_{t-1} is known to everyone.

Incumbent politician maximizes voter's welfare and some exogenous "ego rents"[61] $R > 0$ according to

$$E(w_t|\vartheta_{t-1}) + p_t R \tag{A.4}$$

where p_t is the probability that the incumbent is reelected. For simplicity we set R equal to 1. The sequence of the stage game at time t is as follows: (1) the politician chooses s_t, given ϑ_{t-1} and without observing ϑ_t. (2) Nature determines ϑ_t. (3) Voters observe g_t only. (4) If t is an on-election period, voters reelect the incumbent politician

[58]The model was originally formulated by Holmstrom (1982) to describe how career concerns shape the incentives of managers inside an organization. Persson & Tabellini (2000) show how to adapt this model to a political setup.

[59]Note that the quantity s_t can also represent public borrowing and $V(.)$ the cost function of public borrowing.

[60]Thus, competence changes over time, but slowly: if a policymaker was competent yesterday, he retains some of his competence today, though some may depend on new factors. This is a plausible assumption since circumstances change over time and a policy-maker that is competent in some tasks in one period need not be competent on other tasks in other periods. The MA(1) specification is also convenient because it does not allow competence to carry over for more than two periods (i.e. if after the election the challenger replaces the incumbent).

[61]These exogenous rents reflect the value attached to winning the elections and holding office, but they do not appear in the government budget.

or elect a new contender drawn from the same distribution. If t is an off-election period, we move to the election period. The stage game is infinitely repeated.

Under these assumptions, the equilibrium in off-election periods is straightforward, as the incumbent maximizes voters' welfare only. Even though the quantity of seignorage in the current period t reveals incumbent's ϑ_t, the voters do not care about it, as elections take place only in period $t+1$. At that point, voters will look ahead at period $t+2$. By (A.3),

$$E(\eta_{t+2}|g_{t+1}) = E(\vartheta_{t+2}|g_{t+1}) + E(\vartheta_{t+1}|g_{t+1}) = 1 + \vartheta_{t+1} \tag{A.5}$$

Hence knowledge of ϑ_t in period t is irrelevant for the voters and the incumbent politician sets s_t at the socially optimal level. More formally, the incumbent politician maximizes $E(w_t|\vartheta_{t-1})$, which after substituting (A.1) and (A.3) into (A.2), can be written as

$$E(w_t|\vartheta_{t-1}) = y(1-\bar{\tau}) - s_t - V(s_t) + \lambda(1+\vartheta_{t-1})(\bar{\tau}y + s_t) \tag{A.6}$$

Solving the FOC for s_t, we get

$$-1 - V'(s_t) + \lambda(1+\vartheta_{t-1}) = 0 \qquad \text{or}$$

$$V'(s_t) = \lambda(1+\vartheta_{t-1}) - 1 \tag{A.7}$$

In on-election periods, on the other hand, things are different. When period $t+1$ comes, the value of ϑ_{t+1} is not irrelevant for the voters, as shown by (A.5). Even though voters do not directly observe ϑ_{t+1}, they can infer it from g_{t+1} and beliefs about the level of seignorage. Denote the voters' guesses about ϑ_{t+1} and s_{t+1} as $\tilde{\vartheta}_{t+1}$ and $\tilde{s}_{t+1}$ respectively. From the budget constraint, we have

$$g_{t+1} = (\tilde{\vartheta}_{t+1} + \vartheta_t)(\bar{\tau}y + \tilde{s}_{t+1}) \qquad \text{or}$$

$$\tilde{\vartheta}_{t+1} = \frac{g_{t+1}}{\bar{\tau}y + \tilde{s}_{t+1}} - \vartheta_t \tag{A.8}$$

Inserting equation (A.1) (one period ahead) into the numerator of the first term on the right-hand side of (A.8) gives

$$\tilde{\vartheta}_{t+1} = \frac{\bar{\tau}y + s_{t+1}}{\bar{\tau}y + \tilde{s}_{t+1}}(\vartheta_{t+1} + \vartheta_t) - \vartheta_t \tag{A.9}$$

The voters' behavior is then simple to describe: the incumbent is reappointed only if $\tilde{\vartheta}_{t+1}$ exceeds his opponent's expected competence:

$$\tilde{p}_{t+1} = \begin{cases} 1 & \text{iff } \tilde{\vartheta}_{t+1} \geq 1 \\ 0 & \text{otherwise} \end{cases} \tag{A.10}$$

As the incumbent politician does not know yet his own competence, his probability of reelection, as perceived in period $t+1$ when choosing the level of seignorage, is given by $p_{t+1} = Pr(\tilde{p}_{t+1} = 1) = Pr(\tilde{\vartheta}_{t+1} \geq 1)$. Using equation (A.9) we can write this probability as

$$Pr\left(\frac{\bar{\tau}y + s_{t+1}}{\bar{\tau}y + \tilde{s}_{t+1}}(\vartheta_{t+1} + \vartheta_t) - \vartheta_t \geq 1\right) \qquad \text{or}$$

$$Pr\left(\vartheta_{t+1} \geq \frac{\bar{\tau}y + \tilde{s}_{t+1}}{\bar{\tau}y + s_{t+1}} - \vartheta_t \frac{s_{t+1} - \tilde{s}_{t+1}}{\bar{\tau}y + s_{t+1}}\right) \tag{A.11}$$

which can be calculated using the cumulative distribution function of ϑ_{t+1}[62]. That is,

$$\begin{aligned} Pr\left(\vartheta_{t+1} \geq \frac{\bar{\tau}y + \tilde{s}_{t+1}}{\bar{\tau}y + s_{t+1}} - \vartheta_t \frac{s_{t+1} - \tilde{s}_{t+1}}{\bar{\tau}y + s_{t+1}}\right) &= \frac{1}{2} + \varphi\left(1 - \frac{\bar{\tau}y + \tilde{s}_{t+1}}{\bar{\tau}y + s_{t+1}} + \vartheta_t \frac{s_{t+1} - \tilde{s}_{t+1}}{\bar{\tau}y + s_{t+1}}\right) \\ &= \frac{1}{2} + \varphi\left(\frac{s_{t+1} - \tilde{s}_{t+1}}{\bar{\tau}y + s_{t+1}} - \vartheta_t \frac{\tilde{s}_{t+1} - s_{t+1}}{\bar{\tau}y + s_{t+1}}\right) \\ &= p_{t+1} \end{aligned} \tag{A.12}$$

By substituting equation (A.12) into equation (A.4) (one period ahead), we get incumbent's maximization problem in period $t+1$

$$E(w_{t+1}|\vartheta_t) + p_{t+1} = y(1-\bar{\tau}) - s_{t+1} - V(s_{t+1}) + \lambda(1+\vartheta_t)(\bar{\tau}y + s_{t+1}) + p_{t+1} \tag{A.13}$$

where p_{t+1} is defined by equation (A.12). Solving the FOC for s_{t+1}, we get

$$-1 - V'(s_{t+1}) + \lambda(1+\vartheta_t) + \varphi(1+\vartheta_t)\frac{\bar{\tau}y + \tilde{s}_{t+1}}{(\bar{\tau}y + s_{t+1})^2} = 0 \tag{A.14}$$

In equilibrium, politicians' choice of seignorage must be consistent with the voters' guesses (conjectures): $s_{t+1} = \tilde{s}_{t+1}$[63]. This gives us

$$V'(s_{t+1}) = \lambda(1+\vartheta_t) - 1 + \varphi\frac{1+\vartheta_t}{\bar{\tau}y + s_{t+1}} \tag{A.15}$$

Comparing equations (A.15) and (A.7), we see that incumbents choose higher levels of distortions (hence higher levels of seignorage) during elections periods, as the last term on the right hand side of equation (A.15) is nonnegative. This yields the central result of the model: the government's budget balance is influenced by the timing of elections, and hence PBCs are expected to appear in all election periods and in all countries that have elections.

A.1.1 Non-economic voting and competitiveness

A strong assumption of the above model is that the sensitivity of reelection probability to the level of competence is considered to be the same in all periods. This assumption may be satisfied when neither the government nor the voters can observe how this sensitivity parameter varies over time, that is, when there is no access to free media (e.g. radios, television, newspapers) or when the available media do not deliver any information about voters' attitudes and voting intentions. In the opposite case, the observable value of this sensitivity parameter can reshape politicians' incentives in election years and affect the size of distortions identified in the above model. To see this, let us assume that the sensitivity of reelection probability to the level of competence in period t, denoted now by φ_t, is given by

$$\varphi_t = \Omega_t(1 - \Sigma_t) + v_t \tag{A.16}$$

where v_t is an *i.i.d.* error term with mean equal to 0, Σ_t is the level of non-economic voting (i.e the relative impact that non-economic issues have on vote choice) in period

[62]Recall that ϑ_{t+1} is drawn from a uniform distribution with mean 1 and density φ and hence $\forall x$

$$Pr(\vartheta_{t+1} \geq x) = 1 - Pr(\vartheta_{t+1} \leq x) = \frac{1}{2} + \varphi(1-x)$$

[63]This implies that the probability of reelection in equilibrium is 0.5 (by equation (A.12)), which is consistent with the assumption that the incumbent does not know his own competence when setting the level of seignorage in period $t+1$.

t, such that $0 \leq \Sigma_t < 1$, and Ω_t is the level of competitiveness (i.e. the closeness of the incumbent and the challenger in the electoral race) in period t, such that $\Omega_t > 0$ and $E(\Omega_t) = \varphi$. Equation (A.16) suggests that the higher the weight voters assign to non-economic issues and the lower the level of competitiveness, the less sensitive is the probability of reelection to marginal changes in incumbent's competence level. We further assume that the realizations of Σ_t and Ω_t are known to everyone (policymakers and voters) in period t (i.e. due to full access to free media that deliver such information via the publication of opinion polls) and that policy decisions in period t are made after observing Σ_t and Ω_t. Under these assumptions ϑ_t is now drawn from a continuous uniform distribution with mean 1 and density $\bar{\varphi}_t$ defined as

$$\bar{\varphi}_t = E(\varphi_t|\Sigma_t, \Omega_t) = \Omega_t(1 - \Sigma_t) \tag{A.17}$$

and hence the equilibrium seignorage in on-election periods is now given by

$$V'(s_{t+1}) = \lambda(1 + \vartheta_t) - 1 + \Omega_t(1 - \Sigma_t)\frac{1 + \vartheta_t}{\bar{\tau}y + s_{t+1}} \tag{A.18}$$

Notice that when we consider the special case in which the evaluation of government performance depends only on economic issues and the level of competitiveness is equal to its expected value (that is, when we impose the restrictions that $\Sigma_t = 0$ and $\Omega_t = \varphi$), the conditional expectation in (A.17) becomes equal to φ and the equilibrium seignorage in on-election years is the same as the one defined in (A.15). On the other hand, once we relax these restrictions, we can see from the last term on the right hand side of equation (A.18) that the seignorage distortion costs that politicians are willing to pay in equilibrium (and hence the incentives to manipulate fiscal policy), $V'(s_{t+1})$, are a negative function of the level of non-economic voting Σ_t and a positive function of the level of competitiveness Ω_t. As $V'(.) > 0$, this also implies that $\frac{\partial s_{t+1}}{\partial \Sigma_t} < 0$ and $\frac{\partial s_{t+1}}{\partial \Omega_t} > 0$. Intuitively, the larger the level of non-economic voting, the weaker are politicians' incentives to increase government expenditure in order to enhance their chance of reelection, as fewer voters can be influenced by an electoral expenditure boom. As a result the equilibrium level of seignorage decreases in election years. On the other hand, a higher level of competitiveness has the opposite effect, as the electoral outcome becomes less sensitive to marginal changes in votes, which results in a higher level of equilibrium seignorage in election years. Notice also that if the level of non-economic voting is close to 1 (i.e. voters do not care about economic issues when casting their votes) or the level of competitiveness is close to 0 (i.e. the government is certain of losing or winning the elections), the equilibrium levels of seignorage in on election and off election periods are about the same, as the last term on the right hand side of (A.18) is close to zero. Therefore, in contrast to the model proposed by Persson & Tabellini (2000), the central result of this subsection is that PBCs are only identifiable in countries/years with sufficiently large levels of competitiveness and sufficiently low levels of non-economic voting.

A.2 Econometric Theory: Dynamic Panel Data Estimation

Since the seminal paper by Nickell (1981), where it is shown that the Fixed Effects (FE) estimator is not consistent for finite time length T in autoregressive panel data models, a number of consistent instrumental variable (IV) and Generalised Method of Moments (GMM) estimators have been proposed in the econometric literature as an alternative to FE estimator. Anderson & Hsiao (1982) suggest two simple IV estimators that, upon transforming the model to first differences to eliminate the unobserved individual heterogeneity, use the second lags of the depended variable, either differenced or in levels, as instrument for the differenced one-time lagged depended variable. Arellano & Bond (1991) argue that the Anderson-Hsiao estimator, although consistent, fails to take all the potential orthogonality conditions into account and does not exploit all the information available in the sample. In order to construct more efficient estimates of the dynamic panel data model, Arellano & Bond (1991) develop a GMM estimator that treats the model as a system of equations, one per time period, and allows the instruments applicable to each equation to differ (for instance, in later periods, more lagged values of the instruments are available). The instruments include suitable lags of the levels of endogenous variables, which enter the equation in differenced form, as well as the strictly exogenous regressors and any other that may be specified. A potential weakness in the Arellano-Bond estimator is revealed in later work by Arellano & Bover (1995) and Blundell & Bond (1998). The lagged levels are often rather poor instruments for first-differenced variables, especially if the variables are close to a random walk. Their modification of the estimator includes lagged levels as well as lagged differences. The original estimator is often entitled "difference GMM", whereas the expanded estimator is commonly termed "system GMM". The cost of the system GMM estimator involves a set of additional restrictions on the initial conditions of the process generating the dependent variable. Both the difference and system GMM estimators have one-step and two-step variants. The two-step estimates of the difference GMM standard errors have been shown to have a severe downward bias. To evaluate the precision of the two-step estimators for hypothesis tests, Windmeijer (2005) proposes a finite-sample correction to these standard errors.

The appeal of the difference and system GMM estimators lies in the hope they offer for solving a tough estimation problem: the combination of a short panel, a dynamic dependent variable, fixed effects, and a lack of good external instruments. But, as Roodman (2008) point out, an underappreciated problem often arises in the application of these estimators: instrument proliferation. In other words, as T rises, the instrument count can easily grow large relative to the sample size, making some asymptotic results about the estimators and related specification tests misleading (i.e. due to overfitting endogenous variables and imprecise estimates of the optimal weighting matrix). Therefore, in order to limit the number of instruments generated in the difference and system GMM estimators, we use only certain lags instead of all available lags for instruments. Separate instruments are still generated for each period, but the number per period is capped, so that the instruments count is linear in T.

A.3 Tables

Table A.3.1: Country Classification

No	Country	Year of entering the EU	Year of adopting the euro	Established democracy[a]	Plurality rule[b]	Presidential regime[c]
1	Austria	1995	1999	√		
2	Belgium	1952	1999	√		
3	Bulgaria	2007				
4	Cyprus	2004	2008	√		√
5	Czech Rep.	2004			√	
6	Denmark	1973		√		
7	Estonia	2004				
8	Finland	1995	1999	√		
9	France	1952	1999	√	√	
10	Germany	1952	1999	√	√	
11	Greece	1981	2001	√	√	
12	Hungary	2004			√	
13	Ireland	1973	1999	√		
14	Italy	1952	1999	√	√	
15	Latvia	2004				
16	Lithuania	2004			√	√
17	Luxembourg	1952	1999	√		
18	Malta	2004	2008	√		
19	Netherlands	1952	1999	√		
20	Poland	2004				√
21	Portugal	1986	1999	√		
22	Romania	2007				
23	Slovakia	2004	2009			
24	Slovenia	2004	2007			
25	Spain	1986	1999	√	√	
26	Sweden	1995		√		
27	UK	1973		√	√	

[a] Refers to a country which has been democratic for more than 20 years. [b] Refers to a country with a plurality rule in legislative elections (i.e. a country with either a strictly plurality or a mixed plurality-proporional system). [c] Refers to a country where the executive is not accountable to to the legislature. Source: Database of Political Institutions of the World Bank (Beck *et al.*, 2001).

Table A.3.2: Components and Subcomponents of Expenditure and Revenue

Total Expenditure	Current Expenditure	(1)	Final Consumption Expenditure
		(2)	Social Benefits other than Social Transfers in Kind
		(3)	Interest
		(4)	Subsidies
		(5)	Other Current Expenditure
	Capital Expenditure	(1)	Gross Fixed Capital Formation
		(2)	Other Capital Expenditure
Total Revenue	Current Revenue	(1)	Taxes
		(2)	Social Contributions Received
		(3)	Other Current Revenue
	Capital Revenue	(1)	Capital Transfers Received

The partition of expenditure and revenue into components and subcomponents is based on the European System of Accounts 1995 (ESA 95). Source: Statistical Annex to European Economy; European Commission.

Table A.3.3: Variables and Data Sources

Abbreviation	Variable	Source
NL_{it}	General government net lending (+) or net borrowing (−) as a percentage of GDP at market prices. Defined as total general government revenue minus total general government expenditure excluding interest payable, divided by the GDP at market prices and multiplied by 100.	SAEE
$TEXP_{it}$	Total general government expenditure, divided by the GDP at market prices and multiplied by 100.	SAEE
$TREV_{it}$	Total general government revenue, divided by the GDP at market prices and multiplied by 100.	SAEE
$CEXP_{it}$	Current general government expenditure, divided by the GDP at market prices and multiplied by 100.	SAEE
$CREV_{it}$	Current general government revenue, divided by the GDP at market prices and multiplied by 100.	SAEE
FCE_{it}	Final consumption expenditure of general government as a percentage of GDP at market prices. Includes (i) the value of goods and services produced by general government itself other then own-capital formation and sales (collective consumption) and (ii) purchases by general government of goods and services produced by market produces that are supplied to households as social transfers in kind (individual consumption).	SAEE
TAX_{it}	Total taxes of general government as a percentage of GDP at market prices. Includes current taxes on income and wealth (direct taxes) and taxes linked to imports and production (indirect taxes).	SAEE
$GROWTH_{it}$	Output growth. Defined as the annual percentage change of real GDP.	SAEE
$LnGDP_{it}$	Level of development. Constructed using the natural logarithm of real GDP per capital (i.e. nominal GDP per capital, divided by the GDP deflator - base year 2000 - and multiplied by 100).	SAEE
$TRADE_{it}$	Sum of exports and imports of goods and services as a percentage of GDP at market prices.	SAEE
$TRADESK_{it}$	Deviation of trade share from it trend value. Constructed using the difference between the natural logarithm of trade share and its country-specific trend (derived using the Hodrick-Prescott filter $\lambda = 100$).	SAEE
$PROP1564_{it}$	Percentage of population between 15 and 64 years old in the total population.	IDB
$PROP65_{it}$	Percentage of population over the age of 65 in the total population.	IDB
$FRAC_{it}$	Fractionalisation of government. Measured by the probability that two deputies picked at random among the government parties will be of different parties.	DPI, EY, ACEA, PP
$EXECRLC_{it}$	Positioning of the government on a left-right scale. Measured by a dummy variable that equals -1 for left governments, 0 for centrist governments and +1 for right governments.	DPI, PP
ELE_{it}	Dummy variable for executive elections. Equals 1 in a year when the executive is elected, and 0 otherwise.	DPI, EY, ACEA
$ELEP_{it}$	Dummy variable for predetermined executive elections. Equals 1 in a year when a predetermined executive election takes place, and 0 otherwise.	DPI, EY, ACEA, PP
$ELENP_{it}$	Dummy variable for non-predetermined executive elections. Equals 1 in a year when a non-predetermined executive election takes place, and 0 otherwise.	DPI, EY, ACEA, PP
$WELE_{it}$	Weighted variable for predetermined and non-predetermined executive elections. Equals 1 in a year when a predetermined executive election takes place, 0.5 in a year when a non-predetermined executive election takes place, and 0 otherwise.	DPI, EY, ACEA, PP

SAEE: Statistical Annex to European Economy, published in Spring 2005 and in Spring 2009; IDB: US Census Bureau International Data Base; DPI: Database of Political Institutions of the World Bank; EY: Europa Yearbook; ACEA: Adam Carr's Election Archive; PP: Author's Personal Research

Table A.3.3: Variables and Data Sources (*continued*)

Abbreviation	Variable	Source
$FWELE_{it}$	One-year leading series of $WELE_{it}$ (coding preelection years).	DPI, EY, ACEA, PP
$LWELE_{it}$	One-year lagging series of $WELE_{it}$ (coding postelection years).	DPI, EY, ACEA, PP
$ELET_{it}$	Executive election indicator that takes the timing of an election in the course of the year into account.	DPI, EY, ACEA, PP
$PLUR_k$	Dummy variable for electoral systems. Equals 1 ($PLUR_1 = 1$) in the presence of a plurality rule (either in strictly plurality or in mixed plurality-proportional systems), and 0 ($PLUR_0 = 0$) otherwise (in strictly proportional systems).	DPI, EY
$PRES_k$	Dummy variable for government regimes. Equals 1 ($PRES_1 = 1$) in presidential regimes and 0 ($PRES_0 = 0$) otherwise (parliamentary regimes).	DPI, EY
DEM_k	Dummy variable for established versus new democracies. Equals 1 for countries that have been democratic for more than 20 years ($DEM_1 = 1$); and 0 ($DEM_0 = 0$) otherwise.	DPI
$EURO_k$	Dummy variable for Eurozone versus non-Eurozone countries. Equals 1 for countries which have adopted the euro currency as their sole legal tender as of January 2009 ($EURO_1 = 1$), and 0 otherwise ($EURO_0 = 0$).	SAEE
$DEVGR_{kt}$	Annual difference in the average GDP growth rate between the various subsamples defined by D_1 and D_0, where $D_1 \in \{PLUR_1, PRES_1, DEM_1, EURO_1\}$ and $D_0 \in \{PLUR_0, PRES_0, DEM_0, EURO_0\}$.	SAEE, DPI, EY
BET_{it}	Proxy for non-economic voting computed as the percentage of the responders whose answer is "better" (as a share of the responders whose answer is either "better" or "worse") to the question "Looking ahead to the next year, do you think that the financial situation of your household will be better, worse or stay the same?", in country i and year t, rescaled by subtracting the mean of this index across all 27 countries in year t.	SEB
NEC_{it}	Proxy for non-economic voting computed as the proportion of responses in country i and year t to survey items associated with non-economic issues, rescaled by subtracting the mean across all 27 countries in year t.	SEB
$IVPOL_{it}$	Instrumental variable for $POL_{it} \in \{BET_{it}, NEC_{it}\}$.	SEB
$COMP_{it}$	Standardized average of $IVBET_{it}$ and $IVNEC$	SEB
VOT_{it}	Proxy for competitiveness calculated as the mean monthly difference in the polled vote share between the largest government party and the largest opposition party, plus the mean monthly change of this difference.	ARGM, RCPO
$DVOT_{it}$	Alternative proxy for competitiveness calculated as the value of VOT_{it} minus the actual vote share difference between the two parties in the previous executive election.	ARGM, RCPO
Cj for $j = 1, 2, 3$	Dummy variables associated with the level of competitiveness (high, average or low), as determined by the variable VOT_{it}: $j = 1$ codes elections with $\lvert VOT_{it}\rvert < 6\%$, $j = 2$ codes elections with $6\% \leq \lvert VOT_{it}\rvert < 15\%$, and $j = 3$ codes elections with $\lvert VOT_{it}\rvert \geq 15\%$.	ARGM, RCPO
Rj for $j = 1, 2, 3$	Dummy variables associated with the level of competitiveness (high, average or low), as determined by the variable $DVOT_{it}$: $j = 1$ codes elections with $-7\% < DVOT_{it} < 0\%$, $j = 2$ codes elections with $-17\% < DVOT_{it} \leq -7\%$ or $0\% \leq DVOT_{it} < 10\%$, and $j = 3$ codes elections with $DVOT_{it} \leq -17\%$ or $DVOT_{it} \geq 10\%$.	ARGM, RCPO
$C12$, $R12$	Dummy Variables associated with high or average level of competitiveness calculated as the sum of $C1$ and $C2$ or the sum of $R1$ and $R2$.	ARGM, RCPO

SAEE: Statistical Annex to European Economy, published in Spring 2005 and in Spring 2009; IDB: US Census Bureau International Data Base; DPI: Database of Political Institutions of the World Bank; EY: Europa Yearbook; ACEA: Adam Carr's Election Archive; PP: Author's Personal Research; SEB: Standard Eurobarometer; ARGM: Angus Reid Global Monitor; RCPO: Market Research Centers & Polling Organizations

References

Akhmedov, A., & Zhuravskaya, E. 2004. Opportunistic political cycles: Test in a young democratic setting. *Quarterly Journal in Economics*, **119**, 1301–1338.

Alesina, A. 1987. Macroeconomic policy in a two-party system as a repeated game. *The Quarterly Journal of Economics*, **102**, 651–678.

Alesina, A. 1988. *Macroeconomics and Politics. In NBER Macroeconomic Annual 1988 11-55.* The MIT Press: Cambridge.

Alesina, A., & Roubini, N. 1992. Political cycles in OECD economies. *Review of Economic Studies*, **59**, 663–688.

Alesina, A., Roubini, N., & Cohen, G. D. 1997. *Political Cycles and the Macroeconomy.* The MIT Press: Cambridge.

Alt, J. E., & Lassen, D. 2003. *Fiscal transparency, political parties, and debt in OECD countries.* Harvard University Working Paper.

Ames, B. 1987. *Political Survival: Politicians and Public Policy in Latin America.* University of California Press: Berkeley, CA.

Anderson, T. W., & Hsiao, C. 1982. Formulation and estimation of dynamic models using panel data. *Journal of Econometrics*, **18**, 570–606.

Andrikopoulos, A., Loizides, I., & Prodromidis, K. 2004. Fiscal policy and political business cycles in the EU. *European Journal of Political Economy*, **20**, 125–152.

Arellano, M., & Bond, S. 1991. Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Review of Economic Studies*, **58**, 277–297.

Arellano, M., & Bover, O. 1995. Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics*, **68**, 29–51.

Beck, T., Clarke, G., Groff, A., Keefer, P., & Walsh, P. 2001. New tools in comparative political economy: The Database of Political Institutions. *World Bank Economic Review*, **15**, 165–176.

Block, S. 2002. Political business cycles, democratization and economic reform: The case of Africa. *Journal of Development Economics*, **67**, 205–228.

Blundell, R., & Bond, S. 1998. Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, **87**, 115–143.

Boix, C., & Strokes, S. C. 2007. *Comparative Politics.* Oxford University Press: Oxford.

Brender, A., & Drazen, A. 2005. Political budget cycles in new versus established democracies. *Journal of Monetary Economics*, **52**, 1271–1295.

Brody, R. 1991. *Assessing the President: The Media, Elite Opinion, and Public Support.* Stanford University Press: Stanford.

Buti, M., & van den Noord, P. 2003. *Discretionary fiscal policy and elections: The experience of the early years of EMU.* OECD Economics Department Working Paper. No. 351.

Cameron, D. R. 1978. The expansion of the public economy: A comparative analysis. *American Political Science Review*, **72**, 1243–1261.

Drazen, A. 2000. *The political business cycle after 25 years.* In: Bernanske, B. S., & Rogoff, K. S. (eds), NBER Macroeconomic Annual. MIT Press: Cambridge, MA.

Efthyvoulou, G. 2008. *Political cycles in a small open economy and the effect of economic integration: Evidence from Cyprus.* Birkbeck Working Papers in Economics and Finance. No. 808.

Franzese, R. J. 2000. *Electoral and Partisan Manipulation of Public Debt in Developed Democracies, 1956-1990.* In: Strauch R., & von Hagen, J. (eds), Institutions, Politics and Fiscal Policy. Dordrecht: Kluwer Academic Press.

Franzese, R. J. 2002. Electoral and partisan cycles in economic policy and outcomes. *Annual Review of Political Science*, **5**, 369–421.

Frey, B. S., & Schneider, F. 1978. An empirical study of politico-economic interaction in the United States. *The Review of Economics and Statistics*, **60**, 174–183.

Gonzalez, M. 2002. Do changes in democracy affect the political budget cycle? Evidence from Mexico. *Review of Development Economics*, **6**, 204–224.

Hibbs, D. 1977. Political parties and macroeconomic policy. *American Political Science Review*, **71**, 1467–1487.

Holmstrom, B. 1982. Moral hazard in teams. *Bell Journal of Economics*, **13**, 324–340.

Kiviet, J. 1995. On bias, inconsistency, and efficiency of various estimators in dynamic panel data models. *Journal of Econometrics*, **68**, 53–78.

Kraemer, M. 1997. *Electoral budget cycles in Latin America and the Caribbean: incidence, causes and political futility.* Inter-American Development Bank Working Paper. Washington, D.C.

Krueger, A., & Turan, I. 1993. *The politics and economics of Turkish policy reform in the 1980's.* In: Bates, R., & Krueger, A. (eds), Political and Economic Interactions in Economic Policy Reform: Evidence from Eight Countries. Basil Blackwell: Oxford.

Lewis-Beck, M. S. 1990. *Economics and Elections: The Major Western Democracies.* The University of Michigan Press: Michigan.

Lewis-Beck, M. S., & Stegmaier, M. 2007. *Economic Models of Voting.* In: Russell, D. & Hans-Dieter, K. (eds), The Oxford Handbook of Political Behavior. Oxford University Press: Oxford.

Lindbeck, A. 1976. Stabilization policy in open economies with endogenous politicians. *American Economic Review*, **66**, 1–19.

Mink, M., & de Haan, J. 2005. *Has the Stability and Growth Pact impeded political budget cycles in the European Union?* CESifo Working Paper. No. 1532.

Nickell, S. 1981. Biases in dynamic models with fixed effects. *Econometrica*, **49**, 1417–1426.

Nordhaus, W. 1975. The political business cycle. *Review of Economic Studies*, **42**, 169–190.

Perotti, R., & Kontopoulos, Y. 2002. Fragmented fiscal policy. *Journal of Public Economics*, **86**, 191–222.

Persson, T., & Tabellini, G. 1999. The size and scope of government: Comparative politics with rational politicians. *European Economic Review*, **43**, 699–735.

Persson, T., & Tabellini, G. 2000. *Political Economics: Explaining Economic Policy.* The MIT Press: Cambridge.

Persson, T., & Tabellini, G. 2002. *Do electoral cycles differ across political systems?* Working Paper No. 232. IGIER (Innocenzo Gasparini Institute for Economic Research), Bocconi University.

Persson, T., & Tabellini, G. 2003. *The Economic Effect of Constitutions: What do the Data Say.* The MIT Press: Cambridge.

Rivers, D. 1988. Heterogeneity in models of electoral choice. *American Journal of Political Science*, **32**, 737–757.

Rodrick, D. 1998. Why do more open economies have bigger governments? *Journal of Political Economy*, **106**, 997–1032.

Rogoff, K. 1990. Equilibrium political budget cycles. *American Economic Review*, **80**, 21–36.

Rogoff, K., & Sibert, A. 1988. Elections and macroeconomic policy cycles. *Review of Economic Studies*, **55**, 1–16.

Rojas-Suarez, L., Ganonero, G., & Talvi, E. 1998. *Economics and politics in Latin America: Will up-coming elections compromise stability and reform?* Global Emerging Markets Research. Deutsche Bank Securities.

Roodman, D. 2008. *A note on the theme of too many instruments.* Working Paper No. 125. Center for Global Development.

Schuknecht, L. 1996. Political business cycles and fiscal policies in developing countries. *Kyklos*, **49**, 155–170.

Shi, M., & Svensson, J. 2002. *Conditional political budget cycles.* CEPR Discussion Paper. No. 3352.

Shi, M., & Svensson, J. 2004. *Political budget cycles: A review of recent developments.* Mimeo.

Shi, M., & Svensson, J. 2006. Political budget cycles: Do they differ across countries and why? *Journal of Public Economics*, **90**, 1367–1389.

Tujula, M., & Wolswijk, G. 2004. *What determines fiscal balances? An empirical investigation in determinants of changes in OECD budget balances.* ECB Working Paper. No. 422.

von Hagen, J. 2003. *Fiscal discipline and growth in Euroland. Experiences with the Stability and Growth Pact.* ZEI Working Paper. No. B062003.

Warin, T., & Donahue, K. 2006. *The Stability and Growth Pact: A European answer to political budget cycles?* Middlebury College Economics Discussion Paper. No. 06-06.

Windmeijer, F. 2005. A finite sample correction for the variance of linear efficient two-step estimators. *Journal of Econometrics*, **126**, 25–51.