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Political cycle and fiscal policy in the countries of the European Union

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Abstract

The efforts of politicians in power to affect the decisions of voters through expansive fiscal policies in pre-election periods are still topical. This article determines whether governments in European Union countries initiate the political-budget cycle. We analyse 23 EU member states in the period 1995–2008. We pay attention to four institutional factors that can contribute to the creation of the political-budget cycle: length of democracy, type of parliamentary election, term of election and ideology. We find that the political-budget cycle was present throughout European Union countries in this period. The factor of the length of democracy had a small impact on the statistical significance of the results. However, ideology turned out to be the most important factor in our analysis. Current revenues were used as a tool of fiscal policy in the years of elections predominantly by ideologically mixed governments. Left-wing governments used rather the expenditure side of the budget to win the favour of the electorate. The type of election (regular or early) became relevant only in specific cases and in combination with other institutional factors. Finally, the new EU member governments consider the spring or autumn term of the election as a criterion co-determining their pre-election fiscal policies.

Keywords

Election, fiscal policy, ideology, political-budget cycle, state budget.

JEL Classification: H3, H6

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1. Introduction

Research into the political-budget cycle monitors the behaviour of governments and shows their tendency to succumb to short-run election objectives. The political-budget cycle is defined as the repeated misapplication of fiscal policy by governments striving for re-election. It is demonstrated by decreasing tax revenues or increasing public expenditures in election years, which can result in imbalances in state budgets (Person and Tabellini, 2000).

In the short run, such deliberate pre-election fiscal expansion can bring about serious disequilibrium in the economy. Growing aggregate demand results in product growth (decrease in unemployment) and growth in price levels. If the economy is governed by self-regulatory mechanisms of the market, production (and unemployment) will eventually return to their original higher-price levels. The real effect of expansive fiscal policy on the economy is then negligible. In the long run, repeated political-budget cycles can lead to governments being unable to avoid state budget deficits. These, consequently, contribute to the state's indebtedness, decrease national savings and give way to the crowding-out effect that negatively affects the economy's productivity.

Early theories on the political-budget cycle were published in the late 1980s (Rogoff and Sibert, 1988; Rogoff, 1990). These theories followed research into the political-economic cycle, whose task was to define relationships between the development of the main macroeconomic figures (inflation, unemployment and economic growth) and the behaviour of the electorate. The political-economic cycle was interpreted using the Phillips curve and carried out by means of monetary policy (Drazen, 2002). The digression from the use of the Phillips curve in theoretical models of the political-budget cycle was motivated by the acceptance of the rational expectations theory. New models (following the neoclassical tradition) were based on the utility function of the voter and the politician. In terms of real economic policy, the respective period was marked by the growing independence of the central banks. The role of governments in monetary policy diminished or became indirect. The only tool governments could use in their efforts to influence the economy was fiscal policy. Research into the political-budget cycle was consequently supported by a number of theoretical models and empirical analyses. The political-budget cycle was found in a number of countries with significantly different economic levels (Shi and Svensson, 2004), implementation of democratic principles (Brender and Drazen, 2004, 2006, 2007), mechanisms of the political system (Persson et al., 2003, 2006), fiscal policy efficiency (Alt and Lassen, 2003, Benito and Bastida, 2009) and fiscal policy enforcement tools (Rose, 2006; Mink and de Haan, 2005; Donahue and Warin, 2006).

Further to the above-mentioned research, we examine whether governments in European Union countries regularly initiate the political-budget cycle. Our empirical analysis is conducted using data obtained from a sample of 23 EU member states. Owing to the unavailability of relevant statistical data, Bulgaria, Cyprus, Malta and Romania are not included in the analysis. The research, focusing on the period 1995–2008, is based on the analysis of panel data using the country fixed effects model. It is further supplemented by the HAC covariance matrix estimation.

Our attention is also paid to institutional factors that may have contributed to the creation of the political-budget cycles in EU member states, specifically the following (and their combinations):

- Length of functioning of the democratic system (a new or a long-established democracy),
- Types of parliamentary elections (early or regular),
- Term of elections (spring or autumn),
- Political spectrum ideologies (right – centre – left).

Institutional factors are discussed in the second section of this paper. The third section describes the estimated model of the political-budget cycle. Its more specific characterisation according to state budget revenues and expenditures as well as the results of the analysis are included in section four. The conclusion of this paper summarises the most significant findings of our research.

2. Institutional factors

This section offers a closer look at the respective institutional factors that may have contributed to the creation of political-budget cycles in EU member states between 1995 and 2008. Our analysis is based on previous studies dealing with political-budget cycles (Brender and Drazen, 2004, 2006, 2007; Shi and Svensson, 2004; Persson et al., 2003; Mink and de Haan, 2005). However, these authors offer varying conclusions regarding institutional changes. What is more, EU member states were never included in the research in their complete number (preferences were given to more advanced economies) and the research often focused only on short-term data. Therefore, a thorough analysis of the political-budget cycle in EU member states for the past two decades is not included among the above-mentioned studies.

The choice of institutional factors secondly responds to the specifics of democratic political systems in Europe, which differ, among EU member states, by their length and state of development. The most typical form is that defined as a parliamentary democracy based on a proportional electoral system commonly producing governments made up of representatives of various political parties throughout the political spectrum. Governments elected on the basis of the proportional system tend to be more vulnerable than those elected by the majoritarian electoral system. The latter system gives the vote to one winning political party, which then takes control over absolute majority in the Lower House and is thus enabled to approve its bills. In this respect, the situation in Europe is more complicated, compared with the US where the political spectrum clearly defines the left from the right.

The choice of institutional factors is substantiated not only by the presentations of theoretical presumption of the research, but also by specific data illustrating their importance and/or attractivity.

The sample group of 23 EU member states used in this analysis of the political-budget cycle is treated either as a homogeneous unit or divided into two groups; old member states (member states prior to 2004) and new member states (with Malta and Cypress excluded from the sample, these are solely post-communist countries). The old member states in this model are regarded as well-established democracies, continually pursuing democratic principles for a number of decades. By contrast, the new EU member states have considerably shorter experience with the functioning of a democratic political system. After the fall of the communist regimes in the respective countries, people had to be newly brought to the rules and proceedings of the electoral system. The political scenes in these countries were marked by forming a political-party system and coming forth of the main political personalities. Brender and Drazen (2004) claim that it is precisely the electorate's inexperience that enables politicians to win their pre-election favour by means of populist policies. Proceeding from this theory, we assume that the political-budget cycle is typical of countries with short experience with democratic principles.[1]

In the context of the second institutional factor, we focus on the character of parliamentary elections. Only those elections that took place following the full term of office stipulated by the law in a respective country are considered to be regular parliamentary elections. EU member states traditionally define a term of office as a four-year, exceptionally five-year interval. The latter applies to France, Ireland, Italy, Luxemburg and Great Britain. Early elections are called when a government is unable to carry out its tasks and resigns prior to the expiration of its term of office. This may be caused by government coalition breakup, the loss of absolute majority in the Lower House or the passing of a vote of confidence. Of the 92 parliamentary elections taking place in EU member states between 1995 and 2008, as many as 22% were early.[2] This, over one-fifth, share testifies to a rather frequent political instability caused by vulnerable governments. At the same time, this share is sufficient to be used in our empirical analysis examining whether governments elected in regular elections exercise better opportunity to misapply fiscal policy for electoral purposes. This theory has already been researched into in studies by Shi and Svensson (2004) and Brender and Drazen (2004, 2006). Unfortunately, these authors did not reach any unambiguous results and were able to validate this theory only in combination with other institutional factors.

The third of the above-mentioned institutional factors analysed in previous studies of the political-budget cycle – term of elections – did not offer any more significant insight. The term 'spring elections' is

[1] Brender and Drazen (2004) analyse a sample of 106 democratic countries. In cases of the new EU member states, the study follows only a very short period between 1995 and 2001. This seven-year period includes two unfinished terms of office, which seriously limits the plausibility of the data used. The period between 1995 and 2008 used for the empirical analysis of this article presents a significantly longer timeline including 14 observations. Taking into account the fact that the new EU member states were unable to avoid early elections, the given time interval corresponds on an average of four terms of office.

[2] The data relating to parliamentary elections in this chapter were obtained and compiled from various sources: websites of the statistical offices of the respective EU countries, specialised websites Election Resources on the Internet (2011), the European Election Database (2011) and other literature (Cabada et al., 2004; Strmiska et al., 2005).

used for parliamentary elections taking place between January and June of the respective year, while autumn elections take place between September and December. If we consider the delay connected with the implementation of fiscal policy, governments facing upcoming spring elections may be tempted to manipulate fiscal policy in the year preceding the elections. The autumn election term offers enough time for governments to alter their fiscal policies in the course of the election year. Therefore, we assume that the spring term forces governments to carry out fiscal expansion in the year preceding elections. In the analysed period of 1995–2008, EU member states ran 53 parliamentary elections in the spring term (of which 40 were in the old and 13 in the new member states). The autumn term was less frequent, and it showed an almost identical share between the old and the new member states (21:18). The higher occurrence of spring parliamentary elections in EU member states presents a luring opportunity to prove the above-mentioned theory right.

The fourth factor included in our analysis of the political-budget cycle relates to various ideologies pursued by national governments. So far, ideology as a factor of the political-budget cycle has not been researched enough. The authors of previously published empirical studies worked usually with the hypothesis that governments propose and carry out opportunistic actions. Nevertheless, ideology is regarded as an influential tool differentiating parties of the political spectrum in pre-election campaigns. Ideology can be defined as a set of opinions, beliefs and moral stands that, in the real world, transform into specific goals of economic policies, and as such are presented by politicians to their potential electorate (Heyweed, 1994). The simplest view of the political spectrum offers two sides; the left wing and the right wing. However, a closer look at the constitutions of governments in EU member states shows that out of the 117 governments appointed between 1995 and 2008, 75% were made up of two or more political parties. With regard to the varied representation of political parties in coalition governments, our study divides governments into three categories – right wing, left wing and ideologically mixed.[3] According to this, EU member states were, in the given period, led by 43 right-wing, 37 left-wing and 32 ideologically mixed governments.[4] The terms of office of these governments were relatively well-proportioned, which offers evidence of the regular power changes of various political ideologies.

Right-wing, left-wing and mixed governments prefer different tools of their respective fiscal policies depending on their ideologies. Therefore, we assume that right-wing governments, which focus more on high-income voters, tend to lower taxes in the pre-election period and the lower tax rate consequently negatively affects state revenues. By contrast, left-wing governments tend to increase state expenditures, namely social transfers and subsidies made available, especially for low-income citizens, who usually incline to left-wing ideology. The pre-election fiscal preferences of ideologically mixed governments are difficult to precisely determine. The ideological variability of represented political parties in a coalition government can either boost or lessen their tendency to misapply fiscal policy in the pre-election period.

Using an empirical model of the political-budget cycle, we work with the following four institutional presumptions (or their combinations):

1. The political-budget cycle is typical of countries with a short democratic history.
2. Governments have a better possibility to misapply fiscal policy for the sake of their election campaigns provided the parliamentary elections are held as regular.
3. Parliamentary elections held in the spring term motivate governments to misapply fiscal policy in the year preceding the elections.
4. Right-wing governments tend to win the favour of the electorate by lower taxation, which might lead to decreases in tax revenues in the election year. Left-wing governments offer the electorate social allowances, which creates a burden on the state budget.

Institutional factors are dealt with in the estimated model of the political-budget cycle as a part of the dummy election variable. Its contents as well as the relevance of the other variables are discussed in the following section.

3. The basic model of the political-budget cycle

The methodology used in our empirical study of the occurrence of the political-budget cycle in EU countries is based on the studies by Shi and Svensson (2004) and Brender and Drazen (2004). These studies are connected and their authors work with a substantial sample of countries. The development in these countries is observed from a macroeconomic point of

[3] The ideology-based categorisation of governments can be further detailed as right-wing coalition governments made up of right and centre-right parties and left-wing coalition governments made up of left and centre-left parties, while ideologically mixed governments are coalitions representing the entire political spectrum. The respective party's ideology is regarded according to their officially declared political views, not on the basis of their real implemented policy.

[4] In addition, there were five caretaker governments.

view in terms of the choice of variables and econometric methods. Our study applies a similar approach, though in a broader (modified) form.

Our empirical analysis is not carried out on all 27 EU countries. Owing to the nonexistence of relevant statistical data, four countries – Bulgaria, Cypress, Malta and Romania – cannot be included. In the case of the two Mediterranean countries, the missing data refer to, for example, the number of public sector employees, which is used in the model as an explanatory variable. In Bulgaria and Romania, the post-communist transformation process was slow and therefore international organisations provide consistent timelines of statistical data only as of the beginning of the new millennium.

The period in focus in our study is 1995–2008 (i.e. a timeline of 14 observations). Extending the timeline deeper into the early 1990s is impossible due to the transformation processes taking place then in post-communist countries. Furthermore, it is not very likely that governments, busy with carrying out fundamental political and economic measures, would tend to misapply fiscal policy for election purposes. Including the 2009–2010 period is similarly impossible due to the unavailability of some data, not yet released by the respective international agencies.

The timeline is shortened by one observation for reasons of the conversion of data to differences of logs, i.e. their growth rate. This should help eliminate problems resulting from presenting data in the respective national currencies as well as their trend components.

Shi and Svensson (2004) and Brender and Drazen (2004) base their estimations of the political-budget cycle models on the GMM method (Generalised Method of Moments). This method is used for estimating dynamic linear panel data models that include the lagged value of the dependent variable. The use of this variable, however, did not bring expected results in EU member states (see Doležalová, 2011). For this reason, this variable is not included in our model and its estimation is conducted by means of the OLS method (Ordinary Least Squares). The analysis of panel data using the OLS method considers the country fixed effects, which is a variable impossible to observe directly and which changes only over a very long time perspective. This variable differs in each country (e.g. density of social care, structure of the economy or international liabilities). The analysis is further supplemented by the HAC estimation based on the correlation of significant standard deviations. This estimation is used when the number of countries analysed in the model exceeds the number of time observations. Its function is to eliminate problems resulting from the presence of heteroscedasticity or autocorrelation in the set of analysed data (Arellano, 2003).

The estimated model of the political-budget cycle is

$$y_{it} = \sum_{j=1}^{n} \beta_j x_{it} + \gamma elec_{it} + \alpha_i + \varepsilon_{it}, \quad (1)$$

where y_{it} is the dependent variable of the model. The subscript i always refers to a country and t to a time period (i.e. a calendar year). x_{it} stands for a set of control variables and $elec_{it}$ for a dummy election variable. β_j and γ are estimated regression coefficients. The detection of the political-budget cycle is conditioned by the statistical significance of the regression coefficient of the election variable ($elec_{it}$). The estimated fixed effects for the respective countries are included in α_i. Errors occurring in the analysis are accounted for by ε_{it}.

Contrary to Brender and Drazen (2004), whose study worked with total figures (i.e. total state budget revenues, expenditures and balances), the data obtained from the Eurostat statistical database allow us to carry out a deeper analysis. The specification of the dependent variable y_{it} enables the identification of various types of revenues and expenditures of the state budgets in EU countries that may be subject to election cycles. The total figures are lowered by the deduction of capital ones and thus we reach figures for current revenues and expenditures, which are used in our analysis as the dependent variable. Capital revenues and expenditures make up only a small part of the state budget's total figures. Furthermore, we assume that they are not, by definition, used by governments in their election campaigns. The process of specification is carried out separately in terms of the revenues and expenditures of state budgets. The figure of the dependent variable successively represents individual and household income tax revenues, corporate income tax revenues[5], public sector salaries and social expenditures. The meaning of the individual dependent variables is specified in the respective model estimates (see text below).

The set of explanatory variables x_{it} is broader than in the studies by Shi and Svensson (2004) and Brender and Drazen (2004). Similar to their studies, our study also includes the output gap and demographic factors. Newly included variables represent the implicit tax

[5] The analysis does not include indirect tax, specifically VAT, although its reduction would influence a significant number of the electorate. This tax amounts to 31% of the total tax revenues' average in EU member states (the figure for individual and household income tax revenues is 19% and for corporate income tax revenues only 7%). VAT is also less susceptible to changes in the economic cycle (European Commission, 2005). A possible loss of this revenue caused by the election cycle might seriously affect the state budget balance.

rate, the economically active population and the number of public sector employees. Variables such as the openness of the economy are used only in special cases and with different interpretations from those in previous studies (Persson and Tabellini, 2003).

The dummy variable $elec_{it}$ in our model of the political-budget cycle is 1 for the year of the elections and 0 for all other years. In estimating this variable, we also consider which of the institutional factors (or their combinations) is being analysed. If the analysis focuses on the influence of regular elections on the government's fiscal policy, elections held in the regular term are marked as 1, while 0 stands for early elections and all non-election years. In order to distinguish between spring and autumn election terms, the spring term is 1 for the year preceding the elections, but for the autumn term 1 is used for the election year. The 1 and 0 system also make it possible to distinguish between different governments' ideologies.[6] If our analysis is to include only right-wing governments, 1 is used for elections taking place at the end of a right-wing government's term and other years are marked 0. The same is applied when analysing only left-wing or ideologically mixed governments. Thus, the dummy election variable ($elec_{it}$), becomes the key variable in our model.

The data used in our analysis of the political-budget cycle come from the statistical databases of Eurostat, IMF, OECD and ILO. For determining the character and term of the elections and dividing various governments according to their ideologies, we draw from the World Bank's political institutions database (Beck et al., 2010), special websites accumulating data relating to parliamentary elections (Election Resources on the Internet, 2011; European Election Database, 2011), websites of the respective national statistical offices and other sources (Cabada et al., 2004; Strmiska et al., 2005).

The determination of the ruling ideology of a respective political party is rather complicated. The obtained data must be cross-checked in order to verify their credibility.

4. The specification of models of the political-budget cycle and their empirical results

Now, we describe the individual models of our analysis, including explanations of the respective variables and presentations of the observed results.[7]

4.1 State budget revenues

In the following subsections, we estimate the models of the political-budget cycle with specific state budget revenues as the dependent variable.

4.1.1 Current revenues of the state budget as the dependent variable

This is our first estimated model of the political-budget cycle for state budget revenues:

$$ld\_cur\_rev_{it} = \beta 1\ gap_{it} + \beta 2\ ld\_\ itr_{it} + \beta 3\ ld\_ea\_pop_{it} + \\ + \gamma\ elec_{it} + \alpha i + \varepsilon_{it}, \quad (2)$$

The dependent variable $ld\_cur\_rev_{it}$ refers to the current revenues of the state budget. The subscript i relates to a country, while the subscript t to a year. The abbreviation *ld*, preceding the variables, stands for data transformation using the difference of logs, i.e. their conversion to a growth rate. The first explanatory variable is the output gap (gap_{it}), whose task is to detect the influence of changes in the economic cycle on the dependent variable. In periods of economic growth, governments usually manage to collect higher-than-expected tax, whereas recession periods are marked by the contrary trend. Another explanatory variable is the implicit tax rate (ld_itr_{it}), expressing the actual tax burden per workforce in each EU country. As defined by the Laffer curve, if the implicit tax rate is in the curve's left part, its growth will generate an increase in the state budget revenues total. The $ld\_ea\_pop_{it}$ variable refers to changes in the economically active population. Increases and decreases in the number of working-age people mean changes in the largest group of potential taxpayers. The last explanatory variable is the dummy election variable ($elec_{it}$), whose parameters are defined by the key described in section 3. The model is further supplemented by an estimated fixed effect for each of the countries (α_i) and a variable for possible errors occurring in the analysis (ε_{it}).[8]

The results of our model for the old EU member states showed a close connection between the implicit tax rate (ld_itr_{it}) and current revenues of state budgets. Growth in the implicit tax rate (ld_itr_{it}) led in the old EU member states increasing the growth rate of the current revenues of state budgets. By contrast, in the new EU member states, the statistical significance of the output gap regression coefficient (gap_{it}) showed

[6] For ideology-based categorisation, see footnote no. 5.

[7] Owing to the very large scale of the analysis, only data relating to the dummy election variable suggesting a government's potential tendency to initiate the political-budget cycle are included. A summary of these results is presented in Tables 1–6 in the Appendix. As for the other explanatory variables, only the most interesting ones are mentioned. Complete results of the estimated model of the political-budget cycle in EU member states can be obtained from the author of this study upon request.

[8] Owing to the absence of data relating to the implicit tax rate variable (ld_itr_{it}), Greece was not included in the analysis.

a very sensitive correlation between taxation and changes in the economic cycle. The analysis of the election variable ($elec_{it}$) did not detect any influence of parliamentary elections on current revenues in any analysed set of EU member states. The same findings, referring to the election variable ($elec_{it}$), were also obtained after removing the factor of early elections from the analysis (see Table 1 in the Appendix).

The estimated model of the political-budget cycle offered interesting results when the analysis of the election variable ($elec_{it}$) included government ideology. The election variable regression coefficient ($elec_{it}$) was assessed as statistically significant for ideologically mixed governments in both the old and the new EU member states (see Table 1 in the Appendix). Reducing the sample to only regular terms of parliamentary elections provided significant findings, with higher statistical significance of the election variable regression coefficient ($elec_{it}$) in the new EU member states. The growth rate in current revenues in election years under ideologically mixed governments was 25% slower compared with the 1995–2008 period's average.

A thorough estimation model including both spring and autumn election terms again proved a trend according to which ideologically mixed governments in the new EU member states tend to reduce the growth rate in current revenues in election years. Identical findings were obtained from the models including both terms as well as only the regular terms of parliamentary elections (see Table 1 in the Appendix). To put it in other words, in cases of spring election terms, ideologically mixed governments in the new EU member states carried out changes in their fiscal policies in the year preceding the elections, trying to win more space for the implementation of these changes as well as the favour of the electorate.

On the basis of the obtained results, we can state that the division of EU member states into old and new ones was not relevant to respective governments' motivation to carry out pre-election fiscal expansion. What did turn out to be of significance in this respect was their ideologies. The findings showed that ideologically mixed governments decreased the growth rate in current revenues, which was even more perceptible when parliamentary elections were held in their respective countries in regular terms. Governments in the new EU member states even followed a preparation strategy, i.e. they carried out changes to fiscal policy in the year preceding the elections. The causes of such behaviour can be found in the strength and ideology of competing political parties. The frequent accession of right-wing governments replacing ideologically mixed governments indicates that election campaigns allowed for the very probable implementation of right-wing policy. These are mostly characterised by a reduction of the tax burden.

4.1.2 Taxes on individual and household income as the dependent variable

Another estimated model for the state budget revenues is formulated as follows:

$$ld\_pers\_tax\_rev_{it} = \beta 1\ gap_{it} + \beta 2\ ld\_ea\_pop_{it} + \\ + \gamma\ elec_{it} + \alpha_i + \varepsilon_{it}, \quad (3)$$

where $ld\_pers\_tax\_rev_{it}$ stands for the difference in the logs of individual and household income tax revenues in country i at time t. Contrary to the previous model (2), this logarithm does not include the implicit taxation rate variable (ld_itr_{it}), as this variable also considers, in addition to individual and household income tax, other types of taxes. The narrow specification of the model's dependent variable does not regard the implicit taxation rate as a suitable component. The functions of the other dependent variables remain the same.

This model showed a statistically significant decrease in the growth rate in individual and household income tax revenues in election years only in the old EU member states (see Table 2 in the Appendix). The focus on ideological orientation surprisingly showed that it applied especially to left-wing governments (Germany, France, Spain and Sweden). The new EU member states showed the opposite trend. In election years, left-wing governments in the new member states increased the growth rate in individual and household income tax revenues by 27% compared with the 1995–2008 period's average. These increased tax revenues were to cover significant increases in public expenditures in election years (namely in Lithuania and Hungary, see subsection 4.2).

The term of elections (spring or autumn) did not influence the statistical significance of the election variable regression coefficient ($elec_{it}$) in any of the analysed countries. When our model excluded early elections, the regression coefficient showed statistical significance in cases of ideologically mixed governments in the old EU member states.

4.1.3 Taxes on the income or profits of corporations as the dependent variable

The last estimated model of the political-budget cycle for the state budget revenues in EU member states is

$$ld\_corp\_tax\_rev_{it} = \beta 1\ gap_{it} + \beta 2\ ld\_ex\_im\_gdp_{it} + \\ + \gamma\ elec_{it} + \alpha_i + \varepsilon_{it}, \quad (4)$$

where $ld\_corp\_tax\_rev_{it}$ stands for the difference in the logs of corporate income tax revenues in country i at time t. The explanatory variables again include the output gap (gap_{it}), focusing on the influence of the economic cycle on the amount of corporate income tax revenues. A new explanatory variable

($ld\_ex\_im\_gdp_{it}$) stands for the share of the export import total in GDP, i.e. the openness of the economy. Our presumption is that the more open an economy is, the more business opportunities there are for corporations and consequently, their higher profits result in higher taxes. The other explanatory variables include the dummy election variable ($elec_{it}$), the country fixed effect variable (α_i) and the error variable (ε_{it}).

The positive influence of the openness of the economy ($ld\_ex\_im\_gdp_{it}$) on corporate income tax revenues was detected in the old member states. As for the new member states, statistical significance was discovered in the output gap regression coefficient (gap_{it}). This, again, proved a higher degree of influence of tax revenues amount on the development of the economic cycle in these countries. A significant connection between parliamentary elections and a decrease in the growth rate of corporate income tax was not discovered in any of the analysed countries (see Table 3 in the Appendix). When early elections were excluded from the analysis, the results remained unchanged.

A model of the political-budget cycle including political ideology brought minus figures and a 5% statistical significance to the election variable regression coefficient ($elec_{it}$) for ideologically mixed governments in the old EU member states (see Table 3 in the Appendix). In the new EU member states, the same regression coefficient became significant for left-wing governments, noting a 69% increase in the growth rate of corporate income tax revenues compared with the 1995–2008 period's average. These results remained unchanged even when only regular elections were used for the analysis, and similarly when the analysis considered the spring and autumn election terms individually.

The P-values of the F tests in Table 3 signal that the estimated model of the political-budget cycle with taxes on the income or profits of corporations as the dependent variable as a whole proved to be statistically significant only for the new EU member states. In the other analysed groups of countries (or governments), the selected explanatory variables failed in proving a strong enough influence on the dependent variable. Therefore, only those findings proving an increased growth rate in corporate income tax revenues under left-wing governments in the new EU member states can be considered to be relevant.

4.2 State budget expenditures

Now, we examine three specific models of the political-budget cycle with state budget expenditures as the dependent variable.

4.2.1 Current expenditures of the state budget as the dependent variable

Our estimated model is

$$ld\_cur\_exp_{it} = \beta 1\ gap_{it} + \beta 2\ ld\_dem\_p_{it} + \\ + \beta 3\ ld\_pub\_emp_{it} + \beta 4\ ld\_child_{it} + \\ + \gamma\ elec_{it} + \alpha_i + \varepsilon_{it}, \quad (5)$$

where the dependent variable of the difference in the logs of current expenditures in country i at time t is marked as $ld\_cur\_exp_{it}$. Similar to previous models, the first explanatory variable is the output gap (gap_{it}). Public expenditures connected with unemployment are typically very susceptible to changes in the economy. The second explanatory variable is the number of inhabitants older than 65 years of age ($ld\_dem\_p_{it}$). An increase in the number of old-age-pension inhabitants creates negative pressure on public expenditures and the same applies to increases in the number of public sector employees (and consequently their salaries) ($ld\_pub\_emp_{it}$). The explanatory variable (ld_child_{it}) refers to the number of children up to six years of age. This age group represents the most (financially) demanding period of a child's life involving the payment of a birth grant, maternity leave benefits and other kinds of social payments. We presume that growth in the number of this age group contributes to increased public expenditures of the state budget. The values of the election variable ($elec_{it}$) again depend on the relevant focus of the analysis. The model also includes the country fixed effect variable (α_i) and the error variable (ε_{it}).

The output gap (gap_{it}) regression coefficient became positive and very statistically significant in all analysed countries. This finding pointed to the fact that although the economies in EU countries were growing, the growth rate in their current expenditures was increasing as well. Therefore, fiscal policy in EU member states was in favour of cyclical development. In the old member states, the growth rate in current expenditures was driven by increases in public sector employment ($ld\_pub\_emp_{it}$). The proliferating bureaucracy exercised pressure on increases in public sector salaries and a similar effect was recorded in the growing number of preschool age children (ld_child_{it}). In the new EU member states, these explanatory variables (as well as the one including the number of inhabitants over 65 years of age) did not show any statistically significant influence.

Our analysis discovered that the ($elec_{it}$) regression coefficient proved to be very statistically significant in all analysed countries (see Table 4 in the Appendix). In the old member states, the growth rate in current expenditures in election years increased by 19% and in the new ones by 15% compared with the 1995–2008 period's average. Government attitude towards

current expenditures in election years was practically the same in both the analysed groups of countries. The analysis showed that governments throughout the entire EU misapply public expenditures for their election campaigns regardless of the term of elections (regular or early). The focus on ideology further showed that pre-election fiscal expansion was more typical of left-wing governments. In the case of left-wing governments in the new EU member states, the regression coefficient remained statistically significant even when the factor of spring or autumn elections was considered.

4.2.2 Public sector salaries as the dependent variable

The second estimated model focusing on current expenditures as the dependent variable is

$$ld\_comp\_emp_{it} = \beta 1\ gap_{it} + \beta 2\ ld\_pub\_emp_{it} + \\ + \gamma\ elec_{it} + \alpha_i + \varepsilon_{it}, \quad (6)$$

where the dependent variable $ld\_comp\_emp_{it}$ stands for the difference in the logs of expenditures connected with the payment of salaries and bonuses to people employed in the public sector in country i at time t. Contrary to the previous model (5), the first explanatory variable of the output gap (gap_{it}) has a positive correlation with the dependent variable. With regard to the dependent variable, the model also includes as explanatory variables the number of public sector employees ($ld\_pub\_emp_{it}$) and the dummy election variable ($elec_{it}$).

Governments' tendency to repeatedly increase salaries in the public sector in election years was confirmed in all 23 analysed EU countries (see Table 5 in the Appendix). The significance of this result further increased when only regular parliamentary elections were used in the model. By contrast, the term of elections (spring or autumn) did not bring about any changes to our analysis. In other words, governments in EU countries tried to win the pre-election favour of the public sector-employed electorate by means of higher salaries or bonuses mainly in election years. The division into old and new member states showed that the election cycle in the old member states did not exercise any significant influence on the development of the dependent variable. Personnel policy was used in their pre-election campaigns mainly by governments in the new EU member states. The election variable regression coefficient ($elec_{it}$) in these countries was at 1% significance. The growth rate in public sector salaries in election years in the new member states increased by 23% compared with the 1995–2008 period's average. At the same time, economic development in these countries was conditioned by the political ideology of the respective governments. The weak statistical significance of the election variable regression coefficient ($elec_{it}$) was found in left-wing governments and when early elections were excluded from the model, as well as in ideologically mixed governments. Left-wing governments also retained the statistical significance of the election variable ($elec_{it}$) when the term of elections was particularised. On the basis of the above, we can state that the estimation model focusing on public sector salaries as the dependent variable showed more significant results when EU member states were divided according to the length of the functioning of the democratic principle rather than according to their respective governments' ideologies.

4.2.3 Social expenses as the dependent variable

The last model of the political-budget cycle is

$$ld\_soc\_ben\_tranf_{it} = \beta 1\ gap_{it} + \beta 2\ ld\_dem\_p_{it} + \\ + \beta 3\ ld\_child_{it} + \gamma\ elec_{it} + \alpha_i + \\ + \varepsilon_{it}, \quad (7)$$

where the dependent variable $ld\_soc\_ben\_tranf_{it}$ stands for the difference in the logs of social expenditures in country i at time t. Social expenditures consist of social benefits and transfers. In addition to the output gap (gap_{it}), the model includes two demographic variables ($ld\_dem\_p_{it}$, ld_child_{it}) and a dummy election variable ($elec_{it}$). Their respective meanings, presented in subsection 4.2.1, remain unchanged.

The findings of our analysis show that regardless of the economic cycle, EU member states recorded growing financial demands in their social systems. The new member states also showed higher growth rates in social expenditures despite their lower birth rate figures.

The analysis discovered strong statistical significance for the election variable regression coefficient ($elec_{it}$) in all 23 analysed countries (see Table 6 in the Appendix). In election years, the growth rate in social expenditures increased by 15% compared with the 1995–2008 period's average. In the old member states, the election variable regression coefficient ($elec_{it}$) proved to be very statistically significant, while in the new member states, the variable was only weakly significant. In the latter group of countries, the statistical significance of the model as a whole was lost. Statistical significance was not reached even by the more significant results obtained when early elections were excluded from the analysis. However, it should be noted that the growth rate in social expenditures (expressed as a percentage) in the new member states was higher than that in the old member states.

The point of view of government ideology offered unambiguous results. In all analysed countries, the trend to increase the growth rate in social expenditures in election years was typical of left-wing governments (see Table 6 in the Appendix). Pre-election fiscal

expansion was more apparent in the new member states (63% compared with the 1995–2008 period's average) than in the old member states (18%). Among the new member states, this applied especially to the left-wing governments in Lithuania, Hungary, Poland, the Czech Republic and Slovenia. The average growth rate in social expenditures in election years in Lithuania was 22%. The types and terms of elections did not bring about any considerable changes to the results of the model, except for the election variable regression coefficient ($elec_{it}$) for left-wing governments in the new member states, which remained statistically significant for all terms of elections (including both regular and early). The results of our analysis proved that social expenditures represent an important tool used by left-wing governments in the new EU member states in their pre-election campaigns in order to influence the electorate.

4.3 Summary

Our analysis detected the political-budget cycle on both the revenue and the expenditure sides of the state budget in EU member states. Models grouping countries according to the length of the functioning of the democratic system failed to prove the influence of elections on a decrease in the growth rate in current revenues in any of the analysed countries. A more detailed modification based on household income tax revenues as the dependent variable showed the statistical significance of the regression coefficient only in the old EU member states.

The analysis did not prove expectation 4, stating a tendency of right-wing governments to purposefully lower taxes and thus contribute to a decrease in (tax) revenues in election years. This assumption, surprisingly, proved right for ideologically mixed governments. A decrease in the growth rate in current revenues in election years under ideologically mixed governments was recorded in all EU member states. This finding became significant when the analysis included only regular elections (which verified expectation 2). Regular elections provided governments with more space to misapply fiscal policy for election purposes. In the old member states, ideologically mixed governments' policies contributed to a decrease in household income tax revenues. The analysis also proved the tendency of left-wing governments in the new member states to increase the growth rate in current revenues in election years.

The findings presented in section 4.2 make us believe that these revenues were used by the respective governments to carry out their expansive fiscal policies in order to prevent significant worsening in the state budget balance. An increase was recorded in both household and corporate income tax revenues. However, the statistical significance of their regression coefficients shows that left-wing governments' populist pre-election policies were funded primarily by corporate tax revenues (see the increase in these revenues compared with the 1995–2008 period's average, which was 27% for household income tax revenues and 69% for corporate income tax revenues). In other words, increasing social expenditures in an effort to win the election preferences of low-income voters by left-wing governments in the new EU member states was done at the expense of corporate profits.

In all the analysed countries, we recorded a trend to increase the growth rate in current expenditures in the year of the elections, regardless of their regular or early term. The specific term of elections (spring or autumn) did not prove to be a significant factor influencing the development of current expenditures. Similar results were obtained in a model using social expenditures as the dependent variable. Models using public sector salaries as the dependent variable showed that governments in the new EU member states abused this factor in their pre-election campaigns. These findings could be summarised into a statement claiming that in the old EU member states, governments primarily used social expenditures to win their electorates' favour. The highest growth rate in social expenditures in the year of elections was recorded in southern European countries (namely Portugal, Greece and Spain) and in Ireland. In the new EU member states, in election years, governments increased public sector salaries (growth by 23% compared with the 1995–2008 period's average) as well as social expenditures (17%). In both these cases, the high growth rate in state expenditures applied mainly to Baltic countries and Hungary.

Another, more detailed, view of the government tendency to initiate the political-budget cycle came from analysing political ideology. Models working with current expenditures and social expenditures as dependent variables brought about identical results. The growth rate in these types of expenditures typically increased under left-wing governments. The statistical significance of the election variable regression coefficient was, in this case, discovered in all analysed countries; yet, it was considerably higher in the new member states compared with the old ones. Specifically, the growth rate in social expenditures in the years of elections in the new member states increased (compared with the 1995–2008 period's average) by 63%, whereas in the old member states, the figure was a mere 18%. Among the new member states, the governments of Lithuania, Hungary and Poland contributed to the figures, while in the old member states, these were Portugal, Greece and Spain. A model with public sector salaries as the dependent variable showed trends towards populist policy in the

new member states. These findings confirmed the second part of expectation 4, stating that left-wing EU member states' governments increased social expenditures and public sector salaries in the years of elections and thus intensified government expenditures.

5. Conclusion

Our analysis of the political-budget cycle proved that in the 1995–2008 period this phenomenon was present throughout the entire EU. The factor of the length of adherence to democratic principles did not prove to be of serious significance, but government political ideology turned out to be an important factor commanding respective governments to misapply fiscal policy in election years. Current revenues were used as a tool of fiscal policy in the years of elections predominantly by ideologically mixed governments, while left-wing governments used rather the expenditure side of the budget to win the favour of the electorate. The type of election (regular or early) turned out to be of significance only in specific cases and in combination with other institutional factors. In particular, the new EU member states considered the term of upcoming elections to be a criterion co-determining their pre-election fiscal policy, which was exemplified by their tendency to carry out fiscal expansion (both on the revenue and on the expenditure sides) in the year preceding the spring term of elections.

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Appendix

Table 1 The estimated model of the political-budget cycle with current revenues of the state budget as the dependent variable

Parliamemtary election												
Variables	*all states*				*old member states*				*new member states*			
	governments in power				*governments in power*				*governments in power*			
	all	right	left	mixed	*all*	right	left	mixed	*all*	right	left	mixed
EL_ALL_it	–0.003	–0.004	0.006	–0.008	–0.006	–0.001	–0.006	*–0.008***	0.003	–0.003	*0.031**	*–0.018***
	(0.004)	(0.007)	(0.012)	(0.007)	(0.006)	(0.005)	(0.012)	*(0.003)*	(0.007)	(0.018)	*(0.016)*	*(0.008)*
R^2	0.40	0.40	0.40	0.40	0.35	0.35	0.35	0.35	0.20	0.20	0.22	0.21
P-value (F)	1.6E–17	1.6E–17	1.5E–17	1.4E–17	3.1E–09	5.6E–09	4.4E–09	4.5E–09	0.03	0.03	0.02	0.02
DW test	1.07	1.07	1.07	1.07	1.61	1.60	1.62	1.59	0.84	0.84	0.92	0.86
EL_REG_it	0.001	0.000	0.007	*–0.013**	0.002	*0.010**	–0.006	*–0.010****	0.002	–0.003	*0.031**	*–0.026****
	(0.005)	(0.009)	(0.013)	*(0.007)*	(0.008)	*(0.006)*	(0.015)	*(0.005)*	(0.007)	(0.018)	*(0.016)*	*(0.008)*
R^2	0.40	0.40	0.40	0.40	0.35	0.35	0.35	0.35	0.20	0.20	0.22	0.21
P-value (F)	1.8E–17	1.8E–17	1.5E–17	1.0E–17	5.5E–09	3.7E–09	4.7E–09	4.0E–09	0.03	0.03	0.02	0.02
DW test	1.07	1.07	1.07	1.06	1.60	1.62	1.62	1.59	0.84	0.84	0.92	0.84
EL_ALL_TERM_it	0.004	0.002	0.006	0.002	0.002	0.005	–0.005	*0.007**	0.006	0.001	0.030	*–0.012**
	(0.005)	(0.008)	(0.011)	(0.005)	(0.007)	(0.006)	(0.013)	*(0.005)*	(0.007)	(0.023)	(0.019)	*(0.006)*
R^2	0.40	0.40	0.40	0.40	0.35	0.35	0.35	0.35	0.20	0.20	0.22	0.20
P-value (F)	1.5E–17	1.7E–17	1.5E–17	1.7E–17	5.4E–09	4.8E–09	4.7E–09	4.6E–09	0.03	0.03	0.02	0.03
DW test	1.07	1.07	1.08	1.07	1.60	1.61	1.60	1.59	0.85	0.84	0.93	0.84
EL_REG_TERM_it	0.005	0.008	0.006	–0.001	0.005	*0.017****	–0.006	0.007	0.006	0.001	0.030	*–0.019***
	(0.004)	(0.009)	(0.012)	(0.006)	(0.007)	*(0.005)*	(0.013)	(0.005)	(0.007)	(0.023)	(0.019)	*(0.008)*
R^2	0.40	0.40	0.40	0.40	0.35	0.36	0.35	0.35	0.20	0.20	0.22	0.20
P-value (F)	1.3E–17	1.4E–17	1.5E–17	1.8E–17	4.0E–09	1.6E–09	4.6E–09	4.8E–09	0.03	0.03	0.02	0.02
DW test	1.08	1.07	1.08	1.07	1.60	1.64	1.60	1.59	0.86	0.84	0.93	0.82
Observations	286	286	286	299	182	182	182	182	104	104	104	104
Countries	22	22	22	22	14	14	14	14	8	8	8	8
Years	13	13	13	13	13	13	13	13	13	13	13	13

Note 1: Owing to the very large scale of the analysis. only data relating to the dummy election variable are included. Complete results of the estimated model of the political-budget cycle in EU member states can be obtained from the author of this study upon request.
Note 2: Abbreviations of dummy variable:
EL_ALL_it (all parliamentary elections)
EL_REG_it (regular parliamentary elections)
EL_ALL_TERM_it (all parliamentary elections including spring and autumn election terms)
EL_REG_TERM_it – (regular parliamentary elections including spring and autumn election terms)
Note 3: Owing to the absence of data relating to the implicit tax rate variable (ld_itr_{it}). Greece was not included in the analysis.

Table 2 The estimated model of the political-budget cycle with taxes on individual and household income as the dependent variable

Parliamemtary election												
Variables	*all states*				*old member states*				*new member states*			
	governments in power				*governments in power*				*governments in power*			
	all	right	left	mixed	*all*	right	left	mixed	*all*	right	left	mixed
EL_ALL_it	0.002	–0.010	–0.004	0.015	*–0.009**	–0.011	*–0.018***	0.009	0.020	0.005	*0.027**	0.007
	(0.007)	(0.009)	(0.009)	(0.016)	*(0.005)*	(0.009)	*(0.007)*	(0.019)	(0.015)	(0.019)	*(0.016)*	(0.020)
R^2	0.22	0.22	0.22	0.22	0.17	0.17	0.18	0.17	0.19	0.18	0.18	0.18
P-value (F)	5.5E–06	4.6E–06	5.4E–06	4.1E–06	0.01	0.01	0.00	0.01	0.03	0.04	0.03	0.04
DW test	1.33	1.32	1.32	1.34	1.42	1.42	1.44	1.44	1.35	1.31	1.35	1.32
EL_REG_it	–0.003	–0.009	–0.004	0.003	*–0.012***	–0.010	*–0.019**	0.001	0.013	0.005	*0.027**	–0.012
	(0.006)	(0.012)	(0.011)	(0.013)	*(0.006)*	(0.013)	*(0.010)*	(0.015)	(0.011)	(0.019)	*(0.016)*	(0.016)
R^2	0.22	0.22	0.22	0.22	0.18	0.17	0.18	0.17	0.18	0.18	0.18	0.18
P-value (F)	5.4E–06	5.0E–06	5.4E–06	5.5E–06	0.01	0.01	0.00	0.01	0.04	0.04	0.03	0.04
DW test	1.32	1.33	1.32	1.33	1.45	1.43	1.45	1.43	1.33	1.31	1.35	1.31
EL_ALL_TERM_it	0.007	–0.005	0.006	0.013	–0.003	–0.002	–0.001	–0.007	0.021	0.000	0.021	0.022
	(0.006)	(0.010)	(0.008)	(0.013)	(0.004)	(0.011)	(0.009)	(0.006)	(0.014)	(0.022)	(0.017)	(0.023)
R^2	0.22	0.22	0.22	0.22	0.17	0.17	0.17	0.17	0.19	0.18	0.18	0.18
P-value (F)	4.6E–06	5.3E–06	5.2E–06	4.5E–06	0.01	0.01	0.01	0.01	0.03	0.04	0.04	0.04
DW test	1.33	1.33	1.33	1.34	1.43	1.44	1.43	1.43	1.35	1.31	1.34	1.33
EL_REG_TERM_it	0.001	–0.007	0.004	0.001	*–0.009**	–0.007	–0.005	*–0.016***	0.015	0.000	0.021	0.008
	(0.005)	(0.011)	(0.010)	(0.012)	*(0.005)*	(0.012)	(0.011)	*(0.007)*	(0.011)	(0.022)	(0.017)	(0.023)
R^2	0.22	0.22	0.22	0.22	0.17	0.17	0.17	0.17	0.18	0.18	0.18	0.18
P-value (F)	5.6E–06	5.2E–06	5.4E–06	5.6E–06	0.01	0.01	0.01	0.01	0.04	0.04	0.04	0.04
DW test	1.32	1.33	1.33	1.32	1.45	1.44	1.44	1.44	1.33	1.31	1.34	1.32
Observations	299	299	299	299	195	195	195	195	104	104	104	104
Countries	23	23	23	23	15	15	15	15	8	8	8	8
Years	13	13	13	13	13	13	13	13	13	13	13	13

Table 3 The estimated model of the political-budget cycle with taxes on the income and profits of corporations as the dependent variable

Parliamemtary election												
Variables	*all states*				*old member states*				*new member states*			
	governments in power				*governments in power*				*governments in power*			
	all	right	left	mixed	*all*	right	left	mixed	*all*	right	left	mixed
EL_ALL_it	–0.013	–0.038	0.013	–0.024	–0.020	–0.027	–0.007	*–0.056****	0.002	–0.026	*0.085****	–0.019
	(0.023)	(0.036)	(0.040)	(0.023)	(0.035)	(0.042)	(0.053)	*(0.021)*	(0.016)	(0.064)	*(0.018)*	(0.030)
R^2	0.09	0.09	0.09	0.09	0.12	0.12	0.11	0.12	0.17	0.17	0.18	0.17
P-value (F)	0.41	0.38	0.42	0.41	0.16	0.16	0.17	0.14	0.06	0.06	0.04	0.06
DW test	1.75	1.75	1.76	1.75	2.18	2.17	2.18	2.17	1.33	1.33	1.38	1.34
EL_REG_it	0.005	–0.003	0.027	–0.032	0.006	0.037	0.014	*–0.057***	0.001	–0.026	*0.085****	–0.038
	(0.026)	(0.043)	(0.045)	(0.022)	(0.041)	(0.049)	(0.066)	*(0.023)*	(0.017)	(0.064)	*(0.018)*	(0.032)
R^2	0.09	0.09	0.09	0.09	0.11	0.12	0.11	0.12	0.17	0.17	0.18	0.17
P-value (F)	0.43	0.43	0.40	0.41	0.17	0.16	0.17	0.14	0.06	0.06	0.04	0.06
DW test	1.76	1.76	1.75	1.75	2.17	2.19	2.16	2.17	1.33	1.33	1.38	1.34
EL_ALL_TERM_it	0.024	0.046	0.012	*0.055**	0.009	0.002	–0.005	0.039	0.054	0.038	*0.087****	0.030
	(0.025)	(0.026)	(0.031)	*(0.029)*	(0.028)	(0.033)	(0.040)	(0.033)	(0.040)	(0.073)	*(0.030)*	(0.039)
R^2	0.09	0.10	0.09	0.09	0.11	0.11	0.11	0.12	0.18	0.17	0.18	0.17
P-value (F)	0.38	0.29	0.42	0.35	0.17	0.17	0.17	0.16	0.04	0.06	0.04	0.06
DW test	1.76	1.77	1.76	1.76	2.18	2.17	2.17	2.17	1.34	1.32	1.37	1.33
EL_REG_TERM_it	*0.046**	0.035	0.029	*0.061**	0.039	0.056	0.018	0.039	0.049	0.038	0.038	0.027
	(0.026)	(0.042)	(0.035)	*(0.031)*	(0.029)	(0.023)	(0.052)	(0.033)	(0.044)	(0.073)	(0.073)	(0.048)
R^2	0.10	0.09	0.09	0.09	0.12	0.12	0.11	0.12	0.17	0.17	0.17	0.17
P-value (F)	0.29	0.40	0.40	0.35	0.12	0.14	0.17	0.16	0.05	0.06	0.06	0.06
DW test	1.77	1.76	1.76	1.76	2.18	2.19	2.17	2.17	1.35	1.32	1.32	1.33
Observations	299	299	299	299	195	195	195	195	104	104	104	104
Countries	23	23	23	23	15	15	15	15	8	8	8	8
Years	13	13	13	13	13	13	13	13	13	13	13	13

Table 4 The estimated model of the political-budget cycle with current expenditures of the state budget as the dependent variable

Parliamemtary election												
Variables	*all states*				*old member states*				*new member states*			
	governments in power				*governments in power*				*governments in power*			
	all	right	left	mixed	*all*	right	left	mixed	*all*	right	left	mixed
EL_ALL_it	*0.011***	0.003	*0.023***	–0.001	*0.009***	0.001	*0.012***	0.007	*0.015***	0.007	*0.052***	–0.009
	(0.003)	(0.007)	*(0.010)*	(0.006)	*(0.002)*	(0.003)	*(0.002)*	(0.005)	*(0.006)*	(0.018)	*(0.025)*	(0.013)
R^2	0.54	0.53	0.54	0.53	0.73	0.71	0.73	0.72	0.19	0.18	0.23	0.18
P-value (F)	1.2E–31	1.3E–30	1.5E–32	1.4E–30	2.9E–40	9.6E–38	1.1E–39	4.6E–38	0.06	0.09	0.01	0.09
DW test	0.73	0.74	0.77	0.75	1.54	1.57	1.53	1.57	0.65	0.65	0.79	0.68
EL_REG_it	*0.012***	0.004	*0.026***	–0.001	*0.008***	0.002	*0.014***	0.002	*0.019***	0.007	*0.052***	–0.006
	(0.003)	(0.009)	*(0.011)*	(0.006)	*(0.003)*	(0.004)	*(0.002)*	(0.003)	*(0.006)*	(0.018)	*(0.025)*	(0.014)
R^2	0.54	0.53	0.55	0.53	0.72	0.71	0.73	0.71	0.20	0.18	0.23	0.18
P-value (F)	1.3E–31	1.3E–30	8.0E–33	1.4E–30	3.5E–39	9.4E–38	4.2E–40	9.1E–38	0.05	0.09	0.01	0.09
DW test	0.73	0.74	0.77	0.75	1.54	1.57	1.52	1.57	0.65	0.65	0.79	0.67
EL_ALL_TERM_it	*0.005**	0.000	0.016	–0.006	0.003	0.002	0.003	0.003	0.009	–0.003	*0.053***	*–0.021***
	(0.003)	(0.007)	(0.010)	(0.005)	(0.002)	(0.004)	(0.003)	(0.005)	(0.007)	(0.021)	*(0.024)*	*(0.009)*
R^2	0.53	0.53	0.54	0.53	0.72	0.71	0.71	0.71	0.18	0.18	0.23	0.19
P-value (F)	8.3E–31	1.4E–30	1.3E–31	1.2E–30	5.0E–38	9.0E–38	7.8E–38	8.3E–38	0.08	0.09	0.01	0.07
DW test	0.75	0.75	0.79	0.75	1.60	1.58	1.58	1.56	0.66	0.67	0.80	0.68
EL_REG_TERM_it	0.005	–0.001	0.018	*–0.007**	0.001	0.003	0.002	–0.001	0.011	–0.003	*0.053***	*–0.020***
	(0.003)	(0.009)	(0.012)	*(0.004)*	(0.002)	(0.005)	(0.004)	(0.002)	(0.008)	(0.021)	*(0.023)*	*(0.010)*
R^2	0.53	0.53	0.54	0.53	*0.71*	0.71	0.71	0.71	0.19	0.18	0.23	0.18
P-value (F)	9.1E–31	1.4E–30	1.1E–31	1.1E–30	*8.9E–38*	8.5E–38	9.2E–38	9.7E–38	0.07	0.09	0.01	0.08
DW test	0.75	0.75	0.80	0.75	*1.58*	1.57	1.58	1.57	0.66	0.67	0.80	0.68
Observations	299	299	299	299	195	195	195	195	104	104	104	104
Countries	23	23	23	23	15	15	15	15	8	8	8	8
Years	13	13	13	13	13	13	13	13	13	13	13	13

Table 5 The estimated model of the political-budget cycle with public sector salaries as the dependent variable

Parliamemtary election												
Variables	*all states*				*old member states*				*new member states*			
	governments in power				*governments in power*				*governments in power*			
	all	right	left	mixed	*all*	right	left	mixed	*all*	right	left	mixed
EL_ALL_it	*0.009***	0.000	0.017	0.010	0.000	–0.005	0.001	0.000	*0.024****	0.011	*0.050**	0.021
	(0.005)	(0.010)	(0.012)	(0.011)	(0.004)	(0.004)	(0.006)	(0.002)	*(0.008)*	(0.025)	*(0.029)*	(0.021)
R^2	0.51	0.50	0.51	0.50	0.62	0.62	0.62	0.62	0.21	0.19	0.22	0.19
P-value (F)	2.3E–29	8.8E–29	1.4E–29	5.7E–29	8.9E–29	6.2E–29	8.7E–29	9.0E–29	0.01	0.03	0.01	0.02
DW test	0.99	1.00	1.01	0.99	1.41	1.43	1.41	1.41	0.85	0.87	0.94	0.84
EL_REG_it	*0.015****	0.004	*0.021**	0.017	0.002	0.000	0.004	0.002	*0.032****	0.011	*0.050**	*0.036**
	(0.005)	(0.012)	*(0.013)*	(0.011)	(0.002)	(0.004)	(0.005)	(0.003)	*(0.006)*	(0.025)	*(0.029)*	*(0.020)*
R^2	0.51	0.50	0.51	0.51	0.62	0.62	0.62	0.62	0.23	0.19	0.22	0.20
P-value (F)	5.6E–30	8.1E–29	8.0E–30	2.9E–29	7.8E–29	9.0E–29	7.3E–29	8.8E–29	0.01	0.03	0.01	0.02
DW test	0.99	1.00	1.01	0.99	1.41	1.41	1.41	1.41	0.84	0.87	0.94	0.83
EL_ALL_TERM_it	0.000	–0.007	0.012	–0.005	–0.004	–0.003	–0.007	–0.001	0.008	–0.018	*0.059***	–0.009
	(0.0034)	(0.0090)	(0.0120)	(0.0069)	(0.0038)	(0.0037)	(0.0058)	(0.0034)	(0.0063)	(0.0262)	*(0.0246)*	(0.0167)
R^2	0.50	0.50	0.51	0.50	0.62	0.62	0.62	0.62	0.19	0.19	0.24	0.19
P-value (F)	8.8E–29	6.5E–29	3.3E–29	7.9E–29	4.7E–29	8.2E–29	3.8E–29	8.9E–29	0.03	0.03	0.00	0.03
DW test	1.00	1.01	1.02	1.00	1.39	1.41	1.36	1.41	0.88	0.89	0.90	0.88
EL_REG_TERM_it	0.005	–0.005	0.017	0.000	0.000	*0.004***	–0.004	0.001	*0.012**	–0.018	*0.059***	–0.001
	(0.003)	(0.011)	(0.013)	(0.007)	(0.003)	*(0.002)*	(0.006)	(0.004)	*(0.007)*	(0.026)	*(0.025)*	(0.017)
R^2	0.50	0.50	0.51	0.46	0.62	0.62	0.62	0.62	0.19	0.19	0.24	0.18
P-value (F)	6.6E–29	7.9E–29	1.6E–29	8.8E–29	8.9E–29	7.6E–29	7.0E–29	8.9E–29	0.03	0.03	0.00	0.03
DW test	1.01	1.00	1.02	1.00	1.41	1.42	1.39	1.41	0.88	0.89	0.90	0.88
Observations	299	299	299	299	195	195	195	195	104	104	104	104
Countries	23	23	23	23	15	15	15	15	8	8	8	8
Years	13	13	13	13	13	13	13	13	13	13	13	13

Table 6 The estimated model of the political-budget cycle with social expenses as the dependent variable

Parliamemtary election												
Variables	*all states*				*old member states*				*new member states*			
	governments in power				*governments in power*				*governments in power*			
	all	right	left	mixed	*all*	right	left	mixed	*all*	right	left	mixed
EL_ALL_it	*0.011***	0.000	*0.026***	0.004	*0.009****	0.005	*0.009***	0.010	*0.015**	–0.007	*0.069****	–0.005
	(0.004)	(0.009)	*(0.012)*	(0.007)	*(0.003)*	(0.005)	*(0.004)*	(0.008)	*(0.008)*	(0.022)	*(0.023)*	(0.011)
R^2	0.46	0.46	0.47	0.46	0.63	0.62	0.62	0.62	0.14	0.13	0.20	0.13
P-value (F)	2.5E–24	1.4E–23	3.1E–25	1.4E–23	5.7E–29	8.9E–28	3.1E–28	4.8E–28	0.22	0.28	0.03	0.28
DW test	1.06	1.07	1.09	1.06	1.52	1.51	1.53	1.51	1.03	1.04	1.13	1.04
EL_REG_it	*0.011****	0.000	*0.028***	0.001	*0.007***	0.006	*0.009**	0.002	*0.018***	–0.007	*0.069****	–0.001
	(0.004)	(0.011)	*(0.013)*	(0.003)	*(0.003)*	(0.007)	*(0.005)*	(0.002)	*(0.008)*	(0.022)	*(0.069)*	(0.009)
R^2	0.46	0.46	0.47	0.46	0.62	0.62	0.62	0.61	0.14	0.13	0.20	0.13
P-value (F)	3.5E–24	1.4E–23	2.8E–25	1.4E–23	3.1E–28	8.5E–28	4.2E–28	1.2E–27	0.20	0.28	0.03	0.29
DW test	1.06	1.07	1.08	1.07	1.50	1.52	1.50	1.52	1.02	1.04	1.13	1.03
EL_ALL_TERM_it	0.006	0.000	0.015	0.001	0.004	0.006	0.000	0.008	0.011	–0.008	*0.058***	–0.011
	(0.004)	(0.009)	(0.012)	(0.007)	(0.004)	(0.005)	(0.004)	(0.009)	(0.008)	(0.027)	*(0.028)*	(0.010)
R^2	0.46	0.46	0.46	0.46	0.62	0.62	0.61	0.62	0.13	0.13	0.18	0.13
P-value (F)	8.6E–24	1.4E–23	3.8E–24	1.4E–23	7.1E–28	7.8E–28	1.2E–27	7.5E–28	0.25	0.28	0.07	0.27
DW test	1.07	1.07	1.09	1.07	1.53	1.55	1.52	1.50	1.03	1.04	1.15	1.04
EL_REG_TERM_it	0.005	0.000	0.017	–0.002	0.001	0.007	–0.002	–0.001	0.013	–0.008	*0.058***	–0.008
	(0.004)	(0.012)	(0.014)	(0.004)	(0.003)	(0.007)	(0.005)	(0.004)	(0.008)	(0.027)	*(0.028)*	(0.007)
R^2	0.46	0.46	0.46	0.46	0.61	0.62	0.61	0.61	0.13	0.13	0.18	0.13
P-value (F)	1.0E–23	1.4E–23	3.3E–24	1.4E–23	1.2E–27	7.4E–28	1.1E–27	1.2E–27	0.24	0.28	0.07	0.28
DW test	1.07	1.07	1.10	1.07	1.52	1.53	1.52	1.52	1.03	1.04	1.15	1.04
Observations	299	299	299	299	195	195	195	195	104	104	104	104
Countries	23	23	23	23	15	15	15	15	8	8	8	8
Years	13	13	13	13	13	13	13	13	13	13	13	13