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Voters' Awareness as a Determinant of Political Budget Cycles: Evidence from Selected European Economies

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Abstract

This paper analyzes the presence of political budget cycles (PBC) in connection with the different levels of voter awareness in selected European countries. The characteristics of voters and their awareness of the real motives of incumbent politicians in conducting fiscal policy are of particular importance in PBC models. This study uses system GMM to estimate the dynamic panel data models that capture the behavior of structural budget balances. The models are estimated based on balanced panel data for 15 post-transition and low- and middle-income European countries during 2009–2018. One of the key explanatory variables is a Voter Awareness Index, based on Janku and Libich (2019) that is used to examine how structural budget balances differ between countries with different levels of voter awareness. The results indicate that countries with well-informed voters do not experience PBC, while those with poorly aware voters do. This study provides policy recommendations for improving voter awareness and weakening PBC.

1. Introduction

Politicians manipulating economic policies to improve their chances of being re-elected is often explained by a lack of information on economic policymaking available to voters, as information is crucial to the electorate's voting decisions. Providing information on politicians' qualifications, competence, and policy positions can affect how and for who people vote. Although we assume that voters are rational, incumbent politicians can deceive them through insufficient and poor-quality information. This practice is especially evident in underdeveloped and low-income countries with weak democratic institutions, such as post-transition economies, where voters are poorly informed due to weak governance, unavailability of the Internet, restricted media freedom, and inadequate education.

This study considers how the misuse of fiscal policy to induce political budget cycles (PBC) is more prevalent in post-transition and low- and middle-income European countries with poor voter awareness. We are interested in how different

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levels of voter awareness in post-transition economies affect PBC and which awareness elements are crucial in explaining fiscal policy manipulation.

The issue of political misuse of economic policy is much broader than the problem of voters' information on incumbents. Therefore, we begin with a detailed analysis of policymakers' motives and voters' characteristics, the possible misuse of monetary and fiscal policy, and the sources of such misuse. These topics are important for understanding how the lack of information available to voters in some countries affects fiscal policy abuse, which is the subject of this study. Insufficiently informed voters and information asymmetry between policymakers and voters regarding government competence are crucial for understanding fiscal policy abuse. Voter awareness depends on information provision, transmission, and processing by the public. Thus, the PBC found in certain post-transition and low- and middle-income economies are explained in this study as context conditional. The degree of information provision and transmission are the most important conditioning factors for PBC in the selected European economies.

To understand the importance of the information on incumbent politicians available to voters, we must understand the motives that drive incumbents' economic policymaking and voters' characteristics and expectations. Depending on their characteristics and awareness, voters may be unaware of the real political motives of economic policymakers and their possible manipulation of economic policy.

Depending on the different motives of incumbent politicians, the basic features of political business cycle models fall into two categories: opportunistic to be re-elected and partisan to achieve ideological goals through economic policy manipulation. Additional classification of models is based on the two types of voters' or economic agents' expectations: adaptive and rational. Adaptive expectations where incumbents can consistently fool voters and economic agents are present in traditional opportunistic models (Nordhaus, 1975) and partisan cycles (Hibbs, 1977; Hibbs, 1987 a, b). In rational-expectation political cycle models, the voters' rational expectations constrain politically motivated manipulation of economic policy because if manipulation is rationally anticipated, it will not induce real effects or increase the chances of re-election. Nevertheless, rationality does not eliminate such manipulation since incumbents' information advantage over voters regarding their competence and policies can result in electoral and real effects; even rational voters are not fully able to consider the optimal behavior of others. Therefore, the extant literature constructed rational opportunistic models (Cukierman and Meltzer, 1986; Rogoff, 1990; Rogoff and Sibert, 1988) and rational partisan models that distinguish between right- and left-wing parties' preferences regarding economic results together with electoral uncertainty (Alesina, 1987; Alesina 1988; Alesina and Rosenthal, 1995; Alesina *et al*., 1997). These models focus on either monetary or fiscal policy as the source of politically motivated manipulation.

Over the decades, opportunities for misusing and abusing economic policy have decreased, primarily due to changes in the institutional framework of economic policymaking. Nevertheless, as mentioned above, in the macroeconomic analysis of the political abuse of economic policy for pre-election purposes, assumptions regarding voter behavior have changed. Voters' rational expectations replaced adaptive expectations, requiring economic policymakers to devise new mechanisms to enable the misuse of economic policy. The earlier assumption was that incumbent

politicians could easily deceive naive voters with the same expansive monetary and fiscal policies in election years. Currently, due to temporarily increasing income and reducing unemployment while "charging" such policies to the post-election period through high inflation, voters have become rational in political cycle models. Therefore, economic policymakers must apply more complex methods to deceive voters and abuse economic policy. The decisive role, in this case, is that of the well-informed voter. A rational and well-informed electorate would make it difficult for incumbents to deceive voters. Therefore, economic policymakers might try to limit voter information to be able to abuse economic policy and present economic results during pre-electoral campaigns as better than reality. This situation arises when decision-makers deliberately postpone building a democratic system in post-transition and low- and middle-income economies, providing accurate and credible information to voters and improving their ability to process this information. Voter awareness is measured in different ways, most often by a voter awareness index that includes various economic, social, and political factors.

Significant changes have occurred in the conduct of monetary policy. Monetary policy is more difficult to abuse for political purposes in pre-election periods because of monetary rules and the central bank's independence as a key monetary institution, which has been proven true even in countries with an underdeveloped economic system and unconsolidated democracy (Pulatov and Ahmad, 2021). Conversely, fiscal policy, which in democratic systems cannot be removed from politicians and handed over to an independent body with no political motives, remains the main conduit for electorally motivated policy. Therefore, PBC models analyzing possible abuses of fiscal policy for political purposes, primarily the winning of elections, have become particularly important.

Special attention has to be paid to both post-transition and low- and middle-income economies, given that they face significant changes in the institutional framework of economic policy and changes in the political system as a democratic system is built, which is especially important for European countries, as observed in our sample. In these countries, specific behaviors of politicians, and thus of economic policymakers, including their motives, could be observed. Bohn (2018) finds that it is easier to detect PBC in developing countries or new democracies where weak voter awareness fails to perceive the real motives of politicians. This is especially the case during the initial stages of economic and political transition, but it continues in countries where transition processes are prolonged.

This study examines the connection between fiscal policy abuse in the form of fiscal deficit and poor voter awareness in post-transition and low- and middle-income European economies. Furthermore, this study aims to show that in economies with lower voter awareness, more opportunities for fiscal policy misuse arise; thus, higher budget deficits exist. In these economies, more significant PBC, i.e., greater abuse of the fiscal policy, is evident. The low level of voter information and awareness that allows incumbent politicians to manipulate policy to ensure their re-election encourages politicians in power to try to preserve a weak institutional environment.

The paper that inspired this research was written by Janku and Libich (2019). The main difference between our model, the Janku and Libich model, and other well-known models in studies related to political macroeconomics is that we used structural budget balance as a dependent variable. Therefore, we can distinguish

between the structural part of the budget balance and the cyclical component. This variable allows us to observe the underline activities of fiscal policymakers, especially those related to their political motives, providing a better picture of fiscal (ir)responsibility. The second significant difference from Janku and Libich's model is the construction of the Voters' Awareness Index (VAI), which they call the Informed-voter index (INFOVOT index) in their paper. We modified the pillars (dimensions) of that index to make it a better proxy for voters' awareness. Besides the contributions mentioned above, this study adds to the literature on political macroeconomics by investigating countries not usually found in the extant literature. Our sample includes European countries in different stages of development, and controls for the effects of crises, which can have prolonged effects in less developed countries. Finally, we use the panel data econometrics techniques, which are most suitable for this kind of model specification and robust to the properties of our data.

The paper is organized as follows. The following section presents the literature review and theoretical background to politically motivated fiscal policy misuse in connection with poor voter awareness. Section 3 presents the methodology, which includes the model construction, as a modified version of the Janku and Libich model (2019), with system GMM used to estimate the dynamic panel data model specifications. Section 4 presents data analysis of PBC concerning voter awareness for 15 European post-transition and low- and middle-income economies from 2009 to 2018. We primarily focus on dividing observed countries into three groups, according to the voters' awareness: countries with well-aware, moderately aware, and poorly aware voters. Section 5 presents the analysis results according to which structural fiscal balances are very sensitive to the elections but only for the groups of countries with moderately and poorly informed voters. Section 6 derives policy implications based on the estimated results, and Section 7 concludes.

2. Literature Review and Theoretical Background

Political budget cycles are often defined as the cyclical fluctuations of overall government expenditure or some component of government expenditure and revenue (taxes), or budget deficits, caused by electoral cycles. Models of PBC imply that incumbents influence voters by changing fiscal policy during pre-election periods, likely resulting in deteriorated public finances in post-election periods when rising deficit and debt induces economic decline and recession. The temptation for incumbents to pursue electorally motivated fiscal policy will not disappear as long as it can help them win elections, which depends on the information available to voters and on voters' motives (whether or not they are "fiscal conservatives"). However, in the vast PBC literature, numerous empirical studies reach ambiguous conclusions on the issue of politically motivated fiscal policy and its results.

This study empirically tests the hypothesis that PBC are context-driven, primarily by a lack of information and poor voter awareness. It provides evidence that PBC are more prevalent in countries with poorly developed economic and political systems. In the literature, this evidence is often disputed by emphasizing other factors determining the emergence of fiscal manipulation for political purposes. Such factors include ways of conducting fiscal policy (whether fiscal rules are followed) and trends in economic variables that determine the time preference of

voters, especially in poorer countries, such as discount rates, which lead voters to support politicians who are fiscally irresponsible but currently provide them with higher revenues (Kyriacou *et al*., 2022).

Numerous studies, including this one, highlight the importance of information available to voters for the existence of PBC; however, this literature review presents a much broader approach that covers the development of the literature on PBC and highlights the connection between our assumptions, hypothesis, conclusions, and other theoretical and empirical contributions.

The PBC models differ regarding the indicators of fiscal manipulation that they use. Some focus on the level of the budget deficit and how policymakers manipulate it to cheat voters during the electoral period. Other focus on electorally timed shifts in the composition of public spending by raising the level of transfers targeted at particular voters rather than on the budget deficit's overall level (Alesina *et al*., 1997; Rogoff, 1990). This study focuses on the structural budget deficit.

Many conceptual arguments and PBC models have been developed. "Signaling" models refer to policymakers trying to send signals to mask political manipulation and bring about favorable economic conditions in the pre-election period. In these models, the voters dislike budget deficits and would electorally punish motivated fiscal manipulation; however, the signal extraction problem results in an asymmetry of information regarding politicians' competence even when voter expectations are rational. Therefore, the models show some information asymmetry regarding economic authorities' competency.

Rogoff and Sibert (1988) introduced the first model, defining competence as economic policymakers' ability to reduce waste loss in the budget process, meaning the government's ability to provide as many public goods and transfers as possible with the given tax revenues. Economic policymakers know voters' preferences and provoke fiscal expansion or avoid necessary tax increases in the pre-election period, which voters welcome. In the post-election period, there has to be a tax increase to finance the pre-election expansion, which even rational agents cannot anticipate, given the complexity of the budget process on the one hand and limited information on the other. Voters know the values of budget expenditures and tax revenues but are not informed about the inflation tax or the competence of the government. Thus, even in this first PBC model, the focus is on the importance of information. In the pre-election period, the government decides the amount of inflation tax and the tax burden reduction to present itself as competent. The model starts from the premise that due to the complicated budget process, even rational voters can create, at least temporarily, the illusion of prosperity, not realizing that this "prosperity" will be paid for by increasing tax liabilities in the future.

In a related model (Rogoff, 1990), the incumbent signals competence before the election, and government competence is defined as the appropriate structure of government expenditure. The public notices the increased government expenditure in the pre-election period, while funds for investment projects whose results become noticeable after the elections decrease. This manipulation of the fiscal expenditure structure is again based on information asymmetry and insufficient information available to voters.

The information asymmetry in the second group of PBC models (Shi and Svensson, 2002, 2006) is based on a pure moral hazard of electoral competition. Two

groups of differently informed voters are present in the model, and the size of the electoral budget cycles depends on the share of uninformed voters, which is larger in developing countries, resulting in significantly larger and statistically more robust PBC than in developed countries.

Although the original signaling models of Rogoff and Sibert (1988) and Rogoff (1990) do not deal with the specifics of the political and economic system that are needed for the problem of signal extraction to appear, the problem is especially evident in underdeveloped political democracies with underdeveloped economic systems. Therefore, some empirical research on developing countries and new democracies that are also transition economies focuses on the specifics of the context regarding non-transparency of governmental and fiscal policy (inadequate institutional settings). Franzese (2002) calls these PBC "context-conditional cycles." Various empirical studies have found these PBC to be present in developing countries (Block, 2002; Gonzales, 2002; Schuknecht, 1996, Schuknecht, 2000; Shi and Svensson, 2006; Vergne, 2009) and transition economies, which are simultaneously new democracies with a lack of democratic institutions and procedures, especially regarding fiscal and government transparency (Akhmedov and Zhuravskaya, 2004; Alt and Lassen, 2006; Brender and Drazen, 2005; Klašnja, 2008; Lami and Imami, 2014; Pulatov and Ahmad, 2021; Rudy, 2021; Treisman and Gimpelson, 2001).

Recent studies of PBC rely on insufficiently informed voters; thus, it becomes important to define voter awareness in the models as a tool for proving systematic differences between countries with fully informed and with poorly aware voters. All of the elements of voter awareness present the possibility of using the deliberate dissemination of false information or "propaganda" for political influence. Such manipulation might result in reputational or budgetary costs, but it can also increase incumbents' re-election chances (Bohn, 2011, p. 4). These models study the effect of the degree of achieved democracy on the magnitude of budget cycles, including the degree of fiscal policy transparency and the level of voter awareness.

The empirical data shows that the magnitude of fiscal manipulation decreases over time as the proportion of uninformed voters decreases (Shi and Svensson, 2002). This decline can be observed during the economic and political transition process, in which the first phases are characterized by a lack of informed voters and transparency regarding fiscal policy and a government by incumbent politicians with opportunistic preferences. Successful completion of the transition process depends on the establishment of a transparent institutional framework and voters who are well-informed regarding the preferences and behavior of politicians in power. Successful post-transition economies do not have PBC, similar to how developed economies and established democracies do not record significant aggregate deficit or expenditure cycles. Similar conclusions are reached by Rudy (2021) in a detailed analysis of political tax cycles in election periods. He concludes that low- and middle-income countries with hybrid and authoritarian regimes in election periods record the tax burden decreasing rather than increasing, as would be the case in established democracies. Conversely, when political and economic systems improve in these countries, the tax burden tends to go in the same direction in electoral periods as in developed economies with consolidated democracies (Rudy, 2021, p. 202).

In our attempt to explore deeper into the reasons that would explain these differences among countries in fiscal manipulation in election periods, this study examines the relationship between voter awareness and PBC by exploring 15 post-transition and low- and middle-income European countries over the 2009–2018 period. These countries are at different stages of development and can be classified according to the level of voter awareness.

This study uses the structural budget balance as a dependent variable to analyze how PBC in the observed countries is connected to voter awareness as represented by the VAI. Fiscal policy can be a significant contracyclical instrument; hence, political opportunism could accidentally produce a countercyclical policy effect, which a structural budget balance can mitigate. This study avoids the unintentional countercyclical effect of fiscal policy manipulation. By introducing the VAI, this paper follows the theoretical framework that explains the economic, political, and social factors related to voter characteristics and awareness of the real motives of incumbent politicians in conducting fiscal policy, as well as the institutional framework and its influence on fiscal manipulation.

The concept of the VAI follows the literature on the INFOVOT (Janku and Libich, 2019), which includes five criteria that capture different aspects of information flows. These criteria include information provision (policy transparency and credibility), information transmission (internet availability and media independence), and processing of information by the public (the level of education that the public has reached, such as labor force with tertiary education) (Janku and Libich, 2019, p. 21). Each information flow is important for understanding how PBC are connected to voter awareness. Policy transparency and credibility show how economic policy is formulated and implemented and the government's commitment to the policy. Lack of transparency and the credibility of budget institutions are connected to fiscal policy manipulation (Alt and Lassen, 2006; Gootjes *et al*., 2021). The latter criteria are important since they capture politicians' misuse of information through propaganda. Without free media access, policymakers can easily fool voters since the public will not have the relevant information regarding fiscal policy and its results (Bohn, 2011; Veiga *et al*., 2015). The third set of criteria is connected to the public's information processing. If the public cannot understand policies, they can be easily deceived; hence, education regarding PBC is important.

According to these criteria, countries can be classified as those with well-informed voters that do not experience PBC and those with poorly informed voters where policymakers use fiscal policy to bribe electorates, with high costs of macroeconomic volatility and debt accumulation. Countries with moderately informed voters are significant since their incumbents also practice buying voters. These empirical results are consistent with the economic theory of voters' utility function and the intuition that a higher share of uninformed voters induces larger budget deficits. This study improves on analyzing all three criteria to understand the differences between selected European post-transition and low- and middle-income countries regarding PBC.

Some empirical research confirms factors other than voter information and awareness as conditions for the existence of fiscal policy manipulation. Gootjes *et al*. (2021) shows that the application of fiscal rules dampens PBC and that media freedom and the level of government debt are not explanatory variables. Conversely,

they also find that applying fiscal rules has different effects in established democracies, countries with fewer veto players, and more globalized economies.

3. Methodology

3.1 Model Specification

Our model specifications include a modified version of Janku and Libich's (2019) model. To present the importance of voters' awareness in PBC and make our analysis robust, we first estimate every specification without controlling for voters' awareness, i.e., test for unconditional PBC. In other words, we do not split the countries into groups but observe the overall effects of elections on structural budget balances. The estimated model specification, in this case, can be formally noted in this manner:

$$S\_BALANCE_{it} = \rho S\_BALANCE_{it-1} + \alpha Y_{it} + \beta CPI_{it} + \gamma ELE_{it} + \delta \boldsymbol{X}'_{it} + \mu_i + \varepsilon_{it} \qquad (1)$$

where *S_BALANCE* is structural budget balance; *Y* is gross domestic product (GDP) growth; *CPI* is *the* inflation rate; *ELE* is a dummy variable for elections; ***X*** is a vector of control variables, such as crisis, exchange rate regime, openness, and GDP per capita; μ_i captures unobserved country-specific effects; and ε_{it} is the error term.

Subsequently, in every specification, we introduce variables that allow us to observe the effects of voters' awareness on PBC hypothesis binding. We follow the idea of Janku and Libich (2019); however, we make modifications in several dimensions to incorporate the inherent specificities of the observed countries and perform the analysis on different fiscal-variable definitions. The estimated model specification can be formally noted in this way:

$$S\_BALANCE_{it} = \rho S\_BALANCE_{it-1} + \alpha Y_{it} + \beta CPI_{it} + \sum_{k=1}^{3} \gamma_k \left(B\_VAI_i^k * ELE_{it} \right) + \delta \boldsymbol{X}'_{it} + \mu_i + \varepsilon_{it} \qquad (2)$$

We include *B_VAI*, a binary rank of our VAI, and the previously mentioned variables. Furthermore, the products of *B_VAI* and *ELE* deserve more attention. $B\_VAI_i^k$, where k = 1, 2, 3, takes the value of 1 in countries with well-aware, moderately aware, and poorly aware voters and a value of 0 otherwise. From the specification, it can be concluded that the products of *B_VAI* and *ELE* are the essential variables in explaining PBC in the observed countries. For the sake of simplicity, these are denoted as *ELE_high*, *ELE_medium,* and *ELE_low* in the results. Basically, we observe the significance of the elections dummy, which is dependent on voters' awareness in the country classification. The details about all used variables, especially on VAI, can be found in the Data section.

3.2 Estimation Methodology

Within different techniques in panel data econometrics, we found dynamic panel data estimation the most appropriate in our study because of latency and inertia in variable paths. In addition, if some standard panel data techniques estimate the dynamic panel data model, then the results would be biased, and estimations would be inconsistent. Many empirical studies employ Fixed Effects (FE) to allow for cross-country differences; however, it can lead to bias, especially if the number of periods is low (Nickell, 1981; Kiviet, 1995). Given the common problems with this technique in the case of dynamic panel models, we employ it only to test the robustness of our results. We opted for OLS with FE featuring a within-group estimator, i.e., we use a cluster-robust estimator (cluster-robust standard errors at the country level) to allow for within-country correlation between the residuals. When applied to microeconomic panel data, this approach suffers from serious problems where the time dimension is narrow, usually less than five (Janku and Libich, 2019, p. 27); however, we do not expect this problem in our regressions.

To test the presence of PBC in the observed countries, we primarily used Blundell and Bond (1998) method (hereinafter system GMM) because we aim to exploit the favorable properties of this state-of-the-art technique. This method accounts for the endogeneity of lagged dependent variables. Furthermore, there is a possibility of endogeneity of some explanatory variables. In these cases, and in the presence of error measurement and omitted variables, the system GMM method gives the best results compared to other estimators, such as Arellano and Bond (1991) (usually called Difference GMM) and Arellano and Bover (1995). This method reduces finite sample bias and is dominant according to that criterion compared to other dynamic panel data estimators (Baltagi, 2008), and it is asymptotically more efficient than other methods. Soto (2009) finds that this method gives the best results in the case of small N, as in our study, and that its application on small samples does not have significant repercussions on the properties of the estimator. All these arguments confirm the superiority of the system GMM method in the panel data features like ours.

System GMM consists of a system of equations where lagged first differences of the dependent variable are instruments for the level equations, whereas lagged levels of the dependent variable are used as instruments for equations in first differences (Blundell and Bond, 1998). Besides the instruments for the lagged dependent variable, the instruments for other predetermined and endogenous variables can be used, which is the case in our study. A problem can arise if too many instruments exist (Roodman, 2009). To avoid this problem, we opted to use two techniques simultaneously: curtailing and collapsing. Therefore, we use only a limited number of lags as instruments and combine instruments through addition into smaller sets (collapsing). Through this, we managed to decrease the number of instruments in the desirable level, as proposed by Roodman (2009). Our study uses the one-step procedure by Blundell and Bond (1998), who provided the evidence that inference based on the one-step GMM estimators appears to be much more reliable than the two-step procedure when either non-normality or heteroskedasticity is suspected; however, when these problems are not present, the estimators perform similarly. In studies that deal with this estimator's application, recommendations for

using time dummy variables can often be found; therefore, we follow this recommendation in our robustness analysis.

Following the literature related to system GMM, we applied the Sargan test for over-identifying restrictions, which verifies the exogeneity of the instrument subset. Furthermore, the Arellano–Bond test is used to check the presence of second-order serial correlation of differenced residuals.

Finally, applying system GMM to macroeconomic data requires the stationarity of all variables. This property is validated by the employment of a few panel unit root tests (Levin, Lin, and Chu (LLC), Im, Pesaran, Shin (IPS), and ADF, and PP Fisher-type tests). We opted for first-generation tests, which perform better in small samples with a fixed T. Monte Carlo simulations prove this by determining the number of papers (e.g., Breitung, 2000; Im *et al.*, 2003). These simulations show that the IPS test performs slightly better under specific conditions than LLC and the Fisher-type test.

4. Data

This paper analyzes the presence of PBC in connection to the different awareness of voters in selected post-transition and low- and middle-income countries. The sample includes the following European countries: Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Serbia, Slovakia, Slovenia, Turkey, and Ukraine. We investigate the abovementioned research question on the period from 2009 to 2018, constrained by the data availability on VAI index ingredients. From the econometric perspective, we should emphasize that estimators were applied on a balanced panel. Sources of the data are the most reputable and unique for each variable, and therefore, cross-country comparison reliability is provided. Sources and descriptions of the data, summary descriptive statistics, and unit root test results can be found in the Appendix in Tables A1, A2, and A3, respectively.

The dependent variable is the structural budget balance in the percentage of potential GDP (*S_BALANCE*). This variable's behavior is estimated dependent on its lagged value and other explanatory variables; the data source for this variable is the IMF dataset. The average value of structural deficits in the observed countries is 2.1% of the potential GDP. We must emphasize that this is one of the main differences between our model, Janku and Libich's, and other well-known models related to political macroeconomics, which usually use the overall budget balance in the analysis. Although the concept of structural budget balance has its drawbacks, we find it very suitable for analyzing the political business cycle inherence in the observed countries. This concept can distinguish between the structural part of the budget balance (which is under the direct control of policymakers) and the cyclical component (which is seen by policymakers as an excuse in the "bad" times and as merit in "good" times). Of course, the structural budget balance is adjusted by cyclical components and other nonstructural elements beyond the economic cycle. These include temporary financial sector and asset price movements and one-off revenue or expenditure items. This variable allows us to observe the underline activities of fiscal policymakers (especially those related to their political motives) and therefore gives a better picture of fiscal (ir)responsibility. In addition, the

popularity of the abovementioned fiscal variable can be explained by its relevance as a policy target in fiscal rules and as a common indicator of fiscal solvency. Finally, this or similar measure is now widely used for investigation of the fiscal policy (pro/a/counter) cyclicality (e.g., Gootjes *et al*., 2022).

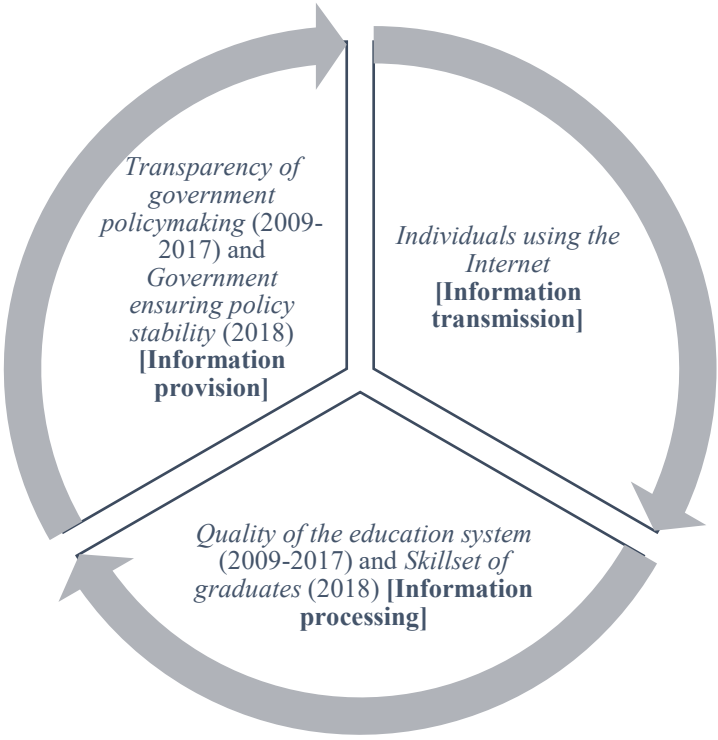
One of the most important determinants of structural balance is GDP growth (*Y*). The concept of structural balance excludes the cyclical component and, therefore, one part of the influence of the growth variable. However, we find it necessary to include it in the model specification because policymakers' discretionary policy is usually tightly connected to economic growth and their policy measures are usually explained and justified by the tendencies in GDP growth. Therefore, besides the automatic stabilizers, policymakers tend to exploit the tendencies in GDP growth more than required, especially when their behavior is motivated by partisan or opportunistic motives. This tendency has an important consequence on this explanatory variable expected sign. If we observe the connection between overall budget balance and GDP growth, the correlation would be positive at first sight since automatic stabilizers are strong enough to determine the direction of influence. In that situation, the countercyclical policy is dominant. However, structural budget balance, besides other one-off measures, is adjusted for cyclical components; therefore, we expect that the sign of the influence of GDP growth on structural balance is negative, especially when policymakers are politically motivated. In this situation, policymakers tend to behave procyclical, not countercyclical. Government revenues rise in expansions, and the typical myopic government cannot resist the temptation to increase spending, sometimes even more than one-for-one. On the contrary, in recessions, a government that conducted policy based on the overall and not structural balance is usually forced to raise revenues to converge to high expenditures that are "more discretionary" and therefore, enter into the procyclicality zone. This is a well-known issue empirically proven by several studies (e.g., Alesina *et al.*, 2008; Calderon *et al*., 2016; Gavin and Perotti, 1997; Lim, 2020). The procyclicality is, to some extent, reduced and sometimes overridden by the automatic stabilizers; however, we are interested in that structural part and not the overall budget balance. Therefore, discretional measures primarily related to the expenditures amplified by PBC postulates are a significant burden to structural balances and are triggers of procyclicality. Based on the data on the observed countries, it can be said that in most of the observed countries, policymakers behaved procyclical in the majority of observed years since they injected fiscal stimulus in periods of GDP growth and tightened the fiscal policy in periods of recessions (see the Figure A1 in Appendix). The two extreme cases are Estonia, which behaved countercyclical most of the years, and Poland, which behaved procyclical in every observed year. Around 74% of total observed pairs of *S_BALANCE* - *Y* falls into the procyclical domain, indicating the expected negative sign.

We investigate the effects of CPI-measured inflation as a regressor (*CPI*), a natural candidate for influence on structural budget balances. We think this factor can be of great importance in fulfilling the goals of a particular policymaker, which is consistent with the findings of Hallett *et al*. (2014). The sign of the influence is, in principle, ambiguous (for details on the different directions of influence from inflation to budget balance, see Tanzi *et al*., 1987). On the one hand, the structural part of revenues tends to rise with the increase in CPI; however, on the other hand,

the expenditures can sometimes rise even faster because of the indexation of wages, retirement annuities, and other expenditures related to interest payments. Due to the low to moderate level of inflation in the observed countries and, consequently, domination of revenue effect, the overall effect of inflation on structural budget balance is expected to be positive.

To examine whether any differences exist between the observed countries concerning PBC, we followed the approach of Janku and Libich (2019) to construct the VAI. This index is used to classify countries based on their voters' awareness. We find it very convenient to keep the basic methodology and dimensions of Janku and Libich's INFOVOT index, i.e., Information provision, Information transmission, and Information processing pillars. However, we modified their structure by including different variables, possibly better describing the respective pillars, making the VAI a better proxy of voters' awareness. The structure of the VAI can be seen in the following illustration.

Figure 1 Voters' Awareness Index Pillars and Structure



Notes: VAI's pillars are given in square brackets

Source: Authors' modification of Janku and Libich's (2019) INFOVOT

Variables *Transparency of government policymaking* (2009–2017) and *Government ensuring policy stability* (2018) are extracted from Global

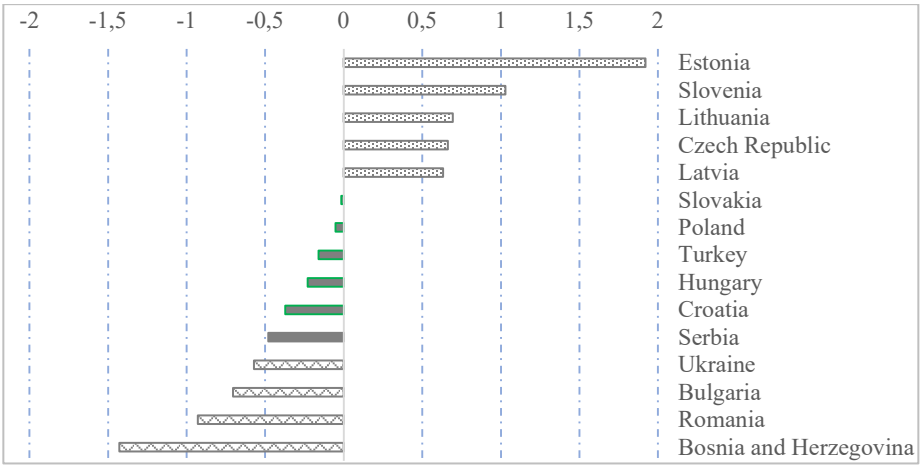
Competitiveness Index Database by World Economic Forum (WEF); their values range from 1 to 7 (best). The variable *Individuals using the Internet* is part of the World Development Indicators database by the World Bank and is denoted as a share of the population. Variables *Quality of the education system* (2009–2017) and *Skillset of graduates* (2018) can be found in the Global Competitiveness Index Database by WEF and ranges from 1 to 7 (best). Starting from 2018, the methodology of the Global Competitiveness Index has slightly changed, causing the usage of variables that are most similar to those used for 2009–2017. We think that the used raw variables are the best among the available ones to capture the nature of the ingredient pillars of the VAI.

The methodology of VAI construction is based on standard scores. All three pillars are equally weighted by 1/3, where $\overline{GOV_i}$, $\overline{NET_i}$, and $\overline{EDU_i}$ are average values of each variable that constitutes the respective pillar (Information provision, Information transmission, and Information processing) during 2009–2018 for each country *i*.

$$VAI = \frac{1}{3}\frac{\overline{GOV_i} - E(GOV)}{\sqrt{var(\overline{GOV_i})}} + \frac{1}{3}\frac{\overline{NET_i} - E(NET)}{\sqrt{var(\overline{NET_i})}} + \frac{1}{3}\frac{\overline{EDU_i} - E(EDU)}{\sqrt{var(\overline{EDU_i})}}$$

The obtained values of VAI are used to split the sample of countries into three groups (well-aware, moderately aware, and poorly aware voters). Since the VAI shows how many standard deviations a particular country deviates from the average country in the sample, we make three groups by establishing two thresholds (−0.5 and 0.5), as done by Janku and Libich (2019). Based on this, we obtain the following results.

Figure 2 Country Estimations of Voters' Awareness Index



Notes: Dotted-filled, solid-filled, and diamond grid bars are values of VAI for countries with well-aware, moderately aware, and poorly aware voters, respectively.

Source: Authors' calculations

A more detailed analysis requires observing the results for each of the individual pillars to determine in which segment some shortcomings lead to poorer results concerning voters' awareness. Analyzing these results, we can conclude that Information provision and transmission are usually obstacles for many of the observed countries. It is important to note that the model was constructed by assuming the same weight assigned to each of these three pillars.

Table 1 Ingredient Pillars of VAI: Country Comparison

	Information provision	*Information transmission*	*Information processing*
Bosnia and Herzegovina	15	13	15
Bulgaria	13	11	8
Croatia	9	9	12
Czech Republic	7	4	3
Estonia	1	1	1
Hungary	12	6	10
Latvia	5	3	6
Lithuania	4	7	5
Poland	11	8	7
Romania	14	12	13
Serbia	8	10	11
Slovakia	6	2	14
Slovenia	2	5	2
Turkey	3	14	9
Ukraine	10	15	4

Notes: Numbers presented are ranks of the observed countries regarding each pillar among this specific sample. Cell patterns differentiate between worse (vertical stripe), middle (horizontal stripe), and best (no pattern) pillar values scored by each country.

Source: Authors' calculations

After constructing VAI and splitting the sample of countries into three groups by the estimated voters' awareness, we compose the new variables which have an essential role in our study. As mentioned in the previous section, we are interested in products of *B_VAI* and *ELE*. ELE_{it} is an electoral dummy variable, which equals 1 if an election takes place and 0 otherwise. *ELE_high*, *ELE_medium*, and *ELE_low* are these derived complex variables related to well-aware, moderately aware, and poorly aware voters, respectively. If the PBC is immanent in any of these groups of countries, we expect the negative sign of this variable, meaning that elections negatively drive the structural budget balance.

Finally, we want to control for other variables related to structural budget balance, usually used in the related literature. One of them, common to all our specifications, is the dummy variable *CRISIS*, which describes the potential influence of the global crisis on the observed fiscal variable. Following other studies, this

dummy takes a value of 1 in the years 2009 and 2010 for all countries and 0 otherwise. This does not necessarily mean that GDP was falling in these years in the observed countries, but rather that global circumstances could potentially put a tremendous burden on fiscal policy; therefore, we expect its negative impact on the structural budget balance.

Janku and Libich (2019) use additional variables as controls; we investigate their significance in our model specification.

The variable *OPEN* denotes openness to trade and is measured by the sum of exports and imports as a share of GDP. This is a common control variable in many econometric research studies. We expect a positive sign based on usual theoretical explanations because higher openness leads to lower expenditure multipliers.

Another variable that can be a significant determinant of structural budget balance is the exchange rate regime (*E*). We followed Janku and Libich (2019) and use Ilzetzki *et al*. (2019) database to code the particular regime in the observed countries. Of course, some countries experienced regime changes during the observed period. This dataset codes the regimes in two ways; however, we use the one that ranges the regimes between 1 and 6, from the least to the most flexible. The traditional interpretation of the exchange rate regime on fiscal policy variables is that a fixed exchange rate stimulates fiscal discipline by tying the politicians' hands (Ghosh *et al*., 2010; Giavazzi and Pagano, 1988). The fiscal indiscipline cost in the exchange rate regime crash will be too high for politicians to take that risk. Therefore, we expect the influence to have a negative sign.

Shi and Svensson (2006) include the logarithm of GDP per capita (*lGDPPC*) in their model specification. They argue that countries with higher GDP per capita, i.e., more developed countries, have better fiscal results. We follow their work and include this variable with the expectation of a positive sign of influence.

5. Results

This chapter is dedicated to presenting the results. First, we briefly show the baseline results. Subsequently, we include additional control variables and present different model specifications.

5.1 Baseline Results

The baseline specification starts with a simple framework consisting of only the most important determinants of structural budget balance, including the variable that reveals the significance of political macroeconomics in fiscal policy modeling. The following table represents the main results for the two specifications of the model baseline specification 1 and 2, i.e., without or with control for voters' awareness, respectively.

The presented results are intuitive and expected. The estimated specifications are fulfilling good statistical properties and can be used for statistical inference. Generally speaking, the observed fiscal variable has shown the persistency in its movement. In most observed countries, fiscal policymakers behave procyclically concerning the business cycle, which is in accordance with the stylized data on the respective variables. An inflation increase positively affects structural balances due to the widening tax base and domination of revenue effect. The global economic

crisis was a significant burden to fiscal balances, and indirect spillover effects were not neglectable.

Table 2 Baseline Results

Dependent variable: S_BALANCE	*Baseline specification 1*	*Baseline specification 2*
S_BALANCE (-1)	0.6003***	0.5750***
	(0.1077)	(0.0989)
Y	-0.1114*	-0.1154**
	(0.0648)	(0.0569)
CPI	0.0502**	0.0469**
	(0.0256)	(0.0229)
CRISIS	-1.2933**	-1.3950**
	(0.5468)	(0.5298)
ELE	-0.4019	
	(0.4019)	
ELE_high		0.5413
		(0.5698)
ELE_medium		-0.8565**
		(0.3498)
ELE_low		-0.7542**
		(0.4083)
Arrelano–Bond AR(2) test	-0.02 [0.9800]	0.00 [0.9990]
Sargan test	10.12 [0.1200]	9.26 [0.1590]
No. of observations	135	135
No. of countries	15	15

Notes: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. In parentheses are robust standard errors. System GMM with robust standard errors is applied. Instruments used for the level equation are lagged first differences of S_BALANCE and Y (potentially endogenous variable) and first difference of CPI (potentially predetermined variable). Instruments used for the first-differenced equations are lagged levels (two periods) of the dependent variable and the potentially endogenous (Y) and predetermined variables (CPI). The exogenous covariates and electoral dummies are instrumented by themselves in the level equations. In square brackets for Arrelano–Bond and Sargan tests are p values.

Source: Authors' calculations

One of the important conclusions can be derived by comparing the results of estimations with and without including voters' awareness. Without controlling for voters' awareness, one can be misguided on the effects of political factors on macroeconomic variables since the elections dummy variable is insignificant. This conclusion is, to some extent, consistent with the results in papers that include the component of voters' awareness in their research hypotheses; however, the most interesting part of the baseline results is related to the analysis of interactions between politics and macroeconomics (specification in the second column). As mentioned in the previous sections, we include the significance of voters' awareness in the standard modeling and connect that to the elections variable. We find evidence that structural fiscal balances are very sensitive to elections occurrences, but only for the countries with moderately and poorly informed voters. In countries with high voter awareness, there is no such evidence. In countries with moderately aware voters, structural deficits are higher by 0.8565% of GDP in election years, relative to

non-election years on average. This is 0.7542% of GDP in the case of countries with poor awareness of voters. These percentages are high considering the abovementioned average structural deficits in the observed countries.

5.2 Alternative Specifications

Further insights arise when we include and control for additional variables that can potentially be significant determinants of structural budget balance. Our findings are extended since we capture the broader picture of the structural budget balance behavior in these countries. Table 3 reports the additional specifications estimations, where alternative specifications 1 and 3 are those where we do not control for voters' awareness, while specifications 2 and 4 control for it.

Table 3 Alternative Specifications

Dependent variable: S_BALANCE	*Alternative specification 1*	*Alternative specification 2*	*Alternative specification 3*	*Alternative specification 4*
S_BALANCE (-1)	0.6366***	0.6322***	0.6538***	0.6500***
	(0.1175)	(0.1118)	(0.1228)	(0.1177)
Y	-0.1817**	-0.1911**	-0.2017**	-0.2235**
	(0.0789)	(0.0765)	(0.0897)	(0.0932)
CPI	0.0615*	0.0527*	0.0630*	0.0519*
	(0.0320)	(0.0296)	(0.0325)	(0.0307)
CRISIS	-1.1365**	-1.1514**	-1.1982**	-1.2283**
	(0.5005)	(0.4942)	(0.5079)	(0.5043)
ELE	-0.22371		-0.2495	
	(0.1993)		(0.2177)	
ELE_high		0.6343		0.6807
		(0.5845)		(0.6011)
ELE_medium		-0.4523*		-0.4450**
		(0.2424)		(0.2120)
ELE_low		-0.6651*		-0.7901**
		(0.3638)		(0.3791)
E	-0.2752*	-0.2195	-0.3459*	-0.2974*
	(0.1658)	(0.1446)	(0.1829)	(0.1543)
OPEN	0.0043**	0.0037*		
	(0.0021)	(0.0022)		
IGDPPC			0.5317*	0.5237*
			(0.2914)	(0.3061)
Arrelano–Bond AR(2) test	-0.01 [0.9910]	0.04 [0.9650]	0.01 [0.9940]	0.12 [0.9080]
Sargan test	7.60 [0.2690]	8.24 [0.2210]	7.35 [0.2900]	7.43 [0.2830]
No. of observations	135	135	135	135
No. of countries	15	15	15	15

Notes: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. In parentheses are robust standard errors. System GMM with robust standard errors is applied. Instruments used for the level equation are lagged first differences of S_BALANCE and Y (potentially endogenous variable) and first difference of CPI (potentially predetermined variable). Instruments used for the first-differenced equations are lagged levels (two periods) of the dependent variable and the potentially endogenous (Y) and predetermined variables (CPI). The exogenous covariates and electoral dummies are instrumented by themselves in the level equations. In square brackets for Arrelano–Bond and Sargan tests are p values.

Source: Authors' calculations

All specifications have good statistical properties. The estimated coefficients are comparable across the different specifications, which improves our faith in the results' robustness.

These alternative specifications again show that conditional PBC investigation is meaningful. Conclusions on fiscal (ir)responsibility concerning political macroeconomics can be misguided if the control for voters' awareness is not incorporated in the analysis. The same conclusion can be derived for the other variables present in the baseline specifications.

Again, our main interest lies in the electoral dummy variables, aiming to empirically test for differences in the structural budget balances during election and non-election years dependent on voters' awareness across the groups of countries (specifications 2 and 4). The variable of interest is statistically insignificant for the group of countries with high awareness of voters, while there is statistical evidence of PBC in the countries in the second and third groups, which is identical to the baseline one. Nevertheless, the magnitude of influence is different, and now ceteris paribus, countries with moderately aware voters experience lower structural deficits increase in election years relative to non-election years than countries with poorly aware voters.

It is also important to note that our results are consistent with Janku and Libich (2019). The variable that corresponds to exchange rate regimes appeared to be significant and with the expected sign of influence. Therefore, the more rigidity in the exchange rate regime, the greater the fiscal discipline is. Openness to trade positively influences structural budget balances.

Additionally, to baseline specification, following the work of Shi and Svensson (2006), we find that *lGDPPC* is statistically significant. Consequently, more developed countries have better fiscal results.

Finally, all estimated models are tested for robustness by including time dummy variables and estimation by OLS with FE estimator. The results of the robustness check can be found in the Appendix in Tables A4 and A5, respectively. At this point we want to note that as expected, the inclusion of time dummy variables in specifications catches the high percentage of variability by definition, and consequently, our dummy variable of interest *ELE_low* becomes insignificant. We can generally conclude that the above findings are robust to change of estimator, although we prioritize system GMM for the above reasons.

6. Discussion and Policy Implications

The concept of voters' awareness in this paper is a modification of Janku and Libich's (2019) INFOVOT, but with improvement in constructing three modified pillars of VAI with countries in it classified into three groups, according to how they differ concerning their voter awareness. The respective pillars are modified to make the VAI a better proxy for voter awareness. For the first pillar of the VAI regarding providing information, the variables used in this paper are transparency of government policymaking and governments ensuring policy stability. For the second pillar regarding the transmission of information, the variable is the number of individuals using the Internet, while the third pillar refers to information processing; it is the educational structure of the population. We also changed the dependent

variable; instead of using the budget balance, we use the structural budget balance since it better avoids the effects of business cycles but not political cycles.

We found that five European countries (Estonia, Slovenia, Lithuania, Czech Republic, and Latvia) with well-aware voters do not experience PBC. Furthermore, the second group of countries with medium-aware voters (Slovakia, Poland, Turkey, Hungary, Croatia, and Serbia) experience PBC, and in the third group of countries with poorly aware voters (Ukraine, Bulgaria, Romania, and Bosnia and Herzegovina), the PBC are very significant. These two latter groups show that structural fiscal balances are very sensitive to elections, a conclusion that accords with the concept of context-conditional cycles. Specific conditions in individual countries regarding institutional, political, and social factors connected to economic and political transition enable politically motivated fiscal manipulation. They also affect voters' characteristics regarding their inability to understand the real motives of politicians' fiscal policymaking.

There is consensus in political macroeconomic theory that incumbent politicians deliberately prevent political and institutional factors from changing so that they can continue to abuse fiscal policy for political purposes. If we accept this postulate, policy implications can be derived from empirical findings. The country's institutional development in this sphere must promote the significance of voters' awareness. Additionally, if domestic incentives for building these institutions are not strong enough, sometimes foreign institutions can play a significant role, e.g., requirements imposed on candidate countries by the European Union in the form of conditions related not only to governance but also to economic policy, and the institutional framework.

Additional policy recommendations can be derived from examining which segments of the VAI pillars have shortcomings that lead to poor results regarding voter awareness. Of the 10 countries with moderately or poorly aware voters, five have the worst results in information provision, three in information transmission, and three in information processing (Bosnia and Herzegovina scores the worse position in two categories). These are the key areas where improvement is necessary to increase voters' awareness.

7. Conclusions

This study argues that the PBC could be connected to different capacities of voter awareness in the selected European post-transition and low- and middle-income countries with respect to fiscal policy. Therefore, the present research contributes to the vast PBC literature. The study provides an empirical analysis based on balanced panel data for 15 European countries during 2009–2018. These countries were overlooked in the previous literature regarding this problem. We examine the structural budget balances over the indicated period, regardless of voters' awareness characteristics, and did not find any cyclical political component. However, when we introduce voter awareness, the results change, proving claims of context-driven political cycles in fiscal policymaking. In this sense, this study supports the existing theoretical and empirical research and evidence in that political cycles are conditioned by the specifics of the undeveloped economic and political system in low- and middle-income countries, especially in transition countries.

The success in building an institutional environment in these countries and the high standards of governance achieved by some post-transition countries ensure that voters are well-informed and difficult to manipulate. Budgetary political cycles are not present in these countries. Of all the factors that determine voter awareness in the observed post-transition and low- and middle-income countries, the worst are the indicators related to information provision and transmission. Both of these concern factors are under the partial influence of the government, i.e., incumbent politicians. Therefore, postponing reforms in these areas can be seen as a deliberate action by individuals using fiscal manipulation in the pre-election periods for the political purposes of remaining in power.

APPENDIX

Table A1 Variables Description and Sources

Variables		Description	Source
S_BALANCE		Structural budget balance in the percentage of potential GDP	IMF, World Economic Outlook database
Y		GDP growth	World Bank, WDI database
CPI		CPI-measured inflation	World Bank, WDI database
CRISIS		Takes a value of 1 in the years 2009 and 2010 for all countries and 0 otherwise	Coded by authors
ELE		Takes a value of 1 in years of elections and 0 otherwise	International Foundation for Electoral Systems (IFES) database
E		Exchange rate regime. Regimes are coded from 1 (least) to 6 (most flexible regime).	Ilzetzki *et al*. (2019)
OPEN		Openness to trade is measured by the sum of exports and imports as a share of GDP.	World Bank, WDI database
IGDPPC		Logarithm of GDP per capita	World Bank, WDI database
VAI ingredients	*Transparency of government policymaking*	Ranges from 1 to 7 (best)	World Economic Forum, Global Competitiveness Index Database
	Government ensuring policy stability	Ranges from 1 to 7 (best)	World Economic Forum, Global Competitiveness Index Database
	Individuals using the Internet	Individuals using the Internet as a share of the population	World Bank, WDI database
	Quality of the education system	Ranges from 1 to 7 (best)	World Economic Forum, Global Competitiveness Index Database
	Skillset of graduates	Ranges from 1 to 7 (best)	World Economic Forum, Global Competitiveness Index Database

Table A2 Summary Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
S_BALANCE	-2.10	2.16	-8.54	2.11
Y	1.62	4.20	-14.81	11.11
CPI	3.19	5.12	-1.58	48.70
OPEN	116.29	36.27	45.90	190.16
IGDPPC	1.40	0.06	1.20	1.49

Source: Authors' calculations

Table A3 Panel Unit Root Tests of the Used Variables

	LLC		*IPS*		*ADF Fisher*		*PP Fisher*	
	Statistic	*p value*	*Statistic*	*p value*	*Statistic*	*p value*	*Statistic*	*p value*
S_BALANCE	-5.1422	0.0000	-1.4017	0.0805	26.9316	0.0000	4.6023	0.0000
Y	-9.1076	0.0000	-6.1162	0.0000	25.1378	0.0000	46.4950	0.0000
CPI	-8.1415	0.0000	-2.8507	0.0022	9.1765	0.0000	0.7179	0.2364
OPEN	-3.4620	0.0003	-2.8436	0.0022	7.4908	0.0000	46.3911	0.0000
IGDPPC	-1.6128	0.0534	-9.4286	0.0000	28.6755	0.0000	-2.2293	0.9871

Notes: Lags are chosen by AIC

Source: Authors' calculations

Table A4 Estimated Specifications with Time Dummies Inclusion

Dependent variable: S_BALANCE	***Baseline specification 1***	***Baseline specification 2***	***Alternative specification 1***	***Alternative specification 2***	***Alternative specification 3***	***Alternative specification 4***
S_BALANCE (-1)	0.7877***	0.7502***	0.7146***	0.6897***	0.7440***	0.7087***
	(0.1981)	(0.1855)	(0.2135)	(0.1989)	(0.2128)	(0.1986)
Y	-0.1581	-0.1453	-0.1126	-0.1047	-0.1168	-0.1060
	(0.1701)	(0.1700)	(0.1520)	(0.1545)	(0.1551)	(0.1514)
CPI	0.025	0.0253	0.0621	0.0605	0.0607	0.064
	(0.0468)	(0.0448)	(0.0502)	(0.0490)	(0.0562)	(0.0515)
ELE	-0.1902		-0.1789		-0.1832	
	(0.2753)		(0.2628)		(0.2678)	
ELE_high		0.6211		0.6493		0.5067
		(0.5765)		(0.6152)		(0.6450)
ELE_medium		-0.5220*		-0.5256*		-0.5449**
		(0.3102)		(0.2951)		(0.2585)
ELE_low		-0.6507		-0.5507		-0.3519
		(0.5227)		(0.4635)		(0.4652)
E			-0.2420	-0.2552	-0.2123	-0.2323
			(0.1978)	(0.1998)	(0.2282)	(0.2093)
OPEN			0.0035	0.0016		
			(0.0044)	(0.0035)		
IGDPPC					4.1124	3.1772
					(2.8390)	(3.2008)
Arrelano–Bond AR(2) test	-0.03 [0.9730]	0.10 [0.9210]	0.07 [0.9410]	0.17 [0.8610]	0.06 [0.9530]	0.1 [0.9170]
Sargan test	10.91 [0.0910]	11.79 [0.0670]	9.78 [0.1340]	10.89 [0.0920]	9.21 [0.1620]	9.79 [0.1340]
No. of observations	135	135	135	135	135	135
No. of countries	15	15	15	15	15	15

Notes: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. In parentheses are robust standard errors. System GMM with robust standard errors is applied. Instruments used for the level equation are lagged first differences of S_BALANCE and Y (potentially endogenous variable) and first difference of CPI (potentially predetermined variable). Instruments used for the first-differenced equations are lagged levels (two periods) of the dependent variable and the potentially endogenous (Y) and predetermined variables (CPI). The exogenous covariates and time and electoral dummies are instrumented by themselves in the level equations. Variable CRISIS is now omitted because we control for these years by time dummy variables. In square brackets for Arrelano–Bond and Sargan tests are p values. It is well-documented that the Stata xtabond2 command has a bug when some variables, usually time dummies, are omitted due to the collinearity, i.e., the degrees of freedom of the Sargan overidentification tests are incorrect, and consequently, the p values are incorrect (too small).

Source: Authors' calculations

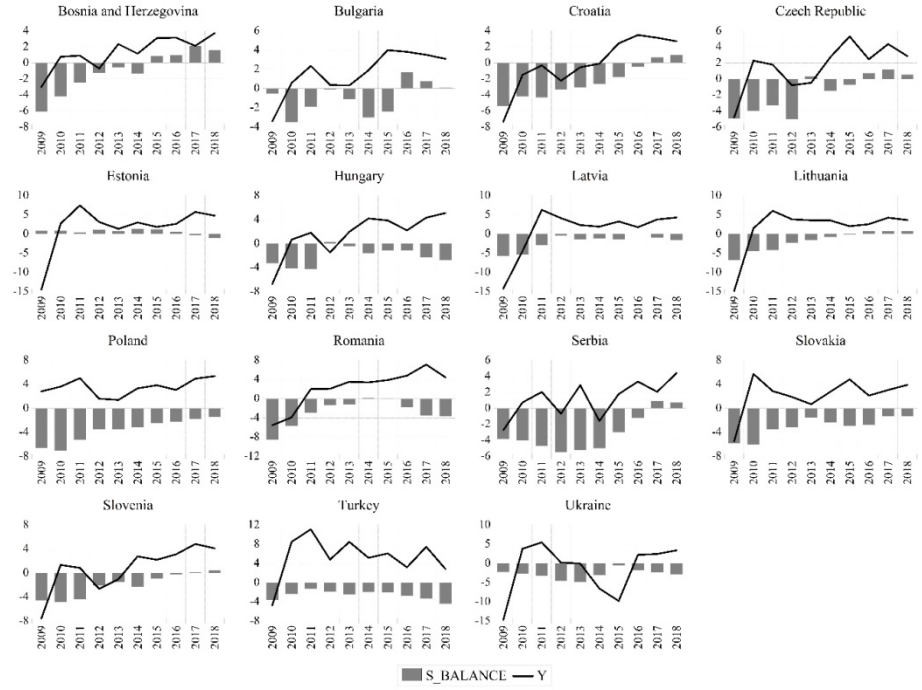
Table A5 Estimated Specifications by OLS with FE Estimator

Dependent variable: *S_BALANCE*	Baseline specification 1	Baseline specification 2	Alternative specification 1	Alternative specification 2	Alternative specification 3	Alternative specification 4
S_BALANCE (-1)	0.6325***	0.6452***	0.5463***	0.5626***	0.6267***	0.6378***
	(0.0812)	(0.0752)	(0.0862)	(0.0807)	(0.0761)	(0.0694)
Y	-0.0256	-0.0410	-0.0117	-0.0311	0.0169	0.0055
	(0.0618)	(0.0624)	(0.0633)	(0.0626)	(0.0673)	(0.0675)
CPI	0.0316	0.0238	-0.0171	-0.0359	-0.0160	-0.0283
	(0.0288)	(0.0300)	(0.0406)	(0.0402)	(0.0392)	(0.0425)
CRISIS	-0.9927**	-0.9854**	-0.3157	-0.2601	-1.1308**	-1.1073**
	(0.4053)	(0.4148)	(0.4489)	(0.4440)	(0.4274)	(0.4362)
ELE	-0.2879		-0.3833		-0.3407	
	(0.2348)		(0.2624)		(0.2389)	
ELE_high		0.4757		0.4509		0.4623
		(0.6422)		(0.6935)		(0.6522)
ELE_medium		-0.4600**		-0.4488**		-0.5714***
		(0.1767)		(0.1956)		(0.1601)
ELE_low		-0.7740**		-1.1643***		-0.8482***
		(0.2708)		(0.0868)		(0.2854)
E			0.6563*	0.7690*	0.4919	0.5801
			(0.3600)	(0.3816)	(0.3714)	(0.3951)
OPEN			0.0543**	0.057**		
			(0.0217)	(0.0205)		
IGDPPC					-20.2880**	-19.3883**
					(8.0586)	(8.7831)
Constant	-0.2596	-0.1754	-7.9271**	-8.3033***	27.3462**	26.029*
	(0.2925)	(0.2879)	(2.7719)	(2.6077)	(11.2671)	(12.2340)
Adj. R^2	0.61	0.62	0.65	0.67	0.63	0.64
No. of observations	135	135	135	135	135	135
No. of countries	15	15	15	15	15	15

Notes: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. In parentheses are robust standard errors. We use a cluster-robust estimator (cluster-robust standard errors at the country level) to allow for within-country correlation between the residuals.

Source: Authors' calculations

Figure A1 (Pro/A/Counter)Cyclicality of Fiscal Policy



Source: Authors' calculations

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