



Political Budget Cycles in Early Versus Regular Elections: The Case of Serbia

Vladan Ivanovic^{1,2}  · Endrit Lami^{3,4} · Drini Imami^{2,5}

Accepted: 1 February 2023 / Published online: 7 March 2023
© Association for Comparative Economic Studies 2023

Abstract

The paper analyses Political Budget Cycles in the context of a young post-communist democracy, Serbia. The authors deploy well-established methodological (time series) approaches to examine the general government budget balance (fiscal deficit) in conjunction with elections. The findings suggest that there is clear evidence of higher fiscal deficit prior to elections—however, this is the case only for regular (scheduled) elections and not so for snap (early called) elections. The paper contributes to the PBC literature by revealing different incumbent behaviour in regular versus early elections, thus highlighting the importance of distinguishing between these types of elections in the domain of PBC research.

Keywords Political budget cycles · Budget balance (deficit) · Early elections · Regular elections · Serbia

JEL Classification D72 · E62 · P16 · H26

✉ Drini Imami
dimami@ubt.edu.al

Vladan Ivanovic
vivanovic@kg.ac.rs

Endrit Lami
endrit.lami@financa.gov.al

¹ Faculty of Economics, University of Kragujevac, Kragujevac, Serbia

² CERGE-EI, Prague, Czech Republic

³ Martin Luther University Halle-Wittenberg, Halle, Germany

⁴ Ministry of Finance and Economy of Albania, Tirana, Albania

⁵ Faculty of Economics and Agribusiness, Agricultural University of Tirana, Tirana, Albania



Introduction

Before elections, an incumbent government may engage in expansionary fiscal policies, to improve the economic situation in order to maximize electoral outcome, giving rise to the so called Political Business Cycles. Since the publication of the seminal paper of Nordhaus (1975), there has been a growing body of empirical research on this topic.

Traditional Political Business Cycle theory characterizes politicians as opportunistic. The driving force incentivizing both the incumbent's behaviour and their economic policies is to remain in power. Voters are assumed to be both myopic and naive and as such prone to vote for incumbents when times are good prior to the election. Hibbs (1977) provided an alternative view incorporating partisan preferences over policy outcomes, arguing that left-wing parties tend to prefer low unemployment at the expense of higher inflation, while right-wing parties have the opposite preferences. While a partisan approach can fit well to (many) western countries or industrial democracies, there is a common understanding that the opportunistic model best describes (some) developing countries, where elections are often considered referenda on specific rulers and recent economic conditions (Block 2002).

The incumbent government may use monetary as well as fiscal policies/instruments to stimulate the economy in conjunction with elections. In the case of monetary instruments, the incumbent can persuade the central bank to engage in expansionary monetary policies prior to elections, known also as political monetary cycle (PMC). While the occurrence of PMC requires that the incumbent has certain levels of control over the central bank (which is not always the case), the alternative economic policy instrument which is under direct control/domain of the incumbent government is fiscal policy. The government can engage in expansionary fiscal policies, which can take the form of lower taxation and/increased spending prior to elections, which eventually results in increased debt—this phenomenon is known as Political Budget Cycle (PBC) (Lami and Imami 2019).

PBCs are more pronounced in emerging economies or new democracies. Brender and Drazen (2005), analysing 68 low- and high-income democracies, demonstrate that new democracies are more vulnerable to PBCs, resulting in higher public spending and larger deficits before elections. Klomp and de Haan (2013a, b), based on panel data analysis, confirm the existence of PBCs being reflected in fiscal balances (as well as public spending) both in young and old democracies. They find far stronger political cycles in the latter category.

Lack of (or limited) voter experience can explain why voters in new democracies do not behave rationally or punish such incumbent behaviour (Praščević 2020; Hanusch and Keefer 2014; Rose 2006; Shi and Svensson 2006; Brender and Drazen 2005). On the other hand, this is more likely to be the case in developed economies where voters have experience and understanding of the costs of PBC. Thus, in this context, fiscal manipulation in advanced democracies may be punished rather than rewarded (Brender and Drazen 2005). Differences in a PBC pattern or its magnitude between developing and developed countries may be due to differences in



institutional environments, which are related to corruption, rent-seeking activities, and access to free media (Shi and Svensson 2006).

Alt and Lassen (2006a, b) highlight the importance of transparency—the higher the degree of fiscal transparency the lower are public debt and deficits during electoral periods. In this context, the media play a crucial role in providing trustworthy and accurate information to citizens (Hong 2016). New democracies are often characterized by an underdeveloped media sector which is under the strong influence of the government and characterized by non-transparent media ownership and money flows associated with high levels of corruption. These are the characteristics of the media market in Serbia (see Kisić 2015).

PBC patterns may be influenced by the timing of elections, e.g. whether elections are called earlier than it has been scheduled (snap/early elections) or on time (scheduled regular elections). In some countries (e.g. the USA), election timing is imposed constitutionally. In many countries early elections are possible and often common. If election timing is not set for a fixed date by the constitution, the incumbent can call early elections for political or economic reasons (Lächler 1982). This implies that the incumbent, instead of engaging in expansionary economic (e.g. fiscal) policies, may use a positive (external) sector supply shock (e.g. high growth, low unemployment, and inflation) as an opportunity to call an early election (Ito and Park 1988), whereas when early elections are called for other reasons (e.g. loss of confidence or a coalition breaks down), the incumbent may not have sufficient time to plan and implement expansionary policies—vice versa, if elections take place as planned (the case of regular elections), the incumbent government has more (sufficient) time to plan and execute expansionary policies with the aim that they will yield the expected “positive effect” in the economy prior to elections¹. Thus, it is very important to distinguish between regular (scheduled) and early (snap) elections when analysing PBCs (Imami et al. 2020).

In our paper, we empirically investigate PBCs in Serbia, a post-communist economy, characterized by a limited democratic history and voter experience, a weak institutional framework, and a high level of corruption, as explained in the following section. This paper adds value to the literature from several perspectives. First, this is the first paper to target PBC phenomena in Serbia. Until now, Serbia was rather part of a broader analysis of transition countries (see Pavlović and Bešić 2019) but previous studies do not provide insight on the occurrence of PBC. The case of Serbia is of interest also because it is one of the last countries embracing transition from a planned economy and dictatorship to market economy and democracy. Second, the analysis puts an emphasis on distinguishing between early/snap elections and regular elections in conjunction with PBC, which is relevant and of interest for other countries too. Even in the context of a relaxed/weak institutional environment,

¹ The process of planning and implementation of expansionary fiscal policies may take many months—as a rule, (new) budgets have to undergo scrutiny/review in different institutions (e.g. Ministry of Finance, government as a whole, various parliament commissions and eventually parliament voting)—this lengthy process is known as inside lag (namely the time between when new fiscal policy (e.g. tax law) is proposed and when it is passed). Inside lags tend to be longer in the case of fiscal policies compared to monetary policies, whereas outside lag refers to the period between the start of implementation and when the effects are realized (Leeper et al 2013).



which characterizes Serbia (see more details later in the paper), the incumbent faces limitations on the timely execution of fiscal expansionary policies. It is even more important, since the changes in the institutional framework for conducting monetary policy considerably reduce the possibility of monetary policy misuse, also in transition economies (Praščević 2020). The findings suggest that the elections-related deterioration of the fiscal balance is clearly present in Serbia—this phenomenon is driven by regular (scheduled) elections, while there is no significant increase in the deficit prior to early (snap) elections. Our findings are in line with previous research dealing with PBC in context of weak institutions and now democracies (see, for example, Hallerberg et al. 2002; Brender and Drazen 2005; Block 2002). Moreover, the use of recent monthly data provides more accurate insight into the PBC dynamics.

The structure of the paper is as follows. The next section describes the country context by presenting an extensive analysis, which is important to understand the political, institutional, and economic context, and also provides useful information per se, given the scarcity of such insights about Serbia in the academic literature. The third section describes the methodology, the fourth section provides the findings while in the last section concluding remarks are presented.

Country Context

In the early 1990s, the Yugoslav state entered political and economic chaos ending up in the bloody decay of the Yugoslav socialist state, where the Federal Republic of Yugoslavia (FRY), comprising Serbia and Montenegro, became a successor. While all the other former communist countries were confronted with steep economic downturn at the beginning of transition, in the case of FRY it was even more pronounced: it was facing economic and political isolation, destructive economic policies, and a hostile political and regulatory environment. This all culminated in the Kosovo war and subsequent NATO bombing of FRY in 1999. When the communist block started to collapse in 1989, FRY was in relatively favourable starting conditions, including substantial experience with market-oriented reforms, major economic (and political) decentralization, greater openness to the West as well as better integration in world economy (Uvalić 2007), although still belonging (arguably) to more rigorous communist regimes (Havrylyshyn 2006). Nevertheless, Serbia entered transformation towards a market economy and democracy as a latecomer and under highly unfavourable conditions at the beginning of the third millennium. All the fundamental policy inputs for achieving desirable economic and social goals: market transformation, state of democracy, and media freedom, were at an extremely low level (Havrylyshyn 2006). Vojislav Koštunica won the presidential election against Slobodan Milošević on 24 September 2000, while the democratic opposition took 2/3 of the seats in the parliamentary elections on 23 December 2000. At that time, Serbia was one of the poorest European countries with GDP at half of the level in 1989. Moreover, within all former Yugoslav republics, only Serbia and Bosnia and



Herzegovina have lower level of GDP when compared to the time before the Berlin wall fall down (Jović 2022).

One may argue that Serbia as a latecomer had a chance for more efficient transition, avoiding the mistakes made by other transition countries and learning from their experience. This did not happen. The countervailing forces were stronger: path dependency, adverse initial conditions, and broad and deeply rooted institutional failure. The informal institutional structure, without the intellectual and cultural roots in classical liberalism “*based on the principles of self-interest, self-determination, self-responsibility and free market competition*” (Pejovich 2003, 350), made an additional long-lasting burden in the successful transformation towards a market economy and supporting political institutions.

While the transition during the 1990s may be characterized as a blocked transformation, retaining a lot of former communist characteristics and only a facade of democratic institutions (Trifunović 2015), the 2000s marked real transition towards a market economy. However, while the initial conditions as well as political and economic heritage were seen as a disadvantage, the institutional setting formed during transition was equally disappointing. State capture, weak rule of law, uneven distribution of political and economic power created strong incentives towards rent-seeking and partisan behaviour, leading to high economic uncertainty and political instability (Resimić 2022).

Two rather different periods of institutional development may be identified since 2000. The first period is between 2000 and 2012. During this time Serbia was confronted with several tectonic political shifts: the assassination of the Prime Minister and leading figure of the democratic movement, Zoran Đinđić (2003); reform of the joint state with Montenegro, which was an introduction to its dissolution (2006); the non-transparent and accelerated process of adoption of a new constitution (2006); and unilateral proclamation of Kosovo independence (2008) (Kovačević 2019). Internal economic conditions were characterized by high unemployment and slow pace of reforms and were additionally worsened by the Global financial crisis in 2008–2009 causing a recession in 2009, making the government-debt-to-GDP ratio unsustainable (Andrić et al. 2016).

In this period, progress was made in setting up and upgrading the institutional structure (Vladislavljević 2019) as reflected in the rising values of democracy indices such as Freedom House or Bertelsmann Foundation, including the most important formal rules of a market economy—credible and stable property rights, freedom of contract, an independent judiciary, and constitutional protection (Pejovich 2003). However, most of this progress remained to a large extent non-functional and the discretionary power of bureaucrats were not reduced. The end result was a captured state, flourishing corruption and an institutional structure that amplified it. This development demonstrates an important feature to be observed in many failed transition countries: *de jure* institutional building was not followed by *de facto* institutional development.

Serbia, at that time, was one of the few countries in the world in which the seats in Parliament belonged to a party and not to elected politicians (Novaković 2010). The supremacy of the party over institutions was achieved. Party domination was additionally fuelled by a high level of state centralization. The government directly



controlled 17 public companies, some of them being the largest companies in Serbia, and many agencies, foundations, and services. Overall, it is estimated that there were about 40,000 positions in Serbia to be appointed by party officials of the ruling parties at all levels (Pešić 2007).

Alongside this centralized state comes an authoritarian and oligarchic organization of the participants in the political market. To accomplish partisan goals—whether it was employment of party people, friends, and relatives in the public sector, or “exchange services” with tycoon businesses, party leaders usurped state institutions, and functions by politicizing them and preventing their impartial and legal action. The basic democratic institutions have also been shaken, and the power of the parliament has weakened most in relation to the power of the executive. In consequence, the political system became overburdened because it performed functions that do not belong to it, which undermines democratization, political, and economic competition (Pešić 2007).

The combined factors of political instability, financial crisis, slow process of European integration, and overall failure of a new political elite after 2000 to establish democratic and independent institutions (Bieber 2018), and the slow pace of economic reforms, where the private sector share was only 60% of GDP in 2010 compared with 40% in 2000 (Uvalić 2013), strongly influenced the change in government in 2012, where the second period of institutional transformation started. A younger generation of Milošević-era politicians gained power and found unrestricted access to public funds in a weak institutional environment (Pavlović 2020). An old elite from the 1990s came back with a changed political and economic narrative. Almost from the beginning of this period, Serbia started moving from moderate party pluralism towards a one-party system. Political and economic pressures on media started to rise, and the independence of institutions, pressures on judiciary, and the fight against corruption were crumbled further (Lončar 2017). Control over the media goes hand-in-hand with economic incentives especially where the role of public resources comes to light: whether through direct financing (for example, regional TV Novi Pazar) or tax write-offs (for example, TV Pink) (Pavlović 2020).

Everything is subordinated to the interests of the incumbents. For example, ruling parties were abusing the governance of the public company “Pošta Srbije”, which refused to post the list of opposition parties 10 days before the elections in 2016. The “catch all” strategy of the incumbent party (Spasojević 2017) spurred vast misuse of resources because of the many diverse interests to be satisfied. The unresolved Kosovo question, migration crisis, the almost frozen process of European integration, and finally the COVID-19 pandemic additionally diverted attention from economic issues.

With an uneven distribution of power, along with institutional weaknesses came an excessive concentration of power and “presidentialization” of politics, although the electoral and political system provides incentives for a more balanced power sharing between different political actors (Spasojević 2021). The newly formed political landscape is described as “competitive authoritarianism” (Castaldo 2020), a hybrid system where *de jure* democratic procedures and *de facto* authoritarian rule merge with an ultimate aim of conquering and consolidating power. The abuse of economic policy and public resources to promote the ruling parties, especially



during election campaigns, has intensified. Ruling parties have become mechanisms for clientelist networks, substituting or replacing formal institutions with negative impact on long-term democracy development and state capacity. The political party (organization) in power is not only the instrument of power but is also a central force in maintaining and protecting power (Günay and Dzhic 2016). The result has been the restructuring and rebuilding of the political system to serve the incumbent party interests, similar to tendencies in Poland, Hungary, or other neighbouring Balkan countries (Keil 2018). Dismantling the democratic institutions was followed by a weakening of the legitimacy of the electoral process. Participation of citizens in the electoral process is in constant decline: it was relatively high in 2008—reaching over 60%, and it dropped to 48.93% in 2020 (Ilić 2021).

While the privatization process is almost finished, an important channel for misuse of public resources after 2012 continued through secret contracts where the most important information on rights and obligations between the state and private investors are hidden. Secret contracts are against constitutional provisions (Article 51), according to which public investment contracts are not allowed to be hidden or blocked (Pavlović 2020).

The weak institutional development and impeding political environment were followed by poor economic performance. Since 2000, Serbia has had four recessions: 2009, 2012, 2014, and 2020. All four downturns were initiated by exogenous shocks—global financial crisis, European crisis of sovereign debt, and COVID-19 pandemic, but further worsened by internal economic and institutional drawbacks. That has resulted in increased need for external funding as well as higher public debt.

Through the whole period after 2000, Serbia was never an over-indebted country. At the beginning of transition there were generous write-offs of a large part of liabilities by the London and Paris Club (Đukić and Nikolić 2012), but the global financial crisis in 2008 caused significant deterioration of the indebtedness position. The foreign debt of Serbia during this period reached about 80 per cent of GDP. Also, according to the ratio of external debt to the value of exports of goods and services Serbia was a highly indebted country until 2011; however, after this period, due to the strong inflow of foreign direct investments and an increase in exports, it switched to being a medium indebted country (Božić Miljković 2019). In the years immediately following the global financial crisis, the level of indebtedness became a lesser problem compared to its growth dynamics. Between 2009 and 2012, the absolute value of debt doubled (Šojić 2013).

Weak institutions not only enabled rent-seeking activities, but they also attracted political agents who were prone to using public resources for private gains, so dismissing pluralistic institutions and violating democratic procedures (Pavlović 2020)². Weak institutions favour powerful incumbents (Havrylyshyn 2006), which in turn creates a highly constraining vicious circle damaging long-term economic

² Economic Intelligence Unit describes Serbia as a “flawed democracy”. The 2022 Freedom in the World Report says it is “Partly free”, while the 2022 Nations in Transition Report says it is a “transitional or hybrid regime with a democracy percentage of 46/100”.



performance. With political agents, where weak vertical and even more squeezed horizontal accountability exists, the use of public resources for partisan purposes is a standard tool in maximizing and consolidating political power. The State became a “money wasting machine” (Pavlović 2016) hampering long-term productivity and economic growth.

In this institutional and political context, the incumbent is expected to have strong incentives and relatively high degrees of freedom to engage in PBC. Higher public spending prior to elections may provide tangible benefits to voters (e.g. through increased employment), while higher spending means also an opportunity to incentivize or fuel clientele (such as businesses attached to the media, that may benefit somehow from public spending) to increase their support for the incumbent.

Data and Method

We statistically test the hypothesis that the general government budget balance (fiscal balance) deteriorates significantly before general (parliamentary) elections in Serbia and such deterioration is attributed to regular (scheduled) elections only—not to early (snap) elections. Fiscal balance is defined as general government budget revenues minus general government budget spending. If revenues are smaller (greater) than the respective spending, then the budget is running a fiscal deficit (surplus). When observed in annual terms, Serbia’s budget was in deficit for 14 out of 17 fiscal years and in surplus for the other three. Observations on a monthly basis shows the government ran a deficit in about 69 per cent of the observed months (143 out of 206) and a surplus for about 31 per cent. To test our hypothesis, we employ monthly time series data on the overall budget balance obtained from the government fiscal statistics.³ Monthly data, in addition to providing more robust statistical results, due to a higher number of observations (compared to annual data), most importantly allows for the inclusion of any intra-annual election effects. Empirical analysis based on annual data has been a serious drawback of many empirical studies analysing several aspects of PBCs (see Streb et al. 2012; Akhmedov and Zhuravskaya 2004). On the other hand, one of the potential problems associated with monthly time series (or, generally, with any intra-annual frequency data) is the possible existence of seasonality patterns, which if not addressed could distort the results. We address this potential drawback, as explained below.

The available time series of the fiscal balance includes 206 observations, from January 2005 to February 2022. The data are denominated in billions of Serbian Dinar (RSD) and deflated by the Consumer Price Index (CPI). In our empirical analysis strategy, we distinguish between early (snap) elections and regular (scheduled) elections which as a rule should take place every four years.⁴ Six parliamentary

³ Data on the overall budget balance are sourced from the National Bank of Serbia (NBS).

⁴ We have considered early elections those which were called prior to the fourth year from the previous election (which is the standard time span between parliamentary elections) or that were labelled/classified as such by OSCE (2022).



(general) elections were held during this period—out of which three were regular elections and three early elections—whose expected effect on fiscal balance is statistically captured by several dummy variables, constructed as explained below. Parliamentary elections were held on 21 January 2007 (regular)⁵; 11 May 2008 (early); 6 May 2012 (regular); 16 March 2014 (early); 24 April 2016 (early); and 21 June 2020 (regular)⁶.

We test the hypothesis of this paper by utilizing Intervention Analysis as the main econometric tool, which is based on the Box and Tiao (1975) methodology. This econometric approach has been applied in several similar works on PBCs or other fields with the same statistical inquiry objective of analysing the impact of “a known event” on a social or a natural time process.⁷ There are not many appropriate controlling variables available at a monthly frequency for this analysis. Therefore, another main reason we employ Intervention Analysis as our primary statistical framework is its advantage of enabling reliable econometric modelling even in the absence of such explanatory variables, as the time process could be modelled by its own autoregressive and moving average components (ARMA). However, as explained below, we conduct robustness checks for our findings by replicating the analysis using linear regressions, and by estimating models with the data collapsed to quarterly frequency so we can utilize additional and more appropriate control variables available at quarterly intervals.

Basically, the test in the Intervention Analysis proceeds by modelling the variable of interest (i.e. the fiscal balance) by an appropriate autoregressive moving average model (ARMA) and an intervention term. The intervention term models the time distance to each election day and captures any potential effect of elections on the variable of interest. The intervention term that models “the event”—the approaching elections in this case—could be considered as an explanatory variable capturing the dynamics of the dependent variable in addition to its “natural” pattern, which is modelled by an $ARMA(p,q)$ specification (where p refers to the order—number of lags—of the autoregressive component, and q to the order of the moving average component). Intervention terms employed in this analysis consist of several dummy variables modelling different periods before and after elections. We call these variables “Electoral dummies” (EDs). Therefore, if the estimated parameter of a particular ED variable was to both prove statistically significant and have the anticipated

⁵ The 2007 elections were called to be held on 21 January 2007, a few months prior to the expected date. However, they were not unexpected. Two big political events in 2006 caused it. The first relates to the secession of Montenegro from the State union of Serbia and Montenegro on 21 May 2006. Already in May 2006 there was a common understanding that new elections would happen after proclamation of new Serbian constitution, which is the second event happening on 28 and 29 October 2006. Thus, in the context of our analysis, we consider them scheduled (as they were planned in advance and the incumbent had sufficient time to prepare for its electoral strategy, including hypothetical engagement in expansionary policies).

⁶ Originally elections were to be organized on 26 April, but because of COVID-19 pandemic they were postponed to 21 June.

⁷ See, for example, McCallum (1978), Hibbs (1977), Alesina and Sachs (1986), Mills and Mills (1991), Alesina and Roubini (1992), Yoo (1998), Gilmour et al. (2006), and Sarfo et al. (2017). For a comprehensive and practical explanation of Intervention Analysis, see Enders (2015).



sign, that would be considered as empirical evidence in support of the hypothesis of this study.

We define four ED variables for different time intervals preceding elections (all elections) and four others for symmetrical time intervals after elections. Likewise, we also define ED variables separately for each category of elections part of our hypothesis, namely for regular and early elections. Each set of EDs is formally defined as follows:

- (i) EDs for “all elections” (regular and early elections altogether)

$$ED_{\pm j,t} = \begin{cases} 1 & : \text{for all months up to and including the } \pm j \text{th month} \\ & \text{before } (-j) \text{ or after } (+j) \text{ elections} \\ 0 & : \text{otherwise} \end{cases}, \quad j \in [3;6;9;12]$$

- (ii) EDs for “regular elections” only

$$ED_{regular_{(\pm j,t)}} = \begin{cases} 1 & : \text{for all months up to and including the } j \text{th month} \\ & \text{before } (-j) \text{ or after } (+j) \text{ } \} \text{regular elections''} \\ 0 & : \text{otherwise} \end{cases}, \quad j \in [3;6;9;12]$$

- (iii) EDs for “early elections” only

$$ED_{early_{(\pm j,t)}} = \begin{cases} 1 & : \text{for all months up to and including the } j \text{th month} \\ & \text{before } (-j) \text{ or after } (+j) \text{ } \} \text{early elections''} \\ 0 & : \text{otherwise} \end{cases}, \quad j \in [3;6;9;12]$$

The methodology allows also for augmentation of the statistical model with other explanatory variables, which, referring to economic theory or common sense, could be considered relevant to explain any degree of variation in the dependent variable. These augmented models are known as $ARMAX(p,q,m)$, where X denotes the presence of (m) other explanatory variables. We employ this type of augmented model as the main statistical setting of our analysis. The additional explanatory variables we include are the industrial production index (IPI) in volume terms; retail trade index (RTI) in volume terms; the number of unemployed persons (Un_Per); RSD/USD nominal exchange rate (NER); and a dummy variable to control for the COVID-19 pandemic shock, which takes the value “1” from February 2020 to March 2021 and value “0” otherwise (Covid_dum).⁸ Based on theoretical and intuitive reasoning, the explanatory variables are included either with a time lag of one period (in the case of monthly data) or as time contemporary variables (when quarterly collapsed data were employed). Descriptions of variables used in analysis are presented in Table 1, while detailed description with additional clarifications regarding syntax

⁸ Monthly time series starting from January 2005 on all four variables are sourced from the National Bank of Serbia.



Table 1 List of variables and definitions

Variable	Description
fis_bal	Overall fiscal (budget) balance, nominal (bn. Dinar)
fis_bal_def	Overall fiscal (budget) balance with constant prices (bn. Dinar)
rti_real	Retail trade index in volume/real (number)
cpi	Consumer Price Index (base = January 2005)
ner	Nominal exchange rate (Dinar/Dollar)
gdp_nom	GDP in current prices/nominal (bn. Dinar)
gdp_real	GDP in constant prices/real (bn. Dinar)
un_per	Unemployed persons (number/thousands)
covid_dum	Dummy variable for the period of Covid-19 (Feb. 2020–Apr. 2021)
ED_3	Cumulative electoral dummies before ALL elections. ED_3 for 3 months before All elections; ED_6 for 6 months before All elections; and so on for ED_9 and ED_12
ED_6	
ED_9	
ED_12	
ED3	Cumulative electoral dummies after ALL elections. ED3 for 3 months after All elections; ED6 for 6 months after All elections; and so on for ED9 and ED12
ED6	
ED9	
ED12	
ED_regular_3	Cumulative electoral dummies before Regular elections. ED_regular_3 for 3 months before Regular elections; ED_regular_6 for 6 months before Regular elections; and so on for ED_regular_9 and ED_regular_12
ED_regular_6	
ED_regular_9	
ED_regular_12	
ED_regular3	Cumulative electoral dummies after Regular elections. ED_regular_3 for 3 months after Regular elections; ED_regular_6 for 6 months after Regular elections; and so on for ED_regular_9 and ED_regular_12
ED_regular6	
ED_regular9	
ED_regular12	
ED_early_3	Cumulative electoral dummies before Early elections. ED_early_3 for 3 months before Early elections; ED_early_6 for 6 months before Early elections; and so on for ED_early_9 and ED_early_12
ED_early_6	
ED_early_9	
ED_early_12	
ED_early3	Cumulative electoral dummies after Early elections. ED_early_3 for 3 months after Early elections; ED_early_6 for 6 months after Early elections; and so on for ED_early_9 and ED_early_12
ED_early6	
ED_early9	
ED_early12	

and transformations employed in estimations for monthly and quarterly data are to be found in Table 3 of “Appendix”).⁹

⁹ The short forms of the variables match the dataset, which is available on request. All of the transformations and estimates reported in this paper can thus be easily checked and/or extended.



In the absence of monthly time series data on real output growth (gross domestic production—GDP), which would be the most appropriate variable to control for real economic activity that might affect fiscal balance, the IPI and RTI in volume terms are reasonable proxy variables.¹⁰ The number of unemployed persons is available at monthly frequency, and we employ this variable to control for possible fiscal balance variation due to labour market dynamics (e.g. to control for potential influences on the fiscal deficit through certain budget items such as unemployment state assistance), whereas nominal exchange rate (RSD/USD) controls for any potential variation due to dynamics in currency exchange markets which also, theoretically and intuitively, might affect fiscal balance.

In the Box–Jenkins methodology of ARMA modelling (Box and Jenkins 1976), one key prerequisite is the stationarity and non-presence of seasonality of the time process being modelled (i.e. the dependent variable), as well as all explanatory variables in the model, if any. Initially, we deflated the original time series of monthly fiscal balance with the Consumer Price Index (CPI) to remove inflation effects and then test the deflated series for any presence of seasonality.¹¹ The series contains strong patterns of seasonality based on all seasonality tests employed (i.e. F-test; nonparametric Kruskal–Wallis test¹²; moving seasonality test; and combined test).

The same is the case for the time series of our explanatory variables. Therefore, first we seasonally adjusted all of the original series.¹³ Then, we tested again for the stationarity of each seasonally adjusted time series, utilizing several unit root tests. The seasonally adjusted series of the dependent variable (i.e. fiscal balance) results in a stationary time process according to all of the statistical tests employed (i.e. augmented Dickey–Fuller test; Phillips–Perron test; and Kwiatkowski–Phillips–Schmidt–Shin test).¹⁴ Conversely, all seasonally adjusted series of explanatory variables were non-stationary processes according to all tests. Therefore, in order to obtain a stationary series, we further transformed explanatory variables into their respective first lag differences of the natural logarithms, which are approximately the monthly growth rates of the original series.¹⁵

¹⁰ We utilize the available data on quarterly GDP in our robustness check modelling with quarterly aggregated data, as explained below.

¹¹ CPI monthly time series starting from January 2005 are from the National Bank of Serbia.

¹² See Kruskal and Wallis (1952).

¹³ Seasonal adjustment of all series is computed by the Census-X12-ARIMA method (developed by US Census Bureau), run through EViews software with all default options, except in the case of deflated fiscal balance series (the dependent variable) which employed the additive decomposition instead of the default multiplicative decomposition, given that this series takes also negative values and multiplicative decomposition cannot be applied in this case, whereas for the time series of other explanatory variables, all of which take only positive values, the default multiplicative decomposition was employed. After seasonal adjustments, all statistical tests employed for the presence of seasonality (i.e. F-tests; nonparametric Kruskal–Wallis test; moving seasonality test; and combined test) reject the seasonal null at the 1% level of significance for all the series (i.e. the dependent and explanatory variables).

¹⁴ See Dickey and Fuller (1981), Phillips and Perron (1988) and Kwiatkowski et al. (1992).

¹⁵ We tested the null of a unit root for the deflated and seasonally adjusted series of the dependent variable (i.e. fiscal balance) as well as first differences of the natural logarithms of seasonally adjusted explanatory variables (i.e. IPI, RTI, Un_Per, and NER) by two statistical tests, the augmented Dickey–Fuller test and the Phillips–Perron test. The unit-root null was rejected at conventional levels of significance in all cases. We also tested the null of stationarity by the Kwiatkowski–Phillips–Schmidt–Shin test, which



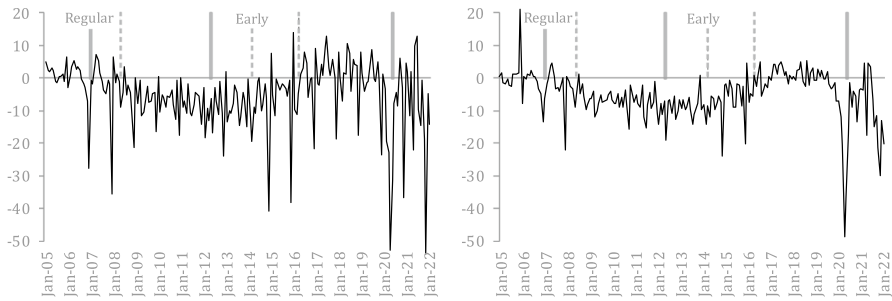


Figure 1 Inflation adjusted monthly fiscal balance in RSD billion (left-hand panel); inflation and seasonally adjusted monthly fiscal balance in RSD billion (right-hand panel). *Source:* National Bank of Serbia—seasonal adjustment by the authors

The right-hand graph in Fig. 1 presents the time series of the seasonally adjusted monthly fiscal balance in constant prices, whereas the left-hand graph shows the time series only adjusted for prices but not seasonally adjusted, both measured in RSD billions. The seasonal patterns are also visible from the left-hand graph of Fig. 1. The “regular election” dates are depicted by the solid grey vertical lines, and the “early elections” dates are depicted by the dashed lines. Already, from an eyeballing of the right-hand graph in Fig. 1, it is possible to discern deteriorating (decreasing) patterns during certain time periods anticipating certain regular elections and a pickup afterwards.

The formal representation of the intervention analysis in this study is:

$$y_t = a_0 + \sum_{i=1}^p a_i y_{t-i} + \sum_{i=1}^q \beta_i \varepsilon_{t-i} + \omega_{\pm j} ED_{\pm j,t} + \sum_{k=1}^m \sum_{i=0}^n \phi_k x_{k,t-i}, \quad j \in [3;6;9;12]$$

where y_t denotes the seasonally and price adjusted monthly fiscal balance measured in RSD billions and t indexes months; a_0 is the constant term; a_i and β_i are, respectively, the i autoregressive (AR) and moving average (MA) parameters of the p AR lags and q MA (ε) terms in the $ARMAX(p,q,m)$ model, which model the “natural” dynamics of fiscal balance; $\omega_{\pm j,t}$ are the parameters that capture any opportunistic effects of approaching elections (i.e. “the event”) on the variable of interest, namely fiscal balance; and the parameters ϕ_k model the effect of x_k , where k is the number (m) of additional explanatory variables. The latter could be either contemporaneous variables ($i = 0$) or variables with a time lag ($i = 1, \dots, n$). In this case, with monthly data, $k = 5$ —i.e. $IPI_{(t-1)}$; $RTI_{(t-1)}$; $Un_Per_{(t-1)}$; $NER_{(t-1)}$; and $Covid_dum_{(t)}$. Therefore, the parameters $\omega_{\pm j,t}$ measure the effects of the interventions (events) and are estimated along with the parameters of the ARMAX components. The estimation procedure provides estimates of $\omega_{\pm j,t}$ as well the corresponding confidence intervals.

Footnote 15 (continued)

was not rejected even at the 10% level of significance in all the aforementioned transformed series (e.g. for the dependent variable the asymptotic critical value for the 10% level of significance is 0.347, while the test value was 0.225).



The probabilistic distribution of each estimator $\omega_{\pm j,t}$ is a t -distribution allowing for straightforward testing of our hypothesis.

We follow the Box–Jenkins methodology (Box and Jenkins 1976) to identify and estimate the most appropriate $ARMAX(p,q,m)$ model for the time process of interest, namely the seasonally adjusted fiscal balance. The most appropriate $ARMA(p,q)$ component of the ARMAX model tentatively found for the variable of interest was an $ARMA(1,1)$ specification—i.e. one first lag auto regression term (ARI) and one first lag moving average term (MAI). We reached this econometric conclusion following the Box–Jenkins methodology, which consists of an iterative three-stage process of: (i) model identification; (ii) parameter estimation; and (iii) assessing the model’s diagnostics. Several conventional criteria and diagnostic tests were employed throughout this iterative procedure.¹⁶

Each pair of symmetrical *pre*- and *post*-elections dummy variables (EDs) as defined earlier were introduced one at a time in the “best” $ARMA(1,1)$ model.¹⁷ Including also the monthly growth rates of IPI, RTI, Un_Per, NER (all four lagged by one period/month), and Covid_dum as additional controlling variables, all parameters of each final comprehensive ARMAX model were estimated simultaneously. If the respective ED estimates have the expected sign (in line with our hypothesis), then the statistical significance of the electoral dummy variables, tested through t tests, reveals whether there is indeed any supposed impact of the elections on the fiscal balance.

Robustness Checks

To check the robustness of the main estimated parameters of interest, firstly we run the whole analysis on the “second best” alternative competing model $ARMA(1,0)$, as well as on specifications without any control variables but with ARMA components alone. We also run specifications including separately for *pre*-elections and *post*-elections EDs (i.e. in contrast to the simultaneous inclusion of symmetrical pairs of EDs *before* and *after* elections in the primary specification).

¹⁶ The selection between competing ARMA models fitting each time series was based on three formal criteria: the Akaike information criterion (AIC), (Akaike 1973); the Bayesian information criterion (BIC), (Schwarz 1978); and the Hannan–Quinn information criterion (HQC), (Hannan and Quinn 1979). We did not encounter any case of conflicting selection guidance among these criteria. Several formal diagnostic tests and means of judgment were used throughout the Box–Jenkins iterative procedure to determine the “best” ARMA model and diagnose its residual properties: the Durbin–Watson test (Durbin and Watson 1951); the Jarque–Bera test (Jarque and Bera 1980); the Q-statistics test (Ljung and Box 1978); the Breusch–Godfrey test (Breusch 1978; Godfrey 1978); the Breusch–Pagan–Godfrey test (Breusch and Pagan 1979; Godfrey 1978); and the Harvey test (Harvey 1976). In addition, we took into account the patterns of autocorrelation functions (ACF), the partial autocorrelation functions (PACF) and residual plots. Although the null of homoscedastic SEs was not rejected by any of the tests employed, we ran the regressions with robust SEs and obtained similar results.

¹⁷ It is intuitive to introduce separately (one at a time) each symmetrical EDs couple as, by definition, the cumulative time interval that each of these *pre*- or *post*-elections dummy variables is modelling, encompasses the time interval modelled by the preceding dummy, hence there are times overlap (e.g. ED_{-3} captures PBC effect during three months before elections, whereas ED_{-6} captures the effect during six months before elections, encompassing the time interval modelled by ED_{-3}).



Secondly, we apply the intervention analysis in the framework of OLS linear regression modelling, employing the same transformed variables as in the ARMAX setting, given that the stationarity of time series (including non-presence of seasonality) is also a prerequisite for OLS regression.¹⁸ Appropriate dependent variable lags, as determined by standard statistical tests (i.e. the Durbin–Watson test, the Breusch–Godfrey LM test, etc.), are introduced as additional regressors to model the inherent autocorrelation in the fiscal balance. In all estimated regressions we utilize robust standard errors (i.e. the White S.E.) to address the potential presence of heteroscedasticity. The results and findings obtained from this approach are essentially the same as those obtained from ARMAX modelling.

Thirdly, we collapsed the monthly data to quarterly frequencies and carried out the analysis in both econometric settings, i.e. ARMAX and OLS linear regression. In this case, we substitute the control variables of IPI and RTI with quarterly GDP in constant prices, as a better variable to control for real economic activity.¹⁹ In order to ensure stationarity of the series, we transformed the original series of quarterly GDP in the same way as we did for the other explanatory variables already introduced in the monthly frequency modelling (as explained earlier). The following section presents the empirical results from all aforementioned primary and alternative specifications.

Empirical Results

The empirical analysis reveals clear evidence of election-related cycles in the fiscal balance of Serbia during the period January 2005–March 2022. When distinguishing between regular and early elections, we find that PBCs take place only in regular (scheduled) elections, while there is virtually no PBC whatsoever in snap (early called) elections.

The estimated parameters of most of the electoral dummy variables employed in the analyses strongly indicate that there is a statistically significant deterioration of the fiscal balance at various time intervals before elections, followed by normalizations or improvements thereafter. More interestingly, the election-related effect on fiscal balance is essentially driven only by regular elections, while there is no statistically significant deteriorating effect of the fiscal balance before snap elections, thus corroborating the hypothesis of this article. Fiscal balance cycles are obviously more pronounced during regular elections. The deterioration magnitude before these elections (i.e. the negative values of the respective estimated electoral dummy variables) are substantially higher than when all elections were considered together.

Furthermore, improvements of fiscal balance after elections (statistically significant at conventional levels) also appear mostly only in the estimated equations

¹⁸ One of the distinguishing econometric differences between ARMA and linear regression models is that the former are estimated through maximum likelihood estimation (MLE) and the latter through ordinary least squares (OLS).

¹⁹ Quarterly GDP data are sourced from the Statistical Office of the Republic of Serbia.



employing regular elections or all elections altogether and only a couple in the case of equations employing early elections. In contrast, in the case of early elections we find no statistically significant estimated ED coefficients for any of the time intervals before elections and only in two cases/EDs after elections in one of the alternative specifications.

These findings are robust to alternative econometric approaches and specifications, namely: (1) ARMAX modelling, including the alternative specifications within this modelling framework (i.e. specifications with the “second best” ARMA components, or without any controlling variables but ARMA components only, or with separate inclusion of *pre*- and *post*-elections EDs instead of pair inclusion of symmetrical *pre*- and *post*-elections EDs); (2) OLS linear regression modelling; and (3) specifications and estimations with quarterly collapsed data for the dependent variable (fiscal balance) and employing more adequate explanatory variables available at quarterly frequency (i.e. GDP).²⁰

Table 2 presents the econometric results for each set of elections separately: i.e. “all elections”; “regular elections”; and “early elections”. In each case, estimates are reported from each econometric approach (i.e. ARMAX and OLS linear regression modelling) and for each data frequency (i.e. monthly and quarterly). Table 2 is trimmed to present only the main variables of interest, i.e. the estimated parameters of the electoral dummy variables, while in “Appendix” (Tables 4, 5, 6, 7) we provide the complete econometric results for each estimated model.

Most of the estimated parameters of EDs *before* “all elections”, estimated through both ARMAX and OLS modelling on monthly data, are significantly negative at either the five or one per cent level of significance. More specifically, prior to elections, when “all elections” are considered, we see a deterioration of the monthly fiscal balance ranging from RSD 2.3 billion in the twelve months before elections ($ED_{.12}$) estimated through OLS modelling to RSD 5.9 billion in the three months before elections ($ED_{.3}$) estimated through ARMAX, as shown, respectively, in the third and first columns of the “all elections” block in Table 2. Given that the overall sample mean of fiscal balance (monthly average of fiscal balance at constant prices) is RSD -5.2 billion, these constitute substantial magnitudes of deterioration, from almost half of its long-term “natural” average to above a hundred per cent of this average.

Such deterioration in the fiscal balance is considerably larger when only “regular elections” are considered compared to the case of “all elections”, particularly for the most immediate time intervals before elections (i.e. 6 or 3 months before elections). As shown in the second block of Table 2, the deterioration in the monthly fiscal balance before regular elections ranges from RSD 1.9 billion in the twelve months before elections ($ED_{Regular.12}$) estimated through OLS modelling to RSD 10.2 billion in the three months before those elections ($ED_{Regular.3}$) estimated through ARMA modelling, statistically significant at conventional levels of significance.

²⁰ For reasons of space, we do not report the empirical results for some of the alternative specifications, namely with “second best” ARMA components and with separate inclusion of EDs. These results are available upon request. The rest of the alternative specifications are reported in “Appendix”.



Table 2 The impact of elections on fiscal balance

Electoral Dummy _(±j)	ARMAX		OLS linear regression	
	Monthly	Quarterly	Monthly	Quarterly
<i>All elections</i>				
ED ₍₋₃₎	-5.937*** (1.766)	-14.261** (5.662)	-4.952*** (1.507)	-11.423*** (4.267)
ED ₍₊₃₎	0.131 (1.755)	1.216 (3.621)	2.590* (1.565)	12.885*** (3.462)
ED ₍₋₆₎	-3.848** (1.680)	-3.630 (5.315)	-3.322*** (1.156)	-6.198 (4.173)
ED ₍₊₆₎	0.460 (1.6.86)	7.919* (4.292)	0.536 (1.181)	8.974** (3.378)
ED ₍₋₉₎	-2.488 (1.669)	-10.591** (4.556)	-2.416** (1.026)	-8.650** (3.545)
ED ₍₊₉₎	0.655 (1.700)	-0.229 (3.819)	0.376 (1.059)	3.475 (3.780)
ED ₍₋₁₂₎	-3.292** (1.677)	-5.902* (3.617)	-2.304** (0.944)	-7.358** (3.062)
ED ₍₊₁₂₎	0.472 (1.657)	5.107 (3.771)	0.555 (0.956)	3.984 (0.214)
<i>Only regular elections</i>				
ED_regular ₍₋₃₎	-10.287*** (2.344)	-21.377*** (7.839)	-6.879*** (2.168)	-17.639*** (6.559)
ED_regular ₍₊₃₎	-0.269 (2.316)	-0.107 (7.638)	4.058* (2.228)	15.305*** (3.905)
ED_regular ₍₋₆₎	-5.233** (2.325)	-15.243** (7.424)	-4.570*** (1.158)	-15.981*** (3.753)
ED_regular ₍₊₆₎	0.966 (2.259)	5.845 (7.092)	1.231 (1.624)	9.220** (4.305)
ED_regular ₍₋₉₎	-1.951 (2.254)	-8.415 (6.679)	-2.559** (1.329)	-10.509** (4.290)
ED_regular ₍₊₉₎	3.936* (2.341)	1.498 (7.167)	1.629 (1.437)	2.515 (5.317)
ED_regular ₍₋₁₂₎	-3.049 (2.270)	-6.319 (6.701)	-1.978* (1.198)	-8.526** (3.750)
ED_regular ₍₊₁₂₎	2.662 (2.156)	8.699 (6.896)	0.867 (1.239)	1.318 (4.066)
<i>Only early elections</i>				
ED_early ₍₋₃₎	-3.046 (2.731)	-6.739 (8.058)	-3.139 (2.089)	-5.824 (4.672)
ED_early ₍₊₃₎	-0.044 (2.670)	3.315 (8.139)	1.337 (2.099)	9.926*** (3.543)
ED_early ₍₋₆₎	-2.794 (2.383)	5.688 (7.240)	-1.708 (1.540)	1.436 (4.669)
ED_early ₍₊₆₎	0.063 (2.397)	9.316 (7.376)	0.381 (1.552)	8.152** (3.432)
ED_early ₍₋₉₎	-2.322 (2.209)	-10.999 (8.871)	-1.575 (1.303)	-5.608 (4.753)
ED_early ₍₊₉₎	-1.341 (2.213)	0.094 (6.561)	-0.198 (1.316)	5.695 (4.246)
ED_early ₍₋₁₂₎	-2.862 (2.176)	-4.536 (6.007)	-1.729 (1.173)	-3.930 (4.085)
ED_early ₍₊₁₂₎	-0.682 (2.183)	3.440 (6.144)	0.376 (1.192)	5.937 (4.022)
Controls included	Yes ^a	Yes ^b	Yes ^c	Yes ^d
No. of obs.	207	69	207	69

Standard errors in parentheses. ***, **, and * significant at 1%, 5%, and 10%, respectively.

^aAR(1); MA(1); $\Delta_1[\ln(\text{IPI}_{t-1})]$; $\Delta_1[\ln(\text{RTI}_{t-1})]$; $\Delta_1[\ln(\text{Un_Per}_{t-1})]$; $\Delta_1[\ln(\text{NER}_{t-1})]$; Covid_dum_t

^bAR(1); $\Delta_1[\ln(\text{GDP}_t)]$; $\Delta_1[\ln(\text{Un_Per}_t)]$; $\Delta_1[\ln(\text{NER}_t)]$; Covid_dum_t

^cfiscal_bal_{t-1}; fiscal_bal_{t-2}; $\Delta_1[\ln(\text{IPI}_{t-1})]$; $\Delta_1[\ln(\text{RTI}_{t-1})]$; $\Delta_1[\ln(\text{Un_Per}_{t-1})]$; $\Delta_1[\ln(\text{NER}_{t-1})]$; Covid_dum_t

^dfiscal_bal_{t-1}; $\Delta_1[\ln(\text{GDP}_t)]$; $\Delta_1[\ln(\text{Un_Per}_t)]$; $\Delta_1[\ln(\text{NER}_t)]$; Covid_dum_t



Interestingly, when only “regular elections” are considered, there seems to be a kind of intensifying monotonic trend of deterioration in fiscal balance as elections come closer (i.e. $ED_{regular.12} > ED_{regular.9} > ED_{regular.6} > ED_{regular.3}$ —noting that the inequality signs in this case mean that each succeeding ED is more negative than the preceding one).²¹ That is the case for both ARMAX and OLS regressions. Hence, the closer in time we are to regular elections the larger the deterioration of the fiscal balance. For both of the aforementioned categories of elections (i.e. “all elections” and “regular elections”), for all of the econometric settings employed (i.e. on monthly or quarterly data with ARMAX or OLS), the highest PBC effect results at the closest time-interval to elections, namely in the last three months or the last quarter before elections. In contrast, when only “early elections” are considered, none of the estimated parameters of the respective EDs before those elections result in statistically significant results at conventional levels, in any of the econometrical setting employed (see the “early elections” block in Table 2).

Consistently following these findings on what happens with fiscal balance *before* regular versus early elections, one could take a subtler view also on what happens *after* each of these elections’ categories. Indeed, even in the aftermath of elections, almost everything statistically significant regarding fiscal balance dynamics seems to happen only in regular elections and very little in the early ones. We find improvements of fiscal balance (i.e. EDs’ coefficients with a positive sign and statistically significant at conventional levels) three and six months after regular elections with OLS regression, respectively, with monthly and quarterly estimations, as well as three months after regular elections with monthly ARMAX estimations (see the respective EDs in the second block of Table 2). The magnitude of the fiscal balance improvement in these cases averages at around RSD 4 billion per month. We find only two post-elections EDs (estimated with the OLS quarterly setting) statistically significant for the defined time intervals after early elections (see the respective EDs in the third block of Table 2).

Therefore, based on these empirical results, one can take the view that, while in general there clearly exist PBC patterns in one of the main targeted parameters of fiscal policy in Serbia, namely general government overall budget balance, this incumbent behaviour takes place (statistically) only in regular (scheduled) elections and does not occur with snap (early called) elections.

Discussion of the Results and Conclusions

This is the first research work on PBCs in Serbia. As such it provides important insight into the less studied transition economy in the literature of the political economy of elections. The findings suggest the existence of PBCs in Serbia.

²¹ $ED_{regualr.12}$ is not statistically significant in the ARMAX monthly specification, only in the OLS one.



Since the system of checks and balances is weak in Serbia, incumbents could easily misuse their official state function and party engagement (OSCE 2020), thus creating the conditions for a boost in public spending for electoral purposes. There are several mechanisms through which higher public spending increases before elections. One important channel is the substantial increase in employment in the already large public sector in Serbia—providing jobs prior to elections is expected to increase electoral support (among the households of newly employed people). Serbia has had, after Belarus, the largest number of employees in the public sector—46% of all employees (Radio-021 2014), and as such, public sector employment represents a heavy weight for the public budget. Although the government of Mirko Cvetković (2008–2012) was considered “a *champion in party employment*”, the other governments also followed the same behavioural pattern. It is interesting to note the case of RTB Bor (public company) where right before 2014 elections, 500 people were employed on one single day (corresponding to 10% increase in total employment in that company)—the company was managed by a politician affiliated to the ruling party (Pavlović 2016, 68). Another striking example is that of the City of Niš which before (regular) 2020 elections, the budgeted expansion of employment by 200 jobs increased the budget by about 170 millions RSD corresponding to 1.6% of the city budget (Stankov 2020). Another example is the cash transfer that the government gave to all adults corresponding to 70 billion of RSD, right before elections in June 2020 (Fiskalni Savet 2020).

The study findings are in line with the previous studies on PBCs such as the recent publication of Lami (2022) who analyses the case of Albania (another post-communist economy which is part of the Western Balkans like Serbia). However, this paper distinguishes between the type of elections by their timing, namely snap (early called) versus regular (scheduled) elections. The empirical findings suggest that while, in general, there clearly exist PBC patterns in one of the main targeted parameters of fiscal policy in Serbia, namely general government overall budget balance, this incumbent behaviour takes place (statistically) only in regular elections and does not occur in snap elections. Thus, the paper contributes to the political economy debate around the incumbent PBC related behaviour in early versus regular elections, by showing very different policy strategy followed by the incumbent in Serbia, thereby highlighting the importance of distinguishing between these types of elections when conducting research on PBCs.

Although our results undoubtedly imply that regular elections are exerting a strong effect on the fiscal balance (deficit), the capacity to carry out PBC is conditioned also by the overall economic situation and related circumstances. While during the elections in 2007 economic growth was deemed high (6.4%) (The World Bank 2022), in the case of the 2020 elections, the extraordinary powers that the government took over due to COVID-19 crisis provided an additional opportunity to increase spending (also in conjunction to elections) bypassing public scrutiny



similar to other countries which experienced elections during COVID-19 (Imami et al 2022), whereas in the case of the 2012 elections, the economy was strongly hit by the Global Financial Crisis of 2009 and by the subsequent European sovereign debt crisis increasing Serbian public debt to unsustainable levels, thus limiting the space for fiscal manoeuvring prior to elections.

In order to reduce election driven debt/deficit trends, it is necessary to improve both the overall justice and institutional framework (e.g. courts, state audit, etc.) and the professionalization and independence of media, which is important to raise the awareness of voters. Indeed, an enhanced institutional framework is important not only to reduce election driven debt, but also to enable growth as previous research highlights that the development of an institutional framework has a significant positive impact on growth (Havrylyshyn and Van Rooden 2003; Havrylyshyn and Wolf 1999).

One of the limitations of this paper is the rather small number of elections covered by the analysis, conditioned by the focus on a single country. Nonetheless, the empirical findings are robust to alternative econometric settings and thus findings related to the distinction between the two types of election can be considered informative. Furthermore, the empirical research relies on monthly data on the fiscal balance. Most studies in this field of research rely on annual data which has been considered a serious drawback (Streb et al. 2012; Akhmedov and Zhuravskaya 2004). As such, the analysis is more solid.

In this paper, we do not explore the mechanisms behind increasing deficit prior to elections. That can be possibly caused by increased public expenditure (e.g. for infrastructure or increasing pensions, or increasing public sector employment as indicated above), or lower tax revenues (due to lower tax rates or lower tax collection performance), or both. For instance, Lami and Imami (2019) find that lower tax collection performance takes place before elections even in mature democracies and, however, that this is more common in “younger” democracies than in mature ones. Future research should consider these aspects.

Appendix

See Tables 3, 4, 5, 6, 7 and 8.



Table 3 Variable definitions

Variable	Description	Syntax and transformations employed in estimations for each frequency	
		Monthly	Quarterly
fis_bal	Overall fiscal (budget) balance, nominal (bn. Dinar)		
fis_bal_def	Overall fiscal (budget) balance with constant prices (bn. Dinar)	FIS_BAL_DEF_SA = seasonally adjusted series	FIS_BAL_DEF_SA = seasonally adjusted series
rti_real	Retail trade index in volume/real (number)	D1_LN_RTI_REAL_SA = 1st lag difference of the natural log of seasonally adjusted series	
cpi	Consumer Price Index (base = January 2005)		
ner	Nominal exchange rate (Dinar/Dollar)	D1_LN_NER_SA = 1st lag difference of the natural log of seasonally adjusted series	D1_LN_NER_SA = 1st lag difference of the natural log of seasonally adjusted series
gdp_nom	GDP in current prices/nominal (bn. Dinar)		
gdp_real	GDP in constant prices/real (bn. Dinar)		D1_LN_GDP_REAL_SA = 1st lag difference of the natural log of seasonally adjusted series
un_per	Unemployed persons (number/thousands)	D1_LN_UN_PER_SA = 1st lag difference of the natural log of seasonally adjusted series	D1_LN_UN_PER_SA = 1st lag difference of the natural log of seasonally adjusted series
covid_dum	Dummy variable for the period of COVID-19 (February 2020–April 2021)	COVID_DUM	COVID_DUM
ED_3	Cumulative electoral dummies before ALL elections; ED_3 for 3 months before All elections; ED_6 for 6 months before All elections; and so on for ED_9 and ED_12	ED_3	ED_3
ED_6		ED_6	ED_6
ED_9		ED_9	ED_9
ED_12		ED_12	ED_12
ED3	Cumulative electoral dummies after ALL elections; ED3 for 3 months after All elections; ED6 for 6 months after All elections; and so on for ED9 and ED12	ED3	ED3
ED6		ED6	ED6
ED9		ED9	ED9
ED12		ED12	ED12



Table 3 (continued)

Variable	Description	Syntax and transformations employed in estimations for each frequency	
		Monthly	Quarterly
ED_regular_3	Cumulative electoral dummies before Regular elections; ED_regular_3 for 3 months before	ED_REGULAR_3	ED_REGULAR_3
ED_regular_6	Regular elections; ED_regular_6 for 6 months before Regular elections; and so on for ED_regular_9 and ED_regular_12	ED_REGULAR_6	ED_REGULAR_6
ED_regular_9		ED_REGULAR_9	ED_REGULAR_9
ED_regular_12		ED_REGULAR_12	ED_REGULAR_12
ED_regular3	Cumulative electoral dummies after Regular elections; ED_regular_3 for 3 months after	ED_REGULAR3	ED_REGULAR3
ED_regular6	Regular elections; ED_regular_6 for 6 months after Regular elections; and so on for ED_regular_9 and ED_regular_12	ED_REGULAR6	ED_REGULAR6
ED_regular9		ED_REGULAR9	ED_REGULAR9
ED_regular12		ED_REGULAR12	ED_REGULAR12
ED_early_3	Cumulative electoral dummies before Early elections; ED_early_3 for 3 months before	ED_EARLY_3	ED_EARLY_3
ED_early_6	Early elections; ED_early_6 for 6 months before	ED_EARLY_6	ED_EARLY_6
ED_early_9	Early elections; and so on for ED_early_9 and	ED_EARLY_9	ED_EARLY_9
ED_early_12	ED_early_12	ED_EARLY_12	ED_EARLY_12
ED_early3	Cumulative electoral dummies after Early elections; ED_early_3 for 3 months after	ED_EARLY3	ED_EARLY3
ED_early6	Early elections; ED_early_6 for 6 months after	ED_EARLY6	ED_EARLY6
ED_early9	Early elections; and so on for ED_early_9 and	ED_EARLY9	ED_EARLY9
ED_early12	ED_early_12	ED_EARLY12	ED_EARLY12



Table 4 Estimated equations with monthly data/ARMAX models

		Dependent variable: Overall fiscal balance (deflated and seasonally adjusted, in RSD billion)										Main diagnostic tests			
	$j =$	ED _(-j)	ED _(+j)	Intercept	AR(1)	MA(1)	$\Delta_j[\ln(\text{PI}_{t-1})]$	$\Delta_j[\ln(\text{RTI}_{t-1})]$	$\Delta_j[\ln(\text{Un}_{\text{Per}_{t-1}})]$	$\Delta_j[\ln(\text{NER}_{t-1})]$	Covid_dum _t	Adj. R ²	F-stat	AIC	DW stat.
All elections	= 3	-5.937*** (1.766)	0.131 (0.069)	-4.889*** (1.370)	0.872*** (0.069)	-0.615*** (0.110)	6.442 (12.314)	10.143 (12.314)	-91.204* (55.844)	-13.204 (12.531)	-7.190** (3.084)	0.368	12.593	6.480	1.964
	= 6	-3.848** (1.680)	0.460 (0.081)	-4.754*** (1.322)	0.840*** (0.081)	-0.561*** (0.122)	7.234 (12.388)	13.261 (12.412)	-106.525* (56.463)	-12.258 (12.696)	-7.209** (3.171)	0.352	11.753	6.504	1.962
	= 9	-2.488 (1.669)	0.655 (0.082)	-4.769*** (1.435)	0.833*** (0.082)	-0.546*** (0.123)	8.239 (12.455)	12.754 (12.454)	-101.853* (57.314)	-12.797 (12.735)	-8.120** (3.256)	0.341	11.181	6.522	1.962
	= 12	-3.292** (1.677)	0.472 (0.080)	-4.266*** (1.624)	0.837*** (0.080)	-0.539*** (0.121)	6.751 (12.391)	13.382 (12.346)	-102.005* (56.844)	-12.982 (12.637)	-8.004** (3.195)	0.349	11.576	6.510	1.987
Regular elections	= 3	-10.287*** (2.344)	-0.269 (0.043)	-5.483*** (1.834)	0.936*** (0.043)	-0.744*** (0.080)	6.387 (12.435)	8.894 (12.342)	-77.508 (54.280)	-11.660 (12.522)	-6.302** (2.853)	0.382	13.350	6.458	1.981
	= 6	-5.233** (2.325)	0.966 (0.064)	-5.145*** (1.444)	0.885*** (0.064)	-0.639*** (0.104)	8.160 (12.495)	12.212 (12.481)	-98.427* (56.264)	-11.215 (12.731)	-6.908** (3.232)	0.351	11.674	6.507	1.929
	= 9	-1.951 (1.766)	3.936* (0.061)	-5.579*** (1.549)	0.888*** (0.061)	-0.630*** (0.101)	8.129 (12.474)	12.571 (12.462)	-94.251* (56.888)	-9.705 (12.764)	-10.016*** (3.399)	0.347	11.462	6.513	1.950
Early elections	= 12	-3.049 (2.270)	2.662 (0.060)	-4.889*** (1.683)	0.894*** (0.060)	-0.632*** (0.099)	8.142 (12.469)	12.732 (12.436)	-109.649** (56.956)	-10.301 (12.712)	-8.733*** (3.217)	0.347	11.477	6.513	1.945
	= 3	-3.046 (2.731)	-0.044 (0.091)	-5.083*** (1.370)	0.793*** (0.091)	-0.468*** (0.134)	6.850 (12.357)	13.081 (12.374)	-109.749* (57.798)	-12.179 (12.694)	-7.881** (3.246)	0.334	10.813	6.533	1.975
	= 6	-2.794 (2.383)	0.063 (0.090)	-4.997*** (1.225)	0.797*** (0.090)	-0.478*** (0.132)	6.683 (12.399)	13.930 (12.437)	-115.312** (57.670)	-11.947 (12.819)	-7.997** (3.239)	0.334	10.843	6.532	1.981
	= 9	-2.322 (2.209)	-1.341 (0.089)	-4.748*** (1.370)	0.808*** (0.089)	-0.499*** (0.130)	7.235 (12.446)	13.555 (12.452)	-111.492* (57.507)	-11.403 (12.821)	-8.148** (3.237)	0.333	10.763	6.535	1.969
= 12	-2.862 (2.176)	-0.682 (0.092)	-4.592*** (1.348)	0.797*** (0.092)	-0.480*** (0.133)	6.555 (12.416)	14.032 (12.425)	-115.203** (57.658)	-12.347 (12.796)	-8.221** (3.253)	0.335	10.873	6.531	1.983	



Table 5 Estimated equations with monthly data/OLS linear regression models

Dependent variable: Overall fiscal balance (deflated and seasonally adjusted, in RSD billion)

	$j =$	Main diagnostic tests													
		ED _(-j)	ED _(+j)	Intercept	fis_bal _{t-1}	fis_bal _{t-2}	$\Delta_1 \ln(\text{PI}_{t-1})$	$\Delta_1 \ln(\text{RTI}_{t-1})$	$\Delta_1 \ln(\text{Un}_t \text{Per}_{t-1})$	$\Delta_1 \ln(\text{NER}_{t-1})$	Covid_dum _t	Adj. R ²	F-stat	AIC	DW stat.
All elec-tions	= 3	-4.952*** (1.507)	2.590 (1.565)	-1.990*** (1.370)	0.349*** (0.068)	0.215*** (0.071)	7.987 (13.534)	27.352*** (12.801)	-36.405 (48.760)	-18.441 (12.631)	-3.547** (1.762)	0.392	14.020	6.437	2.214
	= 6	-3.322*** (1.156)	0.536 (1.181)	-1.881*** (0.624)	0.353*** (0.069)	0.187*** (0.070)	7.449 (13.717)	31.134*** (12.993)	-51.843 (49.289)	-18.853 (12.818)	-3.563** (1.814)	0.376	13.090	6.463	2.177
	= 9	-2.416** (1.026)	0.376 (1.059)	-1.750** (0.629)	0.365*** (0.069)	0.183*** (0.070)	8.136 (13.787)	31.253*** (13.042)	-46.449 (49.532)	-18.853 (12.913)	-3.924** (1.836)	0.368	12.632	7.409	2.183
Regu-lar elec-tions	= 12	-2.304** (0.944)	0.555 (0.956)	-1.609** (0.763)	0.363*** (0.069)	0.195*** (0.070)	7.917 (13.746)	31.344** (12.991)	-47.772 (49.166)	-19.999 (12.884)	-4.072** (1.802)	0.371	12.825	6.471	2.184
	= 3	-6.879*** (2.168)	4.058* (2.228)	-2.111*** (0.577)	0.321*** (0.069)	0.237*** (0.072)	8.258 (13.512)	-34.060** (12.837)	-51.843 (48.650)	-16.636 (12.616)	-3.386* (1.800)	0.391	13.953	6.438	2.227
	= 6	-4.570*** (1.581)	1.231 (1.624)	-1.977*** (0.598)	0.348*** (0.069)	0.211*** (0.070)	8.151 (13.642)	29.541** (12.938)	-36.661 (49.315)	-15.422 (12.781)	-3.011** (1.927)	0.377	13.141	6.462	2.193
Early elec-tions	= 9	-2.559** (1.329)	1.629 (1.437)	-2.022*** (0.631)	0.364*** (0.069)	0.205*** (0.070)	7.755 (13.765)	30.768** (13.046)	-34.123 (50.086)	-14.693 (12.975)	-4.068** (1.995)	0.366	12.521	6.479	2.180
	= 12	-1.978* (1.198)	0.867 (1.239)	-1.985*** (0.674)	0.370*** (0.069)	0.200*** (0.071)	8.008 (13.842)	30.487** (13.115)	-43.316 (50.193)	-15.301 (13.029)	-3.824** (1.933)	0.359	12.156	6.490	2.162
	= 3	-3.139 (2.089)	1.337 (2.099)	-2.161*** (0.604)	0.387*** (0.070)	0.175** (0.070)	8.287 (13.911)	30.728** (13.156)	-54.915 (49.921)	-17.678 (13.032)	-3.936** (1.820)	0.354	11.920	6.497	2.150
	= 6	-1.708 (1.540)	0.381 (1.552)	-2.202*** (0.615)	0.378*** (0.070)	0.171** (0.070)	8.248 (14.000)	31.245** (13.248)	-61.341 (50.234)	-18.136 (13.221)	-4.091** (1.838)	0.350	11.681	6.504	2.144
	= 9	-1.575 (1.303)	-0.198 (1.316)	-2.093*** (0.633)	0.377*** (0.070)	0.169** (0.071)	8.327 (13.988)	30.998** (13.206)	-61.958 (50.029)	-17.922 (13.305)	-4.243** (1.853)	0.350	11.698	6.504	2.147
	= 12	-1.729 (1.173)	0.376 (1.192)	-2.071*** (0.654)	0.377*** (0.070)	0.171** (0.070)	8.566 (13.923)	31.275** (13.161)	-62.490 (50.166)	-19.631 (13.277)	-4.235** (1.861)	0.354	11.895	6.498	2.156

Standard errors in parentheses. ***, **, and * significant at 1%, 5%, and 10%, respectively.



Table 6 Estimated equations with quarterly data/ARMAX models

		Dependent variable: Overall fiscal balance (deflated and seasonally adjusted, in RSD billion)										Main diagnostic tests			
$j =$	$ED_{(-j)}$	$ED_{(+j)}$	Intercept	AR(1)	$\Delta_1 \ln(\text{GDP}_t)$	$\Delta_1 \ln(\text{Un}_t)$	$\Delta_1 \ln(\text{NER}_t)$	Covid_dum _t	Adj. R^2	F-stat	AIC	DW stat.			
All elec- tions	= 3	-14.261** (5.662)	1.216 (3.621)	-16.507*** (3.019)	0.470*** (0.101)	307.688*** (83.392)	-123.421 (85.768)	-13.349 (19.012)	-21.088*** (7.581)	0.560	10.745	8.080	2.050		
	= 6	-3.630 (5.315)	7.919* (4.292)	-18.400*** (3.492)	0.439*** (0.102)	363.816*** (107.681)	-111.818 (80.606)	-27.868 (21.948)	-22.535** (10.365)	0.533	9.655	8.138	2.094		
	= 9	-10.591** (4.556)	-0.229 (3.819)	-14.764*** (3.345)	0.413*** (0.102)	363.543*** (101.333)	-111.576 (83.002)	-25.153 (21.870)	-21.735** (8.971)	0.544	10.071	8.116	2.047		
Regular elec- tions	= 12	-5.902* (3.617)	5.107 (3.771)	-17.328*** (4.300)	0.439*** (0.099)	349.975*** (106.056)	-119.028* (72.598)	-22.578 (20.945)	-23.167** (9.201)	0.535	9.717	8.135	2.108		
	= 3	-21.377*** (7.839)	-0.107 (7.638)	-16.611*** (3.199)	0.457*** (0.119)	299.795*** (75.574)	-107.787 (91.475)	-8.647 (32.895)	-19.838** (8.745)	0.560	10.763	8.079	2.157		
	= 6	-15.243** (7.424)	5.845 (7.092)	-16.974*** (3.305)	0.461*** (0.120)	336.717*** (73.138)	-93.237 (92.698)	-12.944 (33.052)	-17.081* (9.571)	0.555	10.528	8.091	2.147		
Early elec- tions	= 9	-8.415 (6.679)	1.498 (7.167)	-16.612*** (3.330)	0.411*** (0.123)	352.650*** (77.587)	-101.901 (96.601)	-18.466 (34.795)	-21.864** (9.698)	0.516	8.993	8.176	2.101		
	= 12	-6.319 (6.701)	8.699 (6.896)	-18.187*** (4.143)	0.506*** (0.120)	334.500*** (74.409)	-122.143 (100.613)	-8.078 (34.155)	-22.973** (9.506)	0.528	9.438	8.150	2.155		
	= 3	-6.739 (8.058)	3.315 (8.139)	-17.593*** (3.189)	0.417*** (0.121)	365.941*** (77.159)	-122.509 (97.467)	-20.443 (35.081)	-22.858** (8.923)	0.509	8.763	8.189	2.042		
Early elec- tions	= 6	5.688 (7.240)	9.316 (7.376)	-19.260*** (3.474)	0.437*** (0.124)	371.326*** (75.819)	-131.995 (96.825)	-30.405 (35.736)	-21.796** (9.038)	0.513	8.881	8.182	2.068		
	= 9	-10.999 (-1.726)	0.094 (6.561)	-16.320*** (3.370)	0.419*** (0.122)	379.415*** (75.623)	-130.716 (95.365)	-27.859 (35.058)	-23.897*** (8.842)	0.525	9.328	8.157	2.031		
	= 12	-4.536 (6.007)	3.440 (6.144)	-17.469*** (3.521)	0.382*** (0.123)	371.707*** (78.198)	-125.171 (96.255)	-30.417 (35.546)	-23.357*** (8.799)	0.509	8.748	8.190	2.057		

Standard errors in parentheses. ***, **, and * significant at 1%, 5%, and 10%, respectively.



Table 7 Estimated equations with quarterly data/OLS linear regression models

		Dependent variable: Overall fiscal balance (deflated and seasonally adjusted, in RSD billion)										Main diagnostic tests			
$j =$	$ED_{(-j)}$	$ED_{(+j)}$	Intercept	fis_bal $_{t-1}$	$\Delta_1[\ln(GDP_t)]$	$\Delta_1[\ln(Un_Per_t)]$	$\Delta_1[\ln(NER_t)]$	Covid_dum $_t$	Adj. R^2	F-stat	AIC	DW stat.			
All elec- tions	= 3	-11.423*** (4.267)	12.885*** (3.462)	-10.306*** (1.831)	0.488*** (0.084)	433.236*** (75.357)	-37.948 (83.417)	-13.966 (18.847)	-14.226*** (4.751)	0.625	14.306	7.906	2.198		
	= 6	-6.198 (4.173)	8.974** (3.378)	-11.113*** (1.925)	0.458*** (0.080)	474.071*** (76.036)	-32.250 (83.116)	-26.942 (19.389)	-15.903*** (4.635)	0.612	13.553	7.940	2.241		
	= 9	-8.650** (3.545)	3.475 (3.780)	-9.688*** (2.094)	0.430*** (0.077)	464.479*** (75.668)	-40.667 (85.310)	-27.795 (20.173)	-15.844*** (4.724)	0.612	13.564	7.939	2.197		
	= 12	-7.358** (3.062)	3.984 (3.175)	-9.681*** (2.527)	0.443*** (0.079)	463.128*** (78.901)	-44.661 (82.084)	-26.263 (19.326)	-16.136*** (4.569)	0.611	13.482	7.943	2.234		
Regular elections	= 3	-17.639*** (6.559)	15.305*** (3.905)	-10.238*** (1.805)	0.473*** (0.081)	409.477*** (67.733)	-39.056 (81.136)	-9.451 (18.490)	-13.888*** (4.231)	0.617	13.838	7.927	2.286		
	= 6	-15.981*** (3.753)	9.220*** (4.305)	-9.885*** (1.754)	0.478*** (0.078)	445.146*** (63.149)	-21.128 (81.496)	-6.167 (16.610)	-11.975*** (4.101)	0.635	14.931	7.879	2.277		
	= 9	-10.509** (4.290)	2.515 (5.317)	-9.846*** (1.965)	0.449*** (0.078)	454.035*** (77.927)	-28.386 (82.145)	-12.072 (18.258)	-13.302** (5.578)	0.593	12.535	7.987	2.264		
Early elec- tions	= 12	-8.526** (3.750)	1.318 (4.066)	-9.749*** (2.162)	0.446*** (0.077)	466.931*** (83.577)	-30.461 (81.750)	-12.156 (19.207)	-13.691*** (4.969)	0.586	12.149	8.005	2.198		
	= 3	-5.824 (4.672)	9.926*** (3.543)	-11.548*** (2.090)	0.429*** (0.085)	474.834*** (102.929)	-52.707 (84.242)	-17.578 (22.117)	-15.333** (5.991)	0.571	11.413	8.041	2.101		
	= 6	1.436 (4.669)	8.152*** (3.432)	-12.323*** (2.127)	0.422*** (0.082)	482.758*** (99.238)	-53.089 (83.445)	-27.239 (24.066)	-15.050** (5.774)	0.568	11.283	8.048	2.127		
	= 9	-5.608 (4.753)	5.695 (4.246)	-11.617*** (2.114)	0.406*** (0.080)	481.819*** (98.914)	-58.743 (86.526)	-34.098 (24.306)	-16.469*** (5.761)	0.576	11.650	8.030	2.106		
= 12	-3.930 (4.085)	5.937 (4.022)	-11.863*** (2.357)	0.414*** (0.081)	480.024*** (100.434)	-57.692 (87.393)	-33.227 (23.260)	-15.879*** (5.849)	0.577	11.718	8.026	2.171			

Standard errors in parentheses. ***, **, and * significant at 1%, 5%, and 10%, respectively.

Table 8 Variable transformations + Unit-root tests (H0: unit root)

Original variable: ↓	Monthly	Fiscal balance (bn. Dinar) (<i>p</i> = 0.093)	IPI (index/volume) (<i>p</i> = 0.783)	RTI (index/volume) (<i>p</i> = 0.829)	NER (Dinar/Dollar) (<i>p</i> = 0.664)	Unemployed persons (number) (<i>p</i> = 0.962)	
	Quarterly	Fiscal balance (bn. Dinar) (<i>p</i> = 0.000)			NER (Dinar/Dollar) (<i>p</i> = 0.730)	Unemployed persons (number) (<i>p</i> = 0.849)	GDP (bn. Dinar) (<i>p</i> = 0.992)
1st—step trans.: Inflation adjustment ↓	Monthly	Deflated by CPI (<i>p</i> = 0.118)					
	Quarterly	Deflated by CPI (<i>p</i> = 0.000)					Deflated by CPI (<i>p</i> = 0.994)
2nd—step trans.: Seasonal adjustment ↓	Monthly	Seasonally adjusted (<i>p</i> = 0.000)	Seasonally adjusted (<i>p</i> = 0.282)	Seasonally adjusted (<i>p</i> = 0.872)	Seasonally adjusted (<i>p</i> = 0.672)	Seasonally adjusted (<i>p</i> = 0.970)	Seasonally adjusted (<i>p</i> = 0.903)
	Quarterly	Seasonally adjusted (<i>p</i> = 0.000)			Seasonally adjusted (<i>p</i> = 0.719)	Seasonally adjusted (<i>p</i> = 0.933)	Seasonally adjusted (<i>p</i> = 0.903)
3rd—step trans.: Logarithm ↓	Monthly		Natural logarithm (<i>p</i> = 0.220)	Natural logarithm (<i>p</i> = 0.814)	Natural logarithm (<i>p</i> = 0.618)	Natural logarithm (<i>p</i> = 0.998)	Natural logarithm (<i>p</i> = 0.793)
	Quarterly				Natural logarithm (<i>p</i> = 0.713)	Natural logarithm (<i>p</i> = 0.986)	Natural logarithm (<i>p</i> = 0.793)
4th—step trans.: Differencing	Monthly		1st—lag difference (<i>p</i> = 0.000)	1st—lag difference (<i>p</i> = 0.000)	1st—lag difference (<i>p</i> = 0.000)	1st—lag difference (<i>p</i> = 0.000)	1st—lag difference (<i>p</i> = 0.000)
	Quarterly				1st—lag difference (<i>p</i> = 0.000)	1st—lag difference (<i>p</i> = 0.000)	1st—lag difference (<i>p</i> = 0.000)

Mackinnon one-sided *p* values of rejecting the null of a unit root by the augmented Dickey–Fuller test in parentheses.



Acknowledgements The authors are grateful to anonymous referees for their comments and to John Whittle for his support.

References

- Akaike, H. 1973. Information theory and an extension of the maximum likelihood principle. In *2nd international symposium on information theory*, eds. B.N. Petrov, and F. Csáki (Akadémiai Kiadó, Budapest), 267–281.
- Akhmedov, A., and E. Zhuravskaya. 2004. Opportunistic political cycles: Test in a young democracy setting. *The Quarterly Journal of Economics* 119(4): 1301–1338. <https://doi.org/10.1162/0033553042476206>.
- Alesina, A., and N. Roubini. 1992. Political cycles in OECD economies. *The Review of Economic Studies* 59(4): 663–688.
- Alesina, A., and J. Sachs. 1986. *Political parties and the business cycle in the United States, 1948–1984* (No. w1940). National Bureau of Economic Research.
- Alt, J.E., and D.D. Lassen. 2006a. Transparency, political polarization, and political budget cycles in OECD countries. *American Journal of Political Science* 50(3): 530–550. <https://doi.org/10.1111/j.1540-5907.2006.00200.x>.
- Alt, J.E., and D. Lassen. 2006b. Fiscal transparency, political parties and debt in OECD countries. *European Economic Review* 50(6): 1403–1439. <https://doi.org/10.1016/j.euroecorev.2005.04.001>.
- Andrić, V., M. Arsić, and A. Nojković. 2016. Public debt sustainability in Serbia before and during the global financial crisis. *Economic Annals* 61(210): 47–77. <https://doi.org/10.2298/EKA1610047A>.
- Bieber, F. 2018. Patterns of competitive authoritarianism in the Western Balkans. *East European Politics* 34(3): 337–354. <https://doi.org/10.1080/21599165.2018.1490272>.
- Block, S.A. 2002. Political business cycles, democratization, and economic reform: The case of Africa. *Journal of Development Economics* 67(1): 205–228. [https://doi.org/10.1016/S0304-3878\(01\)00184-5](https://doi.org/10.1016/S0304-3878(01)00184-5).
- Box, G.E., and G.M. Jenkins. 1976. *Time series analysis, forecasting and control*. San Francisco, CA: Holden-Day.
- Box, G.E., and G.C. Tiao. 1975. Intervention analysis with applications to economic and environmental problems. *Journal of the American Statistical Association* 70(349): 70–79. <https://doi.org/10.1080/01621459.1975.10480264>.
- Božić Miljković, I. 2019. *Spoljni dug Republike Srbije: Aktualna dužnička pozicija, struktura i održivost spoljnog duga* [External debt of the Republic of Serbia: Current debt position, structure and sustainability of external debt]. In *Dug i (ne) razvoj*, Urd. V. Vukotić et al. [Debt and (Non)Development], 255–265. Institute of Social Sciences: Belgrade.
- Brender, A., and A. Drazen. 2005. Political budget cycles in new versus established democracies. *Journal of Monetary Economics* 52(7): 1271–1295. <https://doi.org/10.1016/j.jmoneco.2005.04.004>.
- Breusch, T.S. 1978. Testing for autocorrelation in dynamic linear models. *Australian Economic Papers* 17(31): 334–355.
- Breusch, T.S., and A.R. Pagan. 1979. A simple test for heteroskedasticity and random coefficient variation. *Econometrica* 47(5): 1287–1294.
- Castaldo, A. 2020. Back to competitive authoritarianism? Democratic backsliding in Vučić's Serbia. *Europe-Asia Studies* 72(10): 1617–1638. <https://doi.org/10.1080/09668136.2020.1817860>.
- Dickey, D.A., and W.A. Fuller. 1981. Likelihood ratio statistics for autoregressive time series with a unit root. *Econometrica* 49(4): 1057–1072.
- Durbin, J., and G.S. Watson. 1951. Testing for serial correlation in least squares regression, II. *Biometrika* 38(1–2): 159–179.
- Đukić, M., and D. Nikolić. 2012. Economic integration and analysis of external debt position of Serbia. In *European integration process in Western Balkan countries*, ed. P. Teixeira, et al., 512–528. Coimbra: Faculty of Economics of the University of Coimbra.
- Enders, W. 2015. *Applied econometric time series*, 4th ed. London: Wiley.
- Fiskalni Savet. 2020. Ефекти мере „100 евра пунолетним грађанима“ на неједнакост и сиромаштво. Коментар студије Међународне организације рада и Европске банке за обнову и развој. [The effects of the measure "100 euros to adult citizens" on inequality and poverty. Commentary on the



- study of the International Labour Organization and the European Bank for Reconstruction and Development]. Available online at: http://www.fiskalnisanavet.rs/doc/analize-stavovi-predlozi/2020/FS_Efektivi_mere_100_evra_na_siromastvo_i_nejednakost.pdf. Accessed 15 Nov 2022.
- Gilmour, S., et al. 2006. Using intervention time series analyses to assess the effects of imperfectly identifiable natural events: A general method and example. *BMC Medical Research Methodology* 6(1): 1–9.
- Godfrey, L.G. 1978. Testing against general autoregressive and moving average error models when the regressors include lagged dependent variables. *Econometrica* 46(6): 1293–1301.
- Günay, C., and V. Dzihic. 2016. Decoding the authoritarian code: Exercising 'legitimate' power politics through the ruling parties in Turkey, Macedonia and Serbia. *Southeast European and Black Sea Studies* 16(4): 529–549. <https://doi.org/10.1080/14683857.2016.1242872>.
- Hallerberg, M., L.V. de Souza, and W.R. Clark. 2002. Political business cycles in EU accession countries. *European Union Politics* 3(2): 231–250. <https://doi.org/10.1177/1465116502003002>.
- Hannan, E.J., and B.G. Quinn. 1979. The determination of the order of an autoregression. *Journal of the Royal Statistical Society, Series B* 41: 190–195.
- Hanusch, M., and P. Keefer. 2014. Younger parties, bigger spenders? Party age and political budget cycles. *European Economic Review* 72: 1–18. <https://doi.org/10.1016/j.euroecorev.2014.08.003>.
- Harvey, A.C. 1976. Estimating regression models with multiplicative heteroscedasticity. *Econometrica* 44(3): 461–465.
- Havrylyshyn, O. 2006. *Divergent paths in post-communist transformation. Capitalism for all or capitalism for the few*. Palgrave MacMillan: Hampshire.
- Havrylyshyn, O., and R. Van Rooden. 2003. Institutions matter in transition, but so do policies. *Comparative Economic Studies* 45(1): 2–24. <https://doi.org/10.1057/palgrave.ces.8100005>.
- Havrylyshyn, O., and T. Wolf. 1999. Determinants of growth in transition countries. *Finance & Development* 36(2): 12–15. <https://doi.org/10.5089/9781451952797.022>.
- Hibbs, D. 1977. Political parties and macroeconomic policy. *American Political Science Review* 71(4): 1467–1487. <https://doi.org/10.2307/1961490>.
- Hong, S. 2016. Government press releases and citizen perceptions of government performance: Evidence from Google Trends Data. *Public Performance & Management Review* 39(4): 885–904. <https://doi.org/10.1080/15309576.2015.1137776>.
- Ilić, V. 2021. *Izbori u Srbiji od 2008. do 2020. godine* [Elections in Serbia between 2008 and 2020]. In *Podrivanje demokratije: procesi i institucije u Srbiji od 2010. do 2020. Godine*, Izd. D. Spasojević [In *Undermining democracy: Processes and institutions in Serbia between 2010 and 2020*, ed. D. Spasojević], 45–78. Crta: Belgrade.
- Imami, D., E. Merkaj, and D. Pojani. 2022. Electoral politics of disaster: How earthquake and pandemic relief was used to earn votes. *Cambridge Journal of Regions, Economy and Society* (forthcoming).
- Imami, D., et al. 2020. Closer to election, more light: Electricity supply and elections in a post-conflict transition economy. *Post-Communist Economies* 32(3): 376–390. <https://doi.org/10.1080/14631377.2019.1640982>.
- Ito, T., and J.H. Park. 1988. Political business cycles in the parliamentary system. *Economics Letters* 27(3): 233–238. [https://doi.org/10.1016/0165-1765\(88\)90176-0](https://doi.org/10.1016/0165-1765(88)90176-0).
- Jarque, C.M., and A.K. Bera. 1980. Efficient tests for normality, homoscedasticity and serial independence of regression residuals. *Economics Letters* 6(3): 255–259.
- Jović, D. 2022. Post-Yugoslav states thirty years after 1991: Unfinished businesses of a fivefold transition. *Journal of Balkan and near Eastern Studies* 24(2): 193–222. <https://doi.org/10.1080/19448953.2021.2006007>.
- Keil, S. 2018. The business of state capture and the rise of authoritarianism in Kosovo, Macedonia, Montenegro and Serbia. *Southeastern Europe* 42(1): 59–82. <https://doi.org/10.1163/18763332-04201004>.
- Kisić, I. 2015. The media and politics: The case of Serbia. *Southeastern Europe* 39(1): 62–96. <https://doi.org/10.1163/18763332-03901004>.
- Klomp, J., and J. de Haan. 2013a. Do political budget cycles really exist? *Applied Economics* 45(3): 329–341. <https://doi.org/10.1080/00036846.2011.599787>.
- Klomp, J., and J. de Haan. 2013b. Conditional election and partisan cycles in government support to the agricultural sector: an empirical analysis. *American Journal of Agricultural Economics* 95(4): 793–818. <https://doi.org/10.1093/ajae/aat007>.
- Kruskal, W.H., and W.A. Wallis. 1952. Use of ranks in one-criterion variance analysis. *Journal of the American Statistical Association* 47(260): 583–621.



- Kovačević, D. 2019. Uloga medija u slobodnim i poštenim izborima—problem „funkcionerske kampanje “u Srbiji [The role of the media in free and fair elections: The problem of the “official campaign” in Serbia]. *CM Komunikacija i Mediji* 14(46): 153–182.
- Kwiatkowski, D., et al. 1992. Testing the null hypothesis of stationary against the alternative of a unit root. *Journal of Econometrics* 54(1–3): 159–178.
- Lächler, U. 1982. On political business cycles with endogenous election dates. *Journal of Public Economics* 17(1): 111–117. [https://doi.org/10.1016/0047-2727\(82\)90029-9](https://doi.org/10.1016/0047-2727(82)90029-9).
- Lami, E. 2022. Political budget cycles in the context of a transition economy: The case of Albania. *Comparative Economic Studies*. <https://doi.org/10.1057/s41294-022-00191-6>.
- Lami, E., and D. Imami. 2019. Electoral cycles of tax performance in advanced democracies. *Cesifo Economic Studies* 65(3): 275–295.
- Leeper, E.M., T.B. Walker, and S.C.S. Yang. 2013. Fiscal foresight and information flows. *Econometrica* 81(3): 1115–1145.
- Ljung, G., and G. Box. 1978. On a measure of lack of fit in time series models. *Biometrika* 65(2): 297–303.
- Lončar, J. 2017. Stanje demokratije u Srbiji kroz prizmu izborne kampanje 2016 godine [The state of democracy in Serbia through the lens of the 2016 election campaign]. In *Stranke i javne politike*, eds. G. Pilipović and Z. Stojiljković [Parties and public policies], 49–68. Konrad Adenauer Foundation: Belgrade.
- McCallum, B.T. 1978. The political business cycle: An empirical test. *Southern Economic Journal* 42(3): 504–515.
- Mills, T.C. 1991. *Time series techniques for economists*. Cambridge: Cambridge University Press.
- Nordhaus, W.D. 1975. The political business cycle. *The Review of Economic Studies* 42(2): 169–190. <https://doi.org/10.2307/2296528>.
- Novaković, G. 2010. Čije mandat Šormazov mandat? [Whose mandate is Sormas's mandate?]. Available online at: <https://www.politika.rs/sr/clanak/151063/Ciji-je-Sormazov-mandat>. Accessed 25 June 2022.
- OSCE. 2022. Elections in Serbia. Available online at: <https://www.osce.org/odihr/elections/serbia?page=1>. Accessed 20 Nov 2022.
- OSCE. 2020. Parliamentary elections 21 June 2020: ODIHR special election assessment mission final report. Available online at: <https://www.osce.org/files/f/documents/a/3/466026.pdf>. Accessed 20 Nov 2022.
- Pavlović, D. 2016. *Mašina za rasipanje para* [Money wasting machine]. Den Graf: Belgrade.
- Pavlović, D., and M. Bešić. 2019. Political institutions and fiscal policy: Evidence from post-communist Europe. *East European Politics* 35(2): 220–237. <https://doi.org/10.1080/21599165.2019.1594786>.
- Pavlović, D. 2020. The political economy behind the gradual demise of democratic institutions in Serbia. *Southeast European and Black Sea Studies* 20(1): 19–39. <https://doi.org/10.1080/14683857.2019.1672929>.
- Phillips, P.C.B., and P. Perron. 1988. Testing for a unit root in time series regression. *Biometrika* 75(2): 335–346.
- Pejovich, S.S. 2003. Understanding the transaction costs of transition: it's the culture, stupid. *The Review of Austrian Economics* 16(4): 347–361. <https://doi.org/10.1023/A:1027397122301>.
- Pešić, V. 2007. Partijska država kao uzrok korupcije u Srbiji [The party state as a cause of corruption in Serbia]. *Republika* 19:402–405. Available online at: <http://www.republika.co.rs/402-405/17.html>. Accessed 17 June 2022.
- Prašćević, A. 2020. The applicability of political business cycle theories in transition economies. *Zagreb International Review of Economics & Business* 23: 73–90. <https://doi.org/10.2478/zireb-2020-0024>.
- Radio-021. 2014. Plate u javnim preduzećima 14 puta veće od profita. [Salaries in public companies are 14 times higher than profits]. Available online at: <https://www.021.rs/story/Info/Srbija/79452/Plate-u-javnim-preduzecima-14-puta-vece-od-profitita.html>. Accessed 20 Nov 2022.
- Resimić, M. 2022. Capture me if you can: The road to the political colonisation of business in post-Milošević Serbia. *Europe-Asia Studies*. <https://doi.org/10.1080/09668136.2021.2008878>.
- Rose, S. 2006. Do fiscal rules dampen the political business cycle? *Public Choice* 128(3): 407–431. <https://doi.org/10.1007/s11127-005-9007-7>.
- Sarfo, A.P., J. Cross, and U. Mueller. 2017. Intervention time series analysis of voluntary, counselling and testing on HIV infections in West African sub-region: The case of Ghana. *Journal of Applied Statistics* 44(4): 571–582.
- Schwarz, G.E. 1978. Estimating the dimension of a model. *Annals of Statistics* 6(2): 461–464.



- Shi, M., and J. Svensson. 2006. Political budget cycles: Do they differ across countries and why? *Journal of Public Economics* 90(8–9): 1367–1389. <https://doi.org/10.1016/j.jpubeco.2005.09.009>.
- Šojić, M. 2013. *Javni dug u Republici Srbiji 2000–2013* [Public debt in Republic Serbia between 2000 and 2013]. *Ekonomski Vidici* 4(2013): 451–480.
- Spasojević, D. 2017. Vrednosno profilisanje stranaka na izborima 2016. godine [Value profiling of parties in the 2016 elections]. In *Stranke i javne politike*, Izd. G. Pilipović and Z. Stojiljković [In *Parties and public policies*, eds. G. Pilipović and Z. Stojiljković], 33–47. Konrad Adenauer Foundation: Belgrade.
- Spasojević, D. 2021. Two and a half crises: Serbian institutional design as the cause of democratic declines. *Political Studies Review*. <https://doi.org/10.1177/14789299211056197>.
- Stankov, A. 2020. U javnom sektoru Niša nova zapošljavanja - planirano više od 200 ljudi [In the public sector Niš new employment - more than 200 people are planned]. *Južne Vesti* [Southern News]. Available online at: <https://www.juznevesti.com/Ekonomija/U-javnom-sektoru-Nisa-nova-zaposljavanja-planirano-vise-od-200-ljudi.sr.html>. Accessed 22 Nov 2022.
- Streb, J.M., et al. 2012. Temporal aggregation in political budget cycles [with comment]. *Economía* 13(1): 39–78.
- The World Bank. 2022. [online]. Available at: <https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=RS>. Accessed 10 Nov 2016.
- Trifunović, V.R. 2015. *Konceptualizacija gubitnika i dobitnika postsocijalističke transformacije srpskog društva* [Conceptualization of losers and winners of the post-socialist transformation in Serbian society]. Neobjavljena doktorska disertacija. [unpublished doctoral dissertation, University of Belgrade – Faculty of philosophy]. Available online at: <https://uvidok.rcub.bg.ac.rs/bitstream/handle/123456789/117/Doktorat.pdf;sequence=1>. Accessed 29 June 2022.
- Yoo, K.R. 1998. Intervention analysis of electoral tax cycle: The case of Japan. *Public Choice* 96(3–4): 241–258.
- Uvalić, M. 2007. How different is Serbia? In *Transition and beyond. Studies in economic transition*, ed. S. Estrin, G.W. Kolodko, and M. Uvalić, 174–190. London: Palgrave Macmillan. https://doi.org/10.1057/9780230590328_9.
- Uvalić, M. 2013. Why has Serbia not been a frontrunner? In *Handbook of the economics and political economy of transition*, ed. P. Hare and G. Turley, 365–375. London: Routledge. <https://doi.org/10.4324/9780203067901>.
- Vladislavljević, N. 2019. *Uspón i pad demokratije posle Petog oktobra* [The rise and fall of democracy after the Fifth of October]. Arhipelag 21: Belgrade.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Springer Nature or its licensor (e.g. a society or other partner) holds exclusive rights to this article under a publishing agreement with the author(s) or other rightsholder(s); author self-archiving of the accepted manuscript version of this article is solely governed by the terms of such publishing agreement and applicable law.

