Overlapping political budget cycles

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Abstract
We advance the literature on political budget cycles by testing for cycles in expenditures for elections to the legislative and the executive branches. Using municipal data, we identify cycles independently for the two branches, evaluate the effects of overlaps, and account for general year effects. We find sizable effects on expenditures before legislative elections and even larger effects before joint elections to the legislature and the office of mayor. In the case of coincident elections, we show that it is important whether the incumbent chief executive seeks reelection. To account for the potential endogeneity of that decision, we apply an IV approach using age and pension eligibility rules.

Keywords Election cycles · Municipal expenditures · Legislative and executive elections · Instrumental variables approach

JEL Classification H11 · H71 · H72 · H74

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1 Introduction

Originating with Nordhaus (1975), a main paradigm of the political economy literature is that political agents act rationally when deliberately manipulating the economy or particular fiscal aggregates to gain electoral advantage. Further theory (e.g., Rogoff and Sibert 1988 and Rogoff 1990) confirms the main prediction of that paradigm, even when voters form rational expectations.\(^1\) While the early empirical literature looks for cycles in macroeconomic aggregates, such as unemployment and inflation,\(^2\) newer work reports credible evidence for political budget cycles (henceforth, PBCs) in fiscal aggregates, such as debt, public expenditures and their composition (see Keech and Pak 1989; Alesina et al. 1997 and Brender and Drazen 2005).\(^3\) Overall, the PBC phenomenon is relatively well understood and the empirical evidence highlights its relevance in actual policy making (see Philips 2016 and Dubois 2016).

This paper contributes to the foregoing literature in two ways. First, we explore PBCs in total public expenditures for regional elections to the legislative and the executive branches of government.\(^4\) We study the cycles of the two institutions independently, evaluate the effects of randomly occurring electoral overlaps and separate the effects from general time effects. That approach contrasts with the existing literature, which focuses either on the legislative branch or on coincident elections to the two branches.\(^5\) Second, for the analysis of PBCs in the executive branch, we highlight the concerns related to the endogenous decision of incumbent chief executives to seek reelection. Overcoming that endogeneity is crucial, as we only expect PBCs when the incumbent competes for reelection. To that end, we use an instrumental variables approach based on the age of the incumbent as well as on public pension eligibility rules to achieve credible identification.

The testing ground for our analysis is at the German sub-national level. We focus on municipalities in the states of Bavaria and Baden-Württemberg because those two states share a comparable institutional design (in contrast to some other German states), and exploiting their particular features allow us causally to identify PBCs for the legislative and the executive branches, the effects of overlapping elections, all while accounting for year effects. For the 1992–2006 period, we observe all key variables (expenditures, transfers and elections to the legislative and the mayor’s office), as well as important socio-economic characteristics (population, age structure and ideological indicators for councils and mayors).\(^6\)

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^1^ Alternatively, Persson and Tabellini (2000) and Shi and Svensson (2006) provide a theoretical foundation for political budget cycles assuming rational expectations and moral hazard. A second strand of theoretical work relates to partisan cycles (e.g., Hibbs 1977; Alesina 1987, 1988a) that explain electoral cycles by shifts in political ideology.

^2^ Studies finding only weak or no evidence for cycles in real macroeconomic aggregates include, among others, Lächler (1978), Golden and Poterba (1980) and Alesina et al. (1997).

^3^ Further evidence at the national level is provided by Alesina (1988b), Alesina et al. (1992), Schuknecht (1999), Potrafke (2012) and Klomp and Haan (2013).

^4^ While some papers study the composition of spending and distinguish between different types of spending categories that are more or less observable (see, e.g., Khemani 2004; Drazen and Eslava 2010), we take the route of most of the literature and study total expenditures.

^5^ The unique setting of our design is acknowledged in Alesina and Passalacqua (2016) in the Handbook of Macroeconomics.

^6^ While a longer time series would always be desirable, we are bound by data availability in Baden-Württemberg before 1992 and the introduction of new accounting standards in Bavaria after 2006.
Our paper is related to a broader literature focusing on PBCs in (local or regional) expenditures. In Table A.1 in the Online Appendix, we provide a detailed and exhaustive overview of papers studying such cycles at the sub-national level. In total, we document 30 studies reporting evidence from 16 countries. Most research focuses on legislative elections and uses variation over time to separate election effects from general year effects.

Apart from the papers in Table A.1, we identify four additional relevant studies. Using alternative outcome variables and focusing on local elections in Germany, Foremny and Riedel (2014) (taxes) and Englmaier and Stowasser (2013) (savings bank lending) provide evidence that PBCs are important. In addition, Furdas et al. (2015) present a closely related analysis in which interactions of PBCs in expenditures across different German governmental tiers (local legislative elections and corresponding state elections) are the focus of attention. The work by Hessami (2018) highlights the differences stemming from a further dimension of election laws. Only mayors that are elected directly by the voters (and not appointed by the council) are shown to have an incentive to attract more state investment grants in election years.

For elections to the executive branch, only a limited number of studies investigate PBCs (e.g., Rose 2006; Alt and Rose 2009; Garmann 2017b). One reason is that the chief executive frequently is not elected directly by the voters (Hessami 2018 being a notable exception). In addition, even if separate elections for mayors and councils are held, those elections often coincide. The papers by Rosenberg (1992) for Israel and Aidt et al. (2011) for Portugal both study cases in which legislative and executive branch elections are held simultaneously. In both studies, the authors control directly for whether the incumbent mayor seeks reelection, but cannot explore the endogeneity of that decision. Our contribution is that we tackle such endogeneity using a novel instrumental variables approach.

Crucial for the validity of our empirical analysis is the fact that local election dates are regulated by state law and are, therefore, set exogenously with very little or virtually no influence on the timing in individual municipalities. The legislative elections throughout our sample are held on state-determined dates. In contrast, regulations with respect to executive elections differ between states, i.e., election dates for the executive branch sometimes align with council elections and sometimes are held on municipally specified dates that differ from the dates of legislative elections (see Sect. 5). Given the varying election timing,

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7 More broadly, our paper generally contributes to the understanding of political economy at the regional level (see, e.g., Kessing 2010; Solé-Ollé and Viladecans-Marsal 2013; Baskaran 2012; Freier and Odendahl 2015; Garmann 2015).

8 Note that the literature is divided into research studying the size of aggregate expenditures close to elections (similar to our question) and those testing for PBCs in the composition of expenditures. Evidence for the latter is first presented by Blais and Nadeau (1992) and Kneebone and Mckenzie (2001) for Canada and subsequently by Drazen and Eslava (2010), Veiga and Veiga (2007) and Akhmedov and Zhuravskaya (2004) in the case of municipal or regional legislative elections in Colombia, Portugal and Russia, respectively. Common to all their results is a shift in expenditures, especially to categories with high visibility for the electorate.

9 Earlier studies for Germany include Seitz (2000), Galli and Rossi (2002) and Schneider (2010) as well as Mechtel and Potrafke (2013), which test for PBCs in total expenditures, budget deficits and unemployment using state-level data.

10 In Sect. 5, we highlight that we can control for the timing of state-level elections. However, as we have just two states, we cannot make the same analytical progress (carefully studying the interaction of those cycles) as skillfully achieved by Furdas et al. (2015). On the other hand, our focus on executive and legislative budget cycles can be studied uniquely in the present design, as institutional circumstances and data availability prevent us from using other German states.
we can identify PBCs in both legislative and executive branch elections plus separate those effects from general year effects.

Our main results are threefold. First, we identify sizable and significant increases in total expenditures in pre-election years for the legislative branch. The results are in the range of 1.3–1.8% of total expenditures and remain stable throughout all of our robustness tests. For a medium-sized town of 5000 inhabitants, the PBC effect amounts to additional spending on the order of about 170,000 Euro in the year prior to the election. Second, we find that the cycles induced by legislative elections are unaffected by the timing of executive branch elections. Third, we show a significant effect of overlapping election cycles conditional on the incumbent’s decision to seek reelection. Aggregate expenditures rise in joint pre-election and election years if the incumbent mayor seeks reelection and decline in joint post-election years if she did not. For instance, given that the incumbent reenters the race for office, local spending in overlapping pre-election years is 5.5% larger than in the counterfactual situation when the incumbent does not seek reelection. However, our results involve with one caveat: The complex structure of our estimations with several interaction terms saturates the model such that, given the number of observations, some results are significant only marginally.

The paper is organized as follows. Section 2 discusses the institutional setting while Sect. 3 derives hypotheses. Section 4 presents our data and descriptive statistics. In Sect. 5 we lay out the identification strategy, Sect. 6 discusses the main results and Sect. 7 summarizes the sensitivity analyses. Section 8 concludes.

2 Institutional background

The institutional arrangements of Baden-Württemberg (BW) and Bavaria (BAY) equip us with the exact features we need in order to test the hypothesis of overlapping PBCs. Municipalities are governed by an elected council and a directly elected mayor. Councils act as legislative bodies and mayors head the executive branch. While the council members are chosen in open-list proportional elections, majoritarian elections are held to select the winner of the mayor’s race. In BAY, the legislative and executive branch are elected for 6 years on (generally) the same statewide election day. In contrast, election terms in BW are of different lengths and election days vary accordingly: the local head of the

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11 The municipal level in Germany is the lowest of four governmental tiers. In addition to the federal level, Germany comprises 16 federal states, about 450 counties and about 12,000 municipalities.
12 Note that the mayor also is a voting member of the council. Generally, the mayor is responsible for city administration, formulating all municipal decisions and overseeing their implementation. Also, she often is the town’s only full-time working politician.
13 The electoral rules in both states are quite similar. There are, however, also subtle differences. For legislative elections, both states have open-list proportional elections where voters have as many votes as there are seats in the council (which allows for vote-splitting and cross-voting). There are no explicit hurdles for small parties. While BW uses a Sainte-Lague seat allocation mechanism, BAY uses a two-step D’Hondt approach. For executive elections, both states use a two-round majoritarian procedure. If no candidate obtains the absolute majority in the first round, a second election must be held. In BAY, this second election is a classical run-off election between the two leading candidates. In BW, the second election is open (even new candidates are allowed) and first-past-the-post.
14 Exceptions to this rule arise when mayoral terms end prematurely. In that case, a Bavarian municipality might hold an independent executive branch election for one term, with the requirement to align with the state wide election dates again in the subsequent election.
The executive branch is elected for 8 years, while legislative elections are held every 5 years. Furthermore, only legislative elections are held on the same statewide day. The election dates for the executive branch are municipal-specific, i.e., each municipality has its own electoral cycle for such elections.

We illustrate the distribution over time of both types of elections in our estimation sample in Fig. 1.\textsuperscript{15} Within the time horizon of this study, we observe legislative elections held in 1996 and 2002 in BAY and in 1994, 1999 and 2004 in BW. Chief executive elections in BW spread evenly throughout the years and only randomly overlap with legislative elections (14.7\% of the cases). In BAY, both elections generally parallel one another. As an exception to the general rule, 10.7\% of the executive branch election cycles in our estimation sample deviate from the general trend (as some past election cycles ended prematurely). We examined those cases carefully and find the towns to be significantly larger in size and to differ in their demographic compositions. To make sure that our results are not driven by the few unusually observations in BAY, we also repeat the analysis dropping them. Reassuringly, the results remain comparable to our main findings.

Crucial for the validity of our empirical analysis is the fact that the timing of local elections (legislative as well as chief executive) is regulated by state law and is, for the most part, beyond the control of individual municipalities. The timing of the legislative elections is fixed entirely by given statewide election terms and therefore is exogenous.\textsuperscript{16} While in principle the same also is true for mayoral elections, the mayor’s term may deviate from the general rule. In particular, the mayor’s term may end prematurely for a number of reasons. First, the citizens or the council may recall the mayor.\textsuperscript{17} Second, the mayor may die or resign for personal (e.g., sickness) or political (e.g., lack of political support) reasons. A third reason causing deviations from the predefined length of political terms is given by the existence of strict limits preventing incumbents from serving beyond the age of 68 in BW.\textsuperscript{18}

With respect to expenditures, local governments play important roles in the provision of public services. Municipalities in both states are responsible for roughly 50\% of all public spending in the state (see Federal Statistical Office 2011).\textsuperscript{19} Among other things, municipalities are in charge of general administration, public order, cultural expenditures, infrastructure and public transport. In addition, towns often oversee local public firms and administer expenditures from higher-level governmental tiers (e.g., expenditures on social welfare). Despite the often complex division of tasks between the different tiers of public governance, municipalities retain considerable discretion in spending decisions.

\textsuperscript{15} The number of elections in BW goes up slightly over time as it becomes easier to obtain all necessary information in later years.

\textsuperscript{16} No option for premature elections exists for the legislative branch. As no formal coalition agreements are negotiated at the local level, a municipal government cannot break down. If a council member dies in office or resigns for personal reasons, she is replaced automatically with a successor. These successors are determined during the election and consist of candidates which exhibited sufficient votes but have not been allocated seats in the local council due to the D’Hondt allocation mechanism.

\textsuperscript{17} While recall is a constitutionally guaranteed right of the citizens and the council, we almost never observe such an event during the period covered in this study.

\textsuperscript{18} We discuss the importance of premature executive elections further in our section on identification (see Sect. 5).

\textsuperscript{19} Municipalities in BW are responsible for 52.9\% of all state expenditures, which exceeds the German average (including municipal budgets as well as public companies under the control of local towns). Municipalities in BAY administer 49.7\% of total state spending.
Focusing on BAY and BW in a subnational study of PBCs is attractive for several reasons. First, historically, both states have had direct mayoral elections since the end of World War II. That contrasts with all other German states, which introduced direct elections to the executive branch only in the mid-1990s (see Ade and Freier 2013; Garmann 2015; Hessami 2018). Consequently, we cannot study individual PBCs in executive and legislative elections in other states earlier than the 2000s. Furthermore, since the mayor automatically becomes a voting member of the council in both states, studying the overlap of individual election cycles is particularly interesting, as the institutional setting may leave room for collusion between the elected branches of government.

Second, the constitutional framework that governs local affairs follows a comparable standard in BAY and BW. Both states operate in a constitutional setting that is referred to as Süddeutsche Ratsverfassung. Important for our study, that particular constitutional setting grants extensive rights and duties to the head of the executive branch, again standing partly in contrast to the institutional structures of other German states, in particular with respect to public spending decisions.

Third, the two states in our analysis are comparable along many other dimensions. Both are located in the south of Germany. In addition, both states have had conservative state rule throughout the time covered in this study. The two states are of comparable size and population. Finally, BAY and BW are of comparable wealth and industrial performance. In both states, the municipalities are well off financially, the level of public debt is comparatively low and the towns enjoy extensive financial independence.

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20 And even then, evidence from those other German states would be particular as their direct mayoral elections were introduced very recently.

21 BAY was governed by absolute majorities of the Conservative Party throughout the period covered by this study. In BW, the Conservative Party also headed the state’s government; however, it did so as the predominant member of a coalition.

22 Consequently, the municipal structures are quite similar. While BW has slightly larger municipalities on average, the differences are rather small compared to other German states. Together, the two states account for more than 25% of the German population.

23 Together they account for approximately 75% of total state income redistribution under the German fiscal equalization scheme (see Heinemann et al. 2015).

24 Municipalities in other German states might have very limited financial opportunities for extraordinary investment projects or other general pork barrel spending before elections.
3 Theoretical considerations

In order to derive testable hypotheses, it is necessary to take a more detailed look at the precise relation between the legislative and the executive branches as well as the distribution of powers and duties. In addition to being a voting member and head of the legislative body, the mayor also serves as the principal agenda setter. She initially has the sole right to cancel or put topics on the council’s political agenda and is free to rearrange the order of voting on those topics during legislative meetings.

Based on an informal application, which must be supported by a minimum of one-fourth of the regular members of the legislative body, however, the executive branch may lose the exclusive right to be the agenda setter. In such a case, the members of the legislative branch also gain the right to put topics for consideration on the agenda. The potential range of these topics is only mildly restricted and may not involve topics that are explicitly assigned by law to the executive branch.25 The final agenda always must be made public prior to council meetings. Generally, the legislative branch may take decisions by absolute voting majorities. Consequently, the legislative branch may not only put new topics on the agenda, but also may overrule the mayor by voting on them. In order to balance powers, the executive has the right to veto decisions taken by the legislative branch if they are deemed to be at the expense of the general welfare of the municipality. Furthermore, the chief executive is obligated to cast a veto if the decision is determined to be illegal. But it can only do so once a decision has been taken and may not prevent topics from being placed on the agenda in advance. Crucial in this context, the legislative branch may even overrule a veto by the executive if the latter was expected to affect municipal welfare negatively. That can be done by putting the topic on the council’s agenda once again.

A feature of executive elections at the local level in Germany is that electoral campaigns and their public perceptions usually focus on the individual candidate rather than the political party to which she belongs (party labels are more salient at higher governmental levels). Consequently, if PBCs are implemented to signal competence, the incumbency status of the chief executive is likely to alter the probability of observing political budget cycles induced by executive action.26

One can therefore summarize that the executive branches in BAY and BW generally hold key positions in the context of municipal fiscal decision making, especially in comparison to other federal states in Germany. However, the executive branch does not have sole responsibility for municipal finances. Indeed, relative to the legislative branch, the executive is in a slightly weaker position.

Apart from the institutional setting, we need to make assumptions about the type of PBCs we believe are prevalent in order to deduce testable hypotheses. Even though we view the contribution of this paper to be in the empirical identification of the effects, structuring the theoretical considerations helps considerably to interpret the results properly.

25 The latter, for instance, involves issues regarding public administration.

26 One careful referee raised the issue that mayors could in fact have incentives to signal competence even when not running for office again: if they hope to be elected in a different municipality, they may still opt to increase spending. Reassuringly, the number of such cases is not large in our dataset. Ninety-eight percent of the candidates in our sample run for election only in a single municipality. We further want to note, however, that as those switching candidates are included in the baseline model (coded as not re-running), any positive spending effect for them would represent a lower-bound and conservative coefficient estimate.
First, we assume that politicians (mayors or the council members) find it worthwhile to manipulate fiscal aggregates prior to elections. While that incentive might be because voters are agnostic (the Nordhaus-type of models) or manipulation represents a mechanism to signal competence (the Rogoff-type model), past research has documented that that type of behavior matters and we have no reason to believe otherwise. It is important to note, that while general PBCs can be explained by both type of models, the mechanism for heterogeneous effects when the incumbent mayor re-runs for office aligns only with the Rogoff-type models of competence signaling.

Second, like much of the literature, we presume that voters want more spending rather than less. That is to say, voters are not fiscally conservative. Although voters’ motivations ultimately remain an assumption, we believe that the literature provides us with ample evidence that that is the case for German local elections (more so than for Swiss or US voters). Most importantly, Asatryan et al. (2017) show that the introduction of direct democracy at the local level in Germany is associated with more public spending and document that local German voters do not seem to be fiscally conservative. Freier (2015) shows that mayors—including those of towns included in our sample—achieve a significant increase in incumbency advantage when raising spending over and above the median level increase. At the same time, an upsurge in debt does not significantly alter incumbents’ reelection chances. Also the evidence on local German tax increases being shifted to post-election years brought forward by Foremny and Riedel (2014) is corroborative for the lack of fiscal conservatism observed in German local elections.

Based on the foregoing assumptions and given the institutional features, we propose the following three Hypotheses 1, 2 and 3.

Hypothesis 1 Both the legislative and the executive branches have the opportunities and the incentives to engage in strategic spending around municipal elections with the aim of gaining electoral advantages.

Hypothesis 2 Relative to the executive branch, cycles for the legislative branch should be more pronounced.

Hypothesis 3 The likelihood of observing political budget cycles in the executive branch should be strengthened if the incumbent seeks reelection to office.

Given the institutional framework, coincident mayoral and council elections represent a special situations and should cause a change in the incentives faced by both bodies. Based on the implicit assumption that pre-electoral spending is perceived by the electorate as a signal of competence, overlapping elections will result in a setting in which observed signals cannot be associated perfectly with either set of political actors. We assume that the electorate is likely to reward both branches for additional public spending, which increases the incentives for collusion.\footnote{We would argue that it is indeed very likely that both branches can claim (at least partial) credit. That is particularly the case because local mayors and local council members face much higher degrees of direct political exposure to one another than they do at higher levels of government. We therefore assume that mayors and councils can solve any emerging free-rider problems or credit-claiming issues. If voters attribute spending to a particular politician and reward her accordingly, the resulting incentives could well produce the opposite results in which, e.g., a mayor would spend more only when she receives all of the credit in her stand-alone election. While we cannot rule out that credit-claiming or free-rider issues exist, we thank a careful referee by noting that any remaining credit-claiming issue means that we estimate a lower bound of the effect stemming from Hypothesis 4.} Compared to situations in which election dates diverge, the
chief executive may now free-ride on the legislative election as the incentives for the legislative branch to support rather than overrule projects initiated by the mayor are strengthened significantly. That conclusion is summarized in Hypothesis 4.

Hypothesis 4  When mayoral and council elections coincide, observed budget cycles are generally more pronounced. That effect is strengthened further when the executive seeks reelection to office.

4 Data

We use data from municipalities in BAY and BW from 1992 to 2006. We observe 2056 municipalities and a population of 12.5 million inhabitants in BAY and 10.5 million inhabitants living in 1101 municipalities in BW.

We obtained information on our outcome variable (total expenditures), state transfers, the results of legislative elections, information on local populations as well as demographic structures from the respective state statistical offices. We calculate municipal expenditures net of transfers, i.e., we subtract the amount of transfers from the respective state government from gross expenditures. That step is crucial in order to capture and isolate the discretionary amounts of municipal spending and to eliminate confounding influences, such as spending that is initiated by an upper level governmental tier, but only administered at the municipal level. For instance, the latter could even be induced by PBCs in state level elections (see Furdas et al. 2015).

We create dummy variables that identify a council’s pre-election, election and post-election year to capture the legislative PBC. Furthermore, we classify councils by the share of seats held by leftwing parties (members of the Social Democratic Party, SPD, and the Green Party, Grüne). We summarize all relevant descriptive information in Table 1. We explain our variable coding further in Table A.2 in the Online Appendix.

Obtaining comprehensive data on executive branch elections in BW is a challenging task. While complete information on elections is provided for BAY by the state statistical office, such data do not exist for BW. Owing to the lack of official data, we collected data manually by contacting and surveying all 1,101 municipalities with respect to the dates of past mayoral elections. Using the responses obtained, we then searched regional newspapers as well as official announcements (Staatsanzeiger Baden-Württemberg) to gather additional information on specific elections, e.g., the name, age, party affiliation and regular occupation of the elected mayor as well as information on whether the incumbent mayor ran for reelection. Finally, we conducted an intensive search of official websites and free internet resources to fill other gaps in our dataset.

28 The time coverage of this study is limited by the availability of data on municipal spending (Jahresrechnungsstatistik). Additionally, data for earlier mayoral elections in BW are hard to obtain, thus preventing the coverage from being expanded. Data beyond 2006 cannot be used to estimate electoral cycles because in 2007, BAY’s municipalities changed their accounting standards. This change was implemented at endogenous times in each municipality, which opens up opportunities to manipulate the observable budget strategically around election years.

29 We contacted all major authorities, including the state statistical office, the association of municipalities, the state ministry of interior affairs and the state election office. No summary of official data exists for mayoral elections in BW.
Table 1  Sample description

| Variable                                      | Observations | Mean  | SD   | 25 %ile | Median | 75 %ile | Minimum | Maximum |
|-----------------------------------------------|--------------|-------|------|---------|--------|---------|---------|---------|
| Total expenditures in logs (net of transfers) | 39,554       | 15.509| 1.145| 14.686  | 15.364 | 16.186  | 11.689  | 22.557  |

**Legislative elections**

| Pre-election year                           | 39,554       | 0.148 | 0.355| 0        | 0      | 0       | 0       | 1       |
| Election year                               | 39,554       | 0.153 | 0.360| 0        | 0      | 0       | 0       | 1       |
| Post-election year                          | 39,554       | 0.155 | 0.361| 0        | 0      | 0       | 0       | 1       |

**Executive elections**

| Pre-election year                           | 39,554       | 0.130 | 0.336| 0        | 0      | 0       | 0       | 1       |
| Election year                               | 39,554       | 0.134 | 0.340| 0        | 0      | 0       | 0       | 1       |
| Post-election year                          | 39,554       | 0.132 | 0.339| 0        | 0      | 0       | 0       | 1       |
| Dummy incumbent runs again                  | 39,554       | 0.739 | 0.439| 0        | 1      | 1       | 0       | 1       |
| Dummy full time mayor                       | 39,554       | 0.608 | 0.488| 0        | 1      | 1       | 0       | 1       |
| Dummy left mayor                            | 39,554       | 0.134 | 0.341| 0        | 0      | 0       | 0       | 1       |
| Age of the mayor                            | 39,554       | 51.534| 8.398| 46       | 52     | 57      | 25      | 85      |
| Share left parties in council               | 39,554       | 0.138 | 0.153| 0.000    | 0.083  | 0.250   | 0       | 0.714   |
| Population                                  | 39,554       | 7.124 | 28.438| 1.732   | 3.141  | 6.135   | 0.096   | 1280.610|
| Population squared                          | 39,554       | 0.859 | 26.815| 0.002   | 0.009  | 0.037   | 0.000   | 1639.962|
| Share population < 15 years                 | 39,554       | 0.180 | 0.024| 0.164   | 0.180  | 0.196   | 0.066   | 0.343   |
| Share population ≥ 65 years                 | 39,554       | 0.171 | 0.046| 0.136   | 0.161  | 0.200   | 0.054   | 0.462   |

**State elections**

| Pre-election year                           | 39,554       | 0.202 | 0.401| 0        | 0      | 0       | 0       | 1       |
| Election year                               | 39,554       | 0.216 | 0.412| 0        | 0      | 0       | 0       | 1       |
| Post-election year                          | 39,554       | 0.196 | 0.397| 0        | 0      | 0       | 0       | 1       |

**Instruments for incumbent runs again**

| Dummy mayor is older than 60 years           | 39,363       | 0.312 | 0.463| 0        | 0      | 1       | 0       | 1       |
| Dummy mayor is pensionable                  | 39,363       | 0.353 | 0.477| 0        | 0      | 1       | 0       | 1       |

Notes: The table shows the descriptive statistics for the sample. We present sample means, standard deviations, minimum and maximum figures, median as well as the 25% and the 75% percentiles of the distributions for the variables indicated in the left column. In total, we include data from 2049 municipalities in BAY and 968 municipalities in BW.
Similar to legislative elections, we code a set of dummy variables for mayoral elections indicating the pre-election, election, and post-election year in each municipality. Furthermore, we construct dummy variables for mayors indicating affiliation with one of the two leftwing parties mentioned previously, whether the mayor serves in a full-time position and whether the incumbent mayor sought reelection in the current election. As the incentives to manipulate public spending strategically should especially be stronger for incumbent mayors rerunning, we will construct interaction terms between mayoral election and incumbency dummies. Finally, we enter the mayor’s age as a further control variable in our regressions, which also will be relevant against the background of our instrumental variables approach.

Compared to the total of 1,101 municipalities in BW and 16,515 municipal-year observations, we ultimately obtained adequate information on mayoral elections for 968 municipalities and significantly fewer years, namely a total of 10,531 municipal-year observations. Typically small municipalities are lost owing to missing information. That smaller sample is explained by our research strategy, which was based on a questionnaire that smaller municipalities with fewer municipal staff might not be able to answer. However, we argue that our results do not suffer from a bias given that the differences in the means of control variables between the two groups are rather small (see Table A.3 in the Online Appendix).

Mayoral terms may end prematurely because of the resignation or death of the incumbent mayor. Because those events may potentially pose problems for the identification of electoral cycles, we exclude non-completed or prematurely ended political terms from our baseline specifications. When testing the robustness of our main results, we also run estimations in which we include all available observations, including incomplete terms.

5 Identification

We specify the following baseline model to identify political budget cycles in municipal spending:

\[
\log(Y_{i,t}) = \mathbf{t}^d_i \delta + \mathbf{t}^e_i \phi + I_{i,t} \theta + \sum_{k=-1}^{1} \left( t^d_{i,t+k} \times t^e_{i,t+k} \right) \pi_{k+2} + \sum_{k=-1}^{1} \left( t^e_{i,t+k} \times I_{i,t} \right) \tau_{k+2} + \sum_{k=-1}^{1} \left( t^d_{i,t+k} \times I_{i,t} \right) \sigma_{k+2} + X'_{i,t} \gamma + \lambda_t + \mu_i + h(t,s) + e_{i,t}.
\]

The dependent variable is the natural logarithm of total municipal expenditures, net of transfers, \(Y_{i,t}\). The vectors \(\mathbf{t}^d\) and \(\mathbf{t}^e\) contain dummies capturing election dates in municipal councils, i.e., legislative (\(l\)), and mayoral, i.e., executive (\(e\)) branch elections, respectively.

30 About 60% of the mayors in the sample work full-time. To test the sensitivity of our results, we also tested models in which we focus exclusively on full-time mayors. Those results return similar point estimates, both in sign and magnitude. Because of the significantly smaller sample size, however, the statistical significances of those estimates are not comparable to those reported in the main text (results are available upon request).
In particular, we define the following dummy variables for the respective elections $j = l, e$ as

$$t^j = \begin{bmatrix} t_{j-1}^l \\ t_j^l \\ t_{j+1}^l \end{bmatrix} \quad \text{and} \quad \begin{cases} 1 \text{ in the pre-election year, } 0 \text{ otherwise} \\ 1 \text{ in the election year, } 0 \text{ otherwise} \\ 1 \text{ in the post-election year, } 0 \text{ otherwise}. \end{cases} \quad (2)$$

To test for differences in spending when election cycles overlap, we estimate interaction terms for congruent pre-, post- and election years as in Foremny and Riedel (2014). The dummy variable $I_{ij}$ denotes whether the incumbent mayor seeks reelection at the next election. The indicator is set to zero/one for the whole term, i.e., we assume that the mayor already knows whether she will run for office again at the end of her term when she takes office. As a result, the estimated coefficient on the incumbent indicator reveals spending differences only between election days. The estimation of interactions between the incumbent dummy and the mayoral election dummies then allows separating general from specific incumbent effects at election time. Finally, the triple interactions adding the incumbent dummy capture the effects of overlapping election cycles conditional on the incumbent’s decision to seek reelection.

We include general year ($\lambda_t$) and municipality ($\mu_i$) fixed effects in the model as well as allow for state-specific linear and quadratic time trends, which we denote by $h(t, s)$. Additional control variables are denoted by $X_{it}^\prime$ and include population, population squared (to control for any non-linear effects of local population sizes), demographic variables, state election indicators, ideological proxies for both the mayor and the council, the age of the mayor and a dummy variable indicating whether the mayor is a full-time politician.

It is important to highlight how our estimation specification identifies PBCs in legislative and executive branch elections. Because legislative elections in BAY and BW are held in different years, the effects of legislative cycles can be separated from general year effects and from state-specific time trends. In contrast, the identification of PBCs surrounding mayoral elections is more demanding. As discussed in Sect. 2, executive branch elections in BAY generally are held at the same time as legislative elections, with a few exceptions. In BW, however, we observe mayoral elections across all years independently of council elections. That is the source of variation, including overlapping as well as non-overlapping elections, that we exploit in order to identify individual executive branch election cycles.

A further important condition for the identification of cycles is the exogeneity of election dates. For council elections, members’ terms are predetermined by state regulations and cannot be influenced by individual municipalities, while for mayoral elections that also is generally true, but the municipality (and/or the mayor) may influence the timing of elections within limits. In our baseline specification, we therefore decided to rely exclusively

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31 We assume that the mayor, at least, has some preferences about that decision, which leads to a final decision at the end of her term. Note that without adopting that assumption, we would condition the incumbent dummy on election years only, which would render separating general from specific incumbent effects infeasible.

32 We also experimented with state-specific year effects, which eliminates the identification of the council election effects. However, such a model can still identify mayoral and joint election effects and when we do this the results remain reassuringly similar (results not reported).

33 In particular, the term of the mayor may end prematurely if (1) the citizens or the council recall a mayor (which is an extremely rare event); (2) the mayor dies or resigns owing to sickness (arguably exogenous to our application); or (3) the mayor resigns for other reasons (personal or political reasons). It is clear that
on fully completed mayoral terms, ensuring that election dates are exogenous and predetermined exclusively by state regulation (8 years in BW and 6 years in BAY). In the robustness section, we test the sensitivity of our results by including terms that ended prematurely. The results remain unaffected both in size and significance.

Another issue that might be raised with respect to endogeneity is given by the incumbent’s decision to seek reelection. In particular, if that decision is linked directly to the fiscal conditions of the municipality and the availability of sufficient financial means for strategic spending, our estimates could not be interpreted as causal. For instance, if a fiscal shock hits the municipality shortly before an election, absorbing available financial means initially intended for strategic spending and ultimately inducing the incumbent not to seek reelection, we would falsely attribute pre-election variations in spending to mayoral election cycles when incumbents do not run for office again. To deal with such potential endogeneity formally, we follow an instrumental variables approach.

To that end, we use two different instruments (explained below) to account for the potential endogeneity of the incumbency indicator. However, implementing an instrumental variables approach in the context of our estimation specification (see Eq. (1)) is challenging because the incumbency variable enters both by itself and interacting with election dummies. As such, separate first-stage regressions are necessary to instrument for the single variable and its interactions. The procedure is shown in Eqs. (3.1) to (4) for the interaction of the incumbent dummy and the mayoral election dummies. In a first step, we separately regress the incumbent dummy (Eq. (3.1)) and its interactions with the executive branch election dummies (Eq. (3.2)) on a set of instruments, i.e., the single instruments \(Z_{it}\), their interactions with the mayoral election dummies \(t_i^e \times Z_{it}\), and the full set of the remaining covariates \(C_{it}'\). In a subsequent step, we use the predicted values for the incumbent indicator and its interactions as regressors in the second stage regression (Eq. (4), see Angrist and Pischke (2009, p.190ff) and Wooldridge (Wooldridge 2010, p. 267f) for more information).

\[
I_{it} = t_{i}^{d} \alpha_1 + t_{i}^{e} \alpha_2 + Z_{it} \alpha_3 + (t_{i}^{e} \times Z_{it}) \alpha_4 + C_{it}' \alpha_5 + \xi_{i,t} \quad (3.1)
\]

\[(t_{i}^{e} \times I_{it}) \equiv T I_i = t_{i}^{d} \km_1 + t_{i}^{e} \km_2 + Z_{it} \km_3 + (t_{i}^{e} \times Z_{it}) \km_4 + C_{it}' \km_5 + \xi_{i,t} \quad (3.2)
\]

\[\log(Y_{i,t}) = t_{i}^{d} \delta + t_{i}^{e} \phi + \hat{I}_i \theta + \hat{T}_i \pi + X_{it}' \gamma + \lambda_i + \mu_i + h(t, s) + \epsilon_{i,t} \quad (4)\]

Footnote 33 (continued)

a mayor will not return to office if his or her term ends prematurely because of resignation. One potential reason for resignations in our data is given by mayors taking office in a larger city for greater remuneration. While the decision to run for office in another municipality potentially is endogenous, the timing is again exogenous because it is predetermined by the timing of elections in other towns.

Note that potential incumbent incompetency would not cause such a pattern. Incompetency would influence a municipality's fiscal position negatively throughout the mayor's full term, and is not necessarily confined to the years around an election.

One might falsely consider estimating the first stage regression exclusively for the single instrument and the incumbent dummy and then compute the interaction term for the second stage regression manually by using the predicted values of the incumbent indicator. That procedure, however, will produce inconsistent estimates. The results of the first stage regression for the incumbent dummy are presented in Table A.6 in the Online Appendix. The results of the remaining first stage regressions for the interaction terms are available upon request. In Eqs. (3.1) and (3.2), municipality and time fixed effects as well as the state-specific time trends are summarized by \(C_{it}' \equiv X_{it}' + \lambda_i + \mu_i + h(t, s)\).
Fortunately, Germany’s institutional design allows us to construct a set of instruments to obtain consistent estimates, as they are uncorrelated with the error term of equation (1), but highly correlated with the incumbent’s decision to seek reelection. We use the following variables and their interactions with the election dummies to instrument the incumbent indicator, all of which we derived from a careful exploitation of the features of German municipal electoral law.  

First, we create a dummy variable that is set to one if the mayor is eligible to receive a pension (*mayor is pensionable*). In both states, in general, the mayor is eligible to receive a pension only if she has served as a civil servant for a particular number of years and has completed at least one entire term of elective office.  

Second, we create a dummy variable that is equal to one if the mayor is older than 60 in the year of her election (*mayor is older than 60 years*). That age threshold is motivated both by the age distribution of incumbent mayors not seeking reelection (see Fig. 2) and the general average age of retirement in the western German population. Concerning the latter, the average pensionable age of men in the western states of Germany (including BAY and BW) in the 1990–2006 period was 60.31 years (German Federal Pension Fund 2014). The threshold is confirmed by our data, incumbent mayors are significantly less likely to seek reelection if they are older than 60 years of age (see left panel of Fig. 2) and while no official age threshold has been established, retirements start to rise at 60 years (see right panel of Fig. 2). Checking the sensitivity of our results, we find that they are robust to changes in the precise definition of the age threshold.  

The two instruments we construct fulfill both necessary conditions for an instrumental variables regression: they are relevant in terms of explaining the incumbent’s decision to run for reelection (mayors above the age of 60 years and mayors who are eligible to receive pensions have weaker incentives to seek reelection), but are exogenous to local public spending. In the second case, no direct link exists between pension eligibility and public spending. With respect to the mayor’s age, in contrast, one might argue that older mayors have different preferences shaping their spending behavior. However, we account for that possibility by controlling explicitly for the mayor’s age in the regressions. Also, tests for overidentification support the appropriateness of our instruments.  

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36 Again, as for the incumbent seeks reelection dummy, both indicators are equal to zero/one for the full term of office.  
37 In BAY, the mayor is eligible to receive a pension if she has served as a mayor for two complete terms and was not reelected at the next election or refused to accept election. In BW, the rule is more complex: The mayor is eligible to receive a pension if she has completed one full term and fulfills one of three criteria: (a) she has served as a temporary civil servant (including positions in the public sector, but not necessarily as a mayor) for 18 years and is older than 47 years of age in the election year; (b) has served as a mayor for two complete terms (= 16 years); or (c) has served as a mayor for 8 years and is older than 60 years of age in the election year. For further details see article 21 KWBG (*Law on local elections and public servants*) (BAY) and §36ff LBG (*Law on state public servants*) (BW).  
38 We refer to men only because the vast majority of mayors are men. The figure increases only slightly if women are taken into account.  
39 Note that age is insignificant throughout all specifications (see Table A.5 in the Online Appendix).
6 Results

Table 2 presents the main results of our estimations using the above described instrumental variable approach. The results of the fixed effects OLS regression are reported in Table A.4 in the Online Appendix for comparison purposes. Stepwise, the table develops our full model (column 6). In columns (1) and (2), we specify simple PBC models in which we study legislative and executive branch election effects separately. In column (3), we incorporate both cycles into one model. In column (4), we also estimate the interactions between joint council and mayoral election years and explore the effects of overlapping cycles. In column (5), we interact of the incumbent dummy with the mayoral election dummies. Finally, we present the estimation results for the full model in column (6). There, we estimate the effects of overlapping PBCs conditional on the incumbent mayor’s decision to run for reelection.

6.1 Cycles in the legislative and executive branches

For legislative branch (council) elections, we find sizable and statistically significant effects (at the 5% level) for the pre-election year across all specifications that are robust to the inclusion of the executive branch’s (mayoral) cycle as well as the various interaction effects. The dependent variable is the logarithm of total municipal expenditures (net of transfers); therefore, the coefficients must be interpreted as semi-elasticities. The estimated marginal effects in Table 2 range between 1.4% and 1.6% of total expenditures in the first five columns and are somewhat larger (4.4%) in column (6). For a town with 5,000 inhabitants, a marginal effect of 1.5% amounts to about 170,000 Euro in additional expenditures in the year prior to a legislative branch election.

For executive branch elections, we do not find evidence of a robust individual cycle in total expenditures. While we do find evidence for unconditional post-election year cycles in mayoral elections (columns (2) and (3)), that effect disappears once further interaction effects are entered. The point estimates of the election dummies for mayoral elections are quite small and statistically insignificant.

With regard to our hypotheses, we can summarize by saying that some indication (although not significantly so in all cases) exists that both levels of government seem to produce some political budget cycles (1) and that the cycles for the legislative branch are indeed more pronounced (and more stable) than for the executive branch cycles (2). We now turn the analysis to the effects of incumbency as well as coincident elections.

6.2 Incumbents seeking reelection

In the instrumental variable approach, the dummy indicating whether or not the incumbent mayor seeks reelection (see bottom of Table 2) is sizable and positive, but remains...
6.3 Overlapping cycles

While columns (1), (2) and (3) report the results from estimating separate cycles in the two branches of government, the case of overlapping cycles is first highlighted in column (4). There, we enter dummies for cases when the two elections are held exactly the same year in a municipality. The results are not fully transparent from the table. The point estimates do not signify any cycles. However, what is important for interpretation are not the individual effects per se, but the combined effects of the variables that are turned on for a specific election cycle. Against that background, municipal spending seems to increase in the year following simultaneous elections to both political branches. The combined mayoral post-election coefficients is 0.015 (\( p \)-value = 0.035 from the instrumental variables regression). That result points to potential post-election collusion between the two political branches so as to gain electoral advantage (see Hypothesis 4).

However, the underlying channel remains unclear in these estimations, which leads us to extend the model further. In columns (5) and (6) of Table 2, we augment the model with interactions of a dummy indicating whether or not the incumbent mayor seeks reelection and the cycle variables.41

6.4 Overlapping cycles and interactions with incumbency effects

In column (5), we include interactions between incumbent mayors choosing to run for office again and mayoral election dummies, while column (6) reports the results for the full model in which interactions between the incumbency and the election year dummies in both political branches are included. As this is a very complex setting involving multiple interactions such that coefficients can hardly be interpreted in isolation, we refer to Table 3.

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41 The same is done for the OLS estimates in Table A.4.
|                              | (1)         | (2)         | (3)         | (4)         | (5)         | (6)         |
|------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| **Legislative elections**    |             |             |             |             |             |             |
| Pre-election year            | 0.016**     | 0.014**     | 0.015**     | 0.015**     | 0.044**     |             |
|                              | [2.477]     | [2.194]     | [2.266]     | [2.293]     | [2.103]     |             |
| Election year                | 0.002       | − 0.001     | 0.001       | − 0.001     | 0.012       |             |
|                              | [0.282]     | [− 0.140]   | [0.138]     | [− 0.125]   | [0.639]     |             |
| Post-election year           | 0.005       | − 0.001     | − 0.004     | − 0.000     | − 0.003     |             |
|                              | [0.918]     | [− 0.145]   | [− 0.655]   | [− 0.002]   | [− 0.216]   |             |
| **Executive elections**      |             |             |             |             |             |             |
| Pre-election year            | 0.003       | 0.000       | 0.002       | − 0.017     | 0.000       |             |
|                              | [0.786]     | [0.066]     | [0.401]     | [− 1.459]   | [0.017]     |             |
| Election year                | 0.004       | 0.005       | 0.006       | 0.003       | 0.036*      |             |
|                              | [1.126]     | [1.129]     | [0.978]     | [0.181]     | [1.726]     |             |
| Post-election year           | 0.010***    | 0.010**     | 0.007       | 0.033       | − 0.003     |             |
|                              | [2.641]     | [2.475]     | [1.310]     | [1.330]     | [− 0.138]   |             |
| Executive elections × legislative elections |             |             |             |             |             |             |
| Joint pre-election year      | − 0.005     | − 0.049*    | − 0.005     | − 0.049*    |             |             |
|                              | [− 0.568]   | [− 1.650]   | [− 0.568]   | [− 1.650]   |             |             |
| Joint election year          | − 0.004     | − 0.046*    | − 0.375     | − 1.854     |             |             |
|                              | [− 0.375]   | [− 1.854]   | [− 0.375]   | [− 1.854]   |             |             |
| Joint post-election year     | 0.008       | 0.068**     | 0.855       |             |             |             |
|                              | [0.855]     | [2.480]     | [0.855]     |             |             |             |
| Executive elections × incumbent runs again |             |             |             |             |             |             |
| Pre-election year            | 0.020       | 0.001       |             |             |             |             |
|                              | [1.511]     | [0.065]     |             |             |             |             |

**Source:** Own calculations
|                            | (1)       | (2)       | (3)       | (4)       | (5)       | (6)       |
|---------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| **Dependent variable:** total expenditures in logs (net of transfers)** |           |           |           |           |           |           |
| Election year             | 0.002     | − 0.041   |           |           |           |           |
|                          | [0.084]   | [− 1.599] |           |           |           |           |
| Post-election year        | − 0.033   | 0.013     |           |           |           |           |
|                          | [− 1.036] | [0.491]   |           |           |           |           |
| Legislative elections × incumbent runs again |           |           |           |           |           |           |
| Pre-election year         |           | − 0.034   |           |           |           |           |
|                          |           | [− 1.413] |           |           |           |           |
| Election year             |           | − 0.013   |           |           |           |           |
|                          |           | [− 0.611] |           |           |           |           |
| Post-election year        |           | − 0.001   |           |           |           |           |
|                          |           | [− 0.042] |           |           |           |           |
| Joint elections × incumbent runs again |           |           |           |           |           |           |
| Pre-election years        |           |           |           |           |           |           |
|                          |           |           |           |           |           |           |
| Election years            |           |           |           |           |           |           |
|                          |           |           |           |           |           |           |
| Post-election years       |           |           |           |           |           |           |
|                          |           |           |           |           |           |           |
| Incumbent runs again dummy| 0.015     | 0.017     | 0.017     | 0.017     | 0.012     | 0.017     |
|                          | [1.489]   | [1.635]   | [1.617]   | [1.613]   | [0.791]   | [1.111]   |
| Control variables         | ✓         | ✓         | ✓         | ✓         | ✓         | ✓         |
| Observations              | 39,344    | 39,344    | 39,344    | 39,344    | 39,344    | 39,344    |
| $R^2$                     | 0.077     | 0.077     | 0.077     | 0.077     | 0.076     | 0.075     |
| Cluster                   | 2997      | 2997      | 2997      | 2997      | 2997      | 2997      |
Table 2 (continued)

|                           | (1)  | (2)  | (3)  | (4)  | (5)  | (6)  |
|---------------------------|------|------|------|------|------|------|
| Dependent variable: total expenditures in logs (net of transfers) |      |      |      |      |      |      |
| Underidentification test (Kleibergen-Paap rk LM) | 888.7 | 865.4 | 864.3 | 863.4 | 833.2 | 674.8 |
| Weak identification test (Kleibergen-Paap rk Wald F) | 1066.3 | 1024.9 | 1023.0 | 1021.0 | 150.4 | 49.2 |
| Overidentification test (Hansen J p value) | 0.824 | 0.851 | 0.850 | 0.848 | 0.977 | 0.755 |
| AIC | – 13092.4 | – 13090.4 | – 13089.4 | – 13084.3 | – 13054.8 | – 12983.9 |
| SBIC | – 12826.4 | – 12824.4 | – 12797.7 | – 12766.8 | – 12736.3 | – 12589.2 |

Notes: The instrumented variable is the incumbent runs again dummy. Instruments are a dummy indicating whether the mayor is pensionable, a dummy indicating whether the mayor is older than 60 years, and the interactions of the instruments with the election indicators (if used in the regression, see the results of the first stage regression in Table A.6 in the Online Appendix). All specifications include municipality and time fixed effects. Robust t-values are shown in brackets. ***, **, * denotes significance at the 1-, 5-, (10)-% level. Error terms are clustered at the municipal level. Interaction effects for election dummies are estimated only for congruent election years. Marginal effects of the interaction effects in columns (5) and (6) are shown in Table 3. The estimation includes the full set of additional control variables.
Table 3  Marginal effects of interaction terms: Fixed effects OLS regression versus instrumental variables regression  

*Source:* Own calculations based on Stata command *lincom*

| Source | Fixed effects OLS | Instrumental vari-ables |
|--------|-------------------|-------------------------|
| (1)    | (2)               | (3)                     | (4)                       |

### Pre-election year

| Source | Fixed effects OLS | Instrumental vari-ables |
|--------|-------------------|-------------------------|
| (1)    | (2)               | (3)                     | (4)                       |

### Election year

| Source | Fixed effects OLS | Instrumental vari-ables |
|--------|-------------------|-------------------------|
| (1)    | (2)               | (3)                     | (4)                       |

### Post-election year

| Source | Fixed effects OLS | Instrumental vari-ables |
|--------|-------------------|-------------------------|
| (1)    | (2)               | (3)                     | (4)                       |
which presents F-tests of joint significance for the (combination of) estimated effects and therefore is complementary to the present results. We report the F-tests for the OLS model (columns (1) and (2)) to make full comparison possible; however, we will discuss and highlight only the results pertaining to the IV approach (columns (3) and (4)).

The structure of Table 3 is as follows: while distinguishing between pre-election, election, and post-election years, we compute marginal effects for overlapping legislative and executive elections conditional on whether the incumbent mayor runs for reelection. We then test whether the difference between those effects is statistically different from zero. Additionally, we compute the marginal incumbent effect conditional on whether a simultaneous election is held. That effect can then be contrasted to the unconditional effect (incumbent runs again dummy) shown in the two baseline tables.

Most importantly, we want to refer the reader to line E in Table 3. There, we document a sizable and statistically significant incumbent effect in the range of 3.2–3.8%, conditional on joint legislative and executive branch elections the following year. Note that this effect is much larger than the unconditional point estimates presented in Table 2, thus providing clearer evidence in support of Hypothesis 3.

The results for executive and legislative branch elections, conditional on joint election years and the incumbent seeks reelection dummy, are further summarized in Fig. 3. For both branches, we observe a similar pattern for joint pre-election, election, and post-election years conditional on the incumbent’s decision to seek reelection. That is, if the incumbent seeks reelection, spending increases in joint pre-election and joint election years but decreases in joint post-election years. Exactly the opposite holds true if the incumbent does not seek reelection: spending decreases in joint pre-election and joint election years but increases in the year after both elections took place. As a result, we detect sizable positive differences in joint pre-election and joint election years, with meaningful negative differences in joint post-election years. While the individual effects and differences are significant at the 5% level for the joint-pre-election year in the executive branch and for the joint election year in the legislative branch, the results for the post-election year in the executive branch remain marginally insignificant.

Notes: The marginal effects are computed by using the coefficients of columns (5) and (6) of Tables A.4 and 2, respectively. Statistical significance is based on F-tests. t-values are shown in brackets. Marginal effects are computed for overlapping legislative and executive elections conditional on whether the incumbent mayor runs for reelection while distinguishing between pre-election, election, and post-election years. Afterwards, it is tested whether the difference between these effects is statistically different from zero. ***, **, * denotes significance at the 1-, (5)-, (10)-% level.

Statistically significant coefficients are shown in bold.

### Table 3 (continued)

| Difference if incumbent reruns (N-M) | Fixed effects OLS | Instrumental variables |
|--------------------------------------|-------------------|------------------------|
|                                      | (1)               | (2) | (3) | (4) |
| **Difference if incumbent reruns**   | 0.019*            | 0.014 | −0.033 | −0.067 |
| (N-M)                                | [1.940]           | [1.046] | [−1.036] | [−1.595] |
| O: Incumbent runs again \(l\) joint post-election years | 0.023***          | 0.023** | −0.021 | −0.051 |
|                                      | [3.090]           | [2.446] | [−1.007] | [−1.560] |

42 The underlying marginal effects and levels of statistical significance all refer to column (4) in Table 3.
Taken together, municipal expenditures increase in joint pre-election and election years if the incumbent seeks reelection and increase in joint post-election years if she did not. In case of the first two results, one might argue that these are expected as incentives for strategic spending and collusion with the municipal council are highest if the incumbent seeks reelection (Hypothesis 4). Furthermore, we observe the pattern that in these settings, with mayors who are not seeking reelection, spending usually decreases. This effect may be justified with shifts in the budget over time rather than deficit spending. As the incentives for strategic spending are highest preceding and contemporary to elections, an incumbent may...
shift future expenditure to the present causing a decline in post-election expenditure if the 
mayor seeks reelection. The observation of a positive and statistically significant effect for 
the legislative branch as well as executive branch in post-election years conditional on the 
icumbent not running for office (see also lines K and M in Table 3) may be explained by 
the new mayor in office colluding with the municipal council to initiate investment projects 
promised throughout her electoral campaign.

7 Robustness checks

We carry out various sensitivity tests to check the robustness of our findings. All tests are 
carried out for columns (5) and (6) of Table 2. The results are reported in Table A.7 (general 
tests) and Table A.8 (specifications with alternative instruments) in the Online Appen-
dix. The letters in italics at the end of the lines correspond to those in Table 3. Only the 
main results of the previous findings are presented, i.e., we show the unconditional coeffi-
cient for legislative branch pre-election years, the mayoral incumbent effect conditional 
on joint pre-election years, and the difference in spending if the incumbent seeks reelection conditional on joint pre-election, election, and post-election years. All of the estimates 
include the full set of covariates.

With respect to general tests (Table A.7), we first include incomplete mayoral terms 
in the estimation. Those mayors were excluded from the baseline regressions because the 
timing of executive branch elections could be endogenous. Second, we exclude county-
free cities from the estimation sample.43 PBCs in those cities might differ from the full 
sample because their elections are more partisan than those held in smaller municipalities. 
Third, to check whether the results are affected by the clustering of the error terms, we 
alternatively cluster at the county level. Fourth, we re-estimate all specifications for data 
on gross spending, i.e., we add state transfers to municipal expenditures. That redefini-
tion of the dependent variable may provide further insights into the generation of PBCs, 
as municipal spending may be co-financed by upper-level governmental tiers. Finally, we take 
account of the state of the municipal economy by entering the share of employees in the 
working-age population as an additional control.44 In an additional robustness tests (results 
not reported), we also estimated a dynamic Least Squares Dummy Variables specification 
and found qualitatively similar results even there.45

Concerning specifications with alternative instruments (Table A.8), we first apply differ-
et thresholds of the age dummy. The instrument indicating that the mayor is older than 60

43 The federal states in Germany are further subdivided into administrative counties. These counties usu-
ally subsume several cities. In case of several large cities, however, these form a county on there own and 
are referred to as county-free cities. BW has 9 county-free cities and BAY has 25 county-free cities.

44 Information on the municipal unemployment rate from the Federal Employment Agency is available 
only from 1998 onwards.

45 The literature on PBCs has often employed dynamic specifications (solving the estimation issues in 
GMM methods) because of the persistent nature of expenditures. In the present application, the estimation 
is complicated further by the fact that we must instrument the incumbent mayor’s decision to stand for re-
election. We would thus have to solve the dual problem of instrumenting both the lagged endogenous vari-
bles and the reelection variable. That is not possible using standard methods for dynamic estimations. For 
robustness, we opted for the simpler LSDV approach. However, we decided that those results are not very 
informative as—given our data structure—the resulting Nickel bias cannot be argued to be small. All such 
estimates are available upon request.
years in the executive branch election year is replaced by a threshold of 59 years (columns (1) and (2)) and a threshold of 61 years (columns (3) and (4)), respectively. Second, we replace the binary age instrument with a discrete measure and enter the mayor’s actual age as an instrument. However, that substitution comes at the expense of controlling for the direct impact of the mayor’s age on public spending. While we do not detect such an impact in the previous regressions (see, e.g., Table A.5), the instrument’s exogeneity assumption is weaker than when using the non-linear transformation of the mayor’s age along with controlling for a direct effect at the same time. Finally, we estimate our model using a single instrument rather than two as in the previous regressions and rely on the dummy variable indicating whether the mayor is older than 60 in the year of the executive branch election, owing to a Bavarian state regulation associated with pension eligibility, i.e., a confounding effect might be introduced because one condition to become pensionable in BAY is that the incumbent sought reelection (but was not elected or refused to accept her election). Accordingly, an incumbent could strategically decide to seek reelection in order to become pensionable, even though it is not her intention to take office afterwards. However, estimating the instrumental variables regression with only one instrument means that we can no longer test for overidentification.

The sensitivity tests reveal that our findings are quite robust overall. Both the economic and statistical significance of the unconditional legislative pre-election year effect are confirmed. Furthermore, only minor changes arise with respect to spending differences in joint pre-election, election, and post-election years, conditional on whether the incumbent mayor runs for reelection. While the point estimates change slightly, statistical significance is lost in legislative branch election years when we enter uncompleted mayoral terms or apply a threshold of 59 years for the age instrument (column (2), line G–F in Tables A.7 and A.8). The same is found for legislative branch post-election years when we run regressions with only one instrument (column (4), line L–K in Table A.8). Furthermore, we lose statistical significance for the conditional incumbent effect when using the mayor’s age as an instrument (columns (5) and (6), line E in table A.8).

Overall, our robustness analyses show that the main findings of our study hold up. A reversal in the effect materializes for pre-election and election years compared to post-election years conditional on the incumbent’s decision to seek reelection. Expenditures are higher in the year before the election and in the election year if the incumbent runs for reelection and cycles overlap; spending rises in post-election years if the incumbent mayor did not run for reelection and elections did overlap.

### 8 Conclusion

We study political budget cycles (PBCs) in public spending with a particular focus on overlapping election cycles in the executive and legislative branches of local governments. Because the literature on PBCs usually cannot separate effects for those two political branches, doing so is a distinct feature of our study. Furthermore, we use an instrumental variable approach to account explicitly for the potential endogeneity of the incumbent mayor’s decision to seek reelection and how that decision affects spending at election times. Using data from the German states Bavaria and Baden-Wuerttemberg allows for consistent estimations of the spending cycles in an institutionally fixed framework.

Our main findings can be summarized as follows: (1) We find sizable and statistically significant unconditional pre-election effects for legislative branch elections that are
significant at the 5% level. Total expenditures rise between 1.3 and 1.8% in the year before the legislative branch election takes place. (2) The budget cycle effects for the legislative branch are robust to the inclusion of election variables for the executive branch. (3) We find, on average, no unconditional (pre-)election PBC for executive branch (mayoral) elections. (4) The findings also hold for the interaction effects when we condition on whether the incumbent mayor runs for reelection. However, if we look at differences in the incumbency effect at election time, 5) we find significantly more spending in pre-election years if the incumbent seeks reelection. Finally, 6) we find spending differences for overlapping cycles conditional on the incumbent’s decision to seek reelection. Municipal expenditures increase in joint pre-election and election years if the mayor runs for reelection and decline in joint post-election years if she did not. Those effects are statistically significant at the 5% level.

Our results support the following conclusions: First, joint legislative and executive branch elections seem to matter for the formation of PBCs. Separating local council and mayoral elections thus can dampen politically motivated pre-election distortions in municipal expenditures. Second, our findings of more public spending before executive branch elections when the incumbent mayor seeks reelection may justify age and term limits. Bavaria and Baden-Württemberg have (in)direct age limits, but no term limit restrictions. Abolishing the age limits likely would add to the number of incumbent candidates seeking reelection, while introducing term limits would work in the opposite direction. Nonetheless, we would refrain from drawing explicit inferences from our results. On the one hand, strong age and term limit rules could be viewed as restraining overspending before joint executive and legislative branch elections. However, the chief executive’s incentive to manipulate the one election in which she could be returned to office (if we assume a two-term limit) could even become stronger (see, for instance, Klein and Sakurai 2015 in the context of subnational elections in Brazil). Thus, it is not obvious whether the introduction of term limits would weaken or strengthen the overall effects of strategic budgetary manipulation in the long run and is, therefore, a question open for further research.

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