Pleasing the voters? Electoral manipulation through voter-attractive expenditures: Evidence from Costa Rican municipalities*

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We study the Political Budget Cycle of voter-friendly spending in local governments in Costa Rica elected every four years. We built a novel panel of election results, mayor characteristics, and disaggregated expenditures for each municipality between 2006 and 2020. We estimate a dynamic panel model to find the change in spending in the political campaign year, defined by the 365 days before ballots are cast. We find that expenses in social activities increase by 36% in the year before elections and there is a consistent decrease in multiple spending subheadings in the year before, such as overtime and durable goods, between 6% and 35%. Contrary to theory, most categories did not increase in the last year of the mayor's term. We provide institutional evidence of possible delays associated with the execution of expenditures and analysis of a plausible intent of saving to expand fiscal possibilities close to the election and strong surveillance by regulatory authorities.

Keywords: Political Budget Cycles, Expenditure composition, Elections, Municipalities, Costa Rica

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1 Introduction

Local governments –also called municipalities– are fundamental institutions for the governance of a country. Their closeness to the community provides them with first-hand recognition of their challenges and threats. These institutions handle a significant amount of resources: Comptroller General of the Republic of Costa Rica (2020) reported that municipalities initially budgeted almost 1.03 billion US dollars, which represented 1.6% of Costa Rica's 2020 GDP. In theory, these funds should be efficiently allocated to maximize social welfare, however, there's evidence of a relationship between fiscal policy and electoral incentives: spending moves with a predictable pattern when elections-motivated candidates and parties are running for election. We shall call this pattern Political Budget Cycles (henceforth, PBCs). (Chortareas et al., 2016; Drazen & Eslava, 2010)

This paper aims to find if pre-electoral politically induced budget cycles exist in voter-attractive expenditures in Costa Rican municipalities and their magnitude. Proving the existence of these cycles has been difficult for two reasons. First, showing a direct link between an increase in expenditure with an increase in the incumbent's probability of reelection isn't possible many times because of the lack of disaggregated data on expenditures, primarily, the attractive spending categories. Second, data are rarely available at the local level for long periods in many countries.

To overcome these challenges, we bring together a detailed data set with disaggregated expenditures that municipalities must budget and get approval from the Comptroller General of the Republic, and then report the actual spending yearly. Our data set contains three detailed levels of disaggregation for 81 municipalities.[1] Previous work usually analyzes the first level, that is, remunerations, services, and investment expenditures, while we use the second and third levels that report categories such as publicity, transportation, construction of land communication routes, activities, and others. These types of expenditures are more visible to the voters and will allow us to make a direct connection to the electoral manipulation in the pre-electoral year. This enables us to analyze changes in expenditure comparing the year before elections to the rest of the incumbent's governing period in spending categories used to capture votes.

Our analysis proceeds in three steps. First, we present a description of the data. We introduce the data set of municipalities' spending and their levels of disaggregation. Furthermore, we describe the demographic variables of the Costa Rican Security Fund (*Caja Costarricense del Seguro Social*, henceforth CCSS). Then we compile a new data set

[1] In 2017, Río Cuarto separated from Grecia leading to the creation of the 82th municipality in the 2006-2020 period, which covers three municipal elections. In our analysis, we exclude Río Cuarto as his mayor was elected in 2020, the last period of our analysis.

on political variables of parties and their candidates over time with information from the Supreme Court of Elections.

Second, we present the institutional background that regulates Costa Rican municipalities. We present the mechanisms that allow PBCs to exist. In addition, this helps us choose voter-friendly spending before elections. We explain the different types of municipal expenditure. Afterward, we describe the steps for approving spending and the participants of this process, in particular, the functions of the Municipal Council and the Mayor. Next, we describe the elections, which dates are set by the Supreme Court of Elections. Specifically, elections, determined by the Supreme Court of Elections, take place every four years and are exogenous.

In the third and final step, we explain our baseline dynamic panel model to estimate the effects of spending manipulation on its growth in the pre-election year. We choose a dynamic specification to account for the persistence in spending growth along the years and to capture the political and institutional context. Also, we include fixed effects for municipalities. The identification assumption that we rely on is that, by controlling by demographic variables and mayors' characteristics, we isolate all possible shocks and identify the campaign year effect.

We show that most of the spending categories have persistent growth over time, which is a first sign of the effective regulation from the General Comptroller and a result against the existence of municipal PBCs in Costa Rica. Contrary to theory, we do not find traditional PBCs in most spending categories; nevertheless, we show that there is a decrease in spending in the period prior to the campaign year (two years before casting the ballot) in some categories from 6% to 35%. However, we do find that there are PBCs in protocol activities, which is one of the most discretionary and visual expenditures. Activities expenditure decreases by 34.8% in the year before the campaign year and increases by 30.2% in the year before the ballots with respect to previous years of administration. Also, we observe that there are no kind of PBCs in the most constant expenditures like remunerations and rentals. Moreover, we find that the least visible spending categories, such as durable goods, decrease their budget in the year prior to the campaign year.

Furthermore, we discuss possible causes of spending concentration in the first years of the incumbent government. We believe that the institutional context with their burocracy, surveillance and regulation is a driver to spend less in the last government's periods, since there's a big chance the final outcome wouldn't be finished by the end of the incumbent's government.

Our paper mainly contributes to three pieces of literature. First, our work advances our understanding of PBC theory. The theoretical framework was formally established

by Nordhaus (1975), by designing a model to explain and predict budgetary policy decisions made by political authorities. He concludes that incumbent politicians go from austerity early in their term to greater spending in election periods. Similar conclusions were reached by Rogoff and Sibert (1988), who further developed this model. Emphasizing the importance of temporary information asymmetries, and assuming that voters observe government investments the year before from elections, incentives clearly exist for macroeconomic policy manipulation. These theoretical conclusions are also supported by the political-economic equilibrium model proposed by Drazen and Eslava (2010). However, to the best of our knowledge, the literature on PBC theory has not considered institutional friction. On top, it hasn't considered spending growth around other years than the election year.

Second, we contribute to the analysis of PBCs in developing countries. At the national level, several attempts have been made to seek relationships between fiscal policy and electoral processes. González (2002) found evidence for the existence of PBC in the form of significant increases in infrastructure spending by the federal government, starting six quarters before the elections, then decreasing one afterward. Lankester-Campos (2017) has similar findings when analyzing macroeconomic fiscal variables in 13 Latin American countries. The evidence she shows is more timid and argues that the effectiveness of fiscal manipulation is determined by time and the specific sets of economic conditions. However, both highlight in their findings that such a phenomenon should be studied at a local authorities' level due to the heterogeneity of the legal, social, and political conditions.

Finally, this article contributes to our understanding of PBCs at the municipal level. Furthermore, we contribute to the study of this phenomenon using disaggregated data on voter-attractive expenditures. We follow the method employed by pioneers in the study of PBCs such as Veiga and Veiga (2007) and Drazen and Eslava (2010), where they found significant increases in expenditure and reduction in taxes in Portugal and Colombia, respectively, mainly in investments "highly visible to the electorate" and simultaneous reduction in "not visible" spending such as transportation, machinery, and equipment. Additionally, their findings suggest that the composition of the budget fluctuates greatly in infrastructure spending related to transportation, water treatment, and power plants. We take this even further by including very specific budgetary items seldom included in this kind of research such as overtime, activities, rentals publicity, and commercial and financial services. To the best of our knowledge, we are the second paper that analyzes disaggregated spending categories at the municipal level on developing countries.

The existence of PBCs proves that in a democratic context there is legal room for

elected public servants –with a high degree of decision-making power– to prioritize their career prospects rather than their constituents' present and future welfare. Furthermore, it can show links between politics and socioeconomic outcomes, provide insight on how fiscal policy is conducted, and, more importantly, find practical measures that counteract such manipulation and improve social welfare. (Alesina et al., 2019; Chortareas et al., 2016; Corvalan et al., 2018; Setiawan & Rizkiah, 2017)

This article is divided as follows. Section 2 covers all the financial, legal and constitutional background of the municipalities of Costa Rica. Section 3 summarizes the data used for our model. Section 4 explains the empirical strategy used to approach our research question. In Section 5 we show our results and discuss similarities, differences, and possible explanations, in light of literature reviewed. Finally, Section 6 concludes.

2 Institutional background

The Costa Rican Municipal Code was approved in 1970 establishing the structure of local governments and their political control. Over the years, reforms have been made to further shape its capacities and limitations. (Alfaro Redondo, 2009, p. 10) This event established municipalities as entities in charge of the government and administration of cantonal interests and services, with the understanding that the canton is a figure of geographical division defined within the legal framework of Costa Rica. (Legislative Assembly of Costa Rica, 1998, Art. 3) Also, these institutions can "invest public funds with other municipalities and organizations of the Public Administration for the fulfillment of local, regional, or national purposes, or for the construction of public works of common benefit, following the agreements signed for this purpose."[2] (Art.3), which means that municipalities can also have an impact outside of their jurisdiction.

Costa Rican municipalities enjoy a high degree of autonomy in administrative and financial affairs. To promote the development of their community, they have managerial freedom over budget administration, provision of certain public services, and the approval of rates, prices, taxes, and contributions, among many other things. (Art. 4)

Regarding the internal organization of this institution, the two figures of authority are (1) the Municipal Council and (2) the Mayor. The mayor is the official in charge of the functions inherent in the condition of a general administrator: overseeing the organization, operation, coordination, and faithful compliance with municipal agreements, laws, and general regulations. Additionally, the mayor is responsible for creating the municipal development plan, which is presented to the municipal council, along with the ordinary

[2]Author's translation.

and extraordinary budgets. (Art. 17)

Additionally, the municipal council is an entity composed of publicly elected councilors, just as the mayor. The council decides the policy and priorities of the municipality, in addition to defining and approving the municipal budget presented by the mayor. (Art. 13) At this point, it is evident that the mayor fulfills (with other officials, such as the vice mayors) a similar function to the executive powers in presidential democratic societies, and the municipal council exercises a function like that of congresses. An extremely important characteristic of these two prominent entities is that both the mayor and the councilors (council members) have no reelection limitations as of 2021. (Art. 15) In fact, this applies to all popularly elected positions in Costa Rican municipalities, which proves to be an obstacle the principle of power alternation. Note that these entities have the necessary governance and power over the budget that allow them to manipulate it. The mayor plans and presents it, while the council acts as a political counterweight that proposes, promotes, and approves modifications. This framework allows manipulation of the municipal budget that may be motivated by the rational and opportunistic use of resources on behalf of mayors to be reelected. This budget pattern refers to the possible existence of PBCs.

Although mayors have the freedom to allocate their resources, some public institutions and regulations are supposed to guarantee the correct and legal application of these expenditures. The main external institution involved in municipal budget procedures is the Comptroller General of the Republic (hereafter CGR). This entity oversees the approval and constant supervision of the finances of these institutions. In particular, the CGR should (1) examine, approve or disapprove the municipalities' budgets, as well as supervise the execution and budget liquidation, (2) supervise that the budgets are organized and formulated in accordance with legal and technical provisions, and, in addition, (3) has the power to determine requirements, procedures, and conditions to make modifications to the budgets, as well as dictate policies, technical manuals, and mandatory compliance guidelines in their jurisdiction. (Legislative Assembly of Costa Rica, 2008, p.2)

The mayor, the council, and the CGR are involved in budget development following these steps: (1) formulation, (2) approval, (3) execution, (4) control, and (5) evaluation. First, the municipality must **formulate** the budget in line with the "operational planning that is carried out in accordance with the medium- and long-term plans and the institutional policies and objectives defined for the period."[3] (Legislative Assembly of Costa Rica, 2008, p.3) The budget must also comply with certain basic principles imposed by

[3]Author's translation.

the law, such as the principle of universality and integrity, financial management, among others. In addition, the CGR will ensure that the principles of participation, flexibility, sustainability, etc. are respected. The budget must be planned annually, considering that the regular budget is valid from January 1 to December 31. The CGR will rule that certain financial and technical criteria are met, such as at least 20% must be allocated to health care and no more than 40% can be allocated to cover administrative expenses. The final step at this stage is that each generated expense should be carefully explained, providing information on its origin and application.

Second, the budget is **approved**. This point is divided into two phases. First, the municipal council and the mayor internally approve the budget, where the council ought to act as a counterweight to the mayor and his team, to the extent the opposition is greater than the incumbent party, by modifying the budget when necessary. In the second place, there comes the external approval by the CGR after verifying that it meets the pertinent requirements. This process tries to tackle two aspects: the internal approval should limit the possible imposition of the mayor's political interests, however. The council's scrutiny depends on its composition: A higher concentration of the official party is often associated with a budget more at the whim of the mayor and vice versa. The second control channel is the CGR that enforces the planning, public administration, and legal guidelines. Nevertheless, this institution can only control to the extent of the law and it can't guarantee the absence of any manipulation.

Third, the process continues with **execution** which corresponds to: "administrative activities and financial economic operations that allow the perception of income and its use in budgeted expenses, in order to achieve the goals and objectives indicated." (Legislative Assembly of Costa Rica, 2008, p.6) On this step, intermittent auditing surveillance is performed when it is considered necessary. Generally, it will depend solely on the administrative body to verify that the corresponding standards are met. Finally, the **control** and **evaluation** phases come, where there are certain mechanisms that guarantee even more clarity within the process.

This process of specifying the budget is even more bureaucratic than described. The intervention of the CGR, in addition to the two approval control channels, should generate enough control to stop possible irregularities in the budget. Bureaucracy could counteract PBCs. There are many control mechanisms that, together with external actors (such as the media), should stop imminent measures of budget manipulation.

Regarding spending, this must be planned annually and should promote the efficient and equitable distribution of resources. (Art. 101) Table 4 shows how the different types of expenses are classified. Some of them could present a stronger fluctuation, such as

capital expenditure, since this includes road expenses, for example. Other expenses such as financial assets or service expenses are expected to remain relatively stable over time.

There are four fundamental facts that could influence the behavior of PBCs in Costa Rican municipalities. First, the celebration of the electoral period in Costa Rica changed its dates. Before the 2016 election, the municipal elections were divided, the election of the councilors was presented simultaneously in February (along with the national elections); while the mayoral election took place the same year in December. Congress considered that in order for municipalities to achieve greater autonomy and give more relevance to the municipal elections, local authorities would be elected in midterm elections two years after the national ones. The election of these positions would take place every four years, as stated in the Electoral Code. (Legislative Assembly of Costa Rica, 2009, Art. 150) To accomplish this, it was necessary to extend the 2010 electoral period by two years, becoming the only municipal period in history to last six years (2010-2016).

Second, we consider the emergence of micro-parties (or municipal parties). Their inscription and functions are limited to municipal politics; therefore, they cannot interfere in national politics directly. In the last two decades, the country has observed an emergence of new local leadership, which is supported by: greater decentralization, the crisis of the traditional national parties, the new tendencies to citizen participation and concerns regarding the control and poor management of local governments. (Blanco, 2011, p. 165) The phenomenon of local parties has been gradually reinforced, especially since the 1998 elections. (Beers González, 2006, p. 15) It can be argued that the dynamics behind budget management can be greatly dependent on the party's classification: national, provincial, or municipal.

Third, there is a growing trend toward politically fragmented local governments. This follows directly from the introduction of new parties (as we mentioned earlier, especially those of municipal competence only) that are beginning to consolidate in the local government policy. Blanco (2011) mentions that: "In a significant number of cantons, there are fragmented local governments with a predominant but not a majority party". (p. 2)

Fourth, corruption cases uncovered in 2021 associated with the public budget have not exempted municipalities. On November 2021, the Costa Rican authorities arrested 6 mayors, five of them members of the same political party, linked to cases of corruption in the public works tender. (Molina, 2021) These events have had a direct impact on the analysis period, as they are events of corruption of public funds that occurred many years ago. But more importantly, these events highlight the importance of constant surveillance and control of public spending by different sectors of our society, which would allow an early detection of irregularities like manipulation of the public finances on municipalities.

All of these factors will be evaluated throughout this article.

3 Data

We combine a new collection of administrative data to quantify the effects of the election year on municipal expenditures.

Expenditures of municipalities Table 4 presents the administrative data of the municipalities' expenditures obtained from CGR. The period available in our observations ranges from 2006 to 2020. Municipalities report all their spending and income to the CGR, which is required since they are handling public funds. They provide data disaggregated into three levels: *Partidas* (level 1), *Grupo de subpartidas* (level 2), and *Subpartidas* (level 3). We select variables that are discretional and prone to manipulation, additionally, we compare them with recurrent stable expenditures. Also, after choosing these variables, we keep those that report positive expenditures across all municipalities in more than 12 years, that is, we drop the expenditures that have more than 243 zero reports (20% out of the total observations).

Then, Table 1 provides descriptive statistics of real expenditures per capita in Costa Rican municipalities. There's heterogeneity in spending decisions among municipalities. As well, look that most of the expenditures have positive asymmetries in their distributions. This could respond to their differences in geographical, demographic, socioeconomic, mayor characteristics, and perceived necessities of each municipality.

Then, Table 2 presents summary statistics for expenditures as a share of total expenses in 2014, including all municipalities. Surprisingly, the shares tend to be more symmetric. Recall that we include several levels of disaggregation in Tables 1 and 2.

The sources of control variables are described below.

Demographic and Economic Variables per Municipality We have two sources for these variables: CCSS and CGR. CCSS is in charge of registering the actuarial statistics per municipality. This data set registers population, number of schools, mortality, births, among other variables related to demography, which allows us to isolate population dynamics to identify the effect of the electoral year. Table 5 provides further information.

Political Context and Personal Characteristics of Mayors Mayors are public servants and subject to the scrutiny of their citizens. Therefore, they must submit their curriculum vitae when postulating for these positions. We compile public personal information of

mayor postulants from their submitted CVs and the Supreme Election Court registry of every Costa Rican citizen civil information such as age, gender, incumbent's advantage, and type of party. Table 6 describes the variables.

4 Empirical strategy

In this section, we present our empirical strategy for studying the effects of election years on voter-friendly municipal expenditures. Using the database, we run the following dynamic panel specification considering most of the literature, municipalities' characteristics, and the institutional context:

$$y_{jit} = \sum_{k=1}^{K} \rho_{jt-k} y_{jit-k} + \sum_{k=0}^{1} \gamma_{t-k} \text{Elec}_{t-k} + \mathbf{Municipality}'_{\mathbf{it}} \beta + \mathbf{Mayor}'_{\mathbf{m(i,t)}} \theta + \lambda_i + \varepsilon_{jit} \quad (1)$$

where y_{jit} is the log real municipal fiscal variable per capita j for the municipality i in year t and y_{jit-k} is the k-th lag of the dependent variable used to capture persistence in municipal fiscal outcomes[4] We estimate a separate regression for (the log of) each type of government expenditure. Elec_t and its lag are dummies that capture the timing of elections. It takes the value of one in the periods preceding local elections and 0 in all the others. We set this dummy such that the pre-election period is the year previous to the election if it takes place in the first half of the year and the year of the election if it is held in the second half. This criterion allows us to study the year of the political campaign. The municipality fixed effect λ_i accounts for unobserved and constant characteristics from each municipality and ε_{jit} an i.i.d. error term.[5] We include additional controls at several levels following the literature and others that fit our institutional context: $\mathbf{Municipality}'_{\mathbf{it}}$ and $\mathbf{Mayor}'_{\mathbf{m(i,t)}}$. The vector $\mathbf{Municipality}'_{\mathbf{it}}$ at the municipality level i in year t controls for demographic variables such as the share of population under 15 years of age and over 65 years of age and the number of K-12 centers. The vector $\mathbf{Mayor}'_{\mathbf{m(i,t)}}$ controls the influence of the political environment on expenditures in each municipality. We include mayors' characteristics like age at the start of their government, gender, incumbent advantage measured by the share of votes of the mayor's party received in the last election at the municipal mayoral level, and the type of political party (municipal, provincial, or national).

[4]The description of the dependent variables of our model and the controls can be found in Tables 4-6.

[5]Since the Supreme Elections Court established simultaneous elections across all municipalities in Costa Rica, we follow Chortareas et al. (2016) by not including time fixed effects because the election year effects cannot be separated from aggregate shocks.

The coefficients of interest are the Elec_{t-k} dummies for $k \in \{0,1\}$ and $y_{ji,t-m}$ for $m \in \{1,2\}$. We expect the first lag of the dependent variable to be statistically significant and positive. We care about the magnitude of the autocorrelation coefficients in the model specifications with one lag of the dependent variable, as a value closer to 1 indicates high persistence on the expenditure growth, which signals high bureaucracy and strict controls from the Comptroller when approving budgets, vanishing political budget cycles. In the institutional context, we discussed that until 2021 mayors could be reelected indefinitely. Nevertheless, a mayor could influence the Political Budget Cycle in an altruistic manner to make its party's fellows more likely to get reelected if the current mayor does not run for another term. Regarding the election dummies, we expect Elec_t to be significant and positive and consider the sign of Elec_{t-1} to be ambiguous *a priori*. If this coefficient is positive and significant, it would indicate that the political budget cycle extends for two years; if it is not significant, it would support the literature regarding the growth in expenditures taking place in the campaign year; and if it is negative and significant, we interpret that the mayors reduce expenditure in preparation for the campaign year.

The specification (1) is a standard dynamic panel data one. The standard fixed-effects estimator is asymptotically biased. First, including a lagged dependent variable and municipality fixed effects renders the OLS estimator biased and inconsistent by the Nickell (1981) bias. Although the fixed-effects (FE) estimator eliminates the municipalities' specific effects, it cannot eliminate the bias introduced by the inclusion of lagged dependent variables among the regressors, which is correlated by construction with the error term. The order of the FE estimator bias is $O(1/T)$, where T corresponds to the time dimension of the panel. In our case, the time length of our panel is 15 years; consequently, the use of the Fixed Effects estimator may add non-negligible bias to the coefficients. To address this concern, we employ the Blundell and Bond (1998) two-step system GMM estimator for dynamic panel data which augments the Arellano and Bond (1991) difference GMM estimator using lagged differences of the dependent variables as instruments in the levels equations in addition to lagged levels of the dependent variables, which are used as instruments for the equations in first differences. Since the estimated standard errors of the two-step GMM estimator tend to be severely downward biased, we correct for the bias using the finite sample correction proposed in Windmeijer (2005). There could be misleading results caused by instrument proliferation from exploiting all moment conditions in system GMM. To alleviate this concern, we collapse the set of instruments, as suggested by Roodman (2009), to reduce the number of moment conditions. Finally, we perform the Arellano and Bond (1991) tests for the serial correlation of the differenced residuals and the Hansen test for overidentifying restrictions.

Regarding the model selection algorithm, we mostly follow Kripfganz (2019) and Kiviet (2020). First, we assume that all variables are predetermined, except for the election dummies, the age and gender of the mayor, and the number of K-12 centers, which we consider exogenous. There is no consensus in the literature on whether or not to include more than one lag in the dependent variable. We apply the described criteria to decide the number of lags of the dependent variable that could be contemporaneous with the error term to choose the optimal specification. We search for the most parsimonious model[6] that complies with the Arellano-Bond and Sargan-Hansen tests. Specifically, we start with one lag of the dependent variable and one valid instrument and use a maximum of three lags of the dependent variable and four valid instruments. We start to evaluate the model with one lag in the independent variable and one instrument. We perform the Arellano-Bond test rejecting the null hypothesis of autocorrelation of order 1 in the first-differenced residuals at the 5% level of significance; then, we do not reject the null hypothesis of autocorrelation of order 2 in the first-differenced residuals. Concerning the Sargan-Hansen test, we do not reject the null hypothesis of overidentifying restrictions. For the models where the Arellano-Bond test fails, it is necessary to add more lags to the dependent variable. With respect to the Sargan-Hansen test, we add more lags to the variables used as instruments. We increase the number of instruments for a given number of lags of the independent variable; after we exhaust the valid instruments, we increase the number of lags and start the process again until we find a model that passes all tests. If there is a model where we cannot find a valid specification, we reduce the significance level to 1% and repeat.

5 Results and Discussion

Table 3 shows the results we obtained at the three main levels of expenditure. We find a persistent pattern of spending by local authorities shown by high coefficients in the dependent variable first lag, reaching levels up to 0.8. Therefore, it can be inferred that current spending is highly dependent on the budget assigned to any given item in the year preceding. Even if this smooth pattern may be expected due to the regulation and surveillance that are given to the use of public funds, which by itself may be considered evidence against cycles, we can see that fluctuations do occur when analyzing municipal finances and its different levels of disaggregation.

The first and most aggregate is remuneration, services, and durable goods. The last

[6]The most parsimonious model minimizes the lags on the independent variable as well as the lags included on the instruments

two show significant cyclical behavior around the year before the political campaign. Surprisingly, in an unexpected direction, services show a lesser effect with a decrease of 7.13% and durable goods – which encompass all machinery and equipment purchased or rented, and any construction and/or improvements made to the canton's infrastructure– decrease in 27.43% two years before the election.

Even if this pattern may come as a surprise, mainly due to its unintuitive and unprecedented nature compared to the results found in the most recent literature (Drazen & Eslava, 2010; Veiga & Veiga, 2007), and counter-theoretical nature with respect to (Nordhaus, 1975; Rogoff & Sibert, 1988), this may imply that PBCs manifest themselves in Costa Rica at a local level, but in a particular way, where the bureaucratic system prolongs the time frame between budgeting and executing infrastructure projects. Therefore, mayors plan their budget so that the results are public before the change of government to get recognition for the improvements in the communities they serve. This incentives higher budgets early on in their administration to then reduce them shortly after its over.

Moving on, the level of dissagregation of the data used allows us to see budget allocation at the municipal level but also the movement and magnitude of its smaller components. For example, even if the remuneration category as a whole shows no evidence of behaving in a cyclical manner, we detect a decrease of 14.88% and 6.27% in overtime and other types of payment, respectively. This pattern could possibly be related to a process of reducing discretionary expenses to further improve the financial standing of the municipality the year before the elections and have more space for voter-friendly spending. The fact that this is not reflected in a general pattern at the country level could be due to heterogeneity in spending changes across municipalities in the campaign year.

The spending categories related to commercial and financial services, including publicity and social activities and protocol, also show compelling results, especially when noticing that there are not studied often in literature (Chortareas et al., 2016; Drazen & Eslava, 2010; Veiga & Veiga, 2007). Predictably, we see that the first decreases by 20.86% two years before the election. Furthermore, we see a significant growth in activities-related budgeting of 35.97% the year before the elections, accompanied by a decline of 22.93% the year before that. There may be multiple possible explanations; however, we identify three nonexclusive ones. The first is that municipalities can decrease very discretionary spending, such as those that involve activities (reduction of 34.77%), two years before the elections, to give themselves more financial freedom next fiscal year to spend more on visible budgetary items. Second, according to the original theory of PBCs, increased spending before the electoral period would prove ineffective to attract voters. Therefore, mayors have incentives to reduce spending up to one year before the polls

open. Finally, in a context of high abstentionism, people who participate in municipal activities are more likely to vote than those who don't. With this in mind, authorities with the prospects of obtaining political advantage will definitely be incentivized to spend more on these types of event (30.15% increase in activities budget) shortly before the ballots are emitted to secure the support of highly active constituents.

Finally, let us refer to the component of durable goods with significant results: Machinery, equipment, and furniture. This element shows a pattern similar to that of its aggregate element: It decreases 23.22% two years before the elections. This appears to be the only investment made by the municipality in which we identify a pattern throughout the studied period, contrary to the findings of Veiga and Veiga (2007), Drazen and Eslava (2010), and Chortareas et al. (2016). We hypothesize, analogously to investments in general, that this cycle is linked to strategic allocation of resources in a time frame that allows for the results of those projects to be properly seen in a period close enough to the opening of the polls.

6 Conclusions

We present an approach to Political Budget Cycles with the innovation of using unprecedented disaggregated data seen with rather specific budget items such as rentals, activities, publicity, among others. We observe a significant decrease in spending two years before the elections in a plethora of budgetary elements. With the exception of "activities" and "Training and Protocol". Then, aligned with the theory, we find an increase in "activities" and "Training and Protocol" expenditures the year before the ballot.

We examine our findings within the scope of the conditions of the Costa Rican local governments and come up with two main theories as to why they behave the way they do. First, we observe the two items that show a significant decrease and increase, two and one year before the elections, respectively: "Training and Protocol" and its component "activities". In a context of high abstentionism, mayors may have the incentive to save spending on social events for the community until elections are close, especially since residents who participate in those may have a higher likelihood of casting a ballot. Next, local authorities could possibly reduce spending in somewhat discretionary items two years before the election and have more fiscal liberty to maneuver spending the one before their term possibly ends. Also, due to plausible bureaucratic frictions that prolong the time frame between budgeting and executing important projects that may be considered attractive to the voters, there may be budget accumulation in the first half of the electoral period for the current mayor to get recognition for these projects.

Although our results and conclusions show possible cyclicity in an alternative manner from the empirical data compared to what other countries may predict, this opens the opportunity to entertain the addition of institutional or bureaucratic frictions in the theory of PBCs, which could possibly produce slight variations to the ones seen thus far.

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Tables

Table 1: Summary of per capita expenditures, 2014
(Thousands of real 2020 colones)

Expenditure	Mean	St Dev	10th	25th	50th	75th	90th	95th	99th
Remunerations	31.73	18.34	15.36	19.12	26.80	39.70	50.76	56.05	99.48
Services	13.42	11.87	5.47	6.79	10.86	15.27	21.26	23.94	73.13
Durable Goods	15.45	18.19	2.47	4.23	10.17	20.27	34.99	45.90	71.56
Basic remuneration	15.90	8.66	8.11	10.28	13.58	19.78	24.49	30.74	45.64
Contingent remuneration	1.47	0.96	0.60	0.93	1.18	1.75	2.54	2.90	5.32
Rentals	1.63	2.59	0.22	0.34	0.86	1.89	3.35	4.76	9.52
Financial and commercial services	0.80	0.92	0.17	0.30	0.58	0.93	1.47	1.94	4.97
Training and Protocol	0.57	0.59	0.08	0.15	0.41	0.77	1.28	1.78	2.69
Maintenance and repairs	1.66	1.60	0.41	0.66	1.19	1.94	3.16	4.67	7.83
Machinery, equipment and mobiliary adquisitions	3.35	4.65	0.51	0.99	2.16	3.80	6.67	11.88	19.23
Construction, additions and remodelating	11.48	16.20	0.94	2.24	6.37	16.47	29.50	33.99	57.84
Salaries	14.22	7.90	7.09	8.88	12.48	17.71	22.25	26.76	42.28
Overtime	0.56	0.49	0.09	0.23	0.46	0.75	1.10	1.43	2.23
Subsistence allowance	0.77	0.37	0.36	0.48	0.75	0.98	1.26	1.42	1.93
Machines, equipment and mobiliary rentals	1.19	1.49	0.04	0.21	0.46	1.74	3.07	3.92	6.75
Advertisement and Publicity	0.08	0.21	0.00	0.01	0.04	0.08	0.14	0.20	1.36
Protocol and social activities	0.39	0.45	0.01	0.08	0.22	0.51	1.04	1.30	1.61
Buildings, constructions and lands maintenance	0.21	0.42	0.00	0.01	0.04	0.18	0.62	1.19	1.80
Roads	5.57	12.14	0.00	0.55	2.11	5.50	13.63	17.37	40.92
Total expenses	79.26	50.02	39.14	48.43	68.16	90.81	115.31	145.13	282.77

Note: Table 1 presents descriptive statistics of the expenditures per capita in Costa Rican municipalities in 2014. The expenditures' descriptive statistics are reported in CPI-deflated 2020 colones. The statistics are computed using 81 municipalities. We use municipality's population reported each year by CCSS. In particular, we show the mean, standard deviation, and percentiles. This information was extracted from the Comptroller General of the Republic.

Table 2: Share of expenditures (%), 2014

Expenditure	Mean	St Dev	10th	25th	50th	75th	90th	95th	99th
Remunerations	41.43	9.40	27.77	34.04	43.39	48.61	52.49	56.15	59.86
Services	16.81	6.41	9.95	11.74	15.78	20.27	25.36	26.72	33.47
Durable Goods	17.42	12.06	4.48	6.96	13.70	25.79	36.07	39.72	44.22
Basic remuneration	21.14	5.50	13.77	17.48	21.32	24.30	28.31	29.57	32.21
Contingent remuneration	1.95	0.80	1.11	1.32	1.78	2.48	3.02	3.49	3.94
Rentals	1.96	1.91	0.28	0.60	1.30	3.03	4.24	6.41	7.30
Financial and commercial services	0.99	0.60	0.25	0.47	0.99	1.40	1.77	1.96	2.34
Training and Protocol	0.67	0.50	0.10	0.30	0.59	0.92	1.42	1.61	2.01
Maintenance and repairs	2.28	2.86	0.78	1.11	1.71	2.57	3.01	5.12	14.07
Machinery, equipment and mobiliary adquisitions	4.08	5.11	1.12	1.62	2.80	4.25	8.02	9.69	26.33
Construction, additions and remodelating	12.75	11.12	1.63	3.22	9.52	19.27	29.17	33.48	41.52
Salaries	18.94	5.11	13.02	14.90	18.73	22.01	25.01	25.84	30.90
Overtime	0.75	0.55	0.20	0.36	0.56	1.06	1.58	1.76	2.19
Subsistence allowance	1.08	0.46	0.62	0.75	0.95	1.35	1.69	1.94	2.51
Machines, equipment and mobiliary rentals	1.60	1.85	0.05	0.27	0.85	2.30	3.75	5.50	7.30
Advertisement and Publicity	0.09	0.10	0.00	0.01	0.06	0.12	0.21	0.27	0.44
Protocol and social activities	0.47	0.43	0.02	0.14	0.35	0.67	1.06	1.51	1.66
Buildings, constructions and lands maintenance	0.24	0.48	0.00	0.01	0.07	0.27	0.55	0.93	2.13
Roads	6.14	7.93	0.00	0.64	3.39	9.40	13.91	28.73	31.24

Note: Table 2 presents the descriptive statistics of the distribution of expenditures as a share of total expenditure for 2014. The statistics are computed using 81 municipalities. In particular, we show the mean, standard deviation, and percentiles. This information was obtained from the Comptroller General of the Republic.

Table 3: Effect of elections on different expenditures

Expenditures	y_{t-1}	y_{t-2}	y_{t-3}	Elec_t	Elec_{t-1}	AR(1)	AR(2)	Sargan-Hansen test	N	Instruments
0-Remuneration	0.783***			0.016	-0.004	0.001	0.910	0.017	1125	y_{t-5}
0.01-Basic Remuneration	0.828***			0.018	0.007	0.000	0.756	0.023	1125	y_{t-5}
0.01.01-Salaries	0.734***	0.031		0.019	0.015	0.000	0.942	0.062	1042	y_{t-6}
0.02-Contingent Remuneration	0.524***			-0.018	-0.014	0.000	0.245	0.014	1125	y_{t-3}
0.02.01-Overtime	0.617***	-0.039	-0.067	-0.021	-0.149***	0.000	0.351	0.142	925	y_{t-6}
0.02.05-Subsistence allowance	0.549***			0.009	0.063***	0.000	0.179	0.230	1123	y_{t-2}
1-Services	0.625***			0.016	-0.071***	0.000	0.163	0.538	1125	y_{t-2}
1.01-Rentals	0.479***			-0.003	-0.166	0.000	0.338	0.210	1080	y_{t-2}
1.01.02-Machines, equipment and mobiliary	0.473***			-0.026	-0.157	0.000	0.357	0.432	1061	y_{t-2}
1.03-Financial and commercial services	0.552***			0.029	-0.209***	0.000	0.075	0.303	1122	y_{t-2}
1.03.02-Advertisement and Publicity	0.347***			-0.002	-0.124	0.000	0.133	0.176	886	y_{t-2}
1.07-Training and Protocol	0.368***			0.360***	-0.229***	0.000	0.104	0.055	1092	y_{t-5}
1.07.02-Protocolary and Social Activities	0.269**	0.113**		0.302***	-0.348***	0.000	0.911	0.048	906	y_{t-6}
1.08-Maintenance and Repairs	0.410***			0.004	-0.071	0.000	0.141	0.843	1125	y_{t-2}
1.08.01-Buildings, constructions and lands maintenance	0.385***			0.134	-0.020	0.000	0.743	0.670	860	y_{t-2}
5-Durable goods	0.326***			-0.133	-0.274**	0.000	0.674	0.135	1125	y_{t-2}
5.01-Machinery, Equipment and Mobiliary	0.103**			-0.197	-0.232**	0.000	0.505	0.828	1121	y_{t-2}
5.02-Construction, Additions and Remodelating	0.366***	0.097		-0.116	-0.296**	0.000	0.493	0.118	956	y_{t-2}
5.02.02-Roads	0.499***	0.153***		-0.119	-0.177	0.000	0.690	0.390	787	y_{t-3}

*Note: The table 3 presents results of estimating Eq.(1) with the Blundell and Bond (1998) system GMM estimator. Each row corresponds to a different regression, where the dependent variable is the log real per capita expenditure accordingly. The first three columns shows the coefficient associated with the first, second and third lag of the dependent variable. The following two show the coefficients associated to the elections year dummy and its lag. Then, we show, the results of the Arellano-Bond test for first and second order autocorrelation. H_0 : the first-differenced residuals have autocorrelation of order k. Also, the Sargan-Hansen test result. H_0 : overidentifying restrictions are valid. Finally, the number of observations, and the last lag of dependent variable used as an instrument. Robust standard errors in parentheses with finite-sample correction for the two step covariance matrix as developed by Windmeijer (2005). Instruments collapsed as suggested by Roodman (2009). *** significant at least at* 1%, ** *at least at* 5%, * *at* 10%.

Table 4: Types of expenditure (y_{jit})

Variable	Description and measure	Source
0-Remuneration	All payments related to labor	CGR
0.01-Basic Remuneration	Base salary for permanent employees	CGR
0.01.01-Salaries	Base salary without adquired bonuses nor readjustments	CGR
0.02-Contingent Remuneration	Wages associated to special conditions	CGR
0.02.01-Overtime	Payment associated to work outside odinary hours	CGR
0.02.05-Subsistence allowance	Wages associated to participation in specific municipal events	CGR
1-Services	Payment for aquired services of any kind	CGR
1.01-Rentals	For temporary use of tangible or intangible assets	CGR
1.01.02-Machines, equipment and mobiliary	Includes any tangible equiment and physical spaces	CGR
1.03-Financial and commercial services	Includes banking sevices, transport, printing, etc.	CGR
1.03.02-Advertisement and Publicity	Includes services of physical and online propaganda	CGR
1.07-Training and Protocol	This can be for employees or residents, and includes all kind of activities	CGR
1.07.02-Protocol and Social Activities	Includes ceremonies, receptions and social events for the community	CGR
1.08-Maintenance and Repairs	Services hired for M&R of buildings, land, equipment, etc	CGR
1.08.01-Buildings, constructions and lands maintenance	Includes an kind of infraestructure of public ownership	CGR
5-Durable goods	Adquisition and constuction of infrastructure and assets	CGR
5.01-Machinery, Equipment and Mobiliary	Adquisition of machinery, equipment and mobiliary	CGR
5.02-Construction, Additions and Remodelating	Includes all types of public infraestructure	CGR
5.02.02-Roads	Includes all types of land communication routes	CGR

Note: Table 4 presents three categories of expenditure and its components analyzed in this paper: Remuneration, Services and Durable Goods. Each one and their components are categorized by a "0", "1" and "5" at the beggining of their classification code, respectively. The most aggregate budget item is identified with a single digit code, followed by the second level of disaggregation with a three digit code, and finally with a 5 digit code we have the most simple and specific item. This means that, for example, all items beginning with "0", belong to "Remuneration". Further on, all items beginning with "0.01", belong to "Basic Remuneration" and subsequently for the rest. The description of each item is extracted from the official Public Budget Code Guide from the Minister of Finance (Ministry of Finance, 2018). The information is extracted from the databases of the Comptroller General of the Republic (CGR).

Table 5: Demographic and Economic Variables per Municipality ($\mathbf{Mun}'_{\mathbf{it}}$)

Variable	Description and measure	Source
Population < 15	Population under 15 years old, percentage	CCSS
Population > 65	Population over 65 years old, percentage	CCSS
K-12	Number of K-12 centers	CCSS

Note: Table 5 presents the demographic and economic controls used in the model for every municipality any given year. Both population variables are given as a percentage of the total amount of residents in the canton. K-12 centers include all education institutions from kindergarten to twelveth grade inside the canton's borders. This information is extracted from the Costa Rica Social Security Institution Actuarial Statistics from 2006 to 2020.

Table 6: Political Context and Personal Characteristics of Mayors ($\mathbf{May}'_{\mathbf{m(i,t)}}$)

Variable	Description and measure	Source
Age	Mayor's age at the beginning of the electoral period	TSE
Gender	Mayor's gender, 1 for man, 0 for woman	TSE
Incumbent's Advantage	Incumbent advantage in last election, difference in percentage of votes	TSE
Type of party	Type of political party, 0 for municipal, 1 for provincial, 2 for national	TSE

Note: Table 6 presents the political conditions and the personal features of each mayor. Due to the nature of how this variables were constructed, they are reported at the start of the incumbent's period in 2006, 2010 and 2016 accordingly. This information is extracted from the databases of the Supreme Court of Elections (TSE).

Table 7: Descriptive statistics of expenditures
(Thousands of real 2020 colones)

Expenditure	Mean	St Dev	10th	25th	50th	75th	90th	95th	99th
Remunerations	30.87	19.62	12.07	17.30	25.67	39.77	52.39	67.21	108.06
Services	14.71	12.43	4.42	7.01	11.62	18.60	27.39	33.66	70.48
Durable Goods	18.72	22.88	2.18	5.03	11.45	24.15	42.39	57.15	95.27
Basic remuneration	15.56	9.10	6.50	9.25	13.21	19.55	27.34	31.97	48.13
Contingent remuneration	1.57	1.15	0.60	0.85	1.29	1.93	2.78	3.45	6.44
Rentals	2.32	3.45	0.16	0.43	1.15	2.88	5.59	8.12	16.91
Financial and commercial services	0.82	0.95	0.13	0.26	0.53	0.99	1.71	2.73	4.97
Training and Protocol	0.57	0.82	0.04	0.12	0.30	0.73	1.32	1.93	3.58
Maintenance and repairs	1.87	2.41	0.35	0.60	1.20	2.25	3.92	5.34	10.76
Machinery, equipment and mobiliary adquisitions	3.99	5.58	0.48	1.08	2.35	4.65	9.07	13.35	26.09
Construction, additions and remodelating	14.01	20.02	0.34	2.33	7.42	18.19	34.24	46.25	83.85
Salaries	13.71	8.15	5.78	8.14	11.59	17.19	23.75	29.41	42.55
Overtime	0.64	0.67	0.08	0.20	0.45	0.83	1.42	1.87	3.10
Subsistence allowance	0.79	0.42	0.36	0.49	0.69	1.00	1.39	1.59	2.09
Machines, equipment and mobiliary rentals	1.96	3.18	0.06	0.30	0.91	2.35	4.86	6.92	15.11
Advertisement and Publicity	0.09	0.19	0.00	0.01	0.04	0.10	0.22	0.31	0.80
Protocol and social activities	0.37	0.60	0.00	0.04	0.16	0.47	0.98	1.38	2.68
Buildings, constructions and lands maintenance	0.22	0.43	0.00	0.01	0.06	0.22	0.60	0.97	1.96
Roads	9.14	16.85	0.00	0.51	3.75	11.56	22.85	35.61	75.13
Total expenses	83.53	55.84	33.99	46.81	69.42	103.32	148.42	192.77	299.42

Note: Table 7 presents descriptive statistics of the expenditures per capita in Costa Rican municipalities. The expenditures' descriptive statistics are reported in CPI-deflated 2020 colones. The statistics are computed using 81 municipalities and observations from 2006 to 2020. We use municipality's population reported each year by CCSS. In particular, we show the mean, standard deviation, and percentiles. This information was extracted from the Comptroller General of the Republic.

Table 8: Share of expenditures (%)

Expenditure	Mean	St Dev	10th	25th	50th	75th	90th	95th	99th
Remunerations	38.63	10.09	25.08	31.85	38.64	45.62	52.30	55.45	59.86
Services	17.46	6.87	9.83	12.93	16.24	20.95	26.07	29.42	42.03
Durable Goods	19.65	13.15	4.70	9.18	17.41	27.88	38.12	44.09	57.65
Basic remuneration	19.94	5.51	12.94	16.18	19.75	23.37	27.01	29.23	33.60
Contingent remuneration	2.02	0.88	1.08	1.38	1.85	2.48	3.22	3.80	4.55
Rentals	2.75	3.64	0.27	0.72	1.67	3.29	6.51	8.37	16.67
Financial and commercial services	0.98	1.14	0.25	0.42	0.77	1.32	1.78	2.05	3.88
Training and Protocol	0.62	0.56	0.09	0.21	0.48	0.87	1.38	1.65	2.36
Maintenance and repairs	2.33	2.55	0.69	1.05	1.60	2.61	4.32	6.60	15.62
Machinery, equipment and mobiliary adquisitions	4.84	5.16	0.92	1.67	3.18	6.09	10.48	15.04	26.34
Construction, additions and remodelating	14.14	12.26	0.92	4.23	11.19	20.97	31.66	37.88	52.22
Salaries	17.61	5.21	11.39	13.92	17.26	20.56	24.33	26.94	31.09
Overtime	0.77	0.66	0.16	0.33	0.61	1.03	1.57	1.95	3.07
Subsistence allowance	1.11	0.53	0.52	0.73	1.01	1.45	1.78	2.07	2.69
Machines, equipment and mobiliary rentals	2.44	3.64	0.10	0.49	1.32	2.92	6.20	8.07	16.60
Advertisement and Publicity	0.11	0.14	0.00	0.01	0.07	0.15	0.28	0.35	0.58
Protocol and social activities	0.40	0.45	0.00	0.06	0.25	0.60	1.00	1.34	1.91
Buildings, constructions and lands maintenance	0.25	0.48	0.00	0.01	0.09	0.28	0.64	0.98	2.62
Roads	9.00	10.50	0.00	0.88	5.27	13.44	23.90	31.96	42.54

Note: Table 8 presents the descriptive statistics of the distribution of expenditures as a share of total expenditure for our period of study. The statistics are computed using 81 municipalities and observations from 2006 to 2020. In particular, we show the mean, standard deviation, and percentiles. This information was obtained from the Comptroller General of the Republic.