Political Budget Cycle and Government Payments

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Abstract

The literature on political budget cycles pointed out that taxes and public deficits are adjusted to alternate fiscal expansions and consolidations according to the electoral cycle. The evidence about public expenditure is controversial. In this paper, we provide an explanation for this puzzle that exploits the difference between expenditure commitments and payments, which characterizes government financial accounting. Relying on data from Italian municipal governments for the period 2000-2014, we find a political cycle in government payments. To detect the drivers of such cycle, we develop a new theory of political behavior featuring a trade off between career concern and rent-seeking under uncertain politician's productivity. The payment cycle allows the politician to privately refine his expectation about own productivity, thus relaxing the trade off between rent-extraction and re-election probability. For this reason, term limits reduce the size of the payment cycle. Such theoretical predictions are confirmed by alternative empirical treatments which help us to exclude identification problems.

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Figure 1: Descriptive statistics of political cycles in tax revenues and government net debt issuance

1 Introduction

In the last three decades, a large literature has investigated political budget cycles. The theoretical explanations of such political behaviors range from signalling the incumbent-politician's performance at uninformed but rational electors to exploiting some kind of irrationality which induces electors to focus just on the incumbent's pre-electoral policy. Though research is still needed to understand which theories could better predict empirical differences in the relevant policy variables, timing and size of political budget cycles, empirical investigations have forged a consensus about the existence of political cycles in taxes and deficits at national and subnational levels of government. (See Figure 1). Conversely, the existence of political cycles in government expenditures is quite controversial.[1]

Several possible causes may provide a rationale for such a political-expenditure-cycle puzzle. As first, the sluggishness of current expenditure (e.g., public employment and wages, debt service, etc.), which constrains the scope for political expenditure cycles and implies a strong persistence of overall government outlays in time (see Figure 2). That is why empirical investigations should focus on government investments (as we do in this paper) or on the composition of public spending (e.g., Drazen and Eslava (2010)). Second, subnational governments – and, sometimes, also national governments[2] – have to comply with fiscal rules (e.g., budget balance, limits to public debt, or caps to spending growth) that restrain the capacity of the incumbent politicians to expand public expenditure while cutting taxation. Of course, the same effect may be endogenously determined by a Ricardian equivalence

[1] See Section 2 for a short review of the literature on political budget cycles.
[2] This is the case of the Eurozone countries.

Figure 2: Descriptive statistics of political cycles in government commitment expenditures and payments

argument, where electors are rational enough to anticipate that expenditure growth has to be financed by future tax increases.

The possible trade-off between revenues and expenditure margins in political budget cycles can be illustrated by descriptive statistics from accounting and financial reports of Italian municipalities (in Figures 1 and 2): we observe a political budget cycle on the revenue side – Figure 1 – but a strange (e.g., "anticipated" – or non-existent if we consider current expenditure) political budget cycle on the investment expenditure side.

The multiplicity of explanations of the political-expenditure-cycle puzzle plainly shows that refined theories are needed and that the full understanding of political budget cycles has to detect and consider all margins that could be exploited by incumbent politicians. In other terms, one has to answer the rather natural question that emerges from the empirical evidence and from the theoretical literature on the subject, that is: why incumbent politicians implement political cycles by taxes (and deficits), while they seem not to use the expenditure margin?

The decoupled dynamics of commitments and payments on investment expenditure of Italian municipalities reported in Figure 2 suggests the possible explanation that we investigate in this paper. To understand this point we need to delve into the functioning of government budget procedures, and particularly of the expenditure process. Real-world fiscal accounting rules divide the budget process in periods (say, fiscal years), each of which beginning with the approval of the (provisional) budget and ending with the approval of the next (provisional) budget. Because of this partition, the flows of government revenues and expenditures can be recorded on alternative *basis*[3], namely:

[3]Though *commitment* and *accrual* basis imply slight differences in the timing of recording of

1. *commitment basis*: at the beginning of the fiscal year, the local government approves a budget that formally authorizes the appropriation of forecasted public revenues and commits public money to be spent in different sectors up to specified amounts (i.e., expenditure *commitments*);

2. *cash basis*: during the fiscal year, the government cashes in revenues and cashes out *payments* on committed expenditures, independent of the fiscal year (current or previous) when these were decided.

Government budgetary flows that are recorded on commitment and cash bases diverge for a number of reasons (e.g., wrong revenue forecasts, payment delays). In this paper we abstract from differences in revenue flows recorded on cash and commitment basis, which are empirically less relevant, and we focus on the mismatch between expenditure commitments and payments that gives rise to *arrears* (on committed investment expenditures). In real-world government accounting systems, arrears arise for two reasons.[4] First, public investments usually take more than one fiscal year, thus payments corresponding to future planned installments form arrears. Second, arrears may simply arise because of payment delays which could be caused by accidental time overruns or by strategic postponement decision of the government.[5] Though payment delays may also affect current government

flows, for the purpose of our analysis they coincide. For a thorough description of alternative recording basis, see IMF (2014, pp. 48-53).

[4]Two remarks are in order as regards arrears. First, this entry is often affected by serious measurement problems (Checherita-Westphal et al., 2016; Chiades et al., 2018). Second, the *due-for-payment* basis of recording allows for the identification of the two sources of arrears described in the text (IMF, 2014, p. 50). These considerations explain two choices that we make in our empirical treatment. First, we rely on the dataset from Italian municipalities, which is relatively better than cross-country datasets as regards measurement problems with arrears and payments. Second, we do not include data beyond 2014, because of the reform of the accounting and financial reporting of Italian municipalities that switched, from 2015 on, the recording basis from commitment/accrual basis to due-for-payment basis.

[5]This also includes the case of negotiated time overruns, in which case the government and the private contractor agree on delaying both the end of public works and, accordingly, the corresponding payments.

expenditures, these are empirically less significant than in the case of investment expenditures (e.g., Figure 2). It is worth to remark that fiscal rules (e.g., budget balance) typically apply to flows that are recorded on commitment basis. In turn, the accumulation of arrears involves a special kind of government deficit.

The crucial implication of the described functioning of government accounting systems is that *payments in one fiscal year may be larger or smaller than commitments in the same year*. They are smaller if part of the investment expenditure commitments at the beginning of the considered year are (for any reason) cashed out in future fiscal years, thus forming new arrears. Conversely, payments are larger than commitments at the beginning of a specific year, when part of the stock of past arrears (i.e., investment expenditures committed in past periods) are cashed out during the considered year. Given that payments may be strategically postponed, the scope of political budget cycles may be underestimated if we exclude such a margin from our empirical investigation and the analysis is carried out focusing only on taxes, deficit and expenditure commitments, as it is the case for the extant literature (see Section 2, for a brief review).

In Section 3, we model a fiscal policy decision process where an incumbent politician decides the level of commitments for (current and) investment expenditures and taxes, at the beginning of each fiscal year. Then, during the fiscal year, the incumbent politician decides the level of payments on committed expenditures, that include investment arrears. Incumbent politicians are interested in their rents (and in their political careers) and face term limits. As usual in political budget cycle models with rational but uninformed voters, citizens have to infer the quality of politicians by perceived effects of fiscal policy (e.g., taxes and expenditure payments). At the equilibrium, the incumbent politician – who is running for a second term – tends to accumulate fiscal resources early in the political cycle, and to use them (by increasing payments and reducing taxes) as far as exogenous uncertainty

unfolds in order to reduce the risk of sending bad signals to citizens along the political cycle. Moreover, the incumbent politician implements policies involving a less marked cycle during the second term of office.

In Section 4, we test the theoretical predictions using a dataset of Italian municipalities for the period 2000-2014 [CHECK HERE]. Our empirical findings confirm that politicians tend to implement fiscal consolidation (i.e., increase of taxes and reduction of loans, expenditure commitments and payments) early after taking office; along the political cycle, investment commitments and taxes grow until the pre-electoral year, then dramatically shrink in the election year. We show that incumbent politicians regulate the timing of expenditure implementation by steadily increasing payments (on committed expenditure, which includes arrears) along the political cycle, reaching the maximum in the election year. As theoretically predicted, the political expenditure cycle is less marked during the second term and when the first-term incumbent politician has previous political experience.

Section 5 draws concluding remarks, including policy implications and future research directions.

2 Related Literature

Our paper contributes to the theoretical and empirical literature on political budget cycles.

2.1 Theories of political budget cycles

In the last three decades, a large literature has investigated political budget cycles, building on previous contributions on political business cycles.

Theoretical contributions have provided an interpretation of such behaviors based on a signaling problem in a framework affected by asymmetric information between

elected officials – who benefit from better information, take unobserved actions and have private agendas – and citizens – who try to elicit relevant information about politicians' quality (e.g., honesty, competence, etc.) to improve their own welfare by elections (e.g., Rogoff and Siebert (1988); Rogoff (1990); Shi and Svensson (2006)).

2.2 Empirical Analysis: overview and expenditure puzzle

Cross-country and within-country empirical investigations have forged a consensus about the general relevance of political budget cycles, and about the role of key fiscal policy tools, such as taxes and deficits However, research is still needed to understand which possible theories could explain marked differences in size, timing and relevant variables of political budget cycles.

2.3 Empirical Analysis: subnational and Italian case

Recent contributions have highlighted the relevance of political cycles in the case of Italian municipalities (e.g., Cioffi et al. (2012); Alesina and Paradisi (2017); Repetto (2017)).

3 A Theory of Political Payment Cycles

We build a theoretical model of political budget cycle where politicians aim at rent extraction along their careers, but are uncertain about their competence (or skill). However, the incumbent politician progressively observes better signals about her skills with respect to the representative citizen who elects them (e.g., Rogoff and Siebert (1988); Rogoff (1990); Shi and Svensson (2006)). In what follows we first describe the model (Section 3.1) and then we solve it in the baseline case (Section 3.2).

3.1 Model setup

We assume that the local government *budget constraint on commitment basis* in the fiscal period (e.g., year) t is given by:

$$\tau_t = i_t \tag{1}$$

where: τ_t are the total tax revenues levied by the considered local government in t; i_t are the committed investment expenditures in the same year. For the sake of simplicity, we abstract from current expenditures and from loans.[6]

As above mentioned, during the generic period t, the government implements fiscal decisions through payments.[7] In particular, it cashes out (part of) expenditure commitments in the form of payments $p_t^c \in [0, i_t]$ or accumulates them in the form of (new) arrears, $a_t \in [0, i_t]$, that is:

$$i_t = p_t^c + a_t \tag{2}$$

New arrears contribute to the accumulation of the final stock of arrears in t:

$$A_t = A_{t-1} - p_t^a + a_t \geq 0 \tag{3}$$

where A_{t-1} is the initial stock of arrears in t that can be cashed out in the form of payments (on initial arrears) $p_t^a \in [0, A_{t-1}]$[8] or contribute to the accumulation of arrears.

Therefore, the local government also faces the following *budget constraint on cash*

[6] As observed in Section 1, current expenditures are more persistent than investment ones and less interesting for our purpose.

[7] For the sake of simplicity, we assume that all tax revenues are cashed in during the current period.

[8] By definition, such payments cannot exceed the stock of initial arrears.

basis in t:

$$p_t^c + p_t^a = r_t + \frac{g_t}{\theta_t} \tag{4}$$

where: r_t is the politician's rent, i.e., the part of payments that are appropriated by the incumbent politician in any form (e.g., wages, perks, corruption, etc); g_t is the amount of public investment good that is actually provided to the local community transforming the residual part of payments that is not appropriated as political rent; and θ_t is the incumbent politician's productivity that determines how many units of public good can be obtained for each unit of government money.

We assume that the productivity of a given politician is determined by an intrinsic, unknown component (i.e., a politician can be on average better than another) and by a stochastic component that affects its realization period by period (i.e., each politician – independent of his intrinsic capacity – can have more or less luck). Thus the productivity of a politician is assumed to be drawn by one of two possible distribution functions: with probability ω, θ_t is drawn by a high-productivity differentiable, cumulative distribution function $F_H(\theta)$, with corresponding density function $f_H(\theta)$, such that $E_H(\theta) = \int \theta dF_H(\theta) = \overline{\theta}$; with probability $1-\omega$, θ_t is distributed as $F_L(\theta)$, with corresponding density function $f_L(\theta)$, such that $E_L(\theta) = \int \theta dF_L(\theta) = \underline{\theta}$. Thus the unconditional distribution of θ_t is the mixture $F(\theta) = \omega F_H(\theta) + (1-\omega)F_L(\theta)$, with corresponding density function $f(\theta) = \omega f_H(\theta) + (1-\omega)f_L(\theta)$. For the sake of simplicity, we assume that $E(\theta) = \int \theta dF(\theta) = \omega\overline{\theta} + (1-\omega)\underline{\theta} = 1$, where $\overline{\theta} > 1 > \underline{\theta}$.

The representative citizen maximizes the intertemporal, expected flow of utility levels that are determined by government policies. The representative citizen's utility in t is given by

$$u_t = v(y - \tau_t) + hg_t \tag{5}$$

where: $v(.)$ is the utility of private consumption (with $v'(.) > 0$, $v''(.) < 0$, $v(0) = 0$, $\lim_{c\to 0} v'(c) = \infty$ and $v'(y) < h\underline{\theta}$[9]); $y - \tau_t$ is the private consumption in monetary terms (with y citizen's exogenous income); h is the constant marginal utility of the public investment good that is provided by the local government in t.[10] The citizen's intertemporal discount factor is $\beta \in (0, 1)$.

The incumbent politician is a citizen that has been elected to run government. Therefore, he has the same objective function as other citizens with two important differences. First, he draws his private consumption from the political rent r_t. Second, the timing of the game, that we describe below, is such that the incumbent politician is able to ex post indirectly observe θ_t. Therefore, after the first observation of θ_t, the incumbent politician can exploit such private information to update his prior beliefs about the probability that the true distribution is the high-productivity one, by the Bayes' rule:

$$\omega_t = \frac{\omega f_H(\theta_t)}{\omega f_H(\theta_t) + (1-\omega) f_L(\theta_t)}. \tag{6}$$

In the same way, the incumbent politician that observes a new realization θ_{t+1}, after θ_t, can perform a new updating of beliefs ω_{t+1}, by substituting ω with ω_t in (6). In turn, such an informed politician relies on a refined probability distribution function, $F_t(\theta) = \omega_t F_H(\theta) + (1-\omega_t) F_L(\theta)$, to determine his expectation about $t+1$ and, in particular, $E_t(\theta) = \int \theta dF_t(\theta) = \omega_t \overline{\theta} + (1-\omega_t)\underline{\theta}$. Incumbent politicians can keep refining their beliefs. After a sufficiently large number of periods, an incumbent politician could, in principle, infer with a high degree of confidence his true distribution of θ. In our model, this possibility is limited by the assumption that an incumbent politician faces a two-terms limit for his office.

[9] This assumption implies that, even if the incumbent politician has low productivity, ex ante it is optimal to invest in the public good.

[10] The assumed quasi-linear utility implies that income effects do not affect the provision of the local public good. MORE HERE ON ABSENCE OF INTER-TEMPORAL RISK INSURANCE...

The timing of the game is as follows:

1) the nature randomly associates a high- or low-productivity distribution function to each politician; from such distribution, in each period of office t, the actual productivity of the incumbent politician θ_t is drawn; no one observes the true distribution, nor the extraction of θ_t, however the incumbent politician can ex post observe the latter;

2) the following political cycle is repeated an infinite number of times:

   B at the beginning of the pre-electoral period B, for each term of office $T \in \{1, 2\}$, the incumbent politician chooses the commitment for taxation and expenditure for the budget period, $\tau_{BT} = i_{BT}$; then, θ_{BT} is extracted, but no one can observe it; the incumbent politician chooses payments, p^c_{BT} and p^a_{BT}, his rent r_{BT} and, by the observation of g_{BT}, detects θ_{BT};

   E at the beginning of period E, for each term of office $T \in \{1, 2\}$, the incumbent politician chooses the commitment for taxation and expenditure for the budget period, $\tau_{ET} = i_{ET}$; then, θ_{ET} is extracted, but no one can observe it; the incumbent politician chooses payments, p^c_{ET} and p^a_{ET}, his rent r_{ET} and, by the observation of g_{ET}, detects θ_{ET}; then, an election takes place, where the representative citizen votes for a new government:

      T=1 if there is no term limit, the incumbent politician is elected with a probability π that is determined by the equilibrium behaviors of the representative citizen and the incumbent politician; with a probability $1 - \pi$, a new politician is elected;

      T=2 if the incumbent politician faces a term limit, only new politicians can run for office and one of them is elected.

3.2 Baseline model

The political equilibrium of the game is a Perfect Bayesian Equilibrium characterized as follows:

1. if the incumbent politician is at his first term ($T = 1$),

   (a) in the period E, the representative citizen plays a re-election strategy that is devised to curb politician's rent-appropriation behavior[11]; the representative citizen relies only on information elicited by politician's performance during his first term;

   (b) in each period of the first term (i.e., B or E), the incumbent politician plays a strategy that exploits information that is extracted along the political cycle and anticipates the effects on (citizen's welfare and, in turn, on) the probability to be re-elected;

2. if the incumbent politician is at his second and last term ($T = 2$),

   (a) the representative citizen cannot influence the incumbent politician performance in any way;

   (b) the incumbent politician does not take into account the effect of his policies on the outcome of the next election (i.e., on citizen's welfare).

As usual, we solve the model by backward induction, knowing that each politician can run the local government for a maximum of four fiscal periods: $B1$ is the first period (before elections) of the first term, $E1$ is the second (electoral) period of the first term, $B2$ is the first period of the second term, and $E2$ is the second period of the second term.

[11] This also amounts to select (for re-election) only politicians with a minimum level of productivity.

3.2.1 Second-term subgame equilibrium

In $T = 2$, the incumbent politician does not care about future elections. At the final year of the second term $t = E2$, the incumbent politician solves the following problem:

$$\max_{r_{E2},p^c_{E2},p^a_{E2},A_{E2}} v(r_{E2}) + hE_{B2}(\theta)(p^c_{E2} + p^a_{E2} - r_{E2}) \tag{7}$$

under the constraints: $r_{E2} \geq 0$ (with Lagrangian multiplier μ_r); $p^c_{E2} \geq 0$ (μ_{pc}); $p^a_{E2} \geq 0$ (μ_{pa}); $A_{E2} \geq 0$ (μ_A); $p^c_{E2}+p^a_{E2} \geq r_{E2}$ (η_r); $A_{B2} \geq p^a_{E2}$ (η_{pa}); $A_{E2} \geq A_{B2}-p^a_{E2}$ (η_A); $y \geq p^c_{E2} + p^a_{E2} + A_{E2} - A_{B2}$ (λ). It is worth to remark, that the expectation about θ_{E1}, $E_{B1}(\theta) = \omega_{B2}\overline{\theta} + (1 - \omega_{B2})\underline{\theta}$, relies on the Bayesian updating of ω that the incumbent politician is able to calculate at the beginning of $t = E2$, having observed θ_{B1}, θ_{E1}, and θ_{B2} in previous periods.

The first order conditions of (7) are:

$$r_{E2}: \quad v'(r_{E2}) - hE_{B2}(\theta) + \mu_r - \eta_r = 0 \tag{8}$$

$$p^c_{E2}: \quad hE_{B2}(\theta) + \mu_{pc} + \eta_r - \lambda = 0 \tag{9}$$

$$p^a_{E2}: \quad hE_{B2}(\theta) + \mu_{pa} + \eta_r - \eta_{pa} + \eta_A - \lambda = 0 \tag{10}$$

$$A_{E2}: \quad \mu_A + \eta_A - \lambda = 0. \tag{11}$$

As first, we show the following result:

Lemma 1 *The equilibrium strategy of the incumbent politician is such that* $i_{E2} = y$, $p^c_{E2} = i_{E2}$ *and* $p^a_{E2} = A_{B2}$.

Proof. By (9), the optimal strategy of the incumbent politician is such that $\lambda > 0$ and $y = i_{E2} = p^c_{E1} + p^a_{E1} + A_{E1} - A_{B1}$. Moreover, by (11), $\mu_A + \eta_A = \lambda > 0$, which implies that the optimal values of control variables are such that $\mu_A > 0$ or

$\eta_A > 0$. If $\mu_A > 0$, $A_{E2} = 0$ and $0 = A_{E2} \geq A_{B2} - p^a_{E2} \geq 0$, hence the lemma is proven ($A_{B2} = p^a_{E2}$ and $i_{E2} = p^c_{E2}$). If $\eta_A > 0$, $A_{E2} = A_{B2} - p^a_{E2} \geq 0$, that implies $i_{E2} = p^c_{E2} > 0$ (hence, $\mu_{pc} = 0$). If $A_{E2} = 0$, also $A_{B2} = p^a_{E2}$ and the lemma is proven. Assume, by contradiction, that $A_{E2} > 0$ (hence, $\mu_A = 0$), then necessarily $A_{B2} > p^a_{E2}$ (hence, $\eta_{pa} = 0$). By (9) and (10), $\mu_{pc} = \mu_{pa} - \eta_{pa} + \eta_A$, that – by the previous arguments – boils down to $\mu_{pa} + \eta_A = 0$, which implies a contradiction given that $\eta_A > 0$. ■

Given the Lemma 1, by the first order condition (8), it is easy to see that the incumbent politician always chooses to have a strictly positive rent r^*_{E2} and to provide at least some public investment good at the optimum,

$$v'(r^*_{E2}) = hE_{B2}(\theta), \tag{12}$$

given that, by assumption, $v'(y) < h\underline{\theta}$ and, by the Bayesian updating of the incumbent politician beliefs, $\underline{\theta} \leq E_{B2}(\theta) = \omega_{B2}\overline{\theta} + (1 - \omega_{B2})\underline{\theta}$. Moreover, by comparative statics, it is easy to check that: $\frac{dr^*_{E2}}{dE_{B2}(\theta)} = \frac{h}{v''(r^*_{E2})} < 0$; and $\frac{dr^*_{E2}}{dA_{B2}} = 0$.

The ex interim equilibrium expected utility of the incumbent politician – that he is able to work out at the beginning of $t = E2$ and, thus, corresponds to the value function of the problem (7) – is

$$U^p_{E2} = v(r^*_{E2}) + hE_{B2}(\theta)(y + A_{B2} - r^*_{E2}), \tag{13}$$

while the ex interim expectations of politician's equilibrium utility calculated at the beginning of previous periods have to take into account that r^*_{B2} is decreasing in $E_{B2}(\theta)$.

Anticipating this outcome, in $t = B2$, the incumbent politician solves the fol-

lowing problem:

$$\max_{r_{B2},p^c_{B2},p^a_{B2},A_{B2}} v(r_{B2}) + hE_{E1}(\theta)(p^c_{B2} + p^a_{B2} - r_{B2}) + \beta E_{E1}(U^p_{E2}) \tag{14}$$

under the constraints: $r_{B2} \geq 0$ (μ_r); $p^c_{B2} \geq 0$ (μ_{pc}); $p^a_{B2} \geq 0$ (μ_{pa}); $A_{B2} \geq 0$ (μ_A); $p^c_{B2}+p^a_{B2} \geq r_{B2}$ (η_r); $A_{E1} \geq p^a_{B2}$ (η_{pa}); $A_{B2} \geq A_{E1} - p^a_{B2}$ (η_A); $y \geq p^c_{B2}+p^a_{B2}+A_{B2}-A_{E1}$ (λ). Again, $E_{E1}(\theta)$ relies on the Bayesian updating of ω that the incumbent politician is able to calculate at the beginning of $t = B2$.

The first order conditions of (14) are:

$$r_{B2}: \quad v'(r_{B2}) - hE_{E1}(\theta) + \mu_r - \eta_r = 0 \tag{15}$$

$$p^c_{B2}: \quad hE_{E1}(\theta) + \mu_{pc} + \eta_r - \lambda = 0 \tag{16}$$

$$p^a_{B2}: \quad hE_{E1}(\theta) + \mu_{pa} + \eta_r - \eta_{pa} + \eta_A - \lambda = 0 \tag{17}$$

$$A_{B2}: \quad \beta hE_{E1}(\theta) + \mu_A + \eta_A - \lambda = 0 \tag{18}$$

By the first order conditions of the problem (14), it is easy to show that the incumbent politician behaves in the same way as in $t = E2$, in particular we have:

Lemma 2 *The equilibrium strategy of the incumbent politician is such that* $i_{B2} = y$, $p^c_{B2} = i_{B2}$ *and* $p^a_{B2} = A_{E1}$.

Proof. As in Lemma 1, by (16), $\lambda > 0$ (i.e., $y = i_{B2} = p^c_{B2}+p^a_{B2}+A_{B2}-A_{E1} > 0$). Moreover, by (17) and (18), $(1-\beta)hE_{E1}(\theta)+\mu_{pa}+\eta_r = \mu_A+\eta_{pa} > 0$, which implies that the optimal values of control variables are such that $\mu_A > 0$ or $\eta_{pa} > 0$. If $\mu_A > 0$, the proof follows as in Lemma 1. If $\eta_{pa} > 0$, $A_{E1} = p^a_{B2}$; if also $A_{B2} = 0$ the lemma is proven. Assume, by contradiction, that $A_{B2} > 0$ (hence, $\mu_A = 0$), then necessarily $A_{B2} > A_{E1} - p^a_{B2} = 0$ (hence, $\eta_A = 0$). By (16) and (18), it follows $(1-\beta)hE_{E1}(\theta) + \mu_{pa} + \eta_r = 0$, which involves a contradiction. ■

Again, r^*_{B2} is such that $v'(r^*_{B2}) = hE_{E1}$. The ex interim expected equilibrium utility of the incumbent politician is equal to

$$U^p_{B2} = v(r^*_{B2}) + hE_{E1}(\theta)(y + A_{E1} - r^*_{B2}) + \beta E_{E1}(v(r^*_{E2}) + hE_{B2}(\theta)(y - r^*_{E2})). \quad (19)$$

Summing up the arguments of the Lemmas 1 and 2, we can state the following result:

Proposition 3 *The equilibrium strategy of the politician in his second term is such payments and commitments coincide and no budget cycle takes place.*

3.2.2 First-term subgame equilibrium

To analyze the first-term behavior of the politician, we have to characterize the equilibrium strategy of the representative citizen. In $t = E1$, the representative citizen observes the levels of taxation and public investment good that the incumbent politician was able to deliver during the first term, though he cannot observe the rents that the incumbent politician obtained. On the basis of available information, the representative citizen forms an expectation of the flow of utilities that she will get in the second term, in case of re-election of the incumbent politician.

To curb the rent-seeking behavior of the politician in the first term and anticipating his behavior in case of re-election, at the end of period $t = E1$, the representative citizen re-elects the incumbent politician for a second term if and only if the intertemporal flow of utilities – summing up the realization of utilities in the first-term and the expectation of utilities in the second term – is such that:

$$u_{B1} + \beta u_{E1} + \beta^2 E(u_{B2} + \beta u_{E2}) \geq U^* \quad (20)$$

where U^* is the cut-off intertemporal utility that is chosen by the citizen to maximize her infinite-horizon, intertemporal expected utility on the equilibrium path.

Of course, the expected utility is calculated relying on the unconditional probability distribution, given that the representative citizen cannot observe nor infer any realization of θ. Moreover, anticipating the equilibrium behavior of re-elected incumbent politicians as above characterized, the terms of left-hand side of (20) can be written as:

$$\begin{aligned} u_{B1} &= v(y - p^c_{B1} - A_{B1}) + h\theta_{B1}(p^c_{B1} - r_{B1}) \\ u_{E1} &= v(y - p^c_{E1} - p^a_{E1} - A_{E1} + A_{B1}) + h\theta_{E1}(p^c_{E1} + p^a_{E1} - r_{E1})) \\ u_{B2} &= h\theta_{B2}(y + A_{E1} - r^*_{B2}) \\ u_{E2} &= h\theta_{E2}(y - r^*_{B2}). \end{aligned}$$

Anticipating the representative citizen's strategy, the incumbent politician is able to calculate the probability of being re-elected in equilibrium, depending on updated information that he gets during his first term of office.

3.2.3 Electoral subgame equilibrium strategy of the politician

We can now characterize the equilibrium strategy of the politician in the first term. At the beginning of the period $t = E1$, he estimates the probability to be re-elected, conditional on θ_{B1} he privately observed:

$$\pi = Prob\{\theta_{E1} \geq \hat{\theta}_{E1} \mid \theta_{B1}\} = 1 - F_{B1}(\hat{\theta}_{E1}) \tag{21}$$

where $\hat{\theta}_{E1}$ is equal to

$$\frac{U^* - u_{B1} - \beta^2 E(h\theta_{B2}(y + A_{E1} - r^*_{B2}) + \beta u_{E2}) - \beta v(y - p^c_{E1} - p^a_{E1} - A_{E1} + A_{B1})}{\beta h(p^c_{E1} + p^a_{E1} - r_{E1})}.$$

Let us remark that in $t = E1$: u_{B1} is a constant determined by the choices of the politician in the previous period and by θ_{B1}; and u_{E2} does not directly depend on

the choices of the politician in $t = E1$.

In $t = E1$, the politician aiming at being re-elected has to solve the following problem:

$$\max_{r_{E1},p^c_{E1},p^a_{E1},A_{E1}} v(r_{E1}) + hE_{B1}(\theta)(p^c_{E1} + p^a_{E1} - r_{E1}) + (1 - F_{B1}(\hat{\theta}_{E1}))\beta E_{B1}(U^p_{B2}) \quad (22)$$

under the constraints: $r_{E1} \geq 0$ (μ_r); $p^c_{E1} \geq 0$ (μ_{pc}); $p^a_{E1} \geq 0$ (μ_{pa}); $A_{E1} \geq 0$ (μ_A); $p^c_{E1} + p^a_{E1} \geq r_{E1}$ (η_r); $A_{B1} \geq p^a_{E1}$ (η_{pa}); $A_{E1} \geq A_{B1} - p^a_{E1}$ (η_A); $y \geq p^c_{E1} + p^a_{E1} + A_{E1} - A_{B1}$ (λ).

The first order conditions of the problem (22) are:

$$r_{E1}: \quad v'(r_{E1}) - hE_{B1}(\theta) + \mu_r - \eta_r - \frac{f_{B1}(\hat{\theta}_{E1})\hat{\theta}_{E1}\beta E_{B1}(U^p_{B2})}{p^c_{E1} + p^a_{E1} - r_{E1}} = 0 \quad (23)$$

$$p^c_{E1}: \quad hE_{E1}(\theta) + \mu_{pc} + \eta_r - \lambda + \quad (24)$$
$$+\frac{f_{B1}(\hat{\theta}_{E1})(h\hat{\theta}_{E1} - v'(y - p^c_{E1} - p^a_{E1} - A_{E1} + A_{B1}))\beta E_{B1}(U^p_{B2})}{h(p^c_{E1} + p^a_{E1} - r_{E1})} = 0$$

$$p^a_{E1}: \quad hE_{E1}(\theta) + \mu_{pa} + \eta_r - \eta_{pa} + \eta_A - \lambda + \quad (25)$$
$$+\frac{f_{B1}(\hat{\theta}_{E1})(h\hat{\theta}_{E1} - v'(y - p^c_{E1} - p^a_{E1} - A_{E1} + A_{B1}))\beta E_{B1}(U^p_{B2})}{h(p^c_{E1} + p^a_{E1} - r_{E1})} = 0$$

$$A_{E1}: \quad (1 - F_{B1}(\hat{\theta}_{E1}))\beta hE_{B1}(\theta) + \mu_A + \eta_A - \lambda + \quad (26)$$
$$+\frac{f_{B1}(\hat{\theta}_{E1})(\beta hE(\theta) - v'(y - p^c_{E1} - p^a_{E1} - A_{E1} + A_{B1}))\beta E_{B1}(U^p_{B2})}{h(p^c_{E1} + p^a_{E1} - r_{E1})} = 0$$

Considering the solution of the program (22), the ex interim expected equilibrium utility of the incumbent politician is:

$$U^p_{E1} = v(r^*_{E1}) + hE_{B1}(\theta)(p^{c*}_{E1} + p^{a*}_{E1} - r^*_{E1}) + (1 - F_{B1}(\hat{\theta}_{E1}))\beta E_{B1}(U^p_{B2}). \quad (27)$$

Moreover, we have:

Lemma 4 *Under the assumption that*

$$\hat{\theta}_{E1} \geq \max\{\underline{\theta}, \beta\}, \tag{28}$$

the equilibrium strategy of the incumbent politician is such that $i_{E1} \in (0, y)$, $p^c_{E1} = i_{E1}$ *and* $p^a_{E1} = A_{B1}$.

Proof. As first, we show that $A_{E1} = A_{B1} - p^a_{E1} = 0$ (hence, $i_{E1} = p^c_{E1} \in [0, y]$ and $A_{B1} = p^a_{E1} \geq 0$). Assume, by contradiction, that at the equilibrium $A_{E1} > A_{B1} - p^a_{E1} > 0$. Consider the following perturbation of the incumbent politician's equilibrium strategy: $dp^a_{E1} = -dA_{E1} > 0$. Remark that such a perturbation leaves unchanged expenditure commitments and taxation – that is $i_{E1} = p^c_{E1} + p^a_{E1} + A_{E1} - A_{B1}$ – hence, the consumption level of the representative citizen. Such a perturbation implies the following variation of the incumbent-politician's expected utility at the equilibrium:

$$dU^p_{E1} = dp^a_{E1}\left(F_{B1}(\hat{\theta}_{E1})\beta h E_{B1}(\theta) + f(\hat{\theta}_{E1})\frac{\hat{\theta}_{E1} - \beta}{p^c_{E1} + p^a_{E1} - r_{E1}}\beta E_{B1}(U^p_{B2})\right)$$

that is positive under the sufficient condition (28), which implies a contradiction. Thus, at the equilibrium, we necessarily have that $A_{E1} \geq A_{B1} - p^a_{E1} = 0$. If $A_{E1} = A_{B1} - p^a_{E1} = 0$, this part of the lemma is proven. Assume, by contradiction, that $A_{E1} > A_{B1} - p^a_{E1} = 0$. Consider now the perturbation of the incumbent politician's equilibrium strategy: $dp^c_{E1} = -dA_{E1} > 0$. Following the argument above, such a perturbation leaves unchanged expenditure commitments and taxation and implies a positive variation of the incumbent-politician's expected utility at the equilibrium, which again implies a contradiction. We now show that, at the equilibrium, $y > i_{E1}$ (hence, $\lambda = 0$). Assume, by contradiction, that $y = i_{E1} = p^c_{E1} + p^a_{E1} + A_{E1} - A_{B1}$. By the first part of this lemma, this would imply that $y = i_{E1} = p^c_{E1} > 0$ (hence,

$\mu_{pc} = 0$). However, considering that (24) can be also written as

$$\begin{aligned}(p^c_{E1} - r_{E1})(hE_{E1}(\theta) + \eta_r) + f_{B1}(\hat{\theta}_{E1})\hat{\theta}_{E1}\beta E_{B1}(U^p_{B2}) = \\ = (p^c_{E1} - r_{E1})\lambda + \frac{f_{B1}(\hat{\theta}_{E1})v'(y - p^c_{E1})\beta E_{B1}(U^p_{B2})}{h},\end{aligned} \tag{29}$$

by $\lim_{p^c_{E1}\to y} v'(y - p^c_{E1}) = \infty$, (29) implies that also $\lim_{p^c_{E1}\to y} \hat{\theta}_{E1} = \infty$, that is $r_{E1} \to p^c_{E1} > 0$. Considering that (23) can be re-written as

$$v'(r_{E1}) + \mu_r = hE_{B1}(\theta) + \eta_r + \frac{f_{B1}(\hat{\theta}_{E1})\hat{\theta}_{E1}\beta E_{B1}(U^p_{B2})}{y - r_{E1}} \tag{30}$$

this would imply a contradiction. Thus $y > i_{E1} = p^c_{E1}$ (hence, $\lambda = 0$) and $p^c_{E1} > r_{E1} > 0$ (hence, $\mu_r = \eta_r = 0$). We finally show that, at the equilibrium, $i_{E1} = p^c_{E1} > 0$. Assume, by contradiction, that $p^c_{E1} = 0$, then, by (24), $v'(y) > h\hat{\theta}_{E1}$, which brings to a contradiction given the combination of the sufficient condition (28) and the assumption that $v'(y) < h\underline{\theta}$. ■

At the beginning of period $t = B1$, the newly-elected politician has no private information about the distribution of his productivity. Moreover, he has to take into account that the previous incumbent politician does not accumulate arrears in the last period of office $A_{E2} = p^a_{B1} = 0$ (by Lemma 1). The elected politician has to solve the following problem:

$$\max_{r_{B1}, p^c_{B1}, A_{B1}} v(r_{B1}) + hE(\theta)(p^c_{B1} - r_{B1}) + \beta E(U^p_{E1}) \tag{31}$$

under the constraints: $r_{B1} \geq 0$ (μ_r); $p^c_{B1} \geq 0$ (μ_{pc}); $A_{B1} \geq 0$ (μ_A); $p^c_{B1} \geq r_{B1}$ (η_r); $y \geq p^c_{B1} + A_{B1}$ (λ).

The first order conditions of the problem (31) are:

$$r_{B1}: \quad v'(r_{B1}) - hE(\theta) + \mu_r - \eta_r - E\left(\frac{f_{B1}(\hat{\theta}_{E1})\theta_{B1}\beta E_{B1}(U^p_{B2})}{p^{c*}_{E1} + A_{B1} - r^*_{E1}}\right) = 0 \tag{32}$$

$$p^c_{B1}: \quad hE(\theta) + \mu_{pc} + \eta_r - \lambda + \tag{33}$$
$$+E\left(\frac{f_{B1}(\hat{\theta}_{E1})(h\theta_{B1} - v'(y - p^c_{B1} - A_{B1}))\beta E_{B1}(U^p_{B2})}{h(p^{c*}_{E1} + A_{B1} - r^*_{E1})}\right) = 0$$

$$A_{B1}: \quad \beta hE(\theta) + \mu_A - \lambda + \tag{34}$$
$$+E\left(\frac{f_{B1}(\hat{\theta}_{E1})(\beta h\hat{\theta}_{E1} - v'(y - p^c_{B1} - A_{B1}))\beta E_{B1}(U^p_{B2})}{\beta h(p^{c*}_{E1} + A_{B1} - r^*_{E1})}\right) = 0$$

3.2.4 Electoral subgame equilibrium of the citizen

[INCOMPLETE]

3.3 Discussion and extensions

[INCOMPLETE]

3.4 Infinite political horizon

[INCOMPLETE]

3.5 Shocks to term limit

[INCOMPLETE]

3.6 Testable predictions

In this section, we summarize our main predictions to use them in our empirical treatment:

Corollary 5 (Political Budget Cycle) *After the election year, the fiscal policy is tight (i.e., high taxes, low commitments for investment expenditure, low payments*

on arrears). Along the political cycle, commitments for investment expenditure increase. In the electoral year, taxes and commitments for investment expenditure are squeezed. Payments on investment expenditure arrears grow along the whole political cycle peaking in the election year.

Corollary 6 (Term Limit) *The fiscal policy is tighter and the budget cycle is more pronounced in the first term. In particular, commitments for investment expenditure and payments on arrears are higher in the second term.*

4 Empirical Evidence from Italian Municipalities

4.1 Data and variables' definitions

In Italy, municipalities are the smallest administrative units and they provide public goods and services in several policy areas, such as local transport, local police, culture and recreation, land management and environment (waste disposal, water, sewage), nursery school and complementary education services, and registry services. About half of the total government investment expenditure is managed by municipalities. For instance, municipalities manage the outsourcing (through competitive auctions, to private suppliers) of about 50% of the public works (such as road works and building constructions).[12]

Annually, each municipality is obliged to transmit its accounting and financial report to the Ministry of Interior (the so-called *Certificato di Conto Consuntivo*). This source of information allows us to have a clear picture of the financial situation of the municipalities for each year for both the revenues and the expenditures sides of the budget. In particular, in our empirical analysis we will focus on the payments

[12]See, for the years of our analysis, the Annual Reports (*Relazione annuale*) of the Italian Authority for the Supervision of Public Contracts (*AVCP*); documents available at www.avcp.it and www.anticorruzione.it.

on arrears for investment commitments (*Payments on arrears*) that represents the amount of real euros per capita that the municipalities pays in a given year out of the stock of non-paid past investment expenditure commitments (i.e., *Stock of arrears*). Annual payments on arrears in our sample are on average about 271 euros per capita, and they represent less than one-third of the stock of arrears.

We will also analyze other budget variables to have a broader picture of the effects of the political cycle on budgetary choices, so to highlight the role of payments on arrears. In particular, we will look at (i) *Investment expenditure commitments*, which represents the amount of euros per capita that a municipality, in a given year, decides to allocate to new investment projects (on average, in our sample, 396 euros per capita); (ii) *Current expenditure*, which represents on average an higher share of the budget (on average 577 euros per capita) and are less volatile than the investment expenditures. On the revenue side, we will consider the effects of the political cycle on (iii) *Tax-revenues* (on average 240 euros per capita), (iv) *Non-tax revenues* (on average 143 euros), and (v) new *Loans* that are more volatile than the previous two sources but are smaller on average amount (77.5 euros per capita).

Since 2000, in Italy, in each municipality, the mayor and city's council are elected for a five-year term and each mayor has a limit of two consecutive terms. Elections do not take place on the same day for every municipalities, so in a given year, different municipalities can find themselves at a different point of their political cycle. Coviello and Gagliarducci (2012) and Repetto (2017) provide narrative analysis based on historical and institutional changes for considering the election dates of Italian municipalities as exogenous.[13]

Data for political cycle at the municipality level are from the Italian Ministry of Interior. For each municipality we observe the election day and the name of the elected mayor, so that we can construct a measure of political cycle (*Cycle*: defined

[13]See also Alesina and Paradisi (2017).

Table 1: Sample summary statistics (Real euros per capita). Period 2000-2010.

VARIABLES	Mean	SD
Payments on arrears	271.2	310.9
Investment expenditure comm.	396.4	539.3
Current expenditures	577.1	222.3
Tax revenues	240.9	128.5
Non-tax revenues	143.3	127.2
New loans	77.5	138.6
Stock of arrears	966.8	1179.3
Share of payments over stock of arrears	0.3	0.2
Share of payments over investment comm.	0.2	0.2
State transfers	198.8	100.2
Av. Taxable income	14334.1	2231.9
Population	7268.9	41292.8
Dummy variables:		
Year of election	0.2	0.4
One year after election	0.2	0.4
Two years after election	0.2	0.4
Three years after election	0.2	0.4
Four years after election	0.2	0.4
First term	0.6	0.5
Second term	0.4	0.5

as the years from the past election) and whether the mayor is at her/his first or second term (*Term*; in the latter case, she cannot be reelected in the following election).[14] Figure 3 shows the year of election of the councils that governed the Italian municipalities during our period of analysis. During 2000-2010, on average, each year, in our sample, there are about 1,200 municipalities holding elections for new mayors and city councils, with a concentration of elections in years 2004 and 2009.

Summary statistics in Table 1 shows that about one-fifth of the municipality-year observational units are distributed quite uniformly across the five years of the

[14]Note that: (i) Municipalities below 15,000 inhabitants have a different electoral system than larger municipalities; in fact, a single ballot system is in place to municipalities with less than 15,000 inhabitants, while a dual ballot system is in place above that threshold (see, among others, Barone and de Blasio (2013)). (ii) We also observe the name and the political affiliation of the city councilmen; this can allow us to construct measures of the political fragmentation of the city council and measures of the political orientation of the mayors and its majority (although the wide diffusion of independent civic coalitions that limit the possibility of identifying the political affiliation of the mayor or council majority for the whole sample of municipalities). In this preliminary version of the paper, we do not explore these features and their potential effects on the political budget cycle and payments on arrears. A deeper analysis will be available in future versions of the paper.

political cycle. The same Table also shows that about three-fifth of our observations have a mayor at his/her first term.

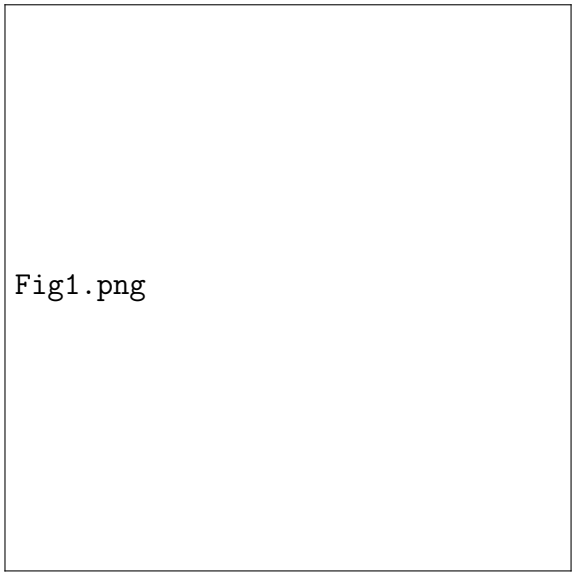

Figure 3: Years of elections in the municipalities in our sample

In this analysis, we focus on the 6,700 municipalities belonging to the fifteen ordinary regions; we do not consider the about 1,400 municipalities of the remaining five regions since the latter enjoy a larger degree of legislative and financial autonomy and respond to different regulations in many fields. We focus on the decade 2000-2010, although not all variables are available in all municipality-year observations.

Our sample of municipalities have on average a population of about 7,000 inhabitants and an average taxable income of about 14,000 euros per capita. Municipalities differs also in other socio-economic dimension, such as their geographical location. This does not only imply a North-South differential in the country in terms of social capital, financial development, presence of criminal activities, and functioning of the institutions in general, but there is also a relevant within-region variation in these and other characteristics (such as the composition of the population or the touristic or non-touristic vocation), which is likely to affect the budgetary choices.

In the Section 4.3, we present the approaches we take to deal with these sources of heterogeneity.

4.2 Suggestive evidence

In this paragraph, we present descriptive evidence on the relationship between political cycle and payment on arrears and other expenditures (Figures 4-6) and revenues budgetary outcomes (Figures 7-9). We present the evidence for each year of the first and second term of the mayor political cycle, showing average and median values as well as deviations from the year after the elections.

We denote with *Election* the year the city-council and mayor are elected. Given that the municipal elections are usually held in Spring, the budgetary choices for the election year are the results of decisions taken by both the mayor and city-council holding office before the elections and the newly elected ones. In particular, the level of expenditure commitments, taxes and loans are set by the incumbent politicians (at the beginning of the fiscal year), while the payments (including the payments on arrears) are decided both by the incumbent politicians (in the first part of the election year) and by the politicians winning the elections (in the second part of the election year).

We denote the first year *after election* with *+1* and this is also taken as the base year for the differences shown in Figures 6 and 9. As this is the first year (and farthest from the next election), according to our theoretical predictions, the new elected mayor and city-council implement in this year the tighter fiscal policy over the political cycle. The last year the mayor and city council autonomously format the budget for the whole year is the fourth year after elections (i.e., *+4*, which is also expected to be the year before the next elections).[15]

[15]Note that in these figures the differences for the years in the second term are taken with respect to the first after the re-election.

Evidence from these figures are in line with the theoretical predictions presented in Section 3, as payments on arrears seem to follow a political cycle and so the other expenditure and revenue outcomes do. In particular, committed investment expenditure gradually increase from the year of election to the year before elections (when they reach their maximum), both in the first and second term. Taxation gradually increases from the year of elections but it reduces in the year before elections, while loans gradually increase from the year of election. Payments on arrears are high in the year of elections, decrease in the following year, but gradually increase up to reach their maximum in the year before elections and stay high in the year of elections.

Figure 4: Expenditures (mean)

Figure 5: Expenditure (median)

Figure 6: Expenditures (differences)

Figure 7: Revenues (mean)

Figure 8: Revenues (median)

Figure 9: Revenues (differences)

4.3 Estimated equation

The reduced form empirical model that we estimate using different approaches to analyze the relationship between expenditure and political cycle looks as follows:

$$y_{mt} = \alpha + \beta Cycle_{mt} + \gamma Term_{mt} + \delta Cycle_{mt} x Term_{mt} + \epsilon_{mt}. \tag{35}$$

All monetary variables are expressed in per-capita values at constant prices. In our main model specification, the dependent variable y denotes the amount of payments on arrears for investments in year t by municipality m. We also alternatively use other dependent variables, in particular: the *payment speed* on new investment commitments – i.e., the share of new investment commitments that are actually cashed out within the year; the *arrears disposal rate* – i.e., the share of (initial) outstanding investment arrears that are actually paid within the year; expenditure commitments; tax and non-tax revenues; loans.

Cycle is one of our key variables of interest and it is operationalized as a set of dummy variables, each one representing the number of years from the past elections. As described in Sections 4.1 and 4.2, the dummy variable *Election* indicates that in a given year municipal elections have been held in a given municipality and, thus, the budgetary choices for that year have been taken both by the former mayor and city-council (governing the city in the months of the year before the elections) and the new elected mayor and city-council (governing the city in the months of the year following the elections). We take as base category for this set of dummy variables the first year after the election. We decided to base our political cycle definition on the years from past elections – instead of the years from the next elections – to reduce endogeneity problems associated with possible choices of incumbent politicians leading to premature end of the term.

Term is the other key variable and indicates whether the mayor is in her first or

last (second consecutive) term. In case the mayor is at her/his second consecutive term is not re-eligible for third consecutive term. It is operationalized with a dummy variable taking the value 1 if the mayor is at her/his *Second term*, the value 0 otherwise (i.e., in the first term). The interactions between second term and the dummy variables that indicate the years from past elections capture the differential behavior of the politician in the second term with respect to the first term, for a given year from the past elections.

The error term ϵ captures all factors that influence the outcome but that are not captured by the model specification and consists of the following: (i) municipality-specific time-invariant effects, (ii) municipality-specific time-varying effects, and (iii) time-varying macro effects that influence all municipalities.

To reduce omitted variables problems and deal with (i), we follow two alternative approaches. The first approach consists of augmenting the model specification (35) with a set of municipality-level control variables (M) that aim to control for the constituency's structural characteristics. In particular, we control for the municipality being a touristic location (proxied by the number of per-capita bed places in tourist accommodations), the location being in a mountainous area, the extension of the existing road network in the municipality, the share of young and old population, a measure of education of the population, a measure of social capital (i.e., the number of per capita non-profit associations)[16], and province-fixed effects to control for factors that influence municipalities operating in contexts with similar socio-institutional qualities (such as crime, and effectiveness of the judicial system) and levels of economic and financial development.

The second alternative approach to reducing municipality-level time-invariant omitted variables involves the inclusion of municipality-fixed effects in the model specification (35). This approach fully captures the cross-sectional variability and

[16]Data for all these variables come from the Italian National Institute of Statistics - ISTAT

allows us to exploit the within-municipality variability.

To deal with (ii) we augment the model with a set of MT_{mt} control variables, such as average taxable income, the amount of transfers from the central government, the population density, and the categories of population size.[17] In some specifications, we also control for the *Stock of arrears* in the municipality at the beginning of the year.

To deal with (iii) we include year-fixed effects. In some specifications, we also include region-year effects so to capture within region-year variations.

All in all, the fact that for historical and institutional reasons (see Coviello and Gagliarducci (2012) and Repetto (2017)), the Italian municipalities hold elections in different years allows us to include both municipality-fixed effects (and thus to exploit within municipality variations in terms of political cycle), but also year-fixed effects (and thus to compare municipalities at different points in the political cycle for a given year).

4.4 Main estimation results

To estimate the augmented equation (35), we employ different estimators that will allow us to capture different dimensions of the variability of our data and to deal with different concerns about omitted variables. In Table 2, we report our main estimation results for the relationship between payments on arrears and political cycle. In columns 1 and 2, we employ a pooled-ordinary least square estimator (pooled-OLS) that includes the controls at the municipality level (M), the municipality-year level (MT), and province-fixed and year-fixed effects. The estimation results in column 3 and 4 are from the within-group estimator (i.e., municipality-fixed effects), which allows us to exploit the time dimension of our data.

[17] We include dummy variables for populations below 1,000 inhabitants, between 1,000 and 5,000, between 5,000 and 15,000, between 15,000 and 200,000, and above 200,000.

Estimation results show that the coefficients of the dummy variables for the years from past elections on the payments on arrears are positive, stastically significant and similar across estimation approaches. Keeping the year after the election as the base year, the level of payments on arrears gets significantly higher as new elections approach. Furthermore, estimations show that in the year of elections the payments on arrears is even higher than the year before the elections with respect to the base year. This result holds both when we estimate with an OLS and with a within-group estimator, and both when we do not and do allow the coefficients for the *Cycle* dummy variables to vary between first and second *Term*. In particular, during the second term the level of payments on arrears is on average higher than in the first term and, in particular, this applies to the year of elections when the mayor starts her/his second consecutive term.

These results confirm the predictions on the payments on arrears from our theoretical model. To put forward solid interpretation on the reasons/mechanisms through which the incumbent political actor increases the payments for arrears as elections approach, we need also to have a broader picture of the relationship between the political cycle and other budget outcome variables. To this end, in Table 3, we show the effect of the cycle on the some other sources of expenditures and revenues. In particular, we study the investment expenditure commitments (columns 1-2), current expenditures (columns 3-4), tax-revenues (columns 5-6), non-tax revenues (columns 7-8), and loans (columns 9-10).

Estimation results show that the levels of investment expenditure commitments vary with the political cycle both in general and when comparing the first and second term. Investment expenditures increase as elections are approaching and reaching in the year before elections the highest positive difference with respect to the base year. The relationship between current expenditure and the political cycle follows a similar path, but it is worth to note that differences at different years of the cycle

Table 2: Main results: Political cycle and payments on arrears

Column	(1)	(2)	(3)	(4)
Estimator	OLS	OLS	Within	Within
Dependent var.	Payments on arrears			
Election year	41.504***	39.476***	40.210***	39.010***
	(2.753)	(3.166)	(2.599)	(2.949)
2-y post election	-0.779	5.834*	-0.488	5.703**
	(2.477)	(3.092)	(2.355)	(2.823)
3-y post election	15.350***	24.082***	15.582***	24.352***
	(2.671)	(3.452)	(2.429)	(3.157)
4-y post election	34.076***	40.807***	34.206***	40.997***
	(3.122)	(3.885)	(2.817)	(3.593)
Second term	15.039***	24.435***	13.296***	23.030***
	(2.511)	(3.859)	(2.339)	(3.849)
Election year x Second term		7.956		5.435
		(5.079)		(4.752)
2-y post election x Second term		-17.539***		-16.434***
		(4.804)		(4.513)
3-y post election x Second term		-22.267***		-22.377***
		(5.352)		(5.183)
4-y post election x Second term		-17.825***		-18.046***
		(6.051)		(5.802)
State transfers	0.766***	0.766***	0.136***	0.137***
	(0.052)	(0.052)	(0.049)	(0.049)
Av. taxable income	0.011***	0.011***	0.012***	0.012***
	(0.002)	(0.002)	(0.003)	(0.003)
Municipality-level controls	YES	YES	YES	YES
Year-fixed effects	YES	YES	YES	YES
Province-fixed effects	YES	YES	NO	NO
Municipality-fixed effects	NO	NO	YES	YES
Observations	63,989	63,989	67,056	67,056
R-squared	0.323	0.323	0.025	0.026

Notes: Robust standard errors clustered at the municipality level are in parentheses. Inference: *** p<0.01, ** p<0.05, * p<0.1. Municipality-level controls include: in columns 1-4, population size categories, and density of population; in columns 1-2: share of young population, share of old population, number of non profit organizations per capita as a proxy of social capital, index of tertiary educated people, number of bed places in tourist accommodations, area of the municipality, km of roads within the municipality, and dummy variables for the municipality being located in a mountainous area.

are much more pronounced for investment expenditures, which are generally more flexible than current expenditure. Furthermore, the largest negative differences with respect to the year after the elections for both variables is in the year of elections. However, this negative difference is lower in the year of elections if the mayor starts her/his consecutive mandate.

Similarly, for the revenue side variables, we observe a cycle. In particular, municipalities tend to increase the revenues when elections are still far – thus contributing to the accumulation of commitments for investment expenditure (i.e., payment capacity), then they decrease taxation in the year before elections and in the election

year, and increase loans in the year before elections (probably to compensate higher expenditures).

Table 3: Main results: Political cycle and other expenditures and revenues

Column	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dependent var.	Inv. exp.comm.		Curr. exp.		Tax-rev.		Non-tax rev.		Loans	
Election year	-52.748***	-53.186***	0.391	-3.097***	-1.173	-3.258***	-0.229	-1.948**	-17.575***	-17.356***
	(7.320)	(6.998)	(1.351)	(0.935)	(0.855)	(0.515)	(1.046)	(0.762)	(2.098)	(2.032)
2-y post election	18.785**	15.674**	4.639***	2.936***	2.198**	1.552***	1.642	0.951	6.454***	6.510***
	(7.780)	(7.326)	(1.350)	(0.876)	(0.899)	(0.534)	(1.048)	(0.714)	(2.210)	(2.147)
3-y post election	35.537***	35.430***	3.948***	2.021**	1.714*	0.853	1.884*	1.023	13.027***	12.918***
	(7.078)	(6.870)	(1.437)	(0.980)	(0.921)	(0.570)	(1.058)	(0.806)	(2.129)	(2.082)
4-y post election	50.990***	56.273***	3.597**	3.058***	-1.429	-1.745***	2.111*	1.452	14.404***	16.354***
	(7.363)	(7.202)	(1.626)	(1.074)	(1.033)	(0.623)	(1.231)	(0.939)	(2.314)	(2.293)
Second term	10.263	6.067	-0.736	-1.214	-1.102	-1.898***	-0.722	-0.340	-0.065	-0.842
	(7.284)	(7.124)	(2.070)	(1.386)	(1.252)	(0.712)	(1.572)	(1.164)	(2.117)	(2.168)
Election year X Second term	36.817***	29.139***	-0.083	2.019	-0.356	-0.717	-1.066	0.980	9.510***	9.381***
	(10.457)	(10.108)	(2.164)	(1.490)	(1.288)	(0.799)	(1.669)	(1.234)	(3.004)	(2.930)
2-y post election X Second term	-3.438	-2.508	-3.379	-2.152	-0.194	0.312	-0.189	-0.420	-2.858	-3.638
	(11.086)	(10.826)	(2.090)	(1.375)	(1.325)	(0.796)	(1.580)	(1.119)	(3.094)	(3.067)
3-y post election X Second term	-9.881	-11.348	-1.526	-1.089	1.403	1.771*	0.166	-0.121	-2.078	-2.890
	(10.913)	(10.667)	(2.389)	(1.628)	(1.474)	(0.906)	(1.785)	(1.316)	(3.188)	(3.159)
4-y post election X Second term	-7.554	-12.864	-0.312	0.458	2.799*	3.474***	0.774	0.759	-2.575	-3.984
	(11.815)	(11.300)	(2.754)	(1.893)	(1.667)	(1.037)	(2.048)	(1.519)	(3.459)	(3.490)
State transfers	1.048***	0.265***	0.637***	0.329***	-0.322***	-0.130***	0.108***	-0.043***	0.031**	-0.010
	(0.078)	(0.090)	(0.040)	(0.025)	(0.026)	(0.011)	(0.027)	(0.015)	(0.015)	(0.025)
Av. taxable income	0.012***	0.003	0.013***	0.008***	0.010***	0.003***	0.004***	0.005***	0.000	-0.000
	(0.003)	(0.005)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Municipality-level controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year-fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Province-fixed effects	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
Municipality-fixed effects	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES
Observations	63,989	67,056	63,989	67,056	63,989	67,056	63,989	67,056	63,989	67,056
R-squared	0.229	0.023	0.534	0.058	0.485	0.078	0.253	0.014	0.090	0.026

Notes: Robust standard errors clustered at the municipality level are in parentheses. Inference: *** p<0.01, ** p<0.05, * p<0.1. Municipality-level controls include: in columns 1-10, population size categories, and density of population; in columns 1,3,5,7,9: share of young population, share of old population, number of non profit organizations per capita as a proxy of social capital, index of tertiary educated people, number of bed places in tourist accommodations, area of the municipality, km of roads within the municipality, and dummy variables for the municipality being located in a mountainous area.

Overall, these results confirm our theoretical predictions. They indicate that when the elections are still far, municipalities tend to increase their future expenditure capacity, increasing the revenues and keeping low the payments on committed expenditures. The year before elections, municipalities tend to reach their highest level of expenditures (particularly, investment expenditure) and lower taxation, while they increase loans. While, the year of elections, the investment expenditures, taxation, and loans are all lowered.

In this framework, the payments on arrears play an additional role as they are a particular budgetary tool that allows the incumbent politicians to adapt the timing of expenditure implementation, thus increasing the overall level of actual expenditures (i.e., payments) also during the year of elections without the need of additional increase in revenues (e.g., taxation or loans) which – as seen in the theoretical setting – involve additional political costs. In fact, the budget coverage for the investment expenditures that have not been paid (i.e., the arrears) is made in the year the investment commitments are taken. Incumbents can thus keep high the payments on arrears also in the year of elections, so to compensate private firms that have executed public works for the municipalities (i.e., reduce their level of trade debt).

Finally, these mechanisms are present also in the second term, although some particular differences exist [and are planned to be studied much more in detail in future versions of the paper].

4.5 Robustness checks

In this section, we present several robustness to assess the validity of our main results and interpretation. In particular, we introduce additional time-varying covariates to our empirical model specification to reduce omitted variable problems.

First, we introduce the stock of arrears measured at the end of the previous year so to interpret the effect of the political cycle on the payments on arrears for

a given level of stock. Estimation results in Table 4 show that our main results are confirmed. This latter control is particularly helpful to reduce the influence of the effects that higher investment commitments decided in the previous years can have on the payments for arrears. In particular, we want to exclude that higher investment commitments taken when elections approach lead in the following year to higher payments on arrears for investment expenditure. If this were the case, our interpretation that incumbent politicians use payments on arrears strategically would not be correct, but it would be simply driven by higher investment commitments. Estimation results for our outcome variables (in columns 1,3,5,7,9) confirm our main results. Actually, the inclusion of this variable tend to increase both the empirical model predictive power and the fit between our predictions, descriptive results, and estimated coefficients (particularly, when we look at the differences between first and second term).

Secondly, we introduce region-year fixed effects so to capture those characteristics that are common to municipalities within the fifteen regions we study in each given year. Estimation results in columns (2,4,6,8,10) show that our main results are confirmed.

Table 4: Robustness checks: Controlling for additional time-varying factors

Column	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Estimator							Within					
Dependent var.	Paym. arrears		Inv. exp.comm.		Curr. exp.		Tax-rev.		Non-tax rev.		Loans	
Election year	25.318***	26.780***	-49.056***	-49.098***	-3.721***	-2.681***	-3.385***	-2.579***	-2.346***	-1.806**	-16.743***	-15.266***
	(2.702)	(2.781)	(6.940)	(7.032)	(0.938)	(0.950)	(0.518)	(0.521)	(0.760)	(0.779)	(2.031)	(2.053)
2-y post election	2.221	3.486	16.724**	16.326**	2.777***	1.903**	1.520***	0.998*	0.849	0.644	6.666***	6.947***
	(2.556)	(2.574)	(7.186)	(7.226)	(0.877)	(0.891)	(0.535)	(0.535)	(0.714)	(0.734)	(2.141)	(2.186)
3-y post election	15.292***	16.328***	38.163***	38.691***	1.608	1.996**	0.770	0.650	0.760	0.686	13.323***	12.358***
	(2.786)	(2.853)	(6.794)	(6.876)	(0.981)	(1.009)	(0.571)	(0.576)	(0.805)	(0.824)	(2.082)	(2.138)
4-y post election	26.312***	32.583***	60.703***	54.650***	2.389**	3.014***	-1.881***	-0.939	1.025	1.417	17.011***	19.691***
	(3.078)	(3.115)	(7.105)	(7.360)	(1.082)	(1.110)	(0.625)	(0.626)	(0.942)	(0.983)	(2.293)	(2.339)
Second term	14.584***	17.328***	8.615	4.946	-1.599	-1.853	-1.976***	-2.136***	-0.586	-0.545	-0.464	-0.600
	(3.163)	(3.141)	(7.201)	(7.082)	(1.380)	(1.364)	(0.711)	(0.699)	(1.162)	(1.158)	(2.172)	(2.158)
Election year X Second term	9.299**	8.342**	27.973***	30.281***	2.195	3.068**	-0.681	0.237	1.092	1.379	9.208***	9.423***
	(4.177)	(4.145)	(10.007)	(9.824)	(1.485)	(1.466)	(0.799)	(0.786)	(1.231)	(1.222)	(2.925)	(2.919)
2-y post election X Second term	-12.052***	-12.114***	-3.829	-12.357	-1.952	-2.367*	0.352	0.378	-0.292	-0.668	-3.834	-4.360
	(4.019)	(4.005)	(10.674)	(10.559)	(1.370)	(1.370)	(0.796)	(0.785)	(1.116)	(1.119)	(3.058)	(3.057)
3-y post election X Second term	-15.229***	-18.643***	-13.505	-14.173	-0.763	-0.634	1.837**	1.715*	0.087	-0.024	-3.210	-3.452
	(4.310)	(4.271)	(10.597)	(10.455)	(1.624)	(1.614)	(0.906)	(0.889)	(1.316)	(1.317)	(3.153)	(3.151)
4-y post election X Second term	-10.699**	-16.543***	-15.081	-15.564	0.793	1.329	3.542***	2.823***	0.973	0.880	-4.313	-4.273
	(4.813)	(4.799)	(11.358)	(11.271)	(1.893)	(1.882)	(1.038)	(1.012)	(1.520)	(1.525)	(3.489)	(3.454)
State transfers	0.076*	0.076*	0.283***	0.275***	0.327***	0.352***	-0.131***	-0.108***	-0.045***	-0.035**	-0.007	0.004
	(0.043)	(0.044)	(0.092)	(0.091)	(0.025)	(0.025)	(0.011)	(0.011)	(0.015)	(0.015)	(0.025)	(0.026)
Av. taxable income	0.003	0.001	0.006	0.008	0.007***	0.004***	0.003***	0.001	0.005***	0.004***	0.000	-0.000
	(0.002)	(0.003)	(0.006)	(0.006)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Stock of arrears	0.172***	0.171***	-0.052***	-0.061***	0.008***	0.006***	0.002***	0.001*	0.005***	0.004***	-0.008***	-0.009***
	(0.005)	(0.005)	(0.007)	(0.007)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)
Municipality-level controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year-fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Municipality-fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Region-year-fixed effects	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES
Observations	67,056	67,056	67,056	67,056	67,056	67,056	67,056	67,056	67,056	67,056	67,056	67,056
R-squared	0.293	0.308	0.029	0.057	0.062	0.098	0.079	0.127	0.017	0.031	0.028	0.043

Notes: Robust standard errors clustered at the municipality level are in parentheses. Inference: *** p<0.01, ** p<0.05, * p<0.1. Municipality-level controls include: in columns 1-12, population size categories, and density of population.

Finally, in Table 5 we use as alternative dependent variable the share payments on the stock of arrears to further control for the role played by past investment decisions and stock of non-paid commitments. Estimation results in columns 1-3 confirm our main results. In columns 4-6 we use the share of payments on investment commitments decided in the year. Consistent to our theoretical predictions, we expect that if incumbent politicians strategically increase payments for committed investments when elections approach, they do not only increase payments for the past commitments with pending payments (i.e., arrears), but they are likely to increase the payments on investment commitments decided in the year. In particular, in the year of elections incumbents would like to pay a larger share of investment commitments decided in that year. Estimation results confirm this hypothesis.

Table 5: Other robustness checks

Column	(1)	(2)	(3)	(4)	(5)	(6))
Estimator	Within					
Dependent var.	Sh. paym./stock arrears			Sh. paym./Invest. comm.		
Election year	0.024***	0.024***	0.022***	0.017***	0.018***	0.018***
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
2-y post election	0.002	0.003	0.005**	-0.002	-0.001	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)
3-y post election	0.009***	0.009***	0.012***	-0.009***	-0.006**	-0.006**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
4-y post election	0.020***	0.024***	0.027***	-0.003	-0.001	-0.001
	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)
Second term	0.008***	0.010***	0.013***	0.006**	0.007***	0.003
	(0.002)	(0.002)	(0.004)	(0.003)	(0.003)	(0.004)
Election year X Second term	0.010***	0.009***	0.012***	-0.001	-0.002	-0.001
	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)
2-y post election X Second term	-0.008**	-0.007**	-0.011***	-0.001	-0.000	-0.001
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)
3-y post election X Second term	-0.010***	-0.011***	-0.015***	-0.000	0.000	0.001
	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)
4-y post election X Second term	-0.009**	-0.011***	-0.014***	-0.004	-0.004	-0.005
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
State transfers	0.000	0.000	0.000	0.000***	0.000*	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Av. taxable income	-0.000**	-0.000	-0.000	-0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Municipality-level controls	YES	YES	YES	YES	YES	YES
Year-fixed effects	YES	YES	YES	YES	YES	YES
Municipality-fixed effects	YES	YES	NO	YES	YES	NO
Region-year-fixed effects	YES	YES	NO	YES	YES	NO
Mayor-fixed effects	NO	YES	NO	NO	YES	NO
Observations	67,056	67,056	67,056	67,056	67,056	67,056
R-squared	0.017	0.036	0.036	0.017	0.036	0.027

Notes: Robust standard errors clustered at the municipality level are in parentheses. Inference: *** p<0.01, ** p<0.05, * p<0.1. Municipality-level controls include: in columns 1-6, population size categories, and density of population.

5 Conclusion

[Complete here]

Appendix: Robustness Checks

Table 6: Dependent variable: Speed of payment

	(1) OLS	(2) OLS	(3) within	(4) within	(5) poisson	(6) poisson
Election year	0.017***	0.018***	0.017***	0.017***	0.092***	0.098***
	(0.002)	(0.003)	(0.002)	(0.003)	(0.015)	(0.017)
2-y post election	-0.003	-0.002	-0.003	-0.002	-0.018	-0.015
	(0.002)	(0.003)	(0.002)	(0.002)	(0.016)	(0.018)
3-y post election	-0.009***	-0.008***	-0.009***	-0.009***	-0.057***	-0.054***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.014)	(0.017)
4-y post election	-0.003	-0.001	-0.004*	-0.003	-0.019	-0.009
	(0.002)	(0.003)	(0.002)	(0.003)	(0.015)	(0.018)
Second term	0.005***	0.007**	0.004***	0.006**	0.030***	0.042**
	(0.001)	(0.003)	(0.001)	(0.003)	(0.008)	(0.017)
Election year X Second term		-0.001		-0.001		-0.018
		(0.004)		(0.004)		(0.024)
2-y post election x Second term		-0.002		-0.001		-0.010
		(0.004)		(0.003)		(0.025)
3-y post election x Second term		-0.001		-0.000		-0.009
		(0.004)		(0.004)		(0.024)
4-y post election x Second term		-0.004		-0.004		-0.028
		(0.004)		(0.004)		(0.025)
State transfers	0.000	0.000	0.000***	0.000***	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Av. taxable income	-0.000	-0.000	-0.000	-0.000	-0.000**	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Municipality-level controls	YES	YES	YES	YES	YES	YES
Year-fixed effects	YES	YES	YES	YES	YES	YES
Province-fixed effects	YES	YES	NO	NO	YES	YES
Municipality-fixed effects	NO	NO	YES	YES	NO	NO
Mean outcome	0.168	0.168	0.168	0.168	0.168	0.168
SD outcome	0.167	0.167	0.167	0.167	0.167	0.167

Notes: Robust standard errors are in parentheses (clustered at the municipality level in columns 1-4). Inference: *** p<0.01, ** p<0.05, * p<0.1. Municipality-level controls include: in columns 1-6, population size categories, and density of population; in columns 1,3,5: share of young population, share of old population, number of non profit organizations per capita as a proxy of social capital, index of tertiary educated people, number of bed places in tourist accommodations, area of the municipality, km of roads within the municipality, and dummy variables for the municipality being located in a mountainous area.

Table 7: Dependent variable: Disposal rate of arrears

	(1) OLS	(2) OLS	(3) within	(4) within	(5) poisson	(6) poisson
Election year	0.028***	0.025***	0.027***	0.024***	0.078***	0.071***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.007)	(0.008)
2-y post election	-0.003	0.001	-0.001	0.002	-0.010	0.000
	(0.002)	(0.002)	(0.002)	(0.002)	(0.007)	(0.009)
3-y post election	0.005**	0.009***	0.005***	0.009***	0.012*	0.027***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.007)	(0.008)
4-y post election	0.017***	0.020***	0.017***	0.020***	0.047***	0.060***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.007)	(0.008)
Second term	0.007***	0.011***	0.005***	0.008***	0.021***	0.035***
	(0.002)	(0.003)	(0.001)	(0.002)	(0.004)	(0.008)
Election year X Second term		0.011***		0.010***		0.025**
		(0.003)		(0.003)		(0.011)
2-y post election x Second term		-0.009***		-0.008**		-0.027**
		(0.003)		(0.003)		(0.012)
3-y post election x Second term		-0.012***		-0.010***		-0.037***
		(0.003)		(0.003)		(0.012)
4-y post election x Second term		-0.010***		-0.009**		-0.033***
		(0.004)		(0.004)		(0.012)
State transfers	-0.000	-0.000	0.000	0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Av. taxable income	-0.000**	-0.000**	-0.000**	-0.000**	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Municipality-level controls	YES	YES	YES	YES	YES	YES
Year-fixed effects	YES	YES	YES	YES	YES	YES
Province-fixed effects	YES	YES	NO	NO	YES	YES
Municipality-fixed effects	NO	NO	YES	YES	NO	NO
Mean outcome	0.344	0.344	0.344	0.344	0.344	0.344
SD outcome	0.177	0.177	0.177	0.177	0.177	0.177

Notes: Robust standard errors are in parentheses (clustered at the municipality level in columns 1-4). Inference: *** p<0.01, ** p<0.05, * p<0.1. Municipality-level controls include: in columns 1-6, population size categories, and density of population; in columns 1,3,5: share of young population, share of old population, number of non profit organizations per capita as a proxy of social capital, index of tertiary educated people, number of bed places in tourist accommodations, area of the municipality, km of roads within the municipality, and dummy variables for the municipality being located in a mountainous area.

Table 8: Quantile regressions. Dependent variable: Disposal rate of arrears

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-th quantile:	10	10	30	30	50	50	70	70	90	90
Election year	0.018***	0.015***	0.025***	0.024***	0.029***	0.028***	0.031***	0.026***	0.031***	0.023***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.005)	(0.005)
2-y post election	-0.002	0.003	-0.000	0.004	-0.000	0.005	-0.002	-0.001	-0.006	-0.008
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.005)	(0.006)
3-y post election	0.005**	0.010***	0.006**	0.013***	0.006**	0.012***	0.005	0.009**	0.005	0.003
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)	(0.004)	(0.004)	(0.005)
4-y post election	0.015***	0.018***	0.018***	0.023***	0.020***	0.025***	0.017***	0.021***	0.016***	0.013**
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.005)	(0.006)
Second term	0.007***	0.011***	0.007***	0.015***	0.008***	0.017***	0.009***	0.011***	0.008***	0.001
	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.004)	(0.003)	(0.005)
Election year X Second term		0.012**		0.006		0.007		0.014**		0.021***
		(0.005)		(0.005)		(0.005)		(0.006)		(0.008)
2-y post election x Second term		-0.011**		-0.013***		-0.014***		-0.005		0.005
		(0.005)		(0.005)		(0.005)		(0.006)		(0.008)
3-y post election x Second term		-0.012***		-0.017***		-0.018***		-0.012**		0.004
		(0.005)		(0.005)		(0.005)		(0.006)		(0.008)
4-y post election x Second term		-0.008*		-0.017***		-0.016***		-0.010		0.006
		(0.005)		(0.005)		(0.005)		(0.006)		(0.008)
State transfers	-0.000***	-0.000***	-0.000***	-0.000***	-0.000**	-0.000**	-0.000	-0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Av. taxable income	0.000	0.000	-0.000	-0.000	-0.000**	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Municipality-level controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year-fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Province-fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Outcome at quantile	0.129	0.129	0.231	0.231	0.321	0.321	0.424	0.424	0.590	0.590

Notes: Standard errors are in parentheses. Inference: *** p<0.01, ** p<0.05, * p<0.1. Municipality-level controls include: in columns 1-10, population size categories, and density of population; share of young population, share of old population, number of non profit organizations per capita as a proxy of social capital, index of tertiary educated people, number of bed places in tourist accommodations, area of the municipality, km of roads within the municipality, and dummy variables for the municipality being located in a mountainous area.

Table 9: Quantile regressions. Dependent variable: Speed of payments

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-th quantile:	10	10	30	30	50	50	70	70	90	90
Election year	0.001	-0.000	0.005***	0.004**	0.013***	0.013***	0.026***	0.027***	0.046***	0.046***
	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.003)	(0.004)	(0.004)	(0.008)	(0.009)
2-y post election	-0.000	-0.001	0.000	0.001	-0.003	-0.001	-0.003	-0.001	-0.008	-0.007
	(0.001)	(0.001)	(0.002)	(0.002)	(0.003)	(0.003)	(0.004)	(0.005)	(0.008)	(0.009)
3-y post election	-0.000	0.000	-0.002	-0.002	-0.005**	-0.006**	-0.009***	-0.008*	-0.019**	-0.017*
	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.003)	(0.004)	(0.004)	(0.007)	(0.009)
4-y post election	0.001	0.002	0.002	0.003	0.001	0.002	-0.001	0.002	-0.007	-0.007
	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.003)	(0.004)	(0.005)	(0.008)	(0.009)
Second term	0.001	0.001	0.003***	0.002	0.005***	0.007**	0.006***	0.010**	0.007*	0.007
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.003)	(0.002)	(0.004)	(0.004)	(0.009)
Election year X Second term		0.003*		0.004		0.002		-0.006		-0.000
		(0.002)		(0.003)		(0.004)		(0.006)		(0.013)
2-y post election x Second term		0.000		-0.002		-0.005		-0.004		0.003
		(0.002)		(0.003)		(0.004)		(0.006)		(0.013)
3-y post election x Second term		-0.002		0.001		0.001		-0.002		-0.003
		(0.002)		(0.003)		(0.004)		(0.006)		(0.013)
4-y post election x Second term		-0.001		-0.002		-0.005		-0.009		0.001
		(0.002)		(0.003)		(0.004)		(0.007)		(0.014)
State transfers	-0.000***	-0.000***	-0.000***	-0.000***	-0.000	-0.000	0.000	0.000	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Av. taxable income	0.000***	0.000***	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Municipality-level controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year-fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Province-fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Outcome at quantile	0.016	0.016	0.060	0.060	0.116	0.116	0.200	0.200	0.394	0.394

Notes: Standard errors are in parentheses. Inference: *** p<0.01, ** p<0.05, * p<0.1. Municipality-level controls include: in columns 1-10, population size categories, and density of population; share of young population, share of old population, number of non profit organizations per capita as a proxy of social capital, index of tertiary educated people, number of bed places in tourist accommodations, area of the municipality, km of roads within the municipality, and dummy variables for the municipality being located in a mountainous area.

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