



To be or not to be in office again: an empirical test of a local political business cycle rationale

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Abstract

Empirical support is provided for our explanation for political business cycles (PBC) at the local government level. The rationale uses an ultrarational set-up to explore the incumbent leader's concern with his or her utility in cases of victory and defeat. The model is tested on Portuguese municipal data. The evidence reveals the role played by politico-economic determinants of local governments' investment outlays, such as electoral calendar, re-candidacy decisions, political cohesion and intergovernmental capital transfers.

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1. Introduction

In very broad terms, political business cycle (PBC) analysis concerns short-run government behaviour within election dates. It is believed that authorities choose economic policy in typical intertemporal patterns each office term.¹ Theoretical approaches have searched for justifications of such patterns while empirical inquiries have tested the reliability of the models.

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¹ A different, historically oriented strand of literature has focused on the long-run interaction cycles between economic performance and political systems, seeking ties with the well-known economic history concepts of *Kuznets and Kondratieff fluctuations*. See, for example, Soldatos (1994).

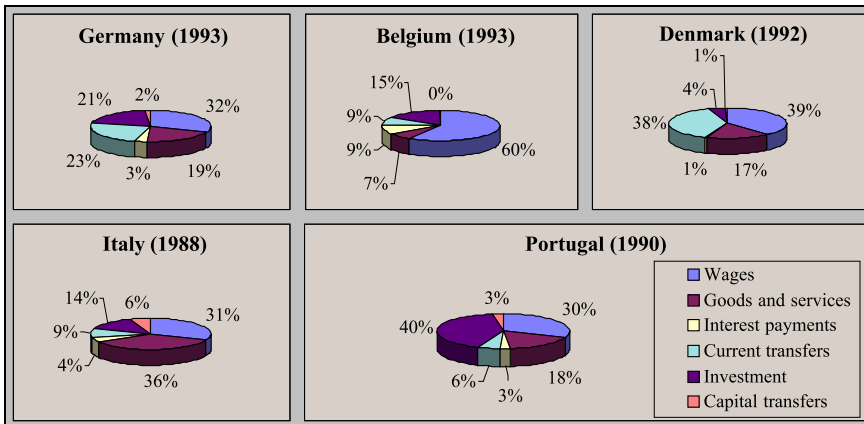


Chart 1. Economic breakdown of local public expenditure, selected EU countries. Source: IMF (1995).

1.1. PBCs with local governments

The focus has generally been on central government behaviour and macroeconomic data—see, for example, Gärtner (1994), Frey (1997) and Drazen (2000). This is not surprising since possibilities for influencing the economy increase with the level of aggregation. In general, central and even regional governments have discretionary power over many more policy instruments than do local governments. Monetary policy is not locally determined and, with respect to fiscal policy, spatial mobility considerably constrains local autonomy over stabilisation, redistribution and own revenue collection.²

Yet, we can think about the prospects of PBC at the local government level, in particular given the trend toward fiscal decentralisation over the last two decades (Yilmaz, 2001; IADB, 1997; Ter-Minassian, 1997). Local authorities have a role in the allocation function of fiscal policy. The provision of local public goods is their core economic activity. However, cross-country differences abound when it comes to the economic breakdown of expenditure. Chart 1 below shows a selection of EU Member States as an illustration of different specialisations. Whilst somewhat balanced distributions exist, such as in Germany, there are also many cases of local expenditure concentration. In Belgium, for instance, allocation seems to rely mainly on civil servant expenditure—which accounts for 60% of total local expenditure. In Denmark, current transfers show a remarkable share of 38%, reflecting the typical involvement that Scandinavian local authorities have in welfare programmes. In Italy, the largest share (36%) is public procurement for non-durable goods. Investment expenditure plays a chief role in Portugal (40%).

PBCs on the expenditure side of the budget require the strategic variable to have some particular features. It should be an expenditure item having local accountability and political visibility. In other words, such an item ought to be an expenditure category subject to discretionary change by the local authority and the manipulation of which from

² Other factors constrain autonomous local fiscal decision-making, notably scale economies in administration and tax compliance costs.

one period to another is not constrained by serious rigidities; additionally, people's awareness about these outlays is crucial if one expects incumbent politicians to use them to enhance their personal goals. Investment seems to satisfy these requirements well in the Portuguese local case. Most local investment is made on highly visible infrastructures (1990 shares for illustrative purpose only): roads (30%), sewerage and piped water (13%), social housing (11%), schools and sports (11%). The executive branch is fully autonomous to set the contents and the timing of the municipal investment plan—see the details in Section 2—and this *inter-year* flexibility is almost impossible with major current expenditure categories. Rather, the latter are rigid and exogenous with respect to local decision-making: there are no welfare outlays, public jobs are highly protected by national law, and wages are set by the central government.

En passant, we should note that *ideologically* motivated PBCs are far less likely at the local level than at the central or even the regional government level. When discretion exists only over one or two expenditure categories, there is no scope for the typical right–left wing preference biases between current and capital expenditure or between social expenditure and taxes.

1.2. Vote-maximising models and our contribution

In this paper, we test empirically a recent explanation for an *opportunistic* PBC at the local government level. In the political economy at large, it is commonly argued that incumbents seek re-election and challengers strive to reach office. For instance, Kraan (1996, p. 62) has written: “According to the dominant view in the public choice literature, the objective function of politicians is the maximisation of electoral votes (. . .)”. A similar remark is made by McNutt (1996, p. 9). This belief is also present in the PBC literature in particular. Frey (1997, p. v), for example, suggestively refers to “vote maximising models”. On PBC models where incumbents aim at maximising their re-election chances, see Nordhaus (1989), Shachar (1993), Gärtner (1994), and Persson and Tabellini (2000, Chapter 16, 1990, Chapter 5).

We departed from this view in our own research³ to consider explicitly the two states of nature associated with electoral uncertainty: to win and to lose. The motivation is that political activity is fraught with risk. Electorally appointed jobs are scarce compared to the number of potential candidates. Under democratic rules, administration positions are subject to turnover rates higher than elsewhere in the economy. Incumbents who fail to be re-elected in general have no certain employment prospects in other public sector offices. These people must find an alternative job in case they are not re-elected. It therefore seems quite reasonable to expect rational incumbents to bear in mind outside income (that is, income earned outside the public sector) when making their fiscal policy decisions.⁴ This

³ Baleiras (1997a), Baleiras and Costa (2002), and Baleiras and Santos (2000, 2003).

⁴ Pure vote-maximising models have also been questioned from the point of view of office holders' career concerns. In Le Borgne and Lockwood (2000), for example, voters follow a cut-off rule according to which they re-elect an incumbent who performs above a threshold level that does not maximise their assessment. Contrary to our approach, the focus of the latter paper is not on the trade off between (local) public office and private appointment, but on the interaction between effort and ability to meet the voters' cut-off level.

behaviour is particularly plausible at the local rather than the central government tier since the uncertainty regarding future political appointments is greater for local than for higher-rank politicians.⁵ Moreover, there is a technical reason to proceed otherwise because the maximisation of re-election chances alone does exclude one feasible state of nature (namely, the outcome of electoral defeat) from an incumbent's expected utility.

Our previous theoretical models have therefore explored the implications of a simultaneous consideration of the two feasible electoral outcomes: *to be or not to be in office in the following term*. Here, we apply the framework to a panel data sample of Portuguese local governments. This application serves a twofold purpose. Firstly, it provides a test on the empirical plausibility of theoretical predictions. The methodology is quite general and can easily be customised to other national contexts. Secondly, it is an opportunity to improve understanding of the Portuguese local finance system.

The paper is organised as follows. Section 2 presents the Portuguese institutional setting to motivate both the PBC rationale and the empirical application. Section 3 summarises the theoretical foundations that are tested. Major features of the empirical application, such as sample nature, variable definitions, and econometric framework, are explained in Section 4. The main empirical results follow in Section 5. Section 6 concludes.

2. Investment decision-making in Portugal

Before moving into economic analysis, we describe briefly the institutional background to the model. The local government unit we address here is the municipality. In mainland Portugal, the public sector comprises the central government and 278 (275 until 1997) municipalities—there are no intermediate-level governments. Each year, the municipality's executive branch proposes to the legislative branch the local budget and the activities plan. The legislative branch votes on both documents but cannot impose amendments to them. Investment expenditures can only be authorised whenever they are budgeted and framed in the activities plan.

A wide public investment spectrum is legally foreseen for local governments' intervention. Municipalities hold exclusive responsibility for promoting investment in the following areas: urban and rural facilities, sewerage and environment, energy, transports and communications, education, culture–leisure–sports, and housing. Through case-

⁵ The difficulty local incumbents face in finding a future political appointment in case they are not re-elected has been documented for the case of Portugal. [Mozzicafreddo et al. \(1991, p. 45\)](#) found that “(. . .) very curiously, the political career of mayors (*Presidentes de Câmara*) initiates and ends at the local level, rarely holding positions in the cabinet, the central administration or in the national bodies of political parties. The only link, with some significance, between central and local tiers is the seating at the national parliament before municipal activity—this has been the case of 27.3% of surveyed mayors.” These conclusions follow from a survey analysis involving 55 mayors in 1986 and a case-study approach focusing on five municipalities from 1976 to 1987. Moreover, central-government politicians enjoy a lifetime compensation upon exit of (at least an 8-year long) political activity in addition to the retirement allowance to which they may be entitled to (the minimum eligible period has changed to 12 years from 1996 onwards); local-government politicians are not entitled to such compensation.

by-case partnership contracts with the central government, the municipality may also invest in other areas along regulated sharing procedures.

The chairperson of the executive branch (*presidente*) plays a prominent role in local politics. Moreover, he or she is legally assigned protagonist functions as far as investment actions are concerned. Among exclusive capacities, the chairperson is entitled to the right to personally authorise the payment of budgeted outlays and the execution of public works framed in the activities plan. In other words, he or she alone holds the power to decide on the timing of local investment actions and on the choice of capital goods suppliers.

3. Theoretical foundations

The theoretical background of this paper starts with Baleiras (1997a), where a simple opportunistic PBC model is presented. The local government has a multiperiod investment programme whose present value is exogenously defined. However, it can set expenditure timing.

The model assumes ultrarational agents⁶ with standard microeconomic principles. Hence, politicians have no room for hollow words or policy errors. Yet, policy cycles are possible because of the incumbent's concern with the uncertainty of electoral scores. The framework consists of a budgetary cycle of two periods, denoted i , $i = 1, 2$. Let g_i , with $0 \leq g_i \leq 1$, be the fraction of the investment programme accomplished in period i , such that $g_1 + g_2 = 1$ because the budget available for the two periods is predetermined. In period 1, the incumbent decides expenditure g_1 , thereby setting the fraction g_2 of the following period. There is an election after period 1 and the probability of re-election is π , with $0 \leq \pi < 1$. In case of electoral defeat, the incumbent has the possibility to be employed in business and earn an income y . He or she derives ego-returns from managing the programme during each period in office, $v(g_i)$, with $v' > 0$ for $i = 1, 2$. The satisfaction from the outside payoff is $x(y)$, with $x' > 0$, which is obtained if the incumbent loses the election. The incumbent's intertemporal utility can be written as

$$u = v(g_1) + \pi v(g_2) + (1 - \pi)x(y).$$

So, whilst the satisfaction in period 1 is certain, the utility in period 2 is uncertain; it will be $v(g_2)$ if the incumbent wins the election (with probability π) or it will be $x(y)$ otherwise—with probability $1 - \pi$. In the original framework, π and y are endogenous⁷

⁶ By ultrarational (as opposed to rational or self-interested agents), we mean self-interested players satisfying the following additional properties: (i) voters evaluate the government on the basis of its expected future performance, have rational expectations, and possess all relevant information; (ii) the policy-maker knows exactly how the voters behave; (iii) there are no information asymmetries between players. The adjective was coined by Nordhaus (1989).

⁷ The re-election probability and the outside income depend on the voters' and on the business community's assessment of the incumbent's policy, respectively, but these modelling features do not need to be called upon formally here. For details, see Baleiras (1997a) and Baleiras and Santos (2000, 2003).

and the incumbent solves welfare recursively. This objective function differs from standard models where the incumbent maximises the re-election probability.

Two major predictions emerge from this framework, and both can be empirically tested.

Proposition 1 (The political expenditure cycle). *The optimal expenditure in the pre-electoral period exceeds the optimal expenditure in the post-electoral, $g_1^* > g_2^*$ —for the proof, see Baleiras (1997a).*

The intuition for this result is simple. By taking into consideration the chance of losing the upcoming contest, the incumbent is led to discount the future utility from being in office according to re-election prospects, whereas the pre-electoral utility is not discounted. Hence, pre-electoral outlays bear full marginal utility while post-electoral expenses convey only a probabilistically discounted marginal utility. As a consequence, the incumbent is led to set the pre-electoral investment expenditure above the post-electoral investment expenditure and hence the cycle.⁸

The re-election probability, π , has two components—Baleiras and Costa (2002): $\pi = \bar{\pi} + \gamma(s)$. The latter component, $\gamma(s)$ with $\gamma' > 0$, is endogenously valued and reflects the electorate's assessment (s) of the incumbent's performance—see footnote 7.⁹ While it is insightful to allow for the voters' voice, it would perhaps be too stringent to preclude the possibility of other factors influencing π . A number of feasible events unexplained in the model can have that effect, such as the business cycle position, the popularity of the party that backs up the local incumbent, or the incumbent's own decision to stand for re-election. The variable $\bar{\pi}$ represents these exogenous elements. Proposition 2 shows the effect of a probability shock on the cycle width.

Proposition 2 (Re-election probability and the political expenditure cycle). *The political expenditure cycle does not widen with increasing exogenous re-election probability, $dg/d\pi \leq 0$ —for the proof, see Baleiras and Costa (2002, pp. 213–216).*

The increase in $\bar{\pi}$ renders the post-electoral expenditure relatively more valuable to the policy-maker, thus reducing his or her bias towards pre-electoral expenditure. This is why the expenditure cycle cannot enlarge. As pointed out below, Proposition 2 helps to distinguish this rationale from conventional opportunistic PBC models on an empirical basis.

Both propositions have testable empirical implications. Proposition 1 implies that pre-election investment expenditure exceeds post-election investment expenditure. Proposition 2 ascribes a cycle to a departing incumbent that is at least as large as that induced by a re-election runner. This second implication perhaps needs clarification. Consider two alternative incumbents, one seeking re-election and the other not. Clearly, the re-election probability is positive in the former case¹⁰ and nil in the latter. With the specific probability function $\pi = \bar{\pi} + \gamma(s)$, it seems natural to distinguish the two cases according to the value of the exogenous component π : a departing incumbent is captured by a lower

⁸ The two-period structure of the model is not restrictive as far as the incentives to create the expenditure cycle are concerned—see Baleiras and Santos (2000, p. 125).

⁹ The assessment s is therefore a function of the policy variables g_1 and g_2 .

¹⁰ We naturally discard the possibility of an absolute incompetent politician for whom the chances of being re-elected simply do not exist.

$\bar{\pi}$.¹¹ Note also that the implication from Proposition 2 discriminates on empirical grounds our rationale from vote-maximising PBC models because, by definition, there is no role for departing incumbents in such models.

4. Application to Portuguese municipalities

We now move into the major concern of this paper, which is to investigate whether the outlined rationale helps to understand the actual behaviour of local governments in Portugal. Through this application, we also hope to shed light on other potentially interesting facts concerning the political economy of Portuguese local public finance. We firstly describe the data set and, secondly, explain the econometric framework designed to serve that double purpose.

4.1. The sample

We have constructed an annual panel data sample of 30 Portuguese (mainland) municipalities comprising five full electoral terms, from 1977 to 1993.¹² In our application, the dependent variable (denoted by y) is total real *per capita* investment expenditure: if any political influence of the kind discussed in Section 3 exists, investment is the expenditure item over which that influence is likely to extend with greater significance.

The empirical test of Propositions 1 and 2 requires the use of qualitative explanatory variables. Given the two-period nature of the incumbent's model, it seems natural to define the two following dummy regressors:

$$x_2 = \begin{cases} 1 & \text{if local elections are held at the end of the current period} \\ 0 & \text{otherwise,} \end{cases}$$

$$x_3 = \begin{cases} 1 & \text{if the current incumbent seeks re-election and the current period} \\ & \text{is pre-electoral}^{13} \\ 0 & \text{otherwise.} \end{cases}$$

¹¹ More precisely, the no-re-candidacy case implies $\bar{\pi} = -\gamma(s)$, whereas the re-candidacy case implies $\bar{\pi} > -\gamma(s)$.

¹² There were 275 municipalities during the sample period. Missing data precluded a larger set. However, the sample covers a wide diversity in terms of population, density, partisan dominance, constituency, and revenue. In 1993, the sampled municipalities accounted for 15% of total (nominal) municipal investment and 12% of total resident population. Further data details appear in Baleiras (1997b, pp. 234–237 and 311–333) and are available from the author upon request. The use of a random-effects panel data model minimises the inconveniences from any bias eventually remaining in the sample—see why in subsection 4.2 below.

¹³ Variable x_1 has unit value if the regression equation contains an intercept term. More will be said about the intercept presence below when presenting the estimation method.

Consider a fit involving x_2 only. Our prior, based on Proposition 1, is to find a positive estimate of β_2 .¹⁴ The electoral schedule introduces an expansionary deviation on investment outlays at pre-electoral periods. If x_2 and x_3 enter the same fit, Proposition 1 calls for positive estimates of β_2 and $\beta_2 + \beta_3$ because a PBC is expected without regard to the outcome of the re-candidacy decision. However, this decision is expected to make a difference on the cycle width; in fact, Proposition 2 implies $\beta_3 \leq 0$, thus ascribing a narrower cycle to a re-election seeker.

Due to a legislative change, the first three sample terms (1977–1985) are 3 years long and the last two (1986–1993) are 4 years long. The pre-electoral period of these latter terms was defined as the election year and the year before; the pre-electoral period of the former was defined as the election year only.

We have used an additional political regressor to take into account the degree of political cohesion within the local government. Although the theoretical model does not require this variable, we believe it plays an interesting role in actual policy-making; hence, we decided to include it in the current application.¹⁵ In Portugal, as in many other countries, the budgetary function is shared between both branches of government but naturally, the intertemporal profile of fiscal policy is a prerogative of the branch empowered with the initiative competence.¹⁶ Thus, municipal parliaments are not so bothered with intra-tenure investment management as are executive branches and their leaders. They do, however, believe in the political value of investment outlays. Hence, the members of a local parliament belonging to the president's party naturally tend to favour expansionary plans while their opponents wish to restrain investment initiatives. To make it clearer: *ceteris paribus*, we expect municipal investment in any year to be higher if the president's party enjoys an absolute seat majority at the legislative branch than when that is not the case. We can test for this hypothesis by defining a new political dummy variable,

$$x_4 = \begin{cases} 1 & \text{if the incumbent's party holds more than 50\% of total seats at the} \\ & \text{legislative branch} \\ 0 & \text{otherwise.} \end{cases}$$

Our expectation is therefore to find a positive estimate of β_4 .¹⁷ We could alternatively conceive a continuous measurement of political cohesion, defined by the exact seat percentage. However, this seems a rather weaker way of capturing econometrically the likely influence of political cohesion. A score under 50% would probably call for a compromise solution with other parties at the parliament, thus diluting the expansionary motivation of the ruling party.

¹⁴ Hereinafter, we will denote the parameter associated with the independent variable x_k as β_k .

¹⁵ Actually, the fits do improve with the presence of this variable.

¹⁶ This prerogative is indeed legally binding in Portugal. According to the Local Authorities Act, the municipal parliament cannot introduce a single amendment to the budget or the activities plan proposed by the executive branch; it can only approve or reject the executive's proposal (no. 4 of article 39).

¹⁷ We have also considered the possibility of interaction between political cohesion and the other dummies. Variable x_2x_4 (x_3x_4) captures the impact of an absolute majority on the cycle width (on the differential width induced by a re-election seeker). Yet, we found no empirical support for these interactions. By entering alone in regression lines, variable x_4 tests for the above time-independent effect of partisan composition on investment expenditure.

There is one last explanatory variable that we need to define. An economic variable is required to control the regressions. As the financial environment facing local governments is not stabilised along the sample period, we must distinguish between expenditure changes genuinely induced by local political considerations and expenditure changes due simply to varying funding. Therefore, we should add a funding indicator to the empirical model in an attempt to control for political effects. Given their relative size, received capital transfers are a natural candidate—these grants represent over 60% of capital expenditure during the sample period. We label this new variable as x_5 . It is obviously defined in real *per capita* units, just like the dependent variable. Naturally, we expect a positive estimate for β_5 .¹⁸

To conclude, we should remark on a potential structural break in 1986. Portugal joined the European Community as of the 1st of January 1986. Its participation in the community regional policy gave the central as well as local governments new resources, the structural funds—and later, from 1993 onwards, the cohesion fund. These proceedings are *matching grants* conditional upon the rules of eligibility and additionality that restrict their use to investment finance. A large fraction is actually translated into public capital accumulation. Rules of access to these new income streams, however, differ quite substantially from those applying to traditional central government transfers. In particular, their disposal by municipal budgets is less predictable than older transfers (those from the central government) since these newer transfers are conditional on the pre-existence of investment programs and, to a large extent, must be bargained with central government agencies. The whole transfer procedure is thus longer and contains several critical deadlines sharing nothing with local electoral schedules. Therefore, we should suspect that the increasing reliance of local governments on structural funds makes the political business cycle harder to implement. Nevertheless, the increasing availability of this new revenue, which does not crowd out any previous income source, is expected to enhance the power of capital transfers to explain municipal investment. Hence, we will divide the sample into two subperiods, 1977–1985 and 1986–1993, so as to formally test the statistical significance of this potential 1986 break.

4.2. The econometric framework

As is evident from the sample nature discussed above, each variable observation contains both an individual and a time dimension. With N individuals and T time periods, the empirical model becomes

$$y_{it} = \sum_{k=1}^K \beta_k x_{kit} + v_{it} \quad i = 1, \dots, N; \quad t = 1, \dots, T, \quad (1)$$

¹⁸ As the number of sampled individuals grows to infinity, lagged values of the dependent variable are increasingly more appealing as control variables—see Arellano and Bond (1991). Reliance on their use is particularly tempting when no sound, natural exogenous variable exists in the application context. In our case, neither of these conditions is met, which explains our preference to control the regressions via received capital grants.

where k accounts for the number of regressors and v_{it} is the usual stochastic residual. The economic variables (y and x_s) are measured in logarithmic units.¹⁹ Sample municipalities are likely very different from one another. Population size is not the same across them, their geographic location varies, they are ruled by distinct political parties, the personal motivation of incumbent leaders is inherently idiosyncratic, incumbents' competence is unlike and all this diversity leads local governments to differ in the way they adjust investment expenditure to common stimuli. Clearly, the assumption of equal regression coefficients implicit in Eq. (1) does not seem realistic. But the problem of finding a better specification is that we do not know for sure what it exactly is. Moreover, the wish to add realism must be traded off against the degrees of freedom loss when we think about estimation procedures.

In our quest for a parsimonious specification allowing for individual heterogeneity, we decided to reflect inter-municipal differences solely in intercept terms. To be more precise, all slope coefficients are assumed to be equal across individuals and the parameter associated with $k=1$ is expressed as

$$\beta_{1it} = \beta_1 + \mu_i \quad \forall i, t \quad ,$$

where β_1 is constant and μ_i is the individual-specific component. Although unknown, one must also assume from the outset whether these individual components are *fixed* or *random*.

The choice between fixed and random effect specifications has been thoroughly analysed in the econometrics literature. Following several criteria suggested by Balestra (1992), Hsiao (1986, Chapters 3 and 6, 1992) and Greene (1993, Sc. 16.4), we opt for the stochastic version of individual parameters. Firstly, municipal heterogeneity relies upon a number of non-observable random causes, such as access to capital transfers,²⁰ incumbent's re-candidacy decision²¹ or re-election probability.²² Secondly, given that T is relatively small (when compared to N) in our sample, parameter estimates in fixed-effect models are less reliable than in random-effect models because the ratio of estimable coefficients to available observations is larger. Thirdly, the sample is open in the sense that the N collected municipalities are only a subset of the whole statistical population of

¹⁹ As there is no theoretical recommendation, our empirical implementation has actually measured real *per capita* investment and real *per capita* transfers both in natural units and in logarithmic terms. However, for the sake of space, we report only the logarithmic case in Section 5 below, as its fits are better.

²⁰ Access to national transfers relies very much on the central government's discretion and very little on the local governments' behaviour. The same applies to European capital grants, whose eligibility is contingent upon administrative contests empowered by the central government and European agencies. *Ex ante*, these variables are unknown to the individual municipality, whose bargaining power is typically too small to exert any noticeable influence upon their realisation. Only a collective lobbying organisation encompassing a large enough number of local governments may have such power. The reader interested in a political economy approach to municipal lobbying for transfers may wish to consult Pereira (1996).

²¹ The re-candidacy decision, whose foundations lie beyond this essay's scope, depends on the incumbent's personal trade-off between the local public and non-local public job offers and we can think of politicians as being sorted out from a random distribution of these trade-offs. The concerned reader can refer to Reed (1994) for a cost-benefit analysis of re-election runs.

²² We have not explored in Section 3 the randomness of the re-election probability but we do not ignore its role in the real world. See Tabellini and Alesina (1990) for an example of random probability modelling.

Portuguese local governments. Therefore, individual differences are not a main research concern—the focus is clearly on slope parameters. Individual asymmetry analysis would become a natural priority if the sample were closed in the sense of covering all individuals of the statistical population; in this case, then, a fixed-effects model would be most welcome.²³ Finally, we would like to use regression results to draw conclusions bearing some significance to Portuguese local public finance in general and not only applicable to sampled municipalities. In other words, we prefer to make statistical inference with respect to population features rather than inference conditional on the effects present in the sample. According to Hsiao (1986, Chapters 3 and 6) in particular, a random-effects model is the most suitable specification when this kind of inference is wished.

It is fair to say the empirical PBC literature has proceeded otherwise. In papers such as Roubini and Sachs (1989a,b), Alesina and Roubini (1992), Alesina et al. (1993), and Schuknecht (1999, 2000), on the central government tier, and Blais and Nadeau (1992), on the subnational tier, the individual idiosyncrasies are modelled as deterministic effects from the outset and are not open to discussion. Contrary to this trend, and following the arguments above, we believe there are reasons in our statistical population to expect randomness on inter-municipal structural differences; therefore, we opt for a stochastic specification of individual effects and will subject our choice to the data scrutiny—indeed, a formal test (the *Hausman's* test below) will endorse, in our case, the superiority of the random-effects approach.

Having decided to use a stochastic specification of individual effects on intercepts, the appropriate econometric specification is the so-called *error-components* model. It will be estimated according to the *feasible generalised least-squares* method. Technical details on both the model and the estimator can be found, for example, in Greene (1993, Chapter 16), Mátyás (1992), and Hsiao (1986, Chapter 3).

5. Empirical results

The main outcomes of the empirical research are shown in Table 1. We ran the logarithm of real *per capita* investment expenditure (y) against the logarithm of real *per capita* received capital transfers (x_5) and the political dummies—the electoral variable x_2 , the re-candidacy differential variable x_3 and the political cohesion variable x_4 . Columns 1 and 2 refer to the subperiods 1977–1985 and 1986–1993, respectively. Firstly, we shall comment upon the overall results in these columns; secondly, we shall address the empirical backup of the PBC rationale.

5.1. Basic findings

The evidence in favour of the structural break is indeed quite strong. There is a clear regression improvement from 1986 onwards. This is perceived by the individual

²³ The individual-specific terms μ_i should be treated as constants if the performance of the individual units in the database was of paramount interest, but that is not our case. The size and magnitude of slope coefficients matter more for us than eventual individual differences between them.

Table 1
Main regressions

Independent variables	Dependent variable: $\ln y$	
	1977–1985	1986–1993
$\ln x_5$	0.607 (6.168)*	0.671 (25.529)*
x_2	0.266 (2.143)***	0.090 (4.954)*
x_3	-0.157 (-0.994)	-0.056 (-2.993)*
x_4	-0.108 (-0.694)	0.321 (9.902)*
Constant	1.187 (5.201)**	1.019 (2.993)**
St. error of regression	0.396	0.238
R^2	0.379	0.563
Hausman	1.244	0.907

t-ratios in parentheses.

* Significant at 99% (one-tailed test).

** Significant at 99% (two-tailed test).

*** Significant at 97.5% (one-tailed test).

explanatory power of each independent variable and, most noticeably, is reflected in both overall *goodness-of-fit* statistics displayed: the absolute error measure given by the residual's standard deviation falls from 0.40 to 0.24 and its relative error counterpart, the coefficient of determination, rises almost 20 percentage points. The implicit Chow's test confirms the significance of the differences. The residual sum of squares attached to the post-1986 regression is 3.356, while the homologous figure relating to the whole sample period is 16.046; hence, the relevant *F*-statistic is 3.292, comfortably above the 1% significance threshold. Consequently, we find evidence in favour of a structural break in 1986. At the end of this subsection, we shall comment on the weaker performance of the empirical model in the first subperiod.

Both specifications pass the overall significance *F*-test. Interestingly, the Hausman's statistic is comfortably located in the acceptance region of the relevant χ^2 -distribution (the critical value for a 99% confidence level is 13.3); thus, the empirical evidence does not contradict our priors in favour of the random composition of individual effects.

Note the strong explanatory power of the control variable. The elasticity of investment with respect to capital transfers increases from less than 61% in the first period to over 67% afterwards, and this point estimate change is combined with a clear significance improvement. This result confirms our expectation about the role of structural funds after 1986. Curiously, the political cohesion variable displays the expected sign in both cases, but lacks statistical significance in column 1.

So the empirical model shows a weaker performance in the 1977–1985 subperiod. The problems seem to lie with two political regressors, x_3 and x_4 . Like x_2 , these variables assume a democratic background where the people elect incumbents at regular time intervals. However, Portugal was ruled by a dictatorship for 48 years, until 1974. Moreover, between 1911 and 1976, local incumbents have always been appointed by the central government and were accountable before the central government only. The first local elections since 1911 were held precisely in December 1976. This means the political background of the PBC model in Section 3 was lacking in Portugal during the first democratic years. It takes time to learn democracy and to discover the kind of politico-

economic incentives that drive our theoretical model. We thus believe that this learning process can be a valid explanation for the somewhat weaker empirical results found in the first subperiod.

5.2. Test of the PBC rationale

We can now address the empirical implications of the theoretical results. Recall that Proposition 1 entails $\beta_2 > 0$ and $\beta_2 + \beta_3 > 0$, while Proposition 2 implies $\beta_3 \leq 0$. The estimates in columns 1 and 2 do comply with these theoretical restrictions—their statistical significance is analysed below. During the first subperiod (column 1), leaving incumbents are associated with a 31%²⁴ investment jump in pre-electoral years, whilst re-election runners also display an intertemporal asymmetry but of a lesser magnitude, recording only a 12% PBC. Cycles in the second subperiod (column 2) are smaller: 9% upward jumps for departing incumbents and just 4% upward deviations for re-election seekers.

Hence, access to EC's structural grants seems to have reduced the PBC potential and reinforced the role of capital transfers, just as expected. Besides, the democracy-learning process may have also played a role in this cycle width change. During the first years of democracy, the *rules of the game* were not fully understood by all players, perhaps opening room for myopic expectations on the part of voters and their repeated deception by the incumbents' opportunistic manipulation of the cycle. If this is true, the 1977–1985 cycles are perhaps better explained by a naïve voting behaviour in the tradition of Nordhaus (1975), whilst the rational PBC model at stake in this paper is more enlightening in the 1986–1993 period. Under this interpretation, the cycle differences that we found for the two periods should not surprise given the accumulated theoretical and empirical evidence on PBCs. According to the synthesis in Alesina and Roubini (1997, p. 16), the “cycles in (...) rational models are more short-lived, smaller in magnitude, and less regular than in traditional models.”

Chart 2 offers a graphical illustration of the PBC taking the municipality of Viana do Alentejo as an example.²⁵ The solid line plots the *no-cycle* prediction for this municipality, i.e. the fits in columns 1 and 2 without the cycle dummies x_2 and x_3 . Adding up these variables, we derive the expenditure prediction in line with the proposed regressions—the dashed line gives its plot. Please note that local elections were held in mid-December of the following years: 1979, 1982, 1985, 1989, and 1993. The vertical solid line segments between those two lines stress the estimated pre-electoral upward jumps in investment. The jumps are higher when the incumbent did not run for re-election, which (in Viana do Alentejo) happened in 1979 and 1993.²⁶ The structural break explains the lower jumps in the last two tenures.

²⁴ The predicted proportional change in y is not exactly equal to $\hat{\beta}_2$ because x_2 is a discrete variable. The same applies to the other political dummies. We are grateful to an anonymous referee for calling our attention to this point.

²⁵ The choice of municipality is immaterial. Viana do Alentejo is located in the Alentejo province, southern Portugal.

²⁶ Contrast the 31% jump of 1979 with the 12% deviations in 1982 and 1985, and the 9% jump of 1993 with the 4% deviation in 1989.

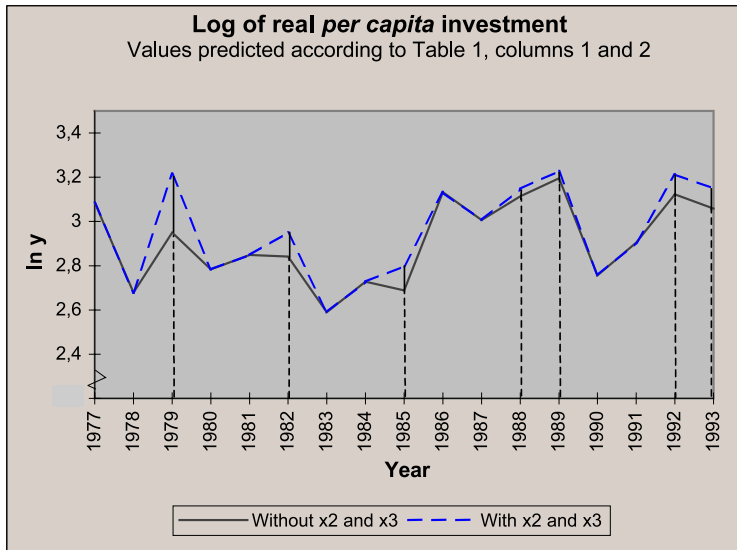


Chart 2. The political expenditure cycle in the municipality of Viana do Alentejo.

The statistical significance of the PBCs was also investigated. Firstly, we tested for the joint significance of both propositions. This requires the estimation of a constrained model, derived from the original by imposing the nulls (not shown). For each subsample, the statistical significance of the difference between the unrestricted and the constrained models is judged upon the value of the relevant F -statistic, which equals 8.799 in 1977–1985 and 13.531 in 1986–1993. In both cases, the data do not reject the overall explanation of investment cycles outlined in Section 3.

Secondly, we have also looked for the individual significance of each proposition. As there are two empirical implications springing from Proposition 1, its test requires (i) a simple t -ratio analysis of $\hat{\beta}_2$ in columns 1 and 2 above, and (ii) a comparison between the unrestricted model (in those columns) and a constrained model embodying the null $H_0: \beta_2 + \beta_3 = 0$. Note therefore that β_2 in columns 1 and 2 is significantly non-zero. The coefficient of determination of the constrained model (not shown) is 0.371 for the 1977–1985 subperiod and 0.513 for the 1986–1993 subperiod; they entail F -statistics of 3.275 and 27.099, respectively, thus allowing us to reject the null in both cases—with a 90% confidence level in the first case and 99% in the second. So the two empirical implications of Proposition 1 pass the data test in both sample periods. To test for Proposition 2's empirical implication alone, it suffices to look for the individual significance of β_3 in columns 1 and 2. Although portraying an economically sound estimate in both subperiods, this proposition finds statistical support in 1986–1993 only. As suggested above, the weaker performance in the earlier subperiod is probably due to the democracy-learning process.

The empirical findings in this section associate economic plausibility with statistical significance, and two conclusions clearly emerge. On the one hand, Propositions 1

and 2 are fully supported by the results in column 2 of Table 1, thus revealing an actual case where the political business cycle rationale recalled in Section 3 is empirically relevant. On the other, the available data point out a diachronic structural break: participation in the common regional policy from 1986 onwards may have led to a mitigation of the PBC and a reinforcement of the explanatory power of capital transfers. The democracy-learning process also helps to understand the break.

6. Concluding remarks

Conventional views about opportunistic PBCs often ascribe their origin to the electorate's shortsightedness or the incumbent's desire to be re-elected. In this paper, we have offered a different interpretation. PBCs can indeed be the optimal outcome of an *ultrarational* set-up where information is full and symmetrically distributed, all players optimise, voters are forward-lookers and the current incumbent explicitly allows for his or her satisfaction in the two possible future states of nature: electoral victory and electoral defeat.

The theoretical framework points out two predictions. First, the optimal policy is a PBC where public outlays before elections exceed those after elections. The incumbent's pre-electoral utility is totally derived from being in office whereas post-electoral utility is contingent upon the electoral score: this introduces an asymmetry in the way pre- and post-electoral expenditure levels are set and engenders the cycle. Second, an increase in the (exogenous) re-election probability does not widen the expenditure cycle. This is so because the incumbent's pre-electoral utility becomes relatively less important following the probability shock.

Local PBCs have previously not received much attention in the literature. Yet, the local government tier shows peculiar politico-economic conditions that may favour the emergence of PBCs. In particular, the uncertainty former leaders face in finding a new political appointment after an electoral defeat is higher at the local level. Our theoretical framework is particularly suited to explore this idea. Thus, the paper provides an empirical test to the proposed rationale, based on a panel data sample of Portuguese municipalities. Municipal investment expenditure was the endogenous variable over which political cycles were expected to materialise. The empirical evidence in the period 1986–1993 appears to support the theoretical model, as its predictions were not contradicted by the data. Moreover, access to European regional policy assistance and democratic maturity help to understand the smaller investment cycles in more recent years. From 1986 as well, an absolute majority of seats by the incumbent's party at the legislative branch exerts an expansionary impact on investment. The elasticity of investment with respect to received capital transfers exceeds 60% throughout the sample period.

Public expenditure fluctuations can therefore be interpreted as the outcome of rational behaviour by fully informed agents. Inasmuch as these fluctuations are regarded as detrimental to society, our research motivates a future study on incentive design to minimise their occurrence.

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