ELECTION RESULTS AND OPPORTUNISTIC POLICIES: AN INTEGRATED APPROACH

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Election Results and opportunistic Policies: an Integrated Approach – Toke S. Aidt, Francisco José Veiga e Linda Gonçalves Veiga

ELECTION RESULTS AND OPPORTUNISTIC POLICIES: AN INTEGRATED APPROACH[1]

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Abstract

The literature on political business cycles suggests that politicians systematically manipulate economic and fiscal conditions before elections. The literature on vote and popularity functions suggests that economic conditions systematically affect election outcomes. This paper integrates these two strands of literature. We use Rogoff (1990)'s model of the rational political business cycle to derive the two-way relationship between the win-margin of the incumbent politician and the size of the opportunistic distortion of fiscal policy. This relationship is estimated, for a panel of 275 Portuguese municipalities (from 1979 to 2001), as a system of simultaneous equations (by GMM). The results show that (1) opportunism pays off, leading to a larger win-margin for the incumbent; (2) incumbents behave more opportunistically when their win-margin is small. These results are consistent with the theoretical model.

Índice

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Abstract

The literature on political business cycles suggests that politicians systematically manipulate economic and fiscal conditions before elections. The literature on vote and popularity functions suggests that economic conditions systematically affect election outcomes. This paper integrates these two strands of literature. We use Rogoff (1990)'s model of the rational political business cycle to derive the two-way relationship between the win-margin of the incumbent politician and the size of the opportunistic distortion of fiscal policy. This relationship is estimated, for a panel of 275 Portuguese municipalities (from 1979 to 2001), as a system of simultaneous equations (by GMM). The results show that (1) opportunism pays off, leading to a larger win-margin for the incumbent; (2) incumbents behave more opportunistically when their win-margin is small. These results are consistent with the theoretical model.

Keywords: Voting and popularity functions, opportunism, rational political business cycles, local government, system estimation, Portugal.

JEL codes: D72, E32, H72.

1   Introduction

To what extent are economic policies in democratic societies distorted by the competitive struggle for votes? How strong is the impact of the economy on election results? These questions have occupied researchers for a long time, but have mostly been investigated separately. On the one hand, the literature on political business cycles (PBCs) focuses on identifying distortions in macroeconomic and fiscal variables around election times.[1] On the other hand, the literature on vote and popularity (VP) functions focuses on identifying the impact of economic and fiscal conditions on election results.[2] Yet, the PBC and the VP function are intimately related: rational politicians would not attempt to create a political business cycle if it did not help them win elections and rational voters would not base their vote decisions on economic and fiscal conditions if it did not help them select better politicians. The aim of this paper is to bridge these two strands of literature and to estimate the VP function and the fiscal distortion created by opportunistic politicians trying to win elections jointly. This allows us to provide a new test of the rational political business cycle theory proposed by Rogoff and Sibert (1988) and Rogoff (1990). This theory has previously been tested by looking for distortions in fiscal outcomes before elections, but not by studying its implications for the joint determination of the probability of winning elections and the fiscal distortion.

Research on electoral economics took off in the 1970s with the seminal works of Goodhart and Bhansali (1970), Mueller (1970), and Kramer (1971) on the VP function and with the work of Nordhaus (1975) and Hibbs (1977) on political business cycles. Right from the beginning, the two literatures developed in parallel and, with the notable exception of Frey and Schneider (1978a,b) who estimated politico-economy models for the United States and the United Kingdom that took the interrelations between the economy and the polity explicitly into account, there was little attempt of integration.

The rational expectations revolution forced the literature to raise to the challenge that rational voters cannot be systematically fooled one election after the other by opportunis-

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[1]See Paldam (1997), Alesina et al. (1997), Drazen (2000: 219-308) or Mueller (2003: 429-471) for surveys of this literature.

[2]See Nannestad and Paldam (1994) and Paldam (2004) for surveys.

tic politicians. New models were developed where the PBC resulted from asymmetries of information between politicians and voters. Alesina (1987), for example, showed how pre-election uncertainty about the ideology of competing political parties can explain rational partisan cycles in macroeconomic aggregates. Around the same time, Rogoff and Sibert (1988) and Rogoff (1990) developed the canonical model of the rational political business cycle in which incumbents signal their competence to the electorate by manipulating fiscal policy instruments before elections.[3] With the introduction of rational expectations into the models, empirical research shifted the focus from data on aggregate economic outcomes to data on economic policy instruments, particularly to those of fiscal policy. To some extent, the emphasis also shifted from the national to the sub-national level with an increasing interest in the study of political business cycles in local and state elections.[4] The interest in political business cycles has recently been renewed, but the current discussion is predominately about which characteristics of a polity might support or discourage political business cycles. According to Shi and Svensson (2006), the magnitude of electoral budget cycles increases with the size of the rent that politicians can earn by remaining in office and with the share of uninformed voters in the electorate. Brender and Drazen (2005) argue that opportunistic fiscal manipulations are more pronounced in "new" than in "established" democracies because, in the former, voters are inexperienced with electoral politics and are less able to detect fiscal manipulations. On the other hand, Alt and Lassen (2006) argue that, conditional on the degree of fiscal transparency, political business cycles are as likely in advanced industrialized economies as elsewhere.

Yet, the two-way relationship between elections and the economy remains under-researched, and only rational partisan theory has been properly tested in such a setting.

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[3] Some public choice scholars have pointed to an alternative explanation of the PBC: rational ignorance of voters in the face of information costs. Instead of assuming that citizens have high levels of information that allow them to detect and punish opportunistic politicians, they argue that many economic actors have little incentive to be informed about economic policies and that opportunistic politicians will take advantage of this, in particular when the percentage of uninformed voters is high (see Willet and Keil (2004)).

[4] Blais and Nadeau (1992) and Rosenberg (1992) where the first to test political budgetary cycles using local data. For an extended revision of the empirical literature about the U.S. see Besley and Case (2003). For studies about Germany see Seitz (2000) and Galli and Rossi (2002). For Sweden see Petterson-Lidbom (2001). Finally, see Akhmedov and Zhuravskaya (2004) for Russia, Drazen and Eslava (2005) for Colombia, and Veiga and Veiga (2007) for Portugal.

Using an empirical model that allows for the joint determination of economic growth and national election outcomes in the United States, Alesina et al. (1993) report evidence that growth responds to unanticipated policy shifts and that the economy has a strong effect on voting in presidential elections. Part of the reason why so few studies attempt to integrate the PBC and the VP function is, as pointed out by Willet and Keil (2004: 414) in their survey of the literature, that the micro incentives behind, in particular the rational political business cycle, have received insufficient empirical attention.

Theoretically, these incentives are clear: PBC models with rational voters a la Rogoff (1990) not only predict that politicians will try to signal their type by distorting fiscal choices before elections, it also suggests that politicians are rewarded for doing so at the polls. In fact, the theory suggests that the vote and popularity function and the fiscal distortion created by opportunistic politicians are jointly determined and therefore should be estimated together. Two recent studies by Akhmedov and Zhuravskaya (2004) and Drazen and Eslava (2005), dealing with local governments in Russia and Colombia respectively, do estimate vote and popularity functions along side with tests for opportunistic cycles in fiscal policy, but treat the two separately. To the best of our knowledge, no study has yet taken the theory seriously and attempted to estimate the vote function and the extent of the opportunistic political business cycle jointly as a system of equations. The purpose of this paper is to fill this gap. We, firstly, develop a version of the canonical model of the rational political business cycle from which we derive the two equations to be estimated. Secondly, we estimate these equations on data from 275 Portuguese municipalities using a Generalized Method of Moments (GMM) system estimator.

We use data from Portuguese municipalities for several reasons. First, we have compiled a large and detailed data set covering 275 mainland municipalities since 1979 to 2001 (seven elections). Second, the mayor is the principal decision-maker in the municipality and is in a position from which he can manipulate important expenditure items for election purpose. Third, all Portuguese municipalities operate under the same institutional framework and have access to the same policy instruments. This allow us to avoid many of the pitfalls associated with cross national studies. Finally, election dates are fixed and exogenous from

4

the perspective of the local authorities, and all municipalities have elections on the same day. Taken together these factors make this data set a very promising testing ground for a study of the interrelationship between the VP function and the political business cycle.

Using a similar dataset, Veiga and Veiga (2007) presented evidence of rational political business cycles in Portuguese municipalities. But, like many of the above-mentioned studies, they do not account for the joint determination of the vote function and of the PBC, since they only test for the latter. Furthermore, the effects of the incumbent's expected margin of victory (or defeat) on the magnitude of the opportunistic distortion are not considered in their estimations. The present study therefore adds substantially to this previous work.

The article is organized as follows. Section 2 presents some institutional information about the Portuguese municipalities. Section 3 describes the model and derives the two equations to be estimated. Section 4 discusses the data sources and the empirical strategy adopted. Section 5 presents the empirical results. Finally, section 6 contains the conclusions.

2   Local Government in Portugal

The Portuguese municipalities were formally established by the Constitution of 1976, after the bloodless military coup of April 25, 1974, which put an end to 48 years of dictatorship. The first municipal election took place in December of 1976. Until 1985 elections were held every third year and after that every fourth year. Election dates are fixed nationally and therefore exogenous from the perspective of the municipalities. During our sample period (1979-2001), all elections took place in December and there were no legal restrictions on the number of times a mayor could stand for election.

The municipalities are governed by the Municipal Assembly and the Town Council.[5] The Municipal Assembly has deliberative power and it approves the general policy framework. The presidents of the councils of the freguesias,[6] which make up each municipality,

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[5]Law 169/99 establishes the competencies and the legal framework for the various branches of the municipalities.

[6]Freguesias are subdivisions of municipalities. They are the lowest administrative unit in Portugal.

are automatically members of the Assembly, while the rest are elected directly by the voters registered in the municipality. The Town Council holds executive power and it designs and implements local policies. Its members are all elected directly by citizens who vote for party or independent lists of candidates.[7] The top candidate from the list that receives the most votes becomes mayor. The mayor is the president of the Town Council and plays a leading role in the executive and has substantial power and autonomy.

The municipalities are responsible for a large variety of activities, ranging from urban planning and territory organization to the supply of local public services and regulation. The local public services controlled by the municipalities include sewage, distribution of water and energy, local transportation and communication, elementary education, patrimony, promotion of culture and science, provision of recreation and sports facilities, local health care, social housing, environmental protection and municipal policing.

The municipalities operate within the same institutional framework and are all subject to the same financial regime.[8,9] With this common regime, the municipalities are financially autonomous and can, without authorization from a higher-ranked authority, define their own budget, collect the revenues they are entitled by law and allocate expenditures.[10] Nonetheless, the Town Council and the mayor who heads it have relatively little discretional power with regard to revenues, as, on average, 70% of per capita income are transfers from the central government and/or from the European Union. Moreover, the bulk of current expenditures go to salaries, expenditures on electricity, water, etc., and are largely non-discretionary and hard to manipulate. Importantly, however, the mayors can control the level and timing of capital expenditures, which, along with the fact that these are highly visible spending items, make them appropriate targets for mayors willing

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[7]Votes are transformed into seats using the Hondt method. After all the votes have been tallied, the following quotient (V/(S+1)) is calculated for each party, where V is the total number of votes that the list received and S is the number of seats that the party has been allocated so far (initially 0 for all parties). The party having the highest quotient gets the first seat allocated, and its quotient is recalculated given its new seat total. The process is repeated until all seats have been allocated.

[8]During the period analyzed four local finance laws were introduced: Law 1/79, Decree-Law 98/84, Law 1/87, and Law 42/98.

[9]For a detailed description of municipal finances in Portugal, see Veiga and Veiga (2007).

[10]They are of course subject to several control mechanisms by central government agencies, but these are merely inspective.

to woo voters to win elections.

3 Theory

In this section, we lay out a version of the rational political business cycle model developed by Rogoff (1990) and Rogoff and Sibert (1988). The purpose of the exercise is, firstly, to draw out implications of the theory which have not yet been subject to systematic testing and, secondly, to allow theory to guide our empirical identification strategy.

3.1 The model

We consider a simple two-period economy $(t = 1, 2)$ populated with a continuum of citizen-voters.[11] Citizen-voters care about private consumption (c_t) and two types of public goods $(g_{1,t}$ and $g_{2,t+1})$. Public good 1 (g_1) is a short-term public good while public good 2 (g_2) is a long-term public good. Investments in the short-term public good lead to immediate provision of services that can be directly observed within the period. Investments in the long-term public good, on the other hand, lead to provision only with a one period time lag. As a consequence, citizen-voters cannot infer how much was invested in this good until later when they observe the provision levels generated by past investments. The life-time utility function of a representative citizen-voter is

$$u^v = c_1 + \ln g_{1,1} + \theta \ln g_{2,1} + \beta \left(c_2 + \ln g_{1,2} + \theta \ln g_{2,2} \right), \tag{1}$$

where $\beta \in (0, 1)$ is the discount factor and θ is the relative importance of long-term public goods.[12] Each citizen-voter is endowed with y units of a non-storable good each period, pays the lump sum tax τ_t and consumes $c_t = y - \tau_t$. Public goods are produced from tax revenues by an elected politician using a simple linear technology:

$$g_{1,t} + g_{2,t+1} = \tau_t + \varepsilon_t \tag{2}$$

where ε_t is a stochastic competency term. We note that the cost of investment in the long-term public good provided in period $t + 1$ is incurred in period t.

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[11] The model is a simplified version of Rogoff (1990).

[12] We assume that $g_{2,1} = 1$.

Each period a citizen-voter is elected to run the government and to produce public goods. To simplify the analysis, we assume that τ is exogenously given and that the politician, therefore, only has to decide on the allocation of resources between the two types of public goods. Citizen-voters differ with respect to their talent for being politicians and some are more competent than others. Specifically, a citizen-voter is either competent ($\varepsilon_t = \varepsilon_H$) or incompetent ($\varepsilon_t = \varepsilon_L < \varepsilon_H$) as a politician. We assume that competency is permanent, i.e., if a politician is competent in period 1 he is also competent in period 2 and vice versa. The probability that a randomly selected citizen-voter is competent is $\rho \in (0, 1)$. Politicians derive utility from private and public goods, but also care about holding office per se because of the power or prestige that goes with it. To capture this, we assume that politicians receive the ego-rent m per period in office. In addition to competency, citizen-voters also care about the ideology of their elected politician. This is modelled as a random shock to citizen-voters' preference for the incumbent relative to that of the challenger in each election. Specifically, we assume that the advantage (or disadvantage) of the incumbent at time t is

$$\alpha_t = \mu - \sigma \upsilon_t, \tag{3}$$

where μ and σ are parameters and $\sigma > 0$. The random variable υ_t captures ideological shocks. It is drawn before each election from a symmetric unimodal distribution $F(\upsilon_t)$ with zero mean and variance one. We assume that F is differentiable and denote the density function by f. The ideological shock lasts for one period only and is unrelated to competency. The parameter μ captures the average incumbency advantage (or disadvantage).

The information structure of the model can best be laid out by listing the timing of events:

1. At the beginning of period 1, the incumbent observes his competency ε_1 and decides on how to allocate resources between the two public goods $(g_{1,1}, g_{2,2})$.

2. Voters observe α_1 and how much is provided of the short-term public good $(g_{1,1})$.

8

3. At the end of period 1, an election takes place where the incumbent runs against a randomly chosen challenger. The incumbent is reelected if he is supported by a majority of citizen-voters; otherwise the challenger takes office.

4. At the beginning of period 2, the incumbent, if reelected, decides how much to invest in the short-term public good.[13] If the challenger is elected, she observes her competency (ε_2) and decides on how much to invest in the short-term public good.

We notice that the incumbent in period 1 does not observe the ideological bias (v_t) until *after* he has decided fiscal policy for the period. This, as we shall see, implies that he cannot be sure about the outcome of the election. He does, however, know the distribution and that allows him to form a judgement about how big or small his advantage is on average.

The structure described above is a sequential game of incomplete information and the natural solution concept is Perfect Bayesian Equilibrium (PBE). A PBE is a pair of first-period fiscal allocations $\left\{ g_{1,t}^L, g_{1,t}^H \right\}$, one for each type, and a reelection rule for citizen-voters (that determines the probability of reelecting the incumbent as a function of observed fiscal policy) such that the incumbent of each type selects an optimal fiscal allocation given the reelection rule; citizen-voters' reelection rule is optimal given their beliefs about the type of the incumbent and the incumbent's strategies; and beliefs are whenever possible updated according to Bayes's rule. To narrow down the set of equilibria, we shall impose additional restrictions on out-of-equilibrium beliefs below.

3.2 Equilibria

We begin by noting that the optimal fiscal policy in the second period is to invest all resources in the short-term public good and so $g_{1,2} = \tau + \varepsilon_i$ irrespective of the type of the second-period incumbent. Supposing that the first-period incumbent is reelected, we can write the second-period utility of a citizen-voter, net of the benefit of the long-term public

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[13]In period 2, nothing is invested in the long-term public good because it is the last period.

good, as a function of the type of the first-period incumbent as

$$W(i) = y - \tau + \ln(\tau + \varepsilon_i) \quad \text{for } i \in \{L, H\}, \tag{4}$$

The corresponding net second-period utility if a challenger of unknown type is elected is

$$W(C) = y - \tau + \rho \ln(\tau + \varepsilon_H) + (1 - \rho) \ln(\tau + \varepsilon_L), \tag{5}$$

where C represents "challenger". If citizen-voters only cared about provision of public goods, then it is clear from these expressions that they would reelect an incumbent who is known to be competent for sure and boot out an incumbent who is known to be incompetent. However, in practice citizen-voters also care about ideology and a representative citizen-voter casts a vote in favour of the incumbent if and only if

$$\widehat{\rho}(g_{1,1}) W(H) + (1 - \widehat{\rho}(g_{1,1})) W(L) - W(C) + \alpha_1 \geq 0, \tag{6}$$

where $\widehat{\rho}(g_{1,1})$ represents the citizen-voters' updated beliefs (that the incumbent if of type H) after having observed the first-period investment in short-term public goods. From the point of view of the first-period incumbent, who does not observe v_1 until after he has decided on fiscal policy, the probability of getting reelected is

$$\pi(\widehat{\rho}(g_{1,1})) = F\left(\frac{\mu}{\sigma} + \frac{\widehat{\rho}(g_{1,1}) W(H) + (1 - \widehat{\rho}(g_{1,1})) W(L) - W(C)}{\sigma}\right) \tag{7}$$

which is increasing in the belief that the incumbent is competent.

Following Snyder (1989) and others, we say that the incumbent has an advantage in the election if, under the condition that both types of incumbents choose the same level of spending and thus $\widehat{\rho}(.) = \rho$, the probability of reelection is greater than $\frac{1}{2}$. Notice that for $\widehat{\rho}(.) = \rho$, we have

$$\pi(\rho) = F\left(\frac{\mu}{\sigma}\right). \tag{8}$$

Since F is symmetric and unimodal with zero mean, it is clear, then, that the incumbent has an advantage if and only if $\mu > 0$. Moreover, the advantage is increasing in μ. On the other hand, the incumbent has a disadvantage if and only $\mu < 0$.

10

Faced with this reelection rule, the first-period incumbent, whether competent or not, decides how to allocate resources between the two types of public goods taking into account how this choice affects his reelection chances. Following Persson and Tabellini (1990, chapter 5), it is convenient to define the following two objects: the *value of reelected* and the *cost of signalling*. The (expected) value of being reelected for a politician of type ε_i is

$$V(\varepsilon_i) = m + (W(i) - W(C)). \tag{9}$$

He gets the ego-rent for another period and benefits (or not) from the fact that he, in expectation, is more (or less) efficient at providing public goods than a randomly chosen challenger. We assume that m is sufficiently large to make $V(\varepsilon_L) > 0$. The cost of signalling is

$$
\begin{aligned}
C\left(g_{1,1}^i, \varepsilon_i\right) = & \ln\left(\frac{\tau + \varepsilon_i}{1 + \beta\theta}\right) + \beta\theta \ln\left(\frac{\beta\theta(\tau + \varepsilon_i)}{1 + \beta\theta}\right) \\
& - \ln g_{1,1}^i - \beta\theta \ln\left(\tau + \varepsilon_i - g_{1,1}^i\right).
\end{aligned} \tag{10}
$$

Signaling entails a distortion of first-period resources (too much is spent on short-term public goods and too little is spent on long-term public goods). The cost of signalling, therefore, is the difference between the short-run optimal allocation of first-period resources between short- and long-term public goods and the actual choice of allocation $(g_{1,1}^i)$.[14]

Proposition 1 *(Equilibrium) The unique intuitive Perfect Bayesian Equilibrium in undominated strategies is a separating equilibrium and is characterized by the following strategies and beliefs:*

1. *An incumbent of type L sets $g_{1,1}^L = \frac{\tau + \varepsilon_L}{1 + \beta\theta}$ and $g_{2,2}^L = \frac{\beta\theta(\tau + \varepsilon_L)}{1 + \beta\theta}$ in period 1. If reelected, he sets $g_{1,2}^L = \tau + \varepsilon_L$ in period 2.*

2. *An incumbent of type H sets $g_{1,1}^H = g_{1,1}^s$ and $g_{2,2}^H = \left(\tau + \varepsilon_H - g_{1,1}^s\right)$ in period 1 where*

$$g_{1,1}^s = \max\left\{\frac{\tau + \varepsilon_H}{1 + \beta\theta}, g^s\right\} \tag{11}$$

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[14]With the logaritmic utility functions, the short-run optimal allocation is $\widehat{g}_{1,1}^i = \frac{\tau + \varepsilon_i}{1 + \beta\theta}$ and $\widehat{g}_{2,2}^i = \frac{\beta\theta(\tau + \varepsilon_i)}{1 + \beta\theta}$.
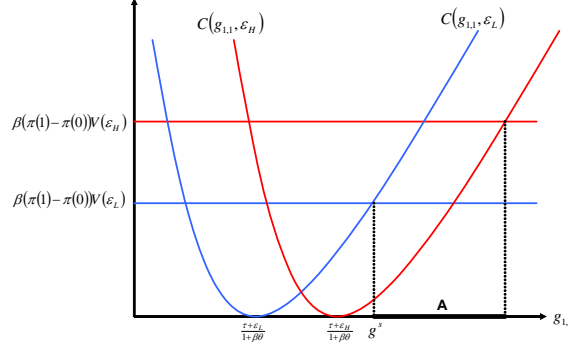
Figure 1: Separating Equilibria

with g^s being defined as

$$g^s = \max \left\{ g \mid C\left(g, \varepsilon_L\right) = \beta \left(\pi \left(\widehat{\rho}\left(g_{1,1}^s\right)\right) - \pi \left(\widehat{\rho}\left(g_{1,1}^L\right)\right)\right) V\left(\varepsilon_L\right) \right\}. \qquad (12)$$

If reelected, he sets $g_{1,2}^H = \tau + \varepsilon_H$ in period 2

3. Citizen-voters' posterior beliefs are $\widehat{\rho}\left(g_{1,1}\right) = 1$ for all $g_{1,1} \geq g_{1,1}^s$ and $\widehat{\rho}\left(g_{1,1}\right) = 0$ for all $g_{1,1} < g_{1,1}^s$ and the reelection rule is given by equation (6).

Proof. See Appendix ∎

The equilibrium is illustrated in Figure 1 where we have drawn the cost of signaling and the expected value of reelection for the two types of incumbents as a function of $g_{1,1}$.

The expected value of reelection is always larger for a competent than for an incompetent incumbent. This is because the former can provide more second-period public goods than the average politician while the latter cannot. The cost of signaling is represented by the parabolas with the competent incumbent's cost of signaling shifted to the right reflecting the fact that it is "cheaper" for the competent incumbent to increase spending on the short-term public good from his short-run optimal level $\left(\frac{\tau+\varepsilon_H}{1+\beta\theta}\right)$ than it is for the incompetent incumbent to match it. In a separating equilibrium, an incumbent of type L sets $g_{1,1}^L = \frac{\tau+\varepsilon_L}{1+\beta\theta}$ and prefers to do so pretending to be competent as long as $g_{1,1}^H$ is no less than g^s. An incumbent of type H, on the other hand, is, if needed, willing to deviate upwards

12

from his short-run optimal policy choice to signal to citizen-voters that he is competent as long as the cost of signaling is no greater than the expected benefit of reelection. Any $g_{1,1}^H$ in the interval A, indicated with the bold line in the Figure, constitute a separating Perfect Bayesian Equilibrium. It is clear, however, that $g_{1,1}^H > g^s$ is more costly to the competent incumbent and thus dominated by $g_{1,1}^H = g^s$.[15] The theory therefore predicts that fiscal policy is distorted before the election because competent politicians need to convince rational voters that they are indeed competent. This is the Rational Political Business Cycle (RPBC).

The extent of signalling depends among other things on the advantage (disadvantage) of the incumbent (captured by μ). This is shown in the next proposition.

Proposition 2 (Incumbency Advantage) Assume that $g^s > \frac{\tau + \varepsilon_H}{1 + \beta\theta}$. An increase (decrease) in the average advantage (disadvantage) of the incumbent ($\mu \uparrow$) reduces the incentive to distort fiscal policy to signal competency if and only if

$$\mu > \phi(\rho) \equiv W(C) - \frac{W(H) + W(L)}{2}, \tag{13}$$

where $\phi'(\rho) > 0$ and $\phi\left(\frac{1}{2}\right) = 0$. Moreover, a large (small) incumbency advantage (disadvantage) increases the reelection chance of all types of incumbents.

Proof. From equation (12), we note that the incentive to signal competency by distorting fiscal policy depends on

$$\pi(1) - \pi(0) = F\left(\frac{\mu + W(H) - W(C)}{\sigma}\right) - F\left(\frac{\mu + W(L) - W(C)}{\sigma}\right).$$

Calculate

$$\frac{\partial(\pi(1) - \pi(0))}{\partial\mu} = \frac{f\left(\frac{\mu + W(H) - W(C)}{\sigma}\right) - f\left(\frac{\mu + W(L) - W(C)}{\sigma}\right)}{\sigma}.$$

We note that $\frac{\partial(\pi(1) - \pi(0))}{\partial\mu} \leq 0 \Rightarrow \frac{\partial g^s}{\partial\mu} \leq 0$. Since F is unimodal and symmetric around zero, it follows that $\frac{\partial(\pi(1) - \pi(0))}{\partial\mu} \leq 0$ if and only if

$$\frac{\mu + W(H) - W(C)}{\sigma} - 0 \geq 0 - \frac{\mu + W(L) - W(C)}{\sigma}$$

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[15] Since reelection is random, pooling equilibria in which both types of incumbents chose $g_{1,1} = \frac{\tau + \varepsilon_H}{1 + \beta\theta}$ in period 1 can be ruled out by the intuitive criterion.
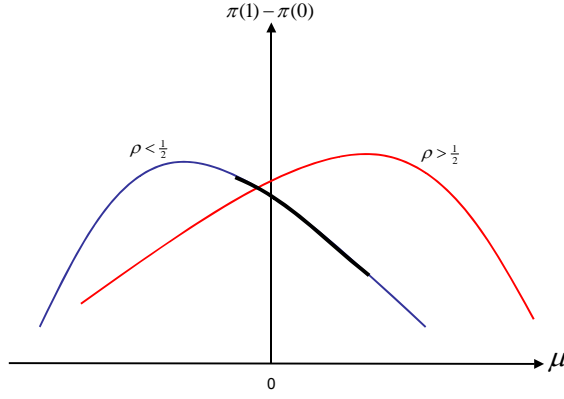
Figure 2: The relationship between incumbency advantage and the incentive to distort fiscal policy to signal competency.

or

$$\mu \geq \phi(\rho) \equiv W(C) - \frac{W(H) + W(L)}{2}. \tag{14}$$

We note that $\phi\left(\frac{1}{2}\right) = 0$ and that $\phi'(\rho) = \ln(\tau + \varepsilon_H) - \ln(\tau + \varepsilon_L) > 0$. The observation that the reelection probability of all types of incumbents increases in μ follows immediately from equation (7) ∎

The main implications of the proposition are illustrated in Figure 2. Recall that the incentive to distort fiscal policy to signal competency is controlled by the difference between the reelection probability of a competent and an incompetent politician, $\pi(1) - \pi(0)$. This differential is a quasi-concave function of μ, as illustrated in the figure for two different values of ρ (the probability that a randomly selected citizen-voter is competent). The reason for this non-monotonicity is that incumbency advantage increases the election prospect of all types of incumbents. Accordingly, when an increase in μ increases the prospect of the competent type more than that of the incompetent type, the incentive to distort fiscal policy is enhanced. Conversely, the incentive is reduced if incompetent politicians benefit more from incumbency advantage than competent ones. From Figure 2, we see that the peak of the PBC depends on ρ. When competency is scarce and only a small faction of the population of potential politicians is competent ($\rho < \frac{1}{2}$), the PBC peaks

14

when the incumbent has a disadvantage. In contrast, when there is an abundance of competent politicians in the population ($\rho > \frac{1}{2}$), the PBC peaks when the incumbent has an advantage. Irrespective of the distribution of competency in the population, incumbency advantage eventually tempers the incentive to distort fiscal policy and $\frac{\partial(\pi(1)-\pi(0))}{\partial\mu}$ becomes negative for μ sufficiently large.

While proposition 2 characterizes the set of theoretical possibilities, two empirical observations allow us to narrow down the set of outcomes we might, in fact, observe. Firstly, in practice, there are good reasons to believe that competency is scarce, i.e., that $\rho < \frac{1}{2}$. One reason is that ability is widely believed to be drawn from a left-skewed distribution (e.g., a log-normal distribution).[16] Another reason is self-selection. Individuals, who would become competent political leaders if they were to stand for election (and be elected), are also individuals who tend to be successful in their private jobs. Accordingly such individuals are more likely to select not to become politicians than less competent ones whose outside options in the private sector are worse. Secondly, a large empirical literature has established that incumbents have an advantage in winning elections.[17] This suggests that μ is likely to be positive. Taken together the two observations suggest that over the empirically relevant range, the relationship between incumbency advantage and the fiscal distortion is negative and monotonic (as illustrated by the bold segment in Figure 2).

3.3 Empirical Implications of the Theory

We are interested in testing the relationship implied by the theory between what we might call the (average) *opportunistic distortion* (OD) and the (average) *win-margin* of the incumbent (WM). Theoretically, the opportunistic distortion is given by

$$\rho\left(g^s(\mu;\theta,\tau,m) - \frac{\tau + \varepsilon_H}{1 + \beta\theta}\right),\tag{15}$$

where g^s is implicitly defined by equation (12), and is simply an ex ante measure of the size of the average political business cycle. Theoretically, the average win-margin can be

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[16]This observation is, for example, the basis for virtually all applied work on optimal taxation (see, e.g., Tuomala, 1990).

[17]See, e.g., Tompkins (1984), Levitt and Wolfram (1997) or Carson et al. (2007).

defined as

$$\rho\pi\left(\widehat{\rho}\left(g_{1,1}^{H}\right)\right)+(1-\rho)\pi\left(\widehat{\rho}\left(g_{1,1}^{L}\right)\right),\tag{16}$$

which is the type-weighted ex ante probability that the incumbent is reelected.

According to the theory, OD and WM are jointly determined at equilibrium. On the one hand, the degree of signalling is a determinant of the win-margin. On the other hand, the win margin, through its effect on the reelection differential between competent and incompetent politicians, is a determinant of the size of the opportunistic distortion. We can therefore write the structural form of the model laid out above as

$$WM = h(OD, Z) \tag{17}$$
$$OD = k(WM, X), \tag{18}$$

where h and k are functions and X and Z are (possibly overlapping) vectors of other determinants of the opportunistic distortion and the win-margin.

The theory of the RPBC imposes some restrictions on h and k that we are interested in testing. Firstly, since the posterior belief that the incumbent is competent, $\widehat{\rho}\left(g_{1,1}\right)$, is non-decreasing in $g_{1,1}$, the model predicts that opportunistic behavior pays off in the sense that the win-margin is (weakly) increasing in the size of the opportunistic distortion ($\frac{\partial h}{\partial OD}\geq 0$). Secondly, the theory predicts that the win-margin is linked to the opportunistic distortion through variations in incumbency advantage as described by proposition 2. The opportunistic distortion is a quasi-concave function of incumbency advantage, increasing at first, then decreasing. In practice, there are, as discussed above, good reasons to believe that we only observe this relationship over a limited range and that the opportunistic distortion is monotonically declining in the win-margin over this range. Based on this, we expect that $\frac{\partial k}{\partial WM} < 0$, but allow in the empirical specification for the possibility of non-monotonicity.

Both the win-margin and the opportunistic distortion are endogenous variables. Accordingly, to identify the links between them empirically, we need to impose restrictions on the structure form. We use the theory to motivate some of these exclusion restrictions. Firstly, we note that the parameter θ, which controls the relative importance of long-term

versus short-term public goods, affects the opportunistic distortion directly, while its impact on the win-margin is indirect (through its effect on the opportunistic distortion). In particular, the larger is θ, the higher the cost of signaling and the lower is g^s and, ceteris paribus, the opportunistic distortion.[18] More broadly, we can interpret θ as a measure of voter awareness of the opportunity cost of spending on easily observable expenditure items. Secondly, the availability of funds (τ) also has a direct (positive) effect on g^s because the cost of signalling falls and the value of reelection ($V(\varepsilon_L)$) increases, while the effect on the win-margin is indirect. Thirdly, the ego-rent increases the benefit of reelection and directly increases the opportunistic distortion. Based on these observations, it is reasonable to exclude factors that affect voter awareness, the availability of funds and the ego-rent from the equation for the win-margin. On the other hand, the opportunistic distortion is unlikely to be directly affected by general economic conditions, while these factors are likely to affect the win-margin directly. We shall build on this identification strategy in the empirical specification below and define X and Z accordingly.

4   Data and Empirical Specification

The data set consists of political, financial and economic variables for the 278 Portuguese mainland municipalities, for the local election years of 1979, 1982, 1985, 1989, 1993, 1997 and 2001.[19] Municipal election dates and results were obtained from the Technical Staff for Matters Concerning the Electoral Process (Secretariado Técnico dos Assuntos para o Processo Eleitoral - STAPE) of the Internal Affairs Ministry. Data on municipal local

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[18]Differentiating equation (10) with respect to θ gives:

$$\frac{\partial C(.,\varepsilon_L)}{\partial \theta} = \ln\left(\frac{\beta\theta(\tau+\varepsilon_L)}{1+\beta\theta}\right) - \ln(\tau+\varepsilon_L - g^s) + \frac{1}{\theta(1+\beta\theta)} > 0.$$

This implies that $\frac{\partial g^s}{\partial \theta} < 0$. Since $\frac{(\tau+\varepsilon_H)}{1+\beta\theta}$ also decreases in θ, the overall effect on the opportunistic distortion is ambiguous.

[19]Although there also was an election in October 2005, data from the municipal financial accounts are only available until 2003. The election of 1979 is not included in the analysis whenever lags, term averages or deviations from term averages are included. For the three municipalities created in 1997 (Odivelas, Trofa and Vizela) there is only election data for 2001 (the last election in our sample), which means that there is no data for the votes obtained in the previous elections. Thus, in the estimations, we have a maximum of 275 municipalities.

accounts were obtained from the local authority's (Direcção Geral das Autarquias Locais - DGAL) annual publication called Finanças Municipais (Municipal Finances). This report exists from 1979 to 1983 and from 1986 to 2003. For the two missing years data was obtained directly from the municipalities' official accounts and are incomplete: we have 182 observations for 1984 and 189 for 1985. The consumer price index and the national unemployment rate were taken from the OECD's Main Economic Indicators. Data on the total number of employees in firms within each municipality and on their average wages, from 1985 to 2003, was obtained from the "Quadros de Pessoal" database, of the Portuguese Ministry of Labour and Social Solidarity (MTSS).[20] Finally, demographic data was obtained from the National Statistics Office (INE).

As discussed above, our empirical model consists of a system of two simultaneous equations: a vote and popularity function representing the win-margin and an equation for the opportunistic distortion. We measure the win-margin of the incumbent as the difference between the vote share of the mayor's party and that of the largest opposition party. We measure the opportunistic distortion as the percentage deviation of investment expenditures (IE) in an election year from the election term average. The later choice is motivated by the fact that opportunistic distortions are, in practice, most likely to show up in budgetary items whose timing of implementation is controlled by the mayor and which are visible to the electorate. As noted in section 2, the municipalities do not have much freedom to set revenue instruments, as transfers from the national government represent the main source of funding, and current expenditures are strongly conditioned by salaries which are regulated by rigid labor contracts. Accordingly, investment expenditures, which are largely controlled by the mayors, are the most likely place to look for evidence of opportunistic behavior.[21]

Based on the discussion of exclusion restrictions above, we can expand equations (17)

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[20]The "Quadros de Pessoal" is a yearly mandatory employment survey that covers virtually all privately owned firms employing paid labor in Portugal (public servants and own employment are not included). Although the most recent year for which data is available is 2003, there is no data on wages for 2001. In order to avoid missing values, for each municipality, we set the wages for 2001 equal to the simple average between those of 2000 and 2002.

[21]For results indicating that opportunism occurs in investment expenditures, see Veiga and Veiga (2007).

and (18) as follows:

$$WM_{it} = \beta_1 OD_{it} + \beta_2 IE_{it} + \beta_3 YM_{it} + \beta_4 RR_{it} \qquad (19)$$
$$+ \beta_5 WM_{i,prev.el.} + \beta_6 GP_{it} + \beta_7 Emp_{it}$$
$$+ \beta_8 Wages_{it} + \nu_i + \delta_t + \epsilon_{it}$$

$$OD_{it} = \phi_0 WM_{it} + \phi_1 (WM_{it})^2 + \phi_2 IE_{it} + \phi_3 YM_{it} + \phi_4 RR_{it} \qquad (20)$$
$$+ \phi_5 CTtm_{it} + \phi_6 \Delta CT_{it} + \phi_7 Pop65_{it}$$
$$+ \phi_8 PopDens_{it} + \phi_9 Right_{it} + \gamma_i + \varphi_t + \mu_{it}$$

where $i = 1, ..., 275$ is the index for municipalities and t indicates election years.[22] Both equations include municipal fixed effects (γ_i and υ_i) and election year fixed effects (φ_t and δ_t). β_1 to β_8 and ϕ_0 to ϕ_9 are parameters to be estimated and μ_{it} and ϵ_{it} are random error terms with $E(\mu_{it}) = E(\epsilon_{it}) = 0$. Our main objective is to estimate jointly the effect of opportunism (OD) on the win-margin (WM) and the effect of the win-margin on the degree of opportunism. The theoretical analysis suggests that $\beta_1 > 0$ and that $\phi_0 > 0$ and $\phi_1 < 0$.

We divide the exogenous variables into three groups. The first group contains three variables that are included in both equations. They are: average investment expenditures during the election term preceding the election of year t (IE); the number of years the incumbent mayor has been in office (YM); and a dummy variable equal to 1 if the incumbent mayor runs for reelection and 0 otherwise (RR). We expect that low average investment expenditures (IE) make it easier to be opportunistic and to create a large percentage deviation of investment expenditures from the average at election times ($\phi_2 < 0$). We also expect that average investment expenditures are positively related to the win-margin as voters reward mayors for keeping investments high on average throughout the term ($\beta_2 > 0$). We expect that the number of years the incumbent mayor has served (YM) reduces the win-margin because, as documented by e.g., Mueller (1970), Frey and Schneider (1978a,b) and Veiga and Veiga (2004a), popularity tends to erode with time in

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[22] The election years are 1979, 1982, 1985, 1989, 1993, 1997 and 2001.

19

office ($\beta_3 < 0$), and that mayors with longer tenures are more experienced and so are more able to manage investment expenditures opportunistically ($\phi_3 > 0$). Finally, we expect that mayors who do not run for reelection ($RR = 0$) are unwilling to incur the cost of signalling and thus would not attempt to increase investments opportunistically ($\phi_4 > 0$). Likewise, the party of the incumbent mayor is expected to do better when the mayor runs for reelection than when a new, often unknown, candidate is presented ($\beta_4 > 0$).

The second group contains variables that are excluded from the equation for the win-margin. Firstly, it includes two variables which are directly related to the availability of funds, namely the average capital transfer from the national government during the preceding election term ($CTtm$) and the election year change in the capital transfer (ΔCT). Theory suggests that the availability of funds, here represented by transfers, increases the opportunistic distortion in election years without having a direct effect on the win-margin. We expect that ϕ_5 and ϕ_6 are positive. Secondly, the second group also includes two variables that are related to voter awareness which, as suggested by the theory, tends to reduce the magnitude of the political business cycle. Akhmedov and Zhuravskaya (2004) in their study of the budget cycle in Russian regions use education and urbanization to measure voter awareness. Unfortunately, data on education attainment at the municipality level are not available for the time period analyzed in this paper. But, in Portugal, older people have, on average, much less education than younger people. Thus, we can use the percentage of the population over 65 years of age ($Pop65$) to proxy for low average education levels[23] and use population density ($PopDens$) to proxy for urbanization. We expect $Pop65$ to be associated with low and $PopDens$ to be associated with high levels of voter awareness and we predict that $\phi_7 > 0$ and $\phi_8 < 0$. Finally, this group also includes a dummy variable that is equal to 1 if the mayor belongs to a right-wing party ($Right$). We have no prior on the sign of ϕ_9.

The third group contains variables that are excluded from the equation for the opportunistic distortion. According to Carsey and Wright (1998), the electorate may wish to reward, or punish, the national government in second tier (local) elections. Since voters

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[23]The same applies to the illiteracy rate, which will also be used in the empirical analysis.

tend to punish the national government for bad economic outcomes,[24] higher unemployment rates should lead to a lower percentage of votes for incumbent mayors who belong to the same party as the national government. We capture this with the variable GP which is the interaction between a dummy variable that takes the value of 1 if the mayor belongs to the same party as the prime minister of Portugal and the national unemployment rate.[25] A negative sign is expected for β_6. Since voters are expected to reward mayors who achieve high levels of municipal employment (Emp) or high average municipal real wages ($Wages$) during their tenure, we also expect β_7 and β_8 to be positive. Finally, we include the win-margin in the previous election ($WM_{i,prev.el.}$). This variable picks up unobserved factors such as the mayor's personal characteristics and ideology and party affiliation of voters. We expect persistence in voter preferences (and thus in voting behavior) and predict that β_5 is positive.

Descriptive statistics are presented in Table 1. Since the win-margin measures the difference in the percentage of votes between the incumbent and his main opponent, it assumes a negative value in case of defeat. The win-margin in the previous election must be positive, since it refers to the results obtained by the *incumbent* mayor. In some cases, the percentage deviation of investment expenditures from the election term average is negative, indicating that not all mayors behave opportunistically.

[Insert Table 1 here]

5 Results

The results of the estimation of equations (19) and (20) as a system of simultaneous equations, using the Generalized Method of Moments (GMM),[26] are reported in the first

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[24]For evidence on the Portuguese case, at the national level, see Veiga and Veiga (2004a,b). For a survey of the international literature, see Paldam (2004).

[25]The interacted variables will also be included in the estimations of equation (19).

[26]GMM is a robust estimator in that it does not require information of the exact distribution of the disturbances, which is an advantage relative to FIML that assumes that the contemporaneous errors have a joint normal distribution. GMM estimation is based upon the assumption that the disturbances in the equations are uncorrelated with a set of instrumental variables. The GMM estimator selects parameter estimates so that the correlations between the instruments and disturbances are as close to zero as possible,

Table 1: Descriptive Statistics

Variable Name	Variable Abbreviation	Obs.	Mean	Stand. Dev.	Min.	Max.
Win-Margin (vote difference)	*WM*	1889	14.49	20.28	-72.62	87.93
Win-Margin in the previous election	$WM_{prev.el.}$	1897	19.32	14.64	0.02	87.93
Investment Expenditures	*InvExp*	1772	182.69	137.28	5.04	1439.10
Investment Expenditures (Term Mean)	*IE*	1623	162.35	105.02	14.13	944.52
Opportunistic Distortion: % Deviation of Investment Expenditures from their Term Mean	*OD*	1500	13.96	30.31	-88.55	169.34
Average Real Wages	*Wages*	1367	515.32	115.65	290.67	1196.98
Capital Transfers (Term Mean)	*CTtm*	1623	129.53	92.54	16.97	879.48
% Change in Capital Transfers (From Previous Year)	*ΔCT*	1522	10.82	40.30	-87.38	287.56
Government's Party	*GovParty*	1893	0.44	0.50	0.00	1.00
Government's Party * Unemployment Rate	*GP*	1897	2.79	3.28	0.00	9.17
Illiteracy Rate	*IR*	1897	19.35	8.63	3.75	54.98
Municipal Employment	*Emp*	1367	15.09	9.73	1.04	89.73
Population Density	*PopDens*	1897	2.82	9.05	0.06	112.75
% Population Over 65 Years Old	*Pop65*	1897	16.98	5.68	5.35	41.22
Right	*Right*	1897	0.48	0.50	0.00	1.00
Run for Re-election	*RR*	1813	0.80	0.40	0.00	1.00
Unemployment Rate (National)	*Unemp*	1897	6.45	1.54	4.07	9.17
Years Mayor	*YM*	1893	7.01	4.61	1.00	25.00

Sources: DGAL, INE, MTSS, OECD, STAPE.

two columns of Table 2. T-statistics are shown in parenthesis and the levels of statistical significance of the estimated coefficients are signalled with asterisks. The number of observations and the adjusted R-squared for each equation are also reported.[27]

[Insert Table 2 here]

There is clear support for the main prediction of the RPBC model: opportunism pays off, as the opportunistic distortion has a statistically significant positive effect on the win-margin in both specifications of equation (19). Although we allow for the possibility of a non-monotonic relationship between the incumbency advantage and the fiscal distortion, in practice, there are, as we discussed above, good reasons to believe that over the empirically relevant range, the relationship is negative and monotonic. This is exactly what the empirical results show, as the win-margin has a statistically significant negative effect on the magnitude of the opportunistic distortion, while its square is statistically insignificant in both specifications of equation (20). In other words, the data strongly support the prediction that incumbent politicians can increase their reelection chances by inflating spending in the year before an election and that they have most reason or incentive to do so when their expected win-margin (or incumbency advantage) is small.

Concerning the magnitude of the effects, a one-point increase in the opportunistic distortion, increases the win-margin by approximately 0.05 points, while a one-point increase in the win-margin decreases the opportunistic distortion by 0.3 to 0.5 points. Although the first effect may seem small, if a mayor, in the election year, doubles investment expenditures relative to their election term average, the win-margin increases by 5 points, which could be the difference between winning and losing a close election. The second effect implies that a one-standard deviation increase in the win-margin decreases the opportunistic

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as defined by a criterion function. By choosing the weighting matrix in the criterion function appropriately, GMM can be made robust to heteroskedasticity and/or autocorrelation of unknown form. In fact, in the presence of heteroskedasticity the GMM estimator brings efficiency gains relative to 3SLS.

[27]The specifications include dummy variables for municipalities (municipal fixed effects) and election years. In order to check if results were sensitive to the geographical dummies chosen, two alternatives were also implemented. First, dummies for districts replaced the municipal fixed effects (there are 18 districts in mainland Portugal). Second, we included dummy variables for three of the four population categories that, according to the Portuguese law, are used to determine the mayors' wages. Results, available upon request, are virtually identical to those obtained when using municipal dummy variables.

Table 2: Opportunism and Vote Difference

Votes	GMM 1	GMM 2	3SLS 3	FIML 4
Equation (19): *Win-margin*				
Opportunistic distortion (% Deviation of Investment Expenditures from their Term Mean)	.058	.045	.038	.053
	(2.43)**	(3.30)***	(2.53)**	(1.98)**
Investment Expenditures (Term Mean)	-.001	.009	.009	.009
	(-.25)	(2.18)**	(2.16)**	(1.96)**
Years Mayor	-.443	-.349	-.326	-.335
	(-4.55)***	(-3.61)***	(-3.28)***	(-3.14)***
Run for Re-election	8.613	9.858	9.224	9.186
	(7.81)***	(9.64)***	(8.05)***	(7.00)***
Win-margin in previous election	62.464	51.046	43.020	43.302
	(16.6)***	(12.6)***	(14.1)***	(15.9)***
Government's Party * Unemployment Rate (national)	-.406	-1.898	-1.916	-1.971
	(-.66)	(-3.23)***	(-3.07)***	(-2.93)***
Government's Party	2.478	8.251	8.414	8.710
	(.68)	(2.31)**	(2.18)**	(2.10)**
Unemployment Rate (national)	.546	1.868	1.613	1.651
	(1.29)	(3.87)***	(3.00)***	(2.69)***
Municipal Employment	.001			
	(.01)			
Average Real Wages	.003			
	(.57)			
# Observations	1212	1463	1463	1463
Adjusted R^2	.24	.18	.19	.19
Equation (20): *Opportunistic distortion (% Deviation of Investment Expenditures from their Term Mean)*				
Win-margin	-.482	-.303	-.455	-.337
	(-3.55)***	(-1.86)*	(-2.10)**	(-3.01)***
Win-margin squared	.007	.002	.004	.002
	(1.63)	(.49)	(.85)	(1.13)
Investment Expenditures (term mean)	-.015	-.006	-.007	-.007
	(-.81)	(-.39)	(-.54)	(-.68)
Years Mayor	-.095	-.048	-.044	-.046
	(-.63)	(-.34)	(-.32)	(-.34)
Run for Re-election	3.687	4.647	5.539	5.136
	(1.85)*	(2.57)**	(2.85)***	(2.61)***
Capital Transfers (Term Mean)	.014	.004	.006	.006
	(.60)	(.20)	(.36)	(.42)
% Change in Capital Transfers (From Previous Year)	.381	.367	.370	.371
	(18.0)***	(19.6)***	(23.1)***	(27.2)***
% Population Over 65 Years Old	.044	.077	.063	.094
	(.25)	(.46)	(.37)	(.62)
Population Density	.149	.110	.130	.127
	(1.94)*	(1.65)*	(1.77)*	(1.58)
Right	-6.088	-5.373	-5.592	-5.268
	(-3.93)***	(-3.46)***	(-3.27)***	(-3.87)***
# Observations	1212	1463	1463	1463
Adjusted R^2	.35	.37	.35	.36

Sources: DGAL, INE, MTSS, OECD, STAPE.

Notes: System of simultaneous equations estimated by the method indicated at the top of each column. Models estimated with a constant and with dummy variables for municipal and time specific effects. T-statistics are in parenthesis. Significance level at which the null hypothesis is rejected: ***, 1%; **, 5%, and *, 10%.

distortion by 6 to 10 points.

Our estimates also give support to some of the secondary hypotheses. Firstly, from the estimates of equation (19) there is evidence that the win-margin is persistent, that time in office reduces the win-margin, that the mayor's party does better when the incumbent runs for reelection, and that mayors belonging to the same party as the national government are penalized in municipal elections for high national unemployment.[28] Municipal employment (Emp) and average real wages ($Wages$) turned out to be statistically insignificant in the specification reported in column 1. Since the inclusion of these variables reduces the sample size substantially, because data on employment and wages are available only from 1985 onwards, we decided to exclude them from the specifications reported in the following columns and tables.[29]

Secondly, from the estimation of equation (20), we note that the data support the hypothesis that opportunism is greater when the incumbent runs for reelection, when she belongs to a left-wing party (Right=0), and when there are increases in capital transfers from the national government in the election year. But, opportunism does not seem to depend on average investment expenditures over the election term, on the number of years the mayor has been in office, or on the average capital transfers over the election term. The results concerning the effects of voter awareness are mixed: the percentage of the population over 65 years old is not statistically significant,[30] but, contrary to our expectations, there is weak evidence of a positive effect of population density on the fiscal distortion.

To check the robustness of these results to alternative system estimation methods, we also performed the estimations using Three Stage Least Squares (3SLS) and Full Information Maximum Likelihood (FIML). Results, reported in columns 3 (3SLS) and 4 (FIML) of Table 2, are practically the same as those of column 2 (GMM). Thus, regardless of the system estimation method chosen, there is clear empirical support for the theoretical

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[28] This effect is, however, not significant in the specification reported in column 1.

[29] The number of observations rises from 1212 to 1463 (an increase of about 20%), and Wald tests allow the exclusion of these variables.

[30] Results are similar when the illiteracy rate is used instead.

predictions.[31]

The evidence presented in Table 2 looks for opportunistic distortions in investment expenditures. In Table 3, we report the results for other expenditure categories.[32] Although the two main predictions of the RPBC model still receive empirical support in the specification with total expenditures (column 1), results are weaker than those obtained for investment expenditures: the opportunistic distortion is only weakly statistically significant in the estimation of equation (19) and the coefficient on the win-margin in equation (20) is much smaller (-0.099 against -0.280). While the results for total capital expenditures are similar to those for investment expenditures (column 3), the results for current expenditures (column 2) do not accord with theory. However, as explained in section 2, Portuguese mayors have relatively little control over current expenditures and it is, therefore, not surprising that these are not opportunistically managed. Finally, in column 4, we used the subdivision of investment expenditures for which Veiga and Veiga (2007) found the most convincing evidence of opportunism - Miscellaneous Constructions. Here results are clearly supportive of the theoretical model's predictions. Furthermore, the coefficient of -0.342 for the win-margin in the estimation of equation (20) is greater in absolute value than any of those obtained for other expenditure items, indicating that the opportunistic distortion is greatest for this expenditure item.

[Insert Table 3 here]

In the first two columns of Table 4, we report results for an alternative specification where we use the level of investment expenditures in the election year instead of the percentage deviation of investment expenditures from their election term average as a measure of the opportunistic distortion. Since the former is highly correlated with the election term average, the later variable was excluded from equation (19). In equation (20), investment expenditures in the previous year replaces the term average of those

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[31] In order to save space, we will only report GMM results in the following tables (3 and 4). But, it is worth noting that those obtained when using 3SLS or FIML are very similar, and are available from the authors upon request.

[32] Since the variable *Win Margin Squared* is not statistically significant when included, it was excluded from the models of Tables 3 and 4 (wald tests allow for this exclusion).

Table 3: Opportunism in Other Expenditure Items

Votes	Total Expend. 1	Current Expend. 2	Capital Expend. 3	Miscellaneous Constructions 4
Equation (19): *Win-margin*				
Opportunistic distortion (% Deviation of Expenditures from their Term Mean)	.076	-.159	.059	.064
	(1.69)*	(-1.79)*	(2.23)**	(2.07)**
Expenditures (Term Mean)	.004	.0002	.009	.009
	(1.60)	(.04)	(2.35)**	(1.50)
Years Mayor	-.342	-.305	-.355	-.364
	(-3.50)***	(-3.17)***	(-3.64)***	(-3.68)***
Run for Re-election	9.848	10.169	9.856	9.096
	(9.63)***	(9.92)***	(9.64)***	(7.82)***
Win-margin in previous election	50.991	50.120	51.427	59.948
	(12.6)***	(12.4)***	(12.8)***	(15.0)***
Government's Party * Unemployment Rate (national)	-1.920	-2.217	-2.038	-.385
	(-3.39)***	(-3.80)***	(-3.59)***	(-.62)
Government's Party	8.261	9.885	8.899	2.333
	(2.36)**	(2.75)***	(2.54)**	(.63)
Unemployment Rate (national)	1.920	1.366	1.995	.958
	(3.86)***	(2.58)***	(4.13)***	(1.64)
# Observations	1489	1487	1489	1212
Adjusted R^2	.19	.15	.19	.21
Equation (20): *Opportunistic distortion (% Deviation of Expenditures from their Term Mean)*				
Win-margin	-.099	.024	-.197	-.342
	(-2.23)**	(.63)	(-2.90)***	(-3.39)***
Expenditures (term mean)	-.002	-.012	-.026	-.054
	(-.31)	(-2.52)**	(-1.76)*	(-1.94)*
Years Mayor	.054	.142	.002	.057
	(.76)	(2.58)***	(.02)	(.31)
Run for Re-election	1.889	.345	3.123	5.725
	(1.97)**	(.43)	(1.96)**	(2.22)**
Transfers (Term Mean)	.003	.010	.028	.041
	(.22)	(2.22)**	(1.34)	(1.37)
% Change in Transfers (From Previous Year)	.194	.082	.340	.306
	(18.8)***	(7.12)***	(20.6)***	(10.0)***
% Population Over 65 Years Old	.166	.100	.147	-.049
	(1.63)	(1.19)	(1.00)	(-.22)
Population Density	.047	.015	.113	.053
	(1.70)*	(.71)	(1.90)*	(.36)
Right	-1.665	.661	-3.768	-6.793
	(-2.30)**	(1.12)	(-3.19)***	(-3.90)***
# Observations	1489	1487	1489	1212
Adjusted R^2	.37	.15	.39	.19

Sources: DGAL, INE, MTSS, OECD, STAPE.

Notes: System of simultaneous equations estimated by GMM (with a heteroskedasticity and autocorrelation robust weighting matrix). Models estimated with a constant and with dummy variables for municipal and time specific effects. T-statistics are in parenthesis. Significance level at which the null hypothesis is rejected: ***, 1%; **, 5%, and *, 10%. The type of municipal expenditures considered in each model is indicated at the top of the respective column. Total transfers are used in columns 1 and 2, and capital transfers in columns 3 and 4.

expenditures, in order to better account for the persistence in this series.

[Insert Table 4 here]

Results are very similar to those of Table 2. Again, opportunism pays off, as higher investment expenditures in the election year lead to a larger win-margin for the incumbent party. Also as expected, investment expenditures in the election year are larger the smaller the (expected) win-margin is. Compared to the specification with deviations from the election term average (Table 2), there is, however, less evidence that opportunism depends on whether or not the mayor runs for reelection or on her ideology. On the other hand, the election term average of capital transfers is highly statistically significant in all the specifications reported in Table 4. Results obtained for total expenditures (column 3) and capital expenditures (column 4) are similar.

6 Conclusion

Building on the literatures of political business cycles and vote and popularity functions, this paper presents a theoretical model and empirical tests which combine the two sides of the interaction between economics and politics. A voting function and an equation for the determinants of opportunistic economic policies are estimated as a system of two simultaneous equations, using Generalized Method of Moments (GMM), for a sample comprising 275 Portuguese municipalities and covering the period 1979-2001.

The empirical results clearly support the hypothesis that opportunism pays off, as greater expenditures in the election year (when compared to the election term average or, simply in euros per capita) lead to greater vote differences between the incumbent and her main opponent. There is also evidence of persistence in vote differences and of a negative effect of time in office. Moreover, we find that the mayor's party does better when the incumbent runs for reelection, and that the party that controls the national government is penalized in municipal elections for high national unemployment.

The hypothesis that, over the empirically relevant range, the magnitude of opportunism is inversely proportional to the estimated win-margin also receives empirical sup-

Table 4: Expenditures and Vote Difference

Votes	Investment Expenditures 1	Investment Expenditures 2	Total Expenditures 3	Capital Expenditures 4
Equation (19): *Win-margin*				
Opportunistic distortion (Expenditures)	.009 (2.35)**	.004 (2.14)**	.006 (2.86)***	.011 (3.40)***
Years Mayor	-.445 (-4.47)***	-.372 (-3.85)***	-.369 (-3.81)***	-.359 (-3.72)***
Run for Re-election	9.185 (7.96)***	10.127 (9.90)***	10.008 (9.85)***	10.040 (9.87)***
Win-margin in previous election	62.961 (16.2)***	50.669 (12.4)***	52.659 (13.1)***	51.301 (12.7)***
Government's Party * Unemployment Rate	.122 (.19)	-1.545 (-2.60)***	-1.702 (-2.99)***	-1.720 (-3.03)***
Government's Party	-.986 (-.26)	5.657 (1.56)	6.951 (1.98)**	6.724 (1.91)***
Unemployment Rate (national)	1.138 (1.99)**	1.478 (3.85)***	1.939 (3.87)***	1.873 (3.84)***
Municipal Employment	.016 (.29)			
Average Real Wages	.010 (2.23)**			
# Observations	1210	1461	1489	1489
Adjusted R^2	.22	.18	.18	.18
Equation (20): *Opportunistic distortion (Expenditures)*				
Win-margin	-.457 (-2.19)**	-.338 (-1.68)*	-.458 (-1.95)*	-.451 (-2.19)**
Expenditures (-1)	.669 (14.8)***	.647 (14.4)***	.769 (22.4)***	.561 (12.3)***
Years Mayor	.726 (1.95)*	.183 (.51)	1.210 (2.89)***	.407 (1.13)
Run for Re-election	7.798 (1.86)*	7.387 (1.90)*	7.829 (1.70)*	8.681 (2.14)**
Transfers (Term Mean)	.488 (8.92)***	.532 (6.54)***	.432 (8.62)***	.643 (8.22)***
% Change in Transfers (From Previous Year)	1.101 (16.6)***	1.029 (16.0)***	2.398 (19.1)***	1.062 (16.9)***
% Population Over 65 Years Old	.211 (.49)	-.397 (-.58)	-.781 (-1.28)	-.074 (-.11)
Population Density	.205 (.94)	.157 (.91)	.792 (2.80)**	.286 (1.53)
Right	-6.753 (-2.01)**	-7.217 (-2.22)**	-13.590 (-3.54)***	-5.041 (-1.47)
# Observations	1210	1461	1489	1489
Adjusted R^2	.82	.82	.91	.82

Sources: DGAL, INE, MTSS, OECD, STAPE.

Notes: System of simultaneous equations estimated by GMM (with a heteroskedasticity and autocorrelation robust weighting matrix). Models estimated with a constant and with dummy variables for municipal and time specific effects. T-statistics are in parenthesis. Significance level at which the null hypothesis is rejected: ***, 1%; **, 5%, and *, 10%. The type of expenditures considered in each model is indicated at the top of the respective column. Total transfers are used in column 3, and capital transfers in columns 1, 2 and 4.

port. Thus, the opportunistic distortion is biggest when the incumbency advantage is small. Opportunism will also be greater when the incumbent runs for reelection, and when there are increases in capital transfers from the central government in the election year.

7 Appendix

Proof of Proposition 1 We start by constructing the set of separating equilibria and then impose restrictions on out-of-equilibrium beliefs to narrow down the set down to a singleton and to rule out pooling equilibria. Let $\left\{g_{1,1}^L, g_{1,1}^H\right\}$ denote candidate first-period equilibrium strategies of the two types of incumbents with $g_{1,1}^L \neq g_{1,1}^H$. Firstly, in any separating equilibrium an incumbent of type L must chose the short-run optimal allocation of first-period resources, i.e., $g_{1,1}^L = \frac{\tau+\varepsilon_L}{1+\beta\theta}$. Thus, Bayes's rule implies that $\widehat{\rho}\left(\frac{\tau+\varepsilon_L}{1+\beta\theta}\right) = 0$. Under the assumption that citizen-voters hold pessimistic out-of-equilibrium beliefs in the sense that for any $g_{1,1} \neq g_{1,1}^H$, $\widehat{\rho}\left(g_{1,1}\right) = 0$, it would not be beneficial for an incumbent of type L to pretend to be of type H if

$$C\left(g_{1,1}^H, \varepsilon_L\right) \geq \beta\left(\pi\left(1\right) - \pi\left(0\right)\right) V\left(\varepsilon_L\right). \tag{21}$$

Moreover, an incumbent of type H prefers to play $g_{1,1}^H$ rather than his short-run optimal choice $\frac{\tau+\varepsilon_H}{1+\beta\theta}$ if

$$C\left(g_{1,1}^H, \varepsilon_H\right) \leq \beta\left(\pi\left(1\right) - \pi\left(0\right)\right) V\left(\varepsilon_H\right). \tag{22}$$

Notice that these the two intervals overlap, that any $g_{1,1}^H$ within this intersection is a separating PBE and that the intersection may contain $\frac{\tau+\varepsilon_H}{1+\beta\theta}$. Call the intersection A. Since for $g_{1,1} \in A$ an incumbent of type H is worse off the further away $g_{1,1}^H$ is from $\frac{\tau+\varepsilon_H}{1+\beta\theta}$, all separating equilibria within A are dominated by $g_{1,1}^H = g^s$ (defined in equation (12)) and can be ruled out by assuming that citizen-voters hold the (out-of-equilibrium) belief that the incumbent is of type H for all $g_{1,1} \in A$. Pooling equilibria in which both types set $g_{1,1} = \frac{\tau+\varepsilon_H}{1+\beta\theta}$ can be ruled out by the intuitive criterion (Cho and Kreps, 1987) as in Rogoff (1990).

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