The effects of party competition on budget outcomes: Empirical evidence from local governments in Spain

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ABSTRACT:

This paper investigates the link between local budget outcomes and the intensity of party competition, measured as the margin of victory obtained by the incumbent in the previous local election (i.e., the difference between the vote share and 50%). Two competing hypothesis are tested in the paper. On the one hand, the *Leviathan* government hypothesis suggests that the increase in the size of the local public sector will be higher the lower is the intensity of party competition, irrespective of the ideology of the party in power. On the other hand, the *Partisan* government hypothesis suggests that the incumbent will find easier to advance its platform when the intensity of competition is low (i.,e., parties on the left/right will increase/ decrease the size of the local public sector when the intensity of the challenge is low). These hypotheses are tested with information on spending, own revenues and deficit for more than 500 Spanish municipalities during 8 years (1992-1999), and information on the results of two local electoral contests (1991 and 1995). The evidence favors the *Partisan* hypothesis over the *Leviathan* one. We found that, for left governments, spending, taxes and deficits increase as the electoral margin increases, while for right governments, and increase in the margin of victory leads to reductions in all these variables.

JEL Codes: H71, H73

Key words: political competition, local government, spending, deficit

1. Introduction

Party competition is central to guarantee the efficient working of representative democracy. When competition is strong then the incumbent party is fearful of losing office and will deliver policies closer to the ones preferred by the electorate. Stronger competition will also force the challenger to modify its platform in the direction of voter's desires. This is, in fact, the prediction of Downs's (1957) regarding party behavior in a representative democracy: the battle for electoral support will lead the parties to adopt policies that reflect the preferences of the median voter.

Not all the public choice literature, however, is equally optimistic about the ability of elections to constraint politicians' choices. On the one side, the *Leviathan* hypothesis (e.g., Brennan and Buchanan, 1980) assumes that politicians are politically unconstrained agents aiming at maximizing power. On the other hand, Wittman (1989, 1995) argues that electoral competition is an effective solution to whatever principal-agent problem might exist between politicians and voters. But formal research in political economy, incorporating the imperfections of the electoral process (e.g., Barro, 1970, Ferejhon, 1986, Caplan, 2001), suggest that neither of the two positions is entirely justified, since politicians always have some latitude to deviate from citizen's interests.

A fruitful way to cast some light in this debate will be to measure the degree of party competition in real situations, to examine its effects on actual policy choices, and to identify those institutions that contribute more to enhance it[1]. There is, however, still little accumulated empirical evidence to suggest that the intensity of party competition is important in practice. The first study to test the link between party competition and subnational policy variation was by Dawson and Robinson (1963), who found only a weak effect of competition on welfare policies in the American states. Other studies conducted similar studies at the state level in the USA (Carmines, 1974, Jennings, 1979) and the local level in the UK (Alt, 1971, Hoggart, 1985, and Boyne, 1994), with mixed results. Recently, some papers on the USA case have found significant effects of competition on state spending, revenues and deficit (see, e.g., Rogers and Rogers, 2000, Caplan, 2001, and Besley and Case, 2003).

[1] There are recent some political economy papers analyzing the effect of different institutions on accountability. See, for example, Besley and Case (1995) on the effect of gubernatorial term limits in the US states, and Persson and Tabellini (1997) on the effect of the separation of powers on political accountability, and Persson and Tabellini (2003) on the effects of different types of political systems on public finance.

This disparity of results may be due to the quality of data and econometric methods used but also to the many difficulties that blur the effective implementation of this approach (Boyne, 1994). First of all, it needs both an appropriate conceptualization of party competition and measures that are operative but strongly related to the concepts used. Following Elkins (1974, p. 682), in this paper we consider that party competition implies that governments "will not be self perpetuating and that elections can, and in some cases do, lead to the replacement of one set of officials with another set. The chance, or probability, of turnover is perhaps the most salient feature of this system of accountability". Most of the empirical papers dealing with this issue use variables that try to measure this "probability of turnover". The percentage of votes or seats obtained by the incumbent in the last electoral contest (Rogers and Rogers, 2000, Besley and Case, 2003) or the incumbents' electoral margin of victory (Boyne, 1994, Caplan, 2001) are the most commonly used variables. But as various authors have noted, other dimensions of competition may be important as, for example, the volatility of party strength (Riley, 1971; Boyne, 1994).

Second, one must have a model in mind in order to identify the proper hypothesis to test. For example, when discussing the positive link between spending growth and competition found in Rogers and Rogers (2000), Besley and Case (2003) point out: "there is no necessary theoretical link between the growth in the size of the government and intensity of competition –it seems just as likely that there would be tax cuts as expenditure increases". The theoretically-founded empirical analysis demanded by these authors has been carried out only by a few authors. It is worth mentioning the paper by Caplan (2001), who uses the insights provided by a *Leviathan* model with electoral constraints to develop his main hypothesis. According to this model, increased competition will force the government to reduce the size of the public sector. The political science literature on this topic (see, e.g., Boyne, 1994) bears on a *Partisan*–type model –although rarely formalized–, in which two parties with different ideologies compete for office. The hypothesis in this case is that increased competition has not a direct effect on the size of the public effect, but only a mediative effect. This means that left governments, preferring a higher public sector, increase spending and taxes in response of a reduced level of competition, while right governments doing the opposite.

In this paper we will take into account the previous experience in the field, trying to compute competition measures in a meaningful way and specifying accurately the hypo-

thesis to be tested. Although the main results we will provide use the incumbent's electoral margin as the main indicator of political competition, we will discuss also some results regarding other indicators. We will test the two models mentioned in the previous paragraph, *Leviathan* and *Partisan*, to check which one provides a better explanation in our case. The empirical analysis will use information on spending, own revenues and deficit for more than 500 Spanish municipalities higher than 5,000 inhabitants during 8 years (1992-1999), and information on the results of two local electoral contests (1991 and 1995).

To our knowledge this is the first test of this kind performed with data on governments outside the USA or the UK. Moreover, most USA papers work with state data, and only the UK studies are centered in the local government context. Therefore, we feel that our results will provide valuable knowledge about local politics. In addition to this, there are many peculiarities to Spanish local politics that make the analysis a little different to the ones performed in the USA case. For example, the multiple parties concurring at local elections joint with the proportional representation system used provokes that many local governments are indeed coalitions. As we will explain in the next section there are some reasons to believe that coalitions will react differently to competition than single party governments. We will take into account this into the empirical analysis, providing evidence on the link between competition and fiscal choices separately for single party and coalition governments. The analysis of the link between political factors and local budgeting is entirely new in Spain, where only a few papers have analyzed previously the effects of economic variables on local spending (see, e.g. Bosch and Suárez, 1994, Solé-Ollé, 2001 and Bosch and Solé-Ollé, 2003). Of these, only the paper by Solé-Ollé (2001) included political factors in the equation. The author found little (if any) effect of ideology and government fragmentation on spending levels due, probably, to the use of a single cross-section of data.

The paper is organized as follows. In the next section we sketch a theoretical framework that will help us to derive the hypothesis to be tested in the empirical analysis. The third section presents the equations used to test these different hypotheses. The fourth section provides a brief description of the local public sector and the electoral system in Spain, describes the data set and econometric procedure used to perform the empirical analysis, and presents the results obtained. The last section sets out the main conclusions of the paper.

2. Theoretical framework

In this section we sketch a simple theoretical framework that will help us to develop some testable hypothesis. We deal first with the predictions related to the *Partisan* model, and then with those related to the *Leviathan* model. We end the section with some comments on the effect of coalition governments on the link between political competition and budget outcomes.

2.2 *Partisan model*

In this kind of model, the parties have policy preferences and voters care about ideology. That is, the parties care about winning the elections but also about the policy platform implemented once in office. The voters care about budget issues but have an ideological preference for one of the parties. As the parties do not know with certainty the ideological position of each voter, but only the distribution of voter positions in the electorate, they will not necessary converge to the position of the median voter. This non-convergence result can be found in works by Calvert (1985), Wittman (1983) and Alesina and Rosenthal (1995)[2].

In these models, a high level of political competition can be identified with a situation where there is uncertainty about the result of the election, because a high proportion of the population is indifferent on partisan terms between the two parties. If this is the case, the parties will be forced to abandon its policy preferences and adopt the platform preferred by the representative voter. On the contrary, if all the voters are certain to vote for the most preferred party (on purely ideological terms), there is no uncertainty about the result, and the winning party (the one with more supporters) will be able to implement its most preferred platform.

[Figure 1 about here]

Figure 1 will help us in the description of the effects of political competition in a partisan model of budgeting, with spending and deficit finance as the main issues. Although this representation is extremely simple, we believe that it describes quite accurately the Spanish situation. Following Alt and Lowry (2000), the horizontal axis shows the level of spending per capita (*e*); to simplify, grant financing is not taken into account for the

[2] Other papers making use of this kind of models to represent the incentives of parties to care for different population subgroups are, for example, Lindbeck and Weibull (1987), Dixit and Londregan (1995, 1998), and Grossman and Helpman (1996).

moment, so spending should be interpreted as net of transfers. The vertical axis shows the level of own revenues per capita (r). The d_0 locus is a 45º line crossing the origin where spending equals own revenues (e=r) and, therefore, the deficit is zero (i.e., d=0). Inside the area under (above) that line, spending is higher (lower) than own revenues and the deficit (surplus) arise. The two parallel lines, d_1 and d_2 show combinations with positive deficit. The point depicted with V is the most-preferred budget of the representative voter, while the points R and L are the most-preferred budgets of the right and the left parties, respectively. As in Alt and Lowry (2002), preferences for points away from the most-preferred budgets are represented by elliptical indifference curves. The ellipses tilt up to the right indicating that spending and revenues are positive complements (Hinich and Munger, 1997). Intuitively, the representative voter and both parties are willing to tolerate spending levels above (below) their most preferred level if revenues are also above (below) their most preferred level, so the budget balance does not worsen.

We have assumed that the right party prefers a zero deficit[3], that the representative voter prefers a positive deficit (e.g., in order to be able to finance capital spending), and that the deficit most-preferred by the left party is even higher. To reflect this we locate the bliss point of the representative voter and the left party on the locus d_1 and d_2, respectively. As a result of this configuration of preferences, the left party prefers both higher spending and taxes and higher deficit than the representative voter, and he/she prefers to spend and tax more and use more deficit finance than the right party. That is, the following relationships hold: $e^L > e^V > e^R$, $r^L > r^V > r^R$ and $d^L > d^V > d^R$. Note that, according to Figure 1, the proportion of deficit finance also follows this sequence: $d^L/e^L > d^V/e^V > d^R/e^R$. This can be seen by noting that as one moves to the right the bliss points are situated on a lower ray passing thorough the origin.

But which is the role of the intensity of political competition in this setting? In the basic version of the Downsian model, the partisan preferences of the parties do not alter the result: the parties should always offer the platform preferred by the representative voter. Therefore, if this was the case, both parties (R and L) should propose the combination of spending and deficit finance V. But, as we mentioned above, other models allowing for

[3] Although this should be interpreted as an extreme case, note that these are more or less the preferences revealed by the main right party (*Partido Popular*) since mid 1990s. In fact, this party, in the central government since 1996, passed in 2001 a law called "zero deficit" that simply forbids the use of deficit at any layer of government. In practice, this means that local government could only issue new debt in order to repay the existing one.

partisanship and ideology suggest that the platform convergence will be only partial. We can give an intuitive interpretation of this result with the help of Figure 1. In this figure, each of the two parties tries to maximize the utility subject to the constraint of securing a given level of utility for the voter. This means that the solution will lay in the locus (*R*-*V*-*L*) where the indifference curves of the voter and the party are tangent. If a party knows with certainty that all voters will vote favorably for him, he will stay at his preferred point (*R* or *L*). As the level of uncertainty about how the voters will vote increase, the degree of political competition of the contest increases, and the party will have to propose a platform that secures a higher level of utility for the representative voter. In the event that all the voters are absolutely uncertain about which party to favor, both parties will have to locate in *V*. Therefore, in practice, the target level of spending, taxes and deficit finance for the right (left) party will be lower (higher) than the one preferred by the voter but higher (lower) than the most preferred by the party. Therefore, a change in the intensity of party competition will have a different effect on a left party than on a right one. A left party will set a higher target in response to a reduction in party competition, while a right party will reduce its target. In this model, thus, the level of party competition does not have a direct effect on budgeting: it only mediates the effect of ideology.

2.1 *Leviathan model*

The basic *Leviathan* hypothesis (Brennan and Buchanan, 1980) assumes that politicians are power maximizing agents and, as power and the size of the public sector are correlated, then their only purpose is to maximize the size of the public sector. In any case, the only limits to this behavior are the amount of revenues they can get from the public. Here we follow the political agency literature (see, e.g., Barro, 1970, Ferejhon, 1986, Rogoff, 1990, Besley and Case, 1995) and assume that electoral constraints may place an upper bound on the activities of the *Leviathan*. In this kind of model, politicians are still budget maximizers but, as they also care for remaining in power, they must moderate spending and tax increases today in order to reap the benefits of charge tomorrow.

In addition to this, politicians are relatively better informed than the voters about the causes and consequences of policies. This means that for the voter is quite difficult to know if an spending or a tax increase is justified by the circumstances (e.g., an economic downturn) or, instead, is due to the *Leviathan* trying to appropriate part of voter's incomes. These models demonstrate that the best strategy available to the voters is to

throw out the incumbent if the utility loss is lower than a given reservation level (Ferejhon, 1986). In this situation, the incumbent will be able to increase spending and taxes but to a maximum amount if he does not want to be thrown out of office.

They way to introduce the intensity of political competition in this case consist of assuming that the voters have specific preferences (i.e., independent of budget policy) for the incumbent or that the reservation utility loss differs across individuals. The politician does not know the value of these individual-specific voting motivations, but only its distribution across the electorate. In this situation, a high level of political competition can be identified with a situation where there is uncertainty about the result of the election, because a high proportion of the population is indifferent about throwing or retaining the incumbent. If this is the case, the incumbent will be forced to adopt the policy preferred by the representative voter. On the contrary, if all the voters are certain to vote to keep the incumbent in office, there is no uncertainty about the result, and the *Leviathan* will not be constrained at all.

[Figure 2 about here]

Figure 2 will help us in the description of the effects of political competition in a *Leviathan* model of budgeting. The figure is similar to the previous one. However, in this case, we consider that the incumbent and the challenger are similar regarding budget issues and, therefore, depict only the preferences of the incumbent. Note that we assume that the government prefers a higher level of spending, own revenues and deficit (point *G*) than the voter (point *V*). Note, however, that we also assume that the share of deficit financing is the same for the government than for the voter, as the bliss point of both agents is located on the same ray that passes through the origin ($d^G/e^G=d^V/e^V$).That is, following the results in Besley and Case (1995), we assume that the *Leviathan* is not inherently biased towards deficit finance: the higher deficit is entirely the result of a higher level of spending[4]. As a result of this, the following relationships hold for the *Leviathan* model: $e^G>e^V$, $r^G>r^V$ and $d^G>d^V$..

In this model the role of political competition is to constraint the Leviathan to adopt policies that are closer to those preferred by the voter. The locus *V*-*G* in Figure 2 shows

[4]Of course, this may change if the voter has deficit illusion (Buchanan and Wagner, 1981) or if the incumbent has a very high rate of time preference, and knows that he will not be in charge at the moment of repaying the deficit.

the tangency points between the indifference curves of the government and the voter. The government will try to reach the higher level of utility given a level of voter's utility. As political competition increases, the higher the proportion of voters that is indifferent between throwing or keeping the incumbent and the higher the level of utility that the voter can achieve. Therefore, Figure 2 tells us that as political competition increases, spending taxes and deficit will decrease. In this case, the impact of competition is direct, not mediative, because the incumbent and the challenger do not have different budgetary policies, but both are *Leviathans*.

2.2 *Coalition governments*

The models presented above aim at representing political competition in bipartisan systems with single party governments. In fact, operative theoretical models of multiparty competition are still to be developed. But, as will become evident in section four, there are multiple parties competing in Spanish local elections and, as a result, nearly 40% of the governments are coalitions. Are the predictions derived above equally valid for these coalitions than for single party governments?.

Recent empirical work on the effects of coalition governments may help us to clarify this issue. There are some papers that show that national coalition governments are less likely to be held accountable for economic performance (Powell and Whitten, 1993, Anderson, 1995). These authors find that vote losses caused an economic downturn are lower for the members of a coalition than for parties governing alone. They explain that this result is due to a lower "clarity of responsibility"; that is, to the voter's difficulty in assigning concrete responsibility to each of the government partners. For state tax politics in the United States, Alt *et al.* (1998) find that electoral losses caused by tax increases are less pronounced when state governments are divided (i.e., when the legislative and the executive are controlled by different parties).

This hypothesis means that, in our case, we could expect that coalition governments will pursue less the interests of the voters. In the *Leviathan* model case, they will enact higher spending, tax and deficit increases than single party governments at any level of political competition. In the case of *Partisan* model case, left coalitions will also tend to increase the size of the public sector more than single party left governments, although right coalition will restrain spending, taxes and deficit more than single party counterparts.

3. Empirical framework

The departure point of our framework is the assumption that the party in the government has a target level for each of the three fiscal variables analyzed: spending (e^T), own revenues (r^T) and deficit (d^T), all of them measured in per capita terms. The different models used to compute these targets giver rise to each of the specifications presented below. We first introduce the basic *Voter demand* model used, then the *Partisan* and *Leviathan* specifications and, at the end, an extension introduced to account for the effect of coalition governments.

3.1. *Voter demand model*

We describe, in the first place, our base model, where perfect political competition obliges the parties to select as its target the level of spending and own revenues preferred by the representative voter. Therefore, in the case of spending, we have:

$$e_{i,t}^T = e_{i,t}^V \tag{1}$$

where $e_{i,t}^V$ is the target level of spending of the representative voter for the local government *i* and the year *t*. Following standard practice in the local public demand literature (see, e.g., Inman, 1978), and previous results for the Spanish case (see, e.g., Bosch & Solé-Ollé, 2003), per capita expenditure desired by the voter can be represented as a linear function of its determinants:

$$e_{i,t}^V = \alpha_1.y_{i,t} + \alpha_2.v_{i,t} + \alpha_3.t_{i,t} + \alpha_4.i_{i,t} + \alpha_5.p_{i,t} + \alpha_6.a_{i,t} + \alpha_7.po_{i,t} + \alpha_8.py_{i,t} \tag{2}$$

where $y_{i,t}$ is income per capita, $v_{i,t}$ is the property value per capita, $t_{i,t}$ are transfers per capita, $i_{i,t}$ are debt charges per capita, $p_{i,t}$ is population size, $a_{i,t}$ is land area per capita, and $po_{i,t}$ and $py_{i,t}$ are the shares of old and young population. In the next section we provide more detail regarding the way to compute these variables, the data sources used and the results expected. Own revenues and deficit are modeled in a similar way.

Following the methodology proposed by Borge and Rattso (1993) and Alt and Lowry (2002) we use a partial adjustment model to represent the dynamic behavior of budgetary decisions. Therefore, we assume that each year the local government increases each fiscal variable in proportion to the difference between the target and the lagged level. For example, the spending increase would be:

$$\Delta e_{i,t} = \alpha_{0,t} + \rho.(e^{T}_{i,t} - e_{i,t-1}) + \varepsilon_{i,t} \tag{3a}$$

or, equivalently,

$$e_{i,t} = \alpha_{0,t} + (1-\rho).e_{i,t-1} + \rho.e^{T}_{i,t} + \varepsilon_{i,t} \tag{3b}$$

where $e_{i,t-1}$ is the previous year's level of spending, ρ is the portion of the disequilibrium between target and past spending that will be corrected during this year, $\alpha_{0,t}$ is a constant term that we allow to be different in each of the years of the sample, and $\varepsilon_{i,t}$ is a well-behaved error term. Now, substituting (2) in (3b) we obtain the basic equation to be estimated:

$$\begin{aligned} e_{i,t} &= \alpha_{0,t} + (1-\rho).e_{i,t-1} + \\ &\rho.(\alpha_1.y_{i,t} + \alpha_2.v_{i,t} + \alpha_3.t_{i,t} + \alpha_4.i_{i,t} + \alpha_5.p_{i,t} + \alpha_6.a_{i,t} + \alpha_7.po_{i,t} + \alpha_8.py_{i,t}) + \varepsilon_{i,t} \end{aligned} \tag{4}$$

The estimation of this equation by a non-linear method (further details provided in the next section) will allow us not only to identify all the structural parameters of expression (2) and the adjustment parameter ρ, but also to obtain its standard errors. These structural parameters will tell us about the long-run effect of an increase in one of these variables on the level of spending. The value of the adjustment parameter will tell us about how many years will be needed to close the gap between target and past spending.

3.2. *Partisan model*

The model described in the second place is the *Partisan* model, were the left (righ) governments are supposed to select a target level for these variables that are higher (lower) than the ones preferred by the representative voter. Therefore, in the case of spending this can be represented as:

$$e^{T}_{i,t} = \left(1 + \gamma_0.\Gamma_{i,t}.\omega_{i,t} + \gamma_1.(1-\Gamma_{i,t}).\omega_{i,t}\right).e^{V}_{i,t} \tag{5}$$

where $\Gamma_{i,t}$=1 in the case of a left government and zero otherwise, and $(1-\Gamma_{i,t})$=1 in the case of a right government and zero otherwise, and $\omega_{i,t}$ is the an indicator equal to zero when the level of competition is maximal, and positive and growing when the intensity of party competition increases. The parameters γ_0 and γ_1 are positive and ne-gative, respectively. Therefore, expression (5) tells us that when the level of political competition is maximal ($\omega_{i,t}$=0) the government's target level coincides with the level desired by the voter, irrespective of the ideology of the party. However, for lower levels of political competition, the government's target level is higher than the voter's spen-

ding target in the case of a left government and lower in the case of a right government. The equation to be estimated is obtained after substituting (5) into (3b):

$$e_{i,t} = \alpha_{0,t} + (1-\rho).e_{i,t-1} + (1+\gamma_0.\Gamma_{i,t}.\omega_{i,t} + \gamma_1.(1-\Gamma_{i,t}).\omega_{i,t})\times \\ \rho.(\alpha_1.y_{i,t} + \alpha_2.v_{i,t} + \alpha_3.t_{i,t} + \alpha_4.i_{i,t} + \alpha_5.p_{i,t} + \alpha_6.a_{i,t} + \alpha_7.po_{i,t} + \alpha_8.py_{i,t}) + \varepsilon_{i,t} \quad (6)$$

As before, estimation of this equation by a non-linear method will allow us to obtain the values and standard errors of the two main parameter of interest, γ_0 and γ_1.

3.3. *Leviathan model*

The model described in the third place is the *Leviathan* model, were the government is able to select a target level for these variables that are higher than the ones preferred by the representative voter. Therefore, in the case of spending this can be represented as:

$$e_{i,t}^{T} = (1+\gamma_0.\omega_{i,t}).e_{i,t}^{V} \quad (7)$$

where γ_0 is a positive parameter and $\omega_{i,t}$ is the an indicator equal to zero when the level of competition is maximal, and positive and growing when the intensity of party competition increases. Therefore, expression (7) tells us that when the level of political competition is maximal ($\omega_{i,t}$=0) the government's target level coincides with the level desired by the voter; however, for lower levels of political competition, the government's target level is higher than the voter's spending target. The equation to be estimated is obtained after substituting (7) into (3b):

$$e_{i,t} = \alpha_{0,t} + (1-\rho).e_{i,t-1} + (1+\gamma_0.\omega_{i,t})\times \\ \rho.(\alpha_1.y_{i,t} + \alpha_2.v_{i,t} + \alpha_3.t_{i,t} + \alpha_4.i_{i,t} + \alpha_5.p_{i,t} + \alpha_6.a_{i,t} + \alpha_7.po_{i,t} + \alpha_8.py_{i,t}) + \varepsilon_{i,t} \quad (8)$$

3.3. *Coalition governments*

Up to know, we identified political competition with a situation were the replacement of the party in government is quite possible. This will probably happen when the election is expected to be much contested. As we will explain in the next section, there are many ways to quantify this concept. We can advance that the main measure of the degree of political competition will be the electoral margin faced by the incumbent in the last election held. In this case $\omega_{i,t}$ goes from zero (no competition) to 0,5 (maximal competition). However, in the real world, there may be some situations were a contested election is not enough to make feel to the incumbent that its fiscal policy may have

electoral consequences. The efficacy of this connection requires also that the voters are able to determine who is ultimately responsible for the policy. As we told in the previous section this may be especially difficult in the case of a coalition government.

To account for "clarity of responsibility" in the *Leviathan* model we amend expression (7) in the following way:

$$e_{i,t}^{T} = \left(1 + \gamma_0 . \mathrm{C}_{i,t} + \gamma_1 . \mathrm{C}_{i,t} . \omega_{i,t} + \gamma_2 . (1 - \mathrm{C}_{i,t}) . \omega_{i,t}\right) e_{i,t}^{V} \tag{9a}$$

where $\mathrm{C}_{i,t} = 1$ in the case of a coalition government and 0 in the case of a single party government, $(1 - \mathrm{C}_{i,t}) = 1$ in the case of single party government and 0 in the case of a coalition. According to the "clarity of responsibility" hypothesis we expect $\gamma_1 \geq \gamma_2 \geq 0$ and $\gamma_0 \geq 0$ to hold. When $\gamma_1 = \gamma_2$ and $\gamma_0 = 0$ expressions (5) and (9a) are equivalent, and coalitions do not behave differently than single party governments. When $\gamma_1 > \gamma_2$ and $\gamma_0 = 0$, a decrease in the level of political competition has a higher impact on the spending target in the case of a coalition. If $\gamma_0 > 0$ and $\gamma_1 = 0$, coalition's effect on spending would not depend on the degree of political competition.

In the case of the *Partisan* model, we amend expression (5) in the following way:

$$\begin{aligned} e_{i,t}^{T} = \big(1 + \gamma_0 . \mathrm{C}_{i,t} + \gamma_1 . \Gamma_{i,t} . \mathrm{C}_{i,t} . \omega_{i,t} + \gamma_2 . (1 - \Gamma_{i,t}) . \mathrm{C}_{i,t} . \omega_{i,t} + \\ + \gamma_3 . \Gamma_{i,t} . (1 - \mathrm{C}_{i,t}) . \omega_{i,t} + \gamma_4 . (1 - \Gamma_{i,t}) . (1 - \mathrm{C}_{i,t}) . \omega_{i,t}\big) e_{i,t}^{V} \end{aligned} \tag{9b}$$

In this case, the expectations are similar: $\gamma_0 \geq 0$, $\gamma_1 \geq \gamma_3 \geq 0$ and $\gamma_2 \leq \gamma_4 \leq 0$. That is, left (right) coalitions tend to spend more (less) than single party left (right) governments and the impact of a decrease in the level of competition is also higher for coalitions than for parties governing alone.

4. Empirical analysis

This section reports and empirical test of the hypothesis developed above. The test use a panel of data for a set of Spanish municipalities during the 1990s. In order to set the scene for the analysis, we begin with a brief description of municipal budgeting and the local political system in Spain. Then we describe the operationalization of the political competition indicator, the way the other variables are computed, and the data sources and the econometric techniques used. Finally, we report the results obtained.

4.1 *Local budgeting and politics in Spain*

Spain consists of more than eight thousand municipalities. Most are quire small (i.e., 90% have less than 5,000 inhabitants and represent no more than 5% of the population). Municipalities are multipurpose governments, with major expenditure categories corresponding to the traditional responsibilities assigned to the local public sector (environmental services, urban planning, transportation, welfare, etc.), with the exception of education, which is a responsibility of the regional government. Municipal responsibilities increase with population size, a fact that is also recognized by the financing system, in the form of higher per capita transfers and more tax autonomy.

Own revenues account for nearly 60% of local non-financial revenues, current transfers – most of them unconditional – account for a 30%, and the remaining 10% is covered by specific capital transfers. Two thirds of own revenues come from five main taxes and the remaining one-third from various user charges. The main taxes are the property tax, the local business tax and the local motor vehicle tax, which account for 50%, 20% and 15% of tax revenues, respectively[5]. In the early years of democracy, Spanish municipalities did not have tax autonomy on these revenue sources. However, in the second half of the 1980s they were granted the power to set the tax rates of the various local taxes up and above a threshold, and over completely harmonized tax bases. Minimum tax rates are the same for all the municipalities but maximum tax rates increases with population size. The tax setting capacity of Spanish municipalities is considerable, since the bottom-top tax rate distance allows wide differences in taxes among municipalities (from 200 to 300%, depending on the tax and population size). Spanish municipalities also have autonomy to borrow[6], subject to formal limits (e.g., debt charges lower than one quarter of current revenues, among other) and, in some cases, the authorization by higher layers of government. Deficit finance is not high on average, but differs enormously across municipalities, and has been reduced thorough the 1990s (see Table 1.A).

In Spain, municipal elections are held simultaneously in all the municipalities at regular periods (4 years). There is a unique local district, closed lists, and the electoral system is a proportional one, using a D'Hondt formula with a minimum vote share of 5%. As

[5] The remaining tax revenue comes from a tax on land value improvements, a tax on building activities and other minor taxes.
[6] As was explained in footnote 2, this situation has recently changed with the new "zero deficit law" of 2001.

Colomer (1995) states, "these rules provide incentives for sincere voting and promote a high degree of pluralism in city councils". However, there is a high proportion of coalition governments: a 30.3% of the municipalities in the sample were coalition governments during the period 1992-95, and this number increased to 43.3% in 1996-99 (see Table 1.B). There is concern in Spain about the problems, ranging from increased government instability to reduced accountability, due to local coalition governments. Also, most candidates are aligned along national party lines. The municipal political system is seen as a first step of the recruitment process of the regional and national political elite (Magre, 1999). Therefore, with few exceptions, incumbents can be classified according to ideology. This becomes in fact more difficult in the case of small municipalities, both because the proportion of independent candidates increases a lot and because even party labels are not meaningful in this context.

4.2 *Variables and data*

This section describes the variables and information sources used. First of all, we justify the sample of municipalities and the period used in the analysis. Second, we describe the budgetary variables used. Third, we describe the way we have computed our political variables, especially those that measure the degree of political competition. Finally, we justify the different control variables used.

Sample and period

The link between political competition and budget outcomes is analyzed using information on more than 500 Spanish municipalities bigger than 5000 inhabitants, during the period 1992-99. More concretely, we work with data on 505 municipalities, which represent the 45% of the Spanish municipalities of this size. Of this, 250 municipalities have more than 20000 inhabitants, the 91% of the municipalities of this size. The remaining 255 municipalities have less than 20000 inhabitants and represent the 30% of municipalities in this group. This sample has been selected randomly by the Ministry of Economics and is, therefore, representative of the entire population. The budgetary data base of the Ministry of Economics (to be described below) provides us with some more observations but the information of 104 municipalities have been discarded because of problems in getting or analyzing its political data. Our database also provided information on a representative sample of municipalities with a population lower than 5000 inhabitants. We decided not to use this information because of the higher

difficulty of assigning party labels to these municipal governments, given their highest proportion of independent representatives.

We choose the period 1992-1999 because of availability of data, since it was not possible to obtain sound budgetary information for previous periods. We have to say, however, that this is probably the best period to analyze budgetary behavior in Spain, since it is not till 1992 that the reforms introduced in the 1980s were completed, with the introduction of the reformed local business tax.

Budgetary data

All budgetary data used in the analysis (i.e., spending, own revenues and deficit) comes from a database updated yearly by the Ministry of Economics with survey responses of all the big municipalities and a selected sample of the smaller ones. The mean and standard deviation of these and the other economic variables used in the analysis is presented in Table1.A. Spending is computed as current and capital expenditure outlays, to the exception of interest payments. Own revenues are the sum of local taxes and user charges and prices collected by the municipality. Deficit is total spending (including interest payments) less own revenues and grants. The three dependent variables analyzed are computed in per capita terms, using annual population figures from INE (National Institute of Statistics). These variables are expressed in real amounts, using a regional price index from INE. This budgetary data base also provides us with the information needed to compute the grant and debt charge variables.

[Tables 1.A and 1.B about here]

Political variables:

In order to implement our testing methodology we should be able to classify our local governments as left vs. right and coalition vs. single party and then compute various indicators of political competition ($\omega_{i,t}$) in a meaningful way. The information of all the political variables used in the empirical analysis is presented in the Table 1.B.

To classify our local governments according such characteristics we use a database provided by the Spanish Ministry of Public Administration, that gives information about the party of the mayor and the other parties in the government team that formed after the local elections of 1991 and 1995. The results of the 1991 election are used for the years 1992 to 1995 and the results of the 1995 election are used for the years 1996 to 1999.

Then, using previous work on the ideological position of the parties (Sotillos, 1996 and Molas and Bartomeus, 1998), we give a ideological score that goes from -1 (left) to 1 (right) to each of the parties belonging to the local government[7]. The ideological score for the government team is the sum of the party scores, weighted by the seat share of this party in the government team, computed with information given by the Spanish Ministry of Interior, regarding the results of the local elections of 1991 and 1995. Then, a government is classified as leftist is the score is negative and as a rightist if the score is positive[8]. A government is classified as single party if there is only one party in the team, even if this party is governing in minority[9], and as a coalition if there are more than one party in the government team.

There are various ways to measure the concept of political competition ($\omega_{i,t}$). One common measure of competition is the electoral margin obtained by the incumbent at the previous election (Tucker, 1982, Boyne, 1994)[10]. This margin can be computed as the difference in absolute value between the incumbents' vote or seat share and 50%. We have computed this measure with the results of the local elections of 1991 and 1995 and both with vote and seat information. It is not totally evident which of the two measures, votes or seats, is better in general. In proportional representation systems both are highly correlated, but in plurality systems there might be a substantial gap between the two (Strom, 1989). In our case, although the electoral system is not entirely proportional, both measures are practically identical (the correlation coefficient is 0.985), and the results obtained are virtually the same. Therefore, we will only report one set of results, those using the electoral margin computed with vote information.

[7] There two different sets of parties concurring to the Spanish local elections. The first one is composed by the parties with a national scope: IU (former communists), PSOE (socialists), PP (rightists), The second one is composed by the regional parties which, obviously, differ from region to region. The national parties can be easily classified exclusively according to ideology, and the scores used have been: IU=-0.75, PSOE=-0.5 and PP=0.5. In the case of regional parties, there is also a regional dimension, but we consider exclusively the ideological one. As an example, in the region of Catalonia, there are two of these parties, CiU (right, with a score of 0.25) and ERC (left, with a score of -0.25). The information on the other regions is available from the author.

[8] We also performed some estimation using a more detailed breakdown (leftist, moderately leftist, moderately rightist and rightist) but the results were qualitatively unchanged. The results are available from the author.

[9] We also performed some additional analyses to check if the behaviour of minority governments resembles most that of the single party ones or that of the coalitions, finding that is virtually the same than majorities. The results are available from the author.

[10] This variable has also been used in test of the probabilistic voting model applied to the distribution of funds across districts. See, e.g., Case (2001) and Dalhberg and Johanssen (2003).

However, as Riley (1971) and Boyne (1994) argue, the electoral margin or closeness of the past election may be not always correlated with the probability of change in party control. Occasionally, a thin electoral margin (e.g., 5%) may make the incumbent feel very safe, if he/she knows that vote shifts from one party to the other are not common. In other situations, however, a higher margin (e.g., 20%) may not be enough to feel safe if there is a high proportion of voters that swing easily from one party to the other. Therefore, we have computed a second measure of political competition ($\omega_{i,t}$): the standard deviation of the incumbents' vote share in the four elections for which we have the required data: 1987, 1991, 1995 and 1999. The data on the 1987 and 1999 elections comes from the same source than the others. Unfortunately, this second measure shows a high correlation with the first one, so the estimation of the equation including both variables at the same time becomes quite difficult. This is because, following Ansolabehere and Snyder (2003), we use a third indicator of political competition, the ratio between the standard deviation and electoral margin. This composite indicator is related positively to party competition: competition increases when there is more volatility in voter patterns and decreases when the closeness of the last election increases.

Control variables:

As is evident from expression (2), we include many control variables in the estimation of the effects of political competition. First, we include a measure of income per capita ($y_{i,t}$), obtained from a study made by a financial institution ("Anuario Económico de España", La Caixa).[11]

Second, we include property value per capita as a measure of the local capacity to obtain revenues through the property tax ($v_{i,t}$). This is the main local tax in Spain, accounting for nearly half of tax revenues. Previous empirical analysis have shown that assessed property value per head is useful in explaining the variation in local spending per head (Solé-Ollé, 2001 and Bosch and Solé-Ollé, 2003).The inclusion of this variable in our equation can also be justified theoretically. For example, Solé-Ollé (2001) obtains a specification where the size of local tax bases allows controlling for tax-exporting effects.

[11] Municipal income is an estimate from basic economic activity indicators, as number of telephones, number of bank offices, number of cars, etc.. This estimate is the so-called *market-share* ("Cuota de Mercado") and is presented as a share over the Spanish total. For ease of comparison with the other variables we have multiplied this share by Spanish real GDP and then we have divided this number by the population of the municipality.

Assessed property value per head is, because of property reassessments delays, a very rough proxy of property tax revenue capacity[12]. This means that assessed values per head in two municipalities will only be strictly comparable if reassessment has been carried out the same year[13]. Therefore, two municipalities, one accumulating a reassessment delay and the other recently reassessed may obtain the same revenue: one with a high base and a low rate, and the other with a low base and a high rate. To control for this fact we add to the regression interactions among the property value per head a set of dummies indicating the number of years since the last reassessment. We use four of these dummies, which take the value of one in a reassessment year ($A0_{i,t}$), if the assessment lag is higher five years ($A5_{i,t}$), and if it is higher than ten years ($A10_{i,t}$), respectively. Assessed property and number of years since reassessment come from a publication by the central assessment office for various years ("Impuesto sobre Bienes Inmuebles. Bienes de Naturaleza Urbana").

Third, we include two variables that measures the amount of intergovernmental transfers received from the central government. The first one is the level of current transfers per head ($gc_{i,t}$), which includes the main unconditional transfer received from the central government ("Participación en los Ingresos del Estado") and other minor transfers, and the second one the level of capital transfers per head ($gk_{i,t}$). As capital grants usually require the addition of local resources, we expect this kind of transfers to have a higher impact on spending that the first one.

Fourth, we include a measure of the debt charges per capita of the municipality ($i_{i,t}$), computed as the sum of interest payments a yearly debt repayment. This variable aims

[12] In Spain, property tax assessments are the responsibility of a central agency ("Centro de Gestion Catastral y Cooperación Tributaria"), so in principle reassessment delays do not occur because of lack of coordination among local governments. However, because the huge amount of municipalities (near 8,000) and the popular opposition to generalised reassessment campaigns at the beginning of the 90's it is not unusual to observe delays of ten years or more in some municipalities. In addition to this, even without differential delays, reassessments are not carried out the same year for all the municipalities, so assessed values for reassessed and non-reassessed municipalities are never strictly comparable.

[13] In fact, casual observation reveals that nominal property tax rates tent to drop suddenly after a reassessment (although effective rates tent to rise) and then are raised again to keep revenues growing. After some time it becomes difficult to raise the tax rates again and a new reassessment is needed. There have been many attempts in the literature to explain this fact. Some authors consider that voter fiscal illusion may give an explanation (Bloom and Ladd, 1982) but others (Strumpf, 2001) have argued that this behaviour may be purely rational. In this paper, however, we are less interested in the theoretical foundations of this specification than in its ability to fit the data.

to capture the effects on budgeting of a high previous debt level. Due to concerns about the possible endogeneity of this variable, we experimented both with its current a lagged values. As the results were virtually unchanged, we will present the current value estimation. The information on transfers and debt charges comes from the Ministry of Economics database mentioned at the beginning of the section.

Five, we include a set of dummies to account for the effects of population size. These dummies take the value of one if population is higher than 10,000 inhabitants ($p10_{i,t}$), higher than 20,000 ($p20_{i,t}$), and higher than 50,000 ($p50_{i,t}$). The coefficients of these variables measure the impact on spending of passing each threshold. These dummies are supposed to control both for scale economies and/or congestion costs and also (and mainly) for the spending responsibilities and tax autonomy of Spanish municipalities (Bosch and Solé-Ollé, 2003), that jump precisely at these thresholds. We experimented with population introduced alone, with the inverse of population and with population and population squared, but the dummy specification provided a better fit to the data.

Six, we include some other variables to measure need and/or cost differences across municipalities: the urban land area per capita ($a_{i,t}$), and the shares of old ($po_{i,t}$) and young ($py_{i,t}$) population. The first variable come from the same database that property values, and the other ones, as the population level, from the INE database.

4.3 *Econometric issues*

Several econometric aspects merit further attention before estimating the equations. First, because of the budget constraint, the error terms of the three equation (spending, own revenues and deficit) will be correlated. Therefore, the equations should be estimated simultaneously.

Second, note that the equations to be estimated (e.g., expressions 4, 6 or 8) are non-linear in the parameters. This means that a non-linear estimation technique is required. We applied the "full-information maximum-likelihood technique" (FIML) with TSP 4.5. (see, e.g., Alt and Lowry, 2002, and Borge and Rattso, 1993 for the application of similar procedures). We treated the deficit as the residual, and the equation of this sector is determined by the budget constraint and the estimated equations of spending and own revenues. The model was estimated also using spending or own revenues as the residual sector, and the results are similar in all the cases. We also estimated the three equations separately without imposing the budget constraint and the results (size and sign of the

main coefficients of interest) were qualitatively similar, although standard errors were somewhat higher.

We also were interested in analyzing if the multiplicative specification (i.e., with interaction between the political and the economic variables) was in fact necessary. Therefore, we reestimated the equations with the same non-linear method (that is still necessary to obtain the adjustment parameter) but adding additively all the political variables. Although the signs of the main variables were maintained, some of the political variables loose signification, and the overall performance of the model (i.e., the R^2) was reduced. Therefore, we decided to maintain the multiplicative specification. We suspect these better results are due to the huge differences in per capita spending among the municipalities in our sample. In these circumstances its does not seem very wise to expect that the increase in spending provoked by a shift in partisan-ship or an increase in the level of competition will be the same irrespective of the previous budgetary level.

Third, note that our specification includes time effects but not individual effects. The reason because individual effects were excluded from the panel estimation is the reduced variance range of the political competition variables. Note that most of them were computed with data from the past election. This means that its value does not change for all the years till the next election. A dynamic model with individual effect should have been estimated by GMM methods (Arellano and Bond, 1991) after first-differencing all the series. This would have implied that the only source of variation of political variables would have been the change occurred between the last year of a mandate and the first year of the following one. We consider that it is not very appropriate to rely only on this source of variation to identify the effects of political competition. Nevertheless, omitted heterogeneity may be a problem in our equation. It is because of this that we include a large number of controls in the equation; results will show that they are quite able to reproduce the budgetary behavior of Spanish municipalities. Moreover, the coefficients of income, grants, property value and population are very similar than the ones obtained previously by other authors using fixed-effects techni-ques (see, e.g., Bosch and Solé-Ollé, 2003). In addition to this we experimented with different sets of regional effects (i.e., 50 provinces and 17 regions) but none of them had explanatory power once introduced all the control variables.

4.3 *Results*

The basic results of the estimation of the equations for spending, own revenues and deficit are presented in Table 2. The results obtained when allowing for different responses of coalition and single party governments are displayed in Table 3. All these results are obtained using the variable electoral margin ($\omega_{i,t}$) as a measure of the intensity of party competition. In both tables, columns a, c and e present the results of the *Partisan* model, while columns b, d and f present the results of the *Leviathan* model. The only difference between both specifications can be appreciated in the top panel of the tables: in the first case the variable electoral margin is interacted with the left and right dummies, while in the second case electoral margin enters alone, without interaction, in the equation. We will discuss first the results of the political variables, and then we will summarize the main results regarding the control variables.

Political variables

The results of Table 2 confirm the superiority of the *Partisan* model over the *Leviathan* one. The results of the *Leviathan* model (columns b, c and f) suggest that an increase in the electoral margin will facilitate tax increases, and that the new revenues obtained will be used to reduce the deficit and raise expenditures. However, electoral margin is statistically significant at the 95% level in the own revenues equation; its coefficient in the deficit equation is significant at the 90% level, and this coefficient is statistically insignificant in the spending equation. These results do not coincide with the predictions we have made for the *Leviathan* model in section 2.

[Tables 2 and 3 about here]

Although we could try to find a rationale to justify them, an inspection to the results of the *Partisan* model suggests that this one performs much better. When the electoral margin is allowed to interact with the left and right dummies, all the coefficients become statistically significant and the explanatory capacity of the model rises. Moreover, the size of the coefficients increases enormously, and now electoral margin has a positive effect on spending, own revenues and deficit only in the case of left governments. Conversely, right governments tend to decrease the three budget items when electoral margin increases. The size of the responses of right and left governments is fairly similar in absolute value. The values of the coefficients obtained can be easily interpreted after recalling that these coefficients multiply the representative voter de-

mand ($e^V_{i,t}$). This means, for example, that when electoral margin increases a 10% a left government increases its target spending ($e^T_{i,t}$) by 0.409 × 0.10 × $e^V_{i,t}$, or a 4.90% (in relation to the spending desired by the voter). This spending increase is financed by an increase in own revenues of a 7.83% and by an increase in the deficit of a 8.69%. Conversely, a right government will react to an increase in the electoral margin of a 10%, reducing spending, own revenues and deficit a 4.63%, a 7.40% and a 8.01%, respectively. Moreover, note that these results imply an increase (decrease) in the relative use of deficit finance respect to own revenues in the case of left (right) governments. This is because the coefficients of electoral margin in the deficit equation are higher than those obtained in the own revenues equation, both for left and right governments. The ratio between deficit finance and own revenues can be computed by dividing expression (5) corresponding to the deficit by the one corresponding to own revenues:

$$\frac{d^T_{i,t}}{r^T_{i,t}} = \frac{\left(1+\gamma^d_0.\Gamma_{i,t}.\omega_{i,t}+\gamma^d_1.(1-\Gamma_{i,t}).\omega_{i,t}\right)}{\left(1+\gamma^r_0.\Gamma_{i,t}.\omega_{i,t}+\gamma^r_1.(1-\Gamma_{i,t}).\omega_{i,t}\right)}.\frac{d^V_{i,t}}{r^V_{i,t}}$$

where γ^d_0 and γ^d_1 are the coefficient estimates obtained from the deficit equation and γ^r_0 and γ^r_1 the coefficients obtained from the own revenues equation. If the electoral margin is zero then $d^T_{i,t}/r^T_{i,t} = d^V_{i,t}/r^V_{i,t}$ for left and right governments. However, if the electoral margin is , for example, equal to 10%, then (using the coefficients from Table 2) $d^T_{i,t}/r^T_{i,t} = 1.048\times(d^V_{i,t}/r^V_{i,t})$ for a left government and $d^T_{i,t}/r^T_{i,t} = 0.765\times(d^V_{i,t}/r^V_{i,t})$ for a right government. Therefore, with a 10% electoral margin the deficit/own revenues ratio would be a 4.80% higher with a left government and a 23.50% lower with a right government.

The results of Table 3 also favor the *Partisan* over the *Leviathan* model; because of this we will only discuss now the results of the *Partisan* model (columns a, c and e). The results of Table 3 suggest that coalitions tend to spend and tax more than single party governments, and also tend to use more deficit finance. For example, the a left single party government will raise spending a 3,91% in response to an increase in electoral margin of a 10%, while a left coalition would increase spending a 6,39% in the same situation. The different reaction of single party governments and coalitions to an increase in electoral margin are also true for own revenue and deficits. Another interesting result of Table 3 is that coalition governments tend to spend, tax and use deficit more than single party governments even when the electoral margin is zero. If this is the case, a coalition will spend a 5,20% more, tax a 5,4% more and use deficit a 7,1% more than

single party governments, although the last two effects are only statistically significant at the 90% level.

[Figure 3 about here]

Figure 3 provides the reaction to increases in the electoral margin by government type. The increase of electoral margin is shown in the horizontal axis and the change in spending (3.1), own revenues (3.2), deficit (3.3), and the ratio of deficit to own revenues (3.4) is shown in the vertical axis. We can check that coalition's profiles depart always from a positive value while single party's profiles depart from zero (i.e., coalitions spend more than single parties in competitive situations). In the case of a left government, the reaction of spending (3.1) and own revenues (3.2) to increased margins are always higher for coalitions than for single party governments. That is, left coalitions always spend and tax more than left single parties. This is not true, however, in the case of deficits (3.3): left coalitions have higher deficits in competitive situations (low margins) but lower deficits if the margin is higher than (approximately) 20%. In the case of right governments, coalitions have higher spending and taxes at low margins, but the situation is reversed when margins are higher. Right coalitions always show higher deficits than right single parties (3.3). Finally, in panel 3.4 we see that when electoral margin increases the ratio deficit/own revenues decreases abruptly for right governments, but it does not increase very much in the case of left governments.

Therefore, we can conclude that the Partisan model explains quite well the link between political competition and budget outcomes. Moreover, the size of the coefficients obtained is substantial. See, for example, the case of left coalitions: when the margin increases a 10%, own revenues increase a 10.27%. Note however, that these are long-run coefficients and that, therefore, the effect of this on a single year will be much lower. For example, in the case of own revenues the estimated adjustment coefficients is around 0.2 (see Table 3, column 2.c), meaning that a government will need five years to close the gap between its target and lagged revenues, and that the revenue increase will be around a 2% each year.

These results are robust to the use of the other measures of political competition. The results are virtually unchanged when electoral margin is computed with seat shares instead of vote shares. The results obtained when using the ratio between the standard deviation of vote share in all the elections and the electoral margin in the last election is also very similar. Also in this case the Partisan model is favored over the Leviathan one,

and left (right) governments spend, tax and use more deficit finance when party competition decreases (increases).

Control variables

The confidence in these results is increased after checking that the explanatory capacity of the model is quite high, with a R^2 around 0.9 in the spending and own revenues equations and around 0.4 in the deficit equation. The signs and size of the coefficients of the control variables are also as expected, and most of them are statistically significant.

An increase in current grants has a positive effect on spending and a negative effect on taxes and deficit. However, the size of the coefficient in the spending equation is very high (and the one in the own revenues equation is very low) and much higher than the size of the income or property value variables. This means that in the Spanish case grants tend to translate disproportionately to spending, suggesting a persistent "flypaper effect". This result has been obtained previously by other authors (see, e.g., Solé-Ollé, 2001, and Bosch and Solé-Ollé, 2003) that attribute it to institutional factors as, for example, the existence of minimum compulsory tax rates for all the local taxes. An increase in capital grants causes an increase in spending higher than the amount of the transfer, meaning that own revenues and deficit also has to increase. This result can be explained by the additionality requirement that accompany most capital grants.

Property value per capita has a positive impact on spending and own revenues and a negative effect on deficit. The impact of property value depends on the number of years since the last property assessment. For example, an increase in 100 euro in property value causes an increase of 1,1 euro in own revenues if the assessment delay is lower than five years (coefficient of $v_{i,t}$), but the impact is only of 0,8 euro in the assessment year (coefficient of $v_{i,t}$ + coefficient of $v_{i,t}\times A0_t$), 0,15 if the assessment delay is higher than five years but lower than ten (coefficient of $v_{i,t}$ + coefficient of $v_{i,t}\times A5_t$), and 0,17 if the assessment delay is higher than ten years (coefficient of $v_{i,t}$ + coefficient of $v_{i,t}\times A5_t$ + coefficient of $v_{i,t}\times A10_t$). These results were as expected and are in line with those of Bosch and Solé-Ollé (2003).

Regarding the remaining variables, lagged debt charges have also the expected sign: they reduce the level of spending and increase own revenues and deficit. The population dummies indicate that spending jumps 17 euro at the 10,000 inhabitants threshold, and 21 euro at the 20,000 threshold (see Table 2, column 1.b), and that the first jump is

financed half with own revenues and half with deficit, while the second jump is financed only with own revenues. There seems to be also a little jump at the 50,000 threshold but the coefficients are not statistically significant at conventional levels. These results are consistent with those obtained in Bosch and Solé-Ollé (2003) that find a sharp grow in per capita spending between the 5,000 and 20,000 inhabitants. Finally, land area and old and young population shares have the expected signs, but only the coefficient of old population share is statistically significant: an increase in old population implies lower spending and taxes and higher deficits.

5. Conclusions

This paper has analyzed the link between the intensity of party competition and several budget outcomes (i.e., spending, own revenues and deficit). Two different models that are capable of explaining this link have been tested: the *Leviathan* model, which predicts that increased competition will reduce spending, taxes and deficit, and the *Partisan* model, which predicts that increased competition will reduce these items for left governments and increase them for right governments. The empirical results favored the Partisan model as the one that provides the best explanation to the phenomenon under study. We found that when the electoral margin of the incumbent at the last election increases, left governments increase substantially the level of spending, own revenues and deficit, and right governments decrease these items. The impact on deficit tends to be higher than the impact on revenues; therefore, as the electoral margin increases, the ratio of deficit to own revenue finance increases for leftist and decreases for rightists. We also find that coalitions react more to increased electoral margins than single party governments and they tend to have higher levels of spending, taxes and deficit than majorities even when competition is extreme (i.e., when the electoral margin is zero). This confirms the "clarity of responsibility" hypothesis advanced in section two: coalitions can pursue their own interest with a lower level of electoral risk because voters are less able to hold accountable the different partners of the coalition.

These results suggest that the effectiveness of fiscal control from the ballot box is far from complete and varies enormously across municipalities. The incentives to keep spending, taxes and deficit at the levels desired by the voters depends ultimately on the electoral margin facing the incumbent, that varies substantially across municipalities. Therefore, one can not be entirely optimistic about the workings of a representative democracy like the one analyzed in this paper.

References

Alesina, A. and H. Rosenthal (1995): *Partisan politics, divided government and the economy*, Cambridge University Press, Cambridge, New York.

Alt, J. (1971): "Some social and political correlates of County Borough expenditures", *British Journal of Political Science*, 1, 49-62.

Alt, J.E. and R.C. Lowry (2000): "A dynamic model of state budget outcomes under divided partisan government", *Journal of Politics*, 62(4), 1035-70.

Alt, J.E., R.C. Lowry and K.E. Ferree (1998): "Fiscal policy and electoral accountability in American States", *American Political Science Review*, 88, 811-28.

Anderson, C. (1995): "The dynamics of public support for coalition governments", *Comparative Political Studies*, 28, 353-383.

Ansolabehere, S. and J. Snyder (2003): "Party control of state government and the distribution of public finances", Mimeo, Dep. of Political Science, MIT.

Arellano, M. and S. Bond (1991): "Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations", *Review of Economic Studies*, 58, 277-297.

Barro, R. (1970). "The control of politicians: an economic model", *Public Choice*, 15, 19-42.

Besley, T. and A. Case (1995): "Does political accountability affect economic policy choices? , *Quarterly Journal of Economics*, 110, 769-798.

Besley, T. and A. Case (2003): "Political institutions and policy choices: evidence from the United States", *Journal of Economic Literature* (forthcoming).

Bloom, H. and H. Ladd (1982): "Property tax revaluation and tax levy growth", *Journal of Urban Economics*, 11, 73-84.

Borge, L-E. and J. Rattso (1993): "Dynamic responses to changing demand: a model of the reallocation process in small and large municipalities in Norway", *Applied Economics*, 25, 589-598.

Bosch, N. and A. Solé-Ollé (2003): "On the relationship between local authority size and expenditure: lessons for the design of intergovernmental transfers in Spain", in G. Färber & N.Otter (eds.): *Reform of local fiscal equalization in Europe.* Speyerer Forchungsberichte 232,Forchungsinstitut für Öffentliche Verwaltung. Speyer, Germany.

Bosch, N. and J. Suárez (1993): "Fiscal perception and voting", *Government & Policy*, 11, 233-238.

Boyne, G.A. (1994): "Party competition and local spending decisions", *British Journal of Political Science*, 35, 210-222.

Brennan, G. and J. Buchanan (1980): *The power to tax: analytical foundations of a tax constitution*, Cambridge University Press, Cambridge.

Calvert, R. (1985): "Robustness of the multidimensional voting model: candidate motivations, uncertainty, and convergence", *American Journal of Political Science*, 29, 69-95.

Caplan, B. (2001): "Has Leviathan been bound? A theory of imperfectly constrained government with evidence from the states", *Southern Economic Journal*, 76, 825-47.

Case, A. (2001): "Election goals and income redistribution: recent evidence from Albania", *European Economic Review*, 45, 405-423.

Carmines, E. (1974): "The mediating influence of state legislatures on the linkage between interparty competition and welfare policies", *American Political Science Review*, 48, 118-24.

Colomer, J.M. (1995): "España y Portugal", in: Colomer, J.M. (ed.): *La política en Europa: introducción a las instituciones de quince países*, Ariel, Barcelona, pp. 203-240.

Dalhberg, M. and E. Johanssen (2002): "On the vote purchasing behavior of incumbent governments", *American Political Science Review*, 96, 27-47.

Dawson, R. and J. Robinson (1963): "Inter-party competition, economic variables and welfare spending in the American States", *Journal of Politics*, 25, 263-89.

Dixit, A. and J. Londregan (1998): "Ideology, tactics, and efficiency in redistributive politics", *Quarterly Journal of Economics*, 119, 497-529.

Elkins, D. (1974): "The measurement of party competition", *American Political Science Review*, 68, 682-700.

Ferejhon, J. (1986): "Incumbent performance and electoral control", *Public Choice*, 50, 5-25.

Grossman, G. and E. Helpman (1996): "Electoral competition and special interest politics", *Review of Economic Studies*, 63, 265-86.

Hinich, M.J. and M.C. Munger (1997): *Analytical politics*. Cambridge University Press, Cambriedge, New York.

Hoggart, K. (1985): "Political party control and the sale of local authority dwellings, 1974-83", *Government and Policy* , 3, 464-74.

Jennings, E. (1979): "Competition, constituencies and welfare policies in the American States", *American Political Science Review*, 73, 414-29.

Lindbeck, A. and J. Weibull (1987): "Balanced-budget redistribution as the outcome of political competition", *Public Choice*, 52, 273-77.

Magre, J. (1999): *L'alcalde a Catalunya*, Workshop Barcelona 9, Institut de Ciències Polítiques i Socials (ICPS), Barcelona.

Molas, I. and O. Bartomeus (1998): "Estructura de la competència política a Catalunya", Working Papere 138, Institut de Ciències Polítiques i Socials (ICPS), Barcelona.

Persson, T., G. Roland, and G. Tabellini (1997): "Separation of powers and political accountability", *Quarterly Journal of Economics*, 112, 1163-1161.

Persson and Tabellini (2003): "Constitutional rules and fiscal policy outcomes?", *American Economic Review*, forthcoming.

Powell, G.B. and G. Whitten (1993): "A cross-national analysis of economic voting: taking account of the political context", *American Journal of Political Science*, 37, 391-414.

Riley, D. (1971): "Party competition and State policy making: the need for a re-examination", *Western Political Quarterly*, 24, 510-13.

Rogers, D.L. and J.H.Rogers (2000): "Political competition and state government size: do tigher elections produce looser budgets", *Public Choice*, 105, 1-21.

Solé-Ollé, A. (1997): "Tax exporting and redistributive politics: an empirical investigation on the determinants of the Spanish local tax structure", *Public Finance*, 52, 102-125.

Solé-Ollé, A. (2001): "Determinantes del gasto público local: ¿necesidades de gasto o capacidad fiscal?", *Revista de Economía Aplicada*, 25, 115-156.

Sotillos, I. (1997): *El comportamiento electoral municipal español*, 1979-95", Centro de Investigaciones Sociológicas, Madrid.

Strom, K. (1989): "Inter.-party competition in advanced democracies", *Journal of Theoretical Politics*, 1, 277-300.

Strumpf, K. (2001): "Infrequent assessments distort property taxes: theory and evidence", *Journal of Urban Economics*, 46, 169-99.

Tucker, H. (1982): "Inter-party competition in the American States one more time", *American Politics Quarterly*, 10, 93-116.

Wittman, D. (1983): "Candidate motivations: a synthesis of alternative theories", *American Political Science Review*, 77, 142-57.

Wittman, D. (1989): "Why democracies produce efficient results", *Journal of Political Economy*, 97, 1395-424.

Wittman, D. (1995): *The myth of democratic failure: why political institutions are efficient*, Chicago University Press, Chicago.

Table 1.A. *Descriptive statistics. Economic variables, periods* 1992-95 *to* 1996-99.

Variable	1992-95		1996-99	
	Mean	*St. Dev.*	*Mean*	*St. Dev.*
spending: $e_{i,t}$	372.71	141.23	482.49	190.56
own revenues: $r_{i,t}$	240.92	162.05	292.09	162.05
deficit: $d_{i,t}$	4.08	25.01	1.88	13.54
current grants per capita: $gc_{i,t}$	117.63	36.69	151.14	151.14
capital grants per capita: $gk_{i,t}$	39.70	41.30	51.52	51.52
property value per capita: $v_{i,t}$	11,739	9,671	14,321	14,321
property value × *assess. year*: $v_{i,t} \times A0_t$	17,670	15,263	19,925	19,925
property value × *5-year assess.*: $v_{i,t} \times A5_t$	10,626	8,210	12,184	12,184
property value × 10*-year assess.*: $v_{i,t} \times A10_t$	7,055	6,364	11,581	11,581
income per capita: $y_{i,t}$	11,739	9,671	11,890	2,131
debt charges: $c_{i,t}$	28.92	32,21	14.04	14.04
land area per capita: $a_{i,t}$	7,04	6,03	6,57	5,06
share old population: $po_{i,t}$	13,21	4,32	15,53	4,72
share young population: $py_{i,t}$	21,90	11,77	17,64	3,05

Notes: budgetary variables, property value and income measured in euro; population shares in %.

Table 1.B. *Descriptive statistics. Political variables, periods* 1992-95 and 1996-99.

Variable	1992-95	1996-99
Sum		
left: $\Gamma_{i,k}$	68,90	54,72
right: $(1-\Gamma_{i,k})$	31,10	45,38
single party: $(1-C_{i,k})$	69,74	56,75
coalition: $C_{I,k}$	30,36	43,35
Mean		
margin: $\omega_{I,k}$	9,01	11,02
standard deviation : $s_{i,k}$	12,33	14,66
ratio standard deviation- margin: $s_{i,k}/\omega_{i,k}$	1,321	1,569
Standard deviation		
margin: $\omega_{I,k}$	9,15	12,58
standard deviation : $s_{i,k}$	15,79	18,39
ratio standard deviation- margin: $s_{i,k}/\omega_{i,k}$	1,676	2,236

Notes: all variables measured in %.

Table 2*:*

Partisan vs. Leviathan models of local politics: basic specification.

n° obs.= 3,550 (*N* = 550*, T*=7) ; *Full-Information Maximum Likelihood estimation*

	Spending ($e_{i,t}$)		*Own revenues* ($r_{i,t}$)		*Deficit* ($d_{i,t}$)	
Variable	(1.a)	(1.b)	(1.c)	(1.d)	(1.e)	(1.f)
i) *Political variables* (*multiplicative coefficients*)						
margin × *left*: $\omega_{i,k} \times \Gamma_{i,k}$	0.490 (4.841)***	--.--	0.783 (3.984)***	--.--	0.869 (2.214)**	--.--
margin × *right*: $\omega_{i,k} \times (1-\Gamma_{i,k})$	-0.463 (4.692)***	--.--	-0.740 (-3.749)***	--.--	-0.801 (-2.134)**	--.--
margin: $\omega_{i,k}$	--.--	0.142 (1.513)	--.--	0.230 (2.365)**	--.--	-0.192 (-1.654)*
ii) *Adjustment coefficient*						
adjustment coefficient: ρ	0.302 (26.898)***	0.342 (28.000)***	0.207 (19.748)***	0.217 (20.302)***	0.900 (62.549)***	0.901 (62.660)***
iii) *Voter demand variables* (*long-run coefficients*)						
current grants per capita: $gc_{i,t}$	0.820 (11.415)***	0.812 (12.050)***	-0.153 (-2.310)**	-0.141 (-2.050)**	-0.026 (-2.363)**	-0.043 (-2.741)***
capital grants per capita: $gk_{i,t}$	1.123 (3.469)***	1.130 (3.451)***	0.078 (3.621)***	0.057 (3.974)**	0.045 (2.363)**	0.073 (2.464)***
property value per capita: $v_{i,t}$	0.009 (19.838)***	0.010 (20.664)***	0.011 (22.113)***	0.012 (21.500)***	-0.001 (-4.302)***	-0.001 (-4.524)***
property value × *assess. year*: $v_{i,t} \times A0_t$	-0.002 (-2.958)***	-0.002 (-2.881)***	-0.003 (-2.412)**	-0.003 (-2.575)***	0.001 (3.750)***	0.001 (3.369)***
property value × *5-year assess.*: $v_{i,t} \times A5_t$	0.003 (6.192)***	0.003 (7.241)***	0.004 (6.243)***	0.004 (7.129)***	-0.001 (-3.710)***	-0.001 (-3.503)***
property value × 10-*year assess.*: $v_{i,t} \times A10_t$	0.004 (8.089)***	0.004 (8.858)***	0.002 (6.649)***	0.002 (7.142)***	0.000 (0.075)	0.000 (0.062)
income per capita: $y_{i,t}$	0.007 (3.670)***	0.007 (3.619)***	0.013 (7.022)***	0.013 (7.496)***	-0.007 (-5.950)***	-0.007 (-5.507)***
debt charges: $c_{i,t}$	-0.622 (-14.321)***	-0.600 (-10.426)***	0.335 (10.213)***	0.351 (10.264)***	0.040 (5.210)***	0.042 (4.780)***
population > 10,000 : $p10_{i,t}$	17.761 (3.153)***	17.562 (4.100)***	19.332 (10.244)***	19.241 (11.634)***	-1.500 (-1.334)	-1.542 (-1.567)
population > 20,000 : $p20_{i,t}$	22.076 (3.549)***	21.136 (2.469)**	9.934 (2.100)**	8.954 (2.324)**	10.225 (2.341)**	11.005 (2.311)**
population > 50,000 : $p50_{i,t}$	3.433 (1.042)	3.260 (1.455)	5.327 (1.368)	5.211 (1.475)	-1.789 (-0.541)	-1.806 (-0.412)
land area per capita: $a_{i,t}$	0.065 (0.900)	0.071 (1.040)	0.066 (0.948)	0.066 (0.955)	0.080 (0.908)	0.092 (0.990)
share old population: $po_{i,t}$	-0.025 (-2.637)***	-0.024 (-2.718)***	-0.029 (-4.677)***	-0.031 (-3.466)***	0.006 (4.006)***	0.007 (4.048)***
share young population: $py_{i,t}$	0.072 (1.590)	0.071 (1.040)	0.025 (0.579)	0.031 (0.722)	0.041 (0.960)	0.030 (0.942)
Adjusted R^2	0.885	0.850	0.963	0.928	0.453	0.427

Note: (1) *t* statistics are show in brackets; (2) *, ** & *** = significantly different from zero at the 90%, 95% and 99% levels, (3) Time effects included in all specifications.

Table 3*: Partisan vs. Leviathan models of local politics: single party vs. coalition n° obs.* = 3,550 (*N* = 550, *T*=7) ; *Full-Information Maximum Likelihood estimation*

	Spending ($e_{i,t}$)		*Own revenues* ($r_{i,t}$)		*Deficit* ($d_{i,t}$)	
Variable	(2.a)	(2.b)	(2.c)	(2.d)	(2.e)	(2.f)
i) *Political variables* (*multiplicative coefficients*)						
margin × *left* × *single party*: $\omega_{I,k} \times \Gamma_{i,k} \times (1 - C_{i,k})$	0.391 (5.663)***	--.--	0.625 (6.147)***	--.--	0.655 (2.722)***	--.--
margin × *right* × *single party*: $\omega_{i,k} \times (1 - \Gamma_{i,k}) \times (1 - C_{i,k})$	-0.370 (-2.411)**	--.--	-0.581 (-2.420)**	--.--	-0.784 (-1.844)*	--.--
margin × *left* × *coalition*: $\omega_{I,k} \times \Gamma_{i,k} \times C_{I,k}$	0.639 (6.250)***	--.--	1.027 (5.690)***	--.--	1.028 (1.875)*	--.--
margin × *right* × *coalition*: $\omega_{i,k} \times (1 - \Gamma_{i,k}) \times C_{i,k}$	-0.602 (1.986)**	--.--	-0.963 (-1.750)*	--.--	-1.041 (-1.547)	--.--
margin × *single party*: $\omega_{i,k} \times (1 - C_{i,k})$	--.--	0.114 (1.538)	--.--	0.185 (2.103)**	--.--	-0.297 (-2.150)**
margin × *coalition*: $\omega_{i,k} \times C_{i,k}$	--.--	0.185 (2.001)**	--.--	0.302 (2.014)**	--.--	-0.393 (-1.680)*
coalition: $C_{i,k}$	0.052 (2.314)**	0.035 (1.762)*	0.054 (1.829)*	0.039 (1.820)*	0.071 (1.909)*	0.040 (1.676)*
ii) *Adjustment coefficient*						
adjustment coefficient: ρ	0.346 (12.194)***	0.392 (27.925)***	0.224 (20.632)***	0.221 (20.524)***	0.899 (62.509)***	0.900 (62.642)***
iii) *Voter demand variables* (*long-run coefficients*)						
current grants per capita: $gc_{i,t}$	0.802 (12.194)***	0.812 (12.031)***	-0.150 (-2.111)**	-0.152 (-2.031)**	-0.039 (-2.608)***	-0.045 (-2.893)***
capital grants per capita: $gk_{i,t}$	1.115 (3.305)***	1.126 (3.428)***	0.083 (3.749)***	0.061 (3.620)**	0.032 (2.469)**	0.053 (2.405)***
property value per capita: $v_{i,t}$	0.010 (20.929)***	0.010 (20.718)***	0.011 (22.722)***	0.014 (21.021)***	-0.001 (-4.379)***	-0.001 (-4.574)***
property value × *assess. year*: $v_{i,t} \times A0_t$	-0.002 (-2.918)***	-0.002 (-2.892)***	-0.003 (-2.119)**	-0.003 (-2.598)***	0.001 (3.152)***	0.001 (3.640)***
property value × *5-year assess.*: $v_{i,t} \times A5_t$	0.003 (6.994)***	0.003 (7.212)***	0.003 (6.565)***	0.003 (7.059)***	0.001 (3.778)***	0.001 (3.531)***
property value × 10-*year assess.*: $v_{i,t} \times A10_t$	0.003 (8.699)***	0.004 (8.828)***	0.003 (7.051)***	0.003 (7.061)***	0.000 (0.062)	0.000 (0.055)
income per capita: $y_{i,t}$	0.007 (3.767)***	0.006 (3.541)***	0.013 (7.597)***	0.013 (7.377)***	-0.008 (-5.166)***	-0.009 (-5.540)***
debt charges: $c_{i,t}$	-0.634 (-12.110)***	-0.611 (-10.167)***	0.324 (10.205)***	0.346 (10.315)***	0.051 (4.674)***	0.053 (4.650)***
population > 10,000 : $p10_{i,t}$	17.780 (2.995)***	17.672 (3.510)***	19.440 (8.411)***	19.361 (7.301)***	-1.469 (-1.214)	-1.497 (-1.567)
population > 20,000 : $p20_{i,t}$	22.165 (3.465)***	22.100 (3.241)**	9.861 (2.325)**	9.211 (2.221)**	9.664 (2.105)**	10.011 (2.243)**
population > 50,000 : $p50_{i,t}$	3.355 (1.201)	3.309 (1.355)	5.120 (1.361)	5.210 (1.369)	-1.629 (-0.331)	-1.771 (-0.295)
land area per capita: $a_{i,t}$	0.639 (0.922)	0.724 (1.059)	0.656 (0.985)	0.685 (1.059)	-0.021 (-1.102)	-0.081 (-1.016)
share old population: $po_{i,t}$	-0.027 (-2.917)***	-0.024 (-2.675)***	-0.031 (-3.485)***	-0.029 (-3.386)***	0.007 (3.797)***	0.007 (4.051)***
share young population: $py_{i,t}$	0.076 (1.628)*	0.077 (1.730)*	0.033 (0.717)	0.027 (0.709)	0.032 (1.142)	0.030 (1.041)
Adjusted R^2	0.889	0.855	0.973	0.928	0.477	0.428

Note: (1) *t* statistics are show in brackets; (2) *, ** & *** = significantly different from zero at the 90%, 95% and 99% levels, (3) Time effects included in all specifications.

Figure 1: *Spending, Own revenues and deficit finance in the partisan model*

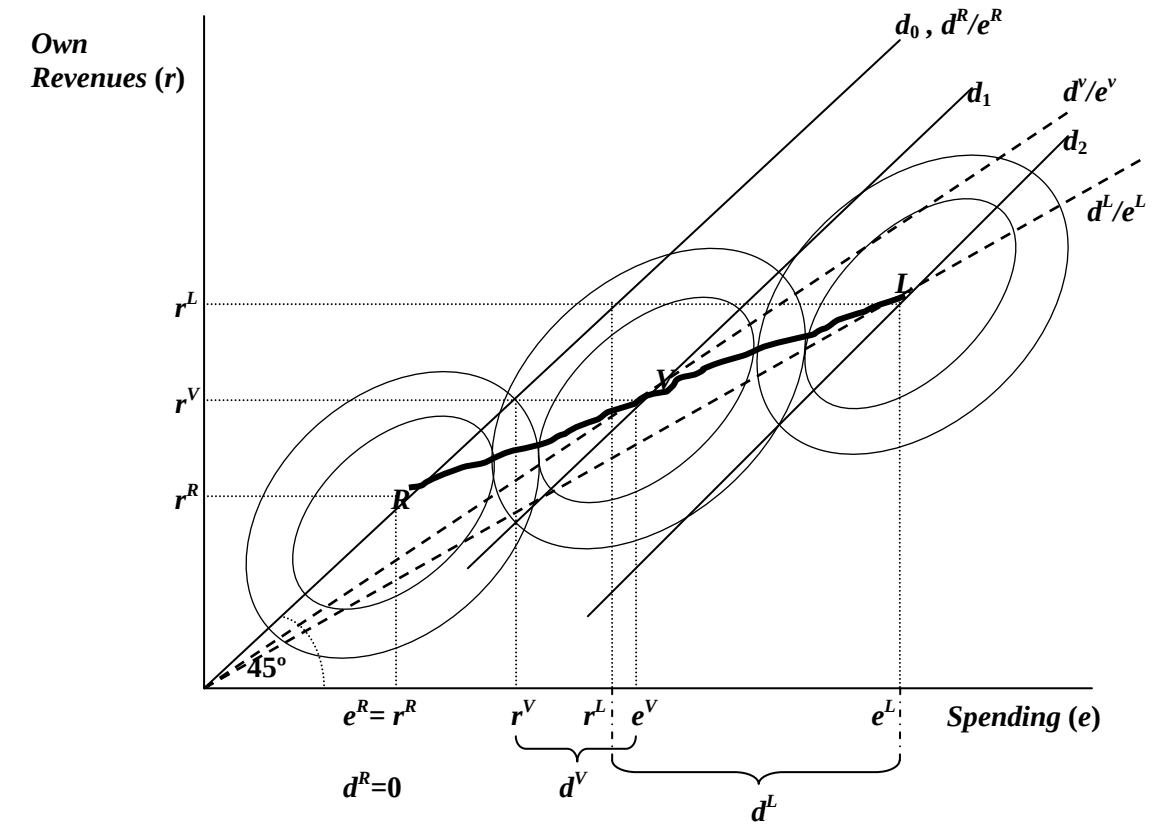


Figure 2: *Spending, Own revenues and deficit finance in the Leviathan model*

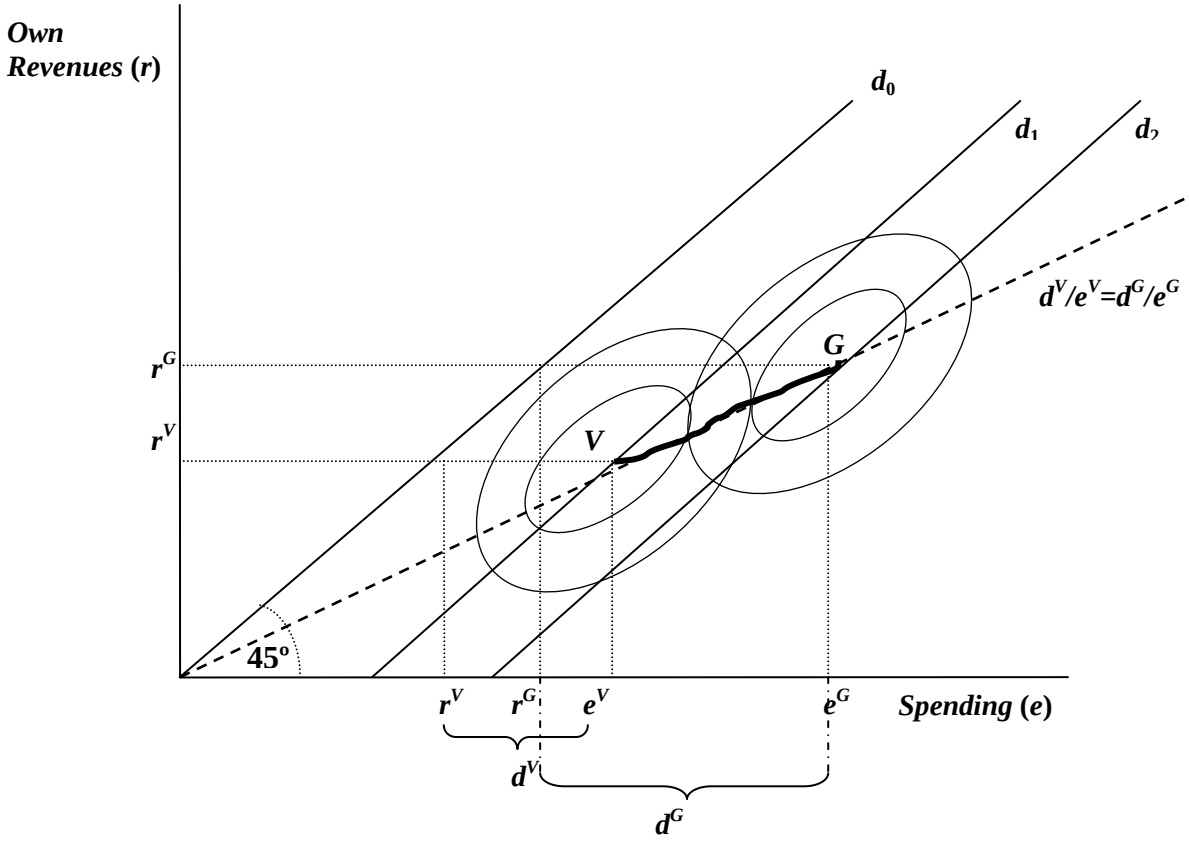
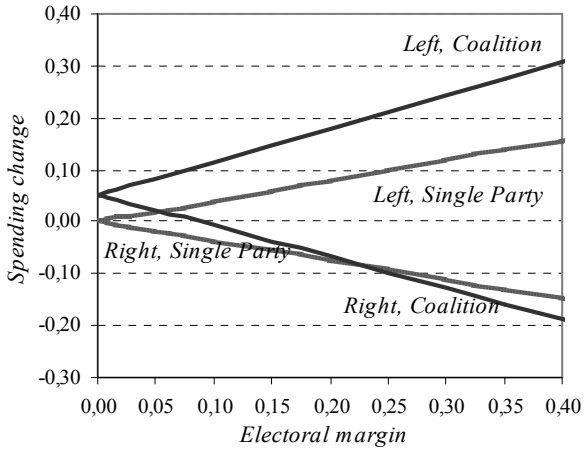
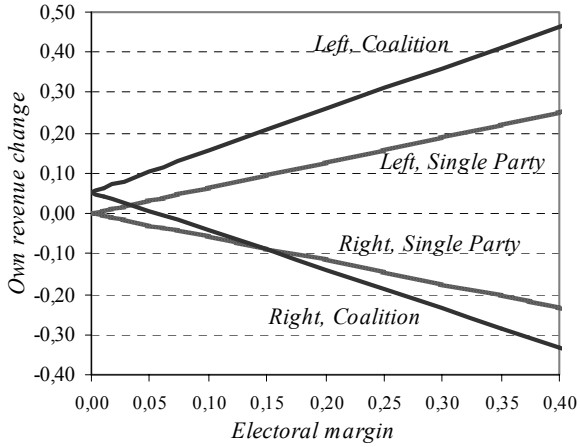


Figure 3: *Effects of electoral margin by government type* (*Single Party vs. Coalition*)

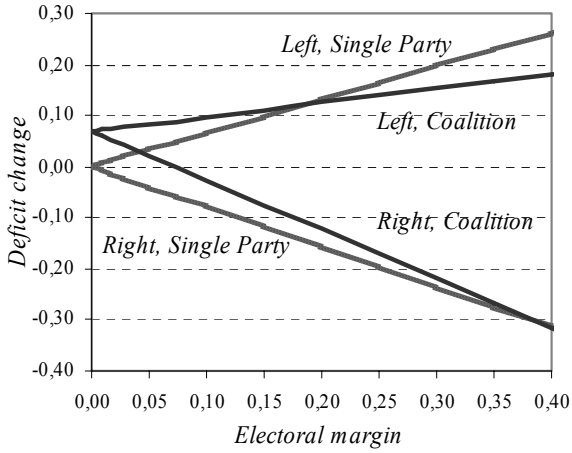
3.1.*Spending change* (*%*)



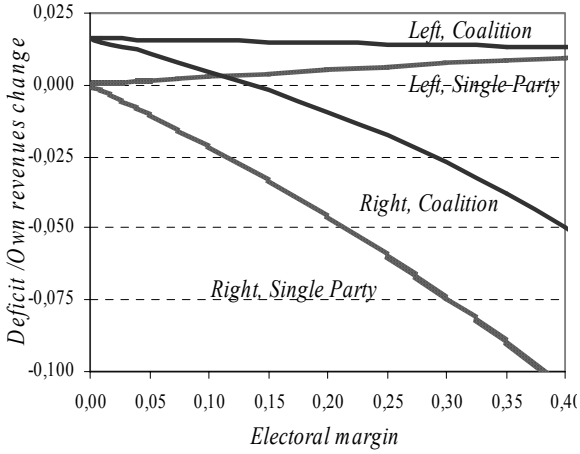
3.2. *Own revenue change* (*%*)



3.3. *Deficit change* (*%*)



3.4. *Deficit / Own revenues change* (*%*)



Note: (1) Change in the variables with respect to the voter's levels, computed from the results of Table 3.