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## Empirical analysis of the influence of voters and politicians in the public choice of Portuguese municipalities universidade portucalense

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**EMPIRICAL ANALYSIS OF THE INFLUENCE OF VOTERS AND  
POLITICIANS IN THE PUBLIC CHOICE OF PORTUGUESE  
MUNICIPALITIES**

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**KEYWORDS:** Median Voter; Interest Groups; Ideology; Local Government, Opportunistic Political Cycle

**ABSTRACT:**

When estimating a specification combining different influences on local public choice, three public issues of different ideological attributes were compared for two periods of Portuguese local government intervention: the beginning and the ending of one electoral cycle. The most exciting results of the paper are the significance of ideology at local level and the decline of its importance in the ending of the electoral cycle. There is also some evidence on the political influence of interest groups, especially in low visible issues. On the general issue, majority is also influential and fiscal illusion is found. Some preliminary panel data results including two electoral cycles are analyzed.

## 1 – Introduction

The empirical literature about local government intervention has been incorporating the theoretical developments of Public Choice literature. The simple median voter model was the first step on the substitution of “ad hoc” specifications for theoretical grounded models. However, the evidence produced on fiscal illusion revealed that majority is not completely decisive in the democratic political market. The development of interest group theory (political power of minorities) opened new paths in the study of local public choice. Finally, the understanding that also supply agents may have some discretionary political power, created a more realist platform of theoretical tools for the construction of empirical works. In this paper, after presenting a summary of some theoretical developments, I estimate for the Portuguese municipalities an empirical specification that combines those referred types of influence. The regressions were estimated for the beginning of one electoral cycle (post-electoral politics) and for the ending of the same electoral cycle (pre-electoral politics). Some comparisons between the two situations were analyzed. The paper ends with some conclusions and some clues for future research.

## 2 – Theory

Before the seventies, the economic empirical literature about local government public choice was built in an “ad hoc” basis. The researchers tested several variables that they believed that would explain local government expenditure without a theoretical basis that could justify the choice of the explanatory variables. However, during the fifties, the abstract Samuelsonian public good literature had to face the social choice problem raised by Arrow (1951). It generated a lot of research incorporating politics in explaining collective choice. Since then, theory has given attention to real public choice, instead of optimal public choice. The work of Downs (1957), departing from the thinking of Bowen (1943) and of Black (1948), gave a great impulse on the empirical study of democratic local public choice.

According to Downs, under the political rule of simple majority (50%+1) and under some restrictions, median voter would be decisive in the political market. Her demand for public goods would be the demand of the community. This result holds mainly in the case of direct democracy, when only two proposals (or candidates) are competing. But, admitting that politicians are trying to maximize votes and that voters are well informed, the result also fits in representative democracy<sup>1</sup>. Empirically, the econometric regressions that traditionally are specified to estimate the local demand for public goods (or local government expenditure) according to the median voter hypothesis include the median values in community (median tax-price and median income). During the seventies, a lot of empirical median voter literature was produced, claiming a theoretical basis, against the ancient “ad hoc “ literature. Pommerehne and Frey (1972) and Pommerehne and Schneider (1978) compared the new specification to the “ad hoc” estimation and concluded that median voter regressions are more powerful in explaining local public choice. Two other basilar empirical works about the median voter hypothesis are Borcharding and Deacon (1972) and Bergstrom and Goodman (1973). They are precursors of hundreds of articles applying the median voter hypothesis<sup>2</sup>. Despite, its success, the median voter hypothesis was very much criticized during the seventies and the eighties, because of its strong assumptions (single peaked preferences, unidimensional political issue, voters information is perfect, only two competitors) and because it is specially shaped for the case of direct democracy. Nevertheless, it is a case of success in economic empirical literature and it was the first step in providing a theoretical basis for the estimation of the local public demand for public goods.

The excessive simplicity of the median voter hypothesis left room for competing approaches that does not depend so much on restrictive assumptions.

The strongest challenge to the credibility of the median voter hypothesis is the assumption of perfect information of voters. Buchanan (1967) recovered the problem of

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<sup>1</sup> When more than two candidates are competing, if they colligate, forming two coalitions, the result also holds.

<sup>2</sup> For a review see Bahl (1980), Holcombe (1989), Cruz (1998). Meltzer and Richard (1981, 1983) are well-known papers that incorporate the median voter hypothesis.

fiscal illusion that had been pointed by Puviani (1903). Wagner (1976), Oates (1979, 1985) and Nelson (1986) tested empirically the existence of fiscal illusion and they could not reject it. One of the consequences of fiscal illusion is the “flypaper effect”<sup>3</sup>. This phenomenon has been exhaustively tested and there is evidence on its non-rejection<sup>4</sup>. As a consequence, the median voter model began to include explanatory variables to capture the fiscal illusion hypothesis<sup>5</sup>. Theoretically this means that the median voter isn’t completely decisive: the preferences of “someone else” affect public choice. The economic analysis of fiscal illusion was a second step in the direction of a more realistic theoretically based specification of community’s demand for local government intervention.

However, the consequences of abandoning the assumption of perfect information were not restricted to the introduction of fiscal illusion. Gathering for information implies costs that the individual pays if she gets some benefits in exchange. Those benefits depend on individual’s interests (what she can gain or lose with public choice). As a matter of fact, different individuals have different interests, so it’s rational to admit that some individuals are better informed than others. Olson (1965) referred that individuals are members of different interest groups (do not act individually in political market) and their information about political proposals depend on the groups they belong to. Tullock (1967) and Krueger (1974) indicated that different groups (with different resources) compete to capture benefits from the government (“rent-seeking”), causing strong deadweight losses in economy. Niskanen (1971) pointed out that bureaucrats are better informed than voters about the costs of public provision, and they use their “power” according to their interests. Stigler (1974) and Posner (1975) emphasized the interaction between government regulation and interest groups. Becker (1983) formalized the case of imperfect competition in the political market. All these referred works initiated several paths of research in public choice giving a renewed consistence to the

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<sup>3</sup> The effect of additional unconditional grants (given to local governments) on increasing local public expenditures is stronger than the same increment in the income of the population of the community.

<sup>4</sup> Bailey and Connolly (1998) reviewed the literature about the “flypaper effect”.

<sup>5</sup> Some examples are: Turnbull (1987); Islam and Choudhury (1989); Turnbull and Djoundourian (1994); Turnbull and Mitias (1995); Gemmell, Morrissey and Pinar (2002).

enlargement of the theoretical basis that could justify various of the “ad hoc” variables jointed together in the models in the category of “specific demand characteristics of communities”. However, interest group theory is not so precise as the median voter theory in indicating which explanatory variables should be included to measure the influence of different demand groups<sup>6</sup>. Congleton and Shughart II (1990), Shapiro and Papadakis (1993), Baumgardner (1993), Congleton and Bennett (1995), Ahmed and Greene (2000) are some examples of papers combining the median voter hypothesis with the interest group hypothesis. The development of the interest group theory was a third step in improving the theoretical basis in the study of local public choice.

From the exposed it is clear that the demand side in the political market has been deeply explored in literature, but it is also important to ask if the supply side does not play a role in local public choice. The special influence of bureaucracy (information about costs and control of agenda) is one kind of supply side action<sup>7</sup>. Another possible influence comes from the ideological and the idiosyncratic preferences of politicians. Median voter hypothesis states that competing candidates tend to the position of the median voter (center), mitigating their ideological differences. So, despite the fact of departing from a perfect knowledge about the ideological positions of all voters, the median voter theorem concludes that ideology is not important, because competition attracts candidates to the center, forcing them to leave their ideological positions. In the interest group hypothesis, ideological interests can be represented as any other demand interests. Among groups of many types, there are ideological groups, whose influence is represented, for example, by the number of voters in left wing and in right wing parties. Another way of giving ideology a role is by analyzing the differences in local public choice provoked by the differences in the ideological preferences of the elected politicians. Indeed, the empirical studies about local public choice that combine economic factors and ideology are not numerous, specially in the case of local political

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<sup>6</sup> In the empirical literature of interest group political influence it is possible to find several ways of measuring the power of groups (number of members, level of resources, number of interventions in media, amount of contributions to candidates in elections); for a review of the empirical interest group literature see Potters and Sloof (1996).

<sup>7</sup> It can be represented as the “agent” in relation with the “principal” (elected politicians), but public officials are also an important group of voters in the demand side of the political market.

market, where decisions are not so much of “ideological type” as in the case of central government. Hug (1995) sustains that because of the threat of entry of new parties, some ideological differences between competitors do not disappear. According to the author, ideology should be considered in the empirical studies. Paldam and Skott (1995) also point that proposals are not empty of ideology because they have to be approved inside parties: the median voters of the ideological groups (parties) may be influential. Levitt (1996) studied the vote of senators in the USA combining economic and ideological influences, which were not rejected. Gemmell, Morrissey and Pinar (2002) applied the median voter model, and introduced dummies to capture the influence of different political preferences in local public choice<sup>8</sup>.

There is also a large amount of literature about the influence of political interests in the determination of opportunistic political cycles. According to this literature, it is expected that elected politicians are not so interested in following the preferences of their ideological supporters in the pre-election moment as in the post-election moment. In the pre-election moment, in order to broader political support, politicians try to please other groups than their ideological supporters. As a consequence, on political issues with ideological attributes, in the post-election moment, it is expected a higher correspondence between the ideological preferences of the political rulers and public choice than in the pre-election moment, when the preferences of voters and interest groups tend to be attended.

The admission in the estimation of ideological and political influences is a fourth step for a more complete rational understanding of local public choice.

### 3 – The equation of influences

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<sup>8</sup> In the Portuguese case it makes sense to include ideological preferences, because political parties support almost all candidates to local elections (in the period analysed in this study, all elected local politicians were support by political parties).

The specification of the regressions estimated in this study includes the four steps referred in the above section: median voter hypothesis, fiscal illusion, interest group hypothesis and ideological preferences.

i) “Pure” median voter model

The objective is to explain local public output, but normally this is something that it is not possible to measure. So, like almost every applications of the median voter model, in this study the dependent variable is the “per capita” local government expenditure.

$$E = q G \tag{1}$$

where E is the value of the public output, G is the real output and q is the unit cost of G.

If the publicly provided good is a “pure” public good everyone consume the same amount of the good (G), if there is complete rivalry in its consume each individual consumes (G/N), being N the total population in the community. Admitting that the median voter is decisive, her demand is:

$$g_m = G N^{-\alpha} \quad (0 \leq \alpha \leq 1) \tag{2}$$

where  $g_m$  is the median voter’s demand of the public good and  $(1/N^\alpha)$  is the traditional congestion function used by Bergstrom and Goodman (1973)<sup>9</sup>. If  $\alpha$  is equal to 0, there is non-rivalry; if  $\alpha$  is equal to 1, the good is private; with  $\alpha$  between 0 and 1 the good is “mixed”.

From the utility maximizing consumer theory, the demand of the median voter is<sup>10</sup>:

$$g_m = K y_m^a p_m^b \quad \text{with } (a > 0 \text{ and } b < 0) \tag{3}$$

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<sup>9</sup> This congestion function was tested against many alternatives, but none had a better performance; see Cruz (1998) for a review.

<sup>10</sup> Assuming a Cobb-Douglas demand function.



where  $y_m$  is the median disposable income,  $p_m$  is the median voter tax-price and  $a$  and  $b$  are the demand income elasticity and the demand price elasticity respectively.  $K$  is a constant.

From (1) and (2) and considering expenditure “per capita” ( $e = E/N$ ):

$$e = K y_m^a p_m^b N^{\alpha-1} \quad (4)$$

The unit cost of the public good associated with the demand of the median voter is the ratio between the total cost of the public output (1) and the demand of the median voter (2):

$$q G / G N^\alpha = q N^\alpha \quad (5)$$

The median voter tax-price depends on the median tax-share ( $t_m = T_m/T$ , being  $T_m$  the local tax paid by the median voter and  $T$  the total tax revenue in the community). So the median voter share of the unit cost of the public good is:

$$p_m = t_m q N^\alpha \quad (6)$$

Admitting that the unit cost of  $G$  ( $q$ ) does not vary among communities<sup>11</sup> and substituting (6) in (4):

$$e = K y_m^a t_m^b N^{\alpha(1+b)-1} \quad (7)$$

The most difficult problem of the empirical estimation of the median voter model is the inclusion of the variable tax-share. As a matter of fact, generally it is not possible to find statistics about median voter tax-share and, in addition, local revenues come from a wide range of fiscal fonts (property taxes, construction taxes, vehicles circulation tax,

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<sup>11</sup> Almost all empirical studies include this simplification, because of lacks of information about differences in the production costs of public goods among communities; see in Bergstrom and Goodman (1973) some conditions for the assumption holds. Borcharding and Deacon (1972) is one of the few exceptions that does not impose this assumption.

other types of taxes). For simplicity I assume that all voters (adults) are local taxpayers and that they equally share the local tax burden<sup>12</sup>. If  $N_A$  is the number of adults (taxpayers) in the community, the median tax-share is ( $t_m = 1/N_A$ ). Assuming this definition, it is possible to separate the tax-share into two effects:

$$t_m = (1/N) (N/N_A) \quad (8)$$

The greater is  $N$ , the lower is  $t_m$ . The greater is  $N$  relatively to  $N_A$  the greater is  $t_m$ , because a larger part of the population is not a taxpayer. Defining  $(N/N_A)$  as  $\theta$  and incorporating (8) in (7):

$$e = K y_m^a \theta^b N^{(\alpha-1)(1+b)} \quad (9)$$

This is the “pure” median voter specification.

## ii) Fiscal illusion

If voters underestimate the tax-price, their choice will not be based on  $p_m$ , but on the perceived tax-price  $\pi_m$  [ $\pi_m = f(p_m)$ ]. The “flypaper effect” literature indicates that one important font of fiscal illusion is the level of unconditional transfers that communities receive from higher levels of government (in continental Portugal, from central government). If these transfers are perceived as being lowering tax-prices, then the higher is the weight of unconditional transfers relatively to the tax payments of the people of the municipality to central government, the higher is the demand for public goods in the community, “ceteris paribus”, and “vice-versa”,  $\left[ \eta = \left( \frac{U}{I} \right) \right]$ , with  $U$  being

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<sup>12</sup> Many median voter applications follow Borchering and Deacon (1972) in considering that the population of each community equally share local taxes.

unconditional transfers given to the community and  $I$  being the taxes collected by the central government in the municipality. It is possible to find in the literature other ways of defining the fiscal illusion influence, for example the relationship between non-transferred local revenue and the total revenue of local government. Letting  $R$  being the total local revenue, the level of independence from unconditional transfers of the community is  $\left[ \eta = \left( \frac{R - F}{R} \right) \right]$ . We would expect that lower “per capita” expenditure is associated to higher proportions of local revenues, but it can also express a stronger ability of municipalities to collect local revenue and, in consequence, more ability of the municipality to generate “per capita” expenditure. Due to this mixed effect I think the first measure is preferable.

The perceived tax-price is:

$$\pi_m = \eta^c p_m \quad \text{with } (c > 0) \quad (10)$$

Substituting the real tax-price by the perceived tax-price  $\pi_m$  (that really drives median voter choice) in (4) and considering the subsequent transformations that originated (9):

$$e = K y_m^a \eta^c \theta^b N^{(\alpha - 1)(1 + b)} \quad (11)$$

### iii) Interest groups

Interest group influence is an expression of differences in communities’ tastes and organization. Their pressure on one political issue varies with the number of interested members, with the intensity of their interest, with their level of information, with their resources and the costs of exerting pressure. The choice of the relevant interest groups that shall be included in the regressions depends on the issues being politically decided. So, there is always an “ad hoc” element in the inclusion of this kind of political influence. I consider a vector of interest groups ( $x_i$ ) in (11).

$$e = K y_m^a \eta^{c b} \theta^b N^{(\alpha - 1)(1 + b)} x_i^d$$

(d < 0 or d > 0, depending on the interests of groups) (12)

iv) Ideological and political influences

The measurement of ideology is not an easy task. The usual proxy is the number of votes obtained by the more ideological candidates in elections. One alternative, especially if the objective is to apprehend the supply side influence (ideological and political influences of elected politicians), is to see if there are significant differences between communities when the elected candidates come from the most ideological parties. It is possible to include ideological and political influences in (12) in the form of a vector of variables ( $s_j$ ).

$$e = K y_m^a \eta^{c b} \theta^b N^{(\alpha - 1)(1 + b)} x_i^d s_j^e$$

(e < 0 or e > 0, depending on the political and ideological preferences of political rulers) (13)

Expressing in logarithmic form:

$$\ln e = k + a \ln y_m + c b \ln \eta + b \ln \theta + (\alpha - 1)(1 + b) \ln N + d \ln x_i + e \ln s_j + u$$
 (14)

4 – Proceedings and data

The main goal of this paper is the understanding of public choice in Portuguese municipalities. I am especially interested in analyzing the behavior of the ideological variables, because there has been a hot discussion among political science researchers about the ability and the will of elected candidates in putting ideology into political action. The development of Public Choice literature enables economic science to provide some contribution on the study of this topic. Of course the municipal public

choice has not the same ideological nature of the parliamentary choice. However if, at this level, it is found some evidence about ideological influence, this contribution is an additional flame on the topic.

Ideology is considered in the left – right dimension. For some of the political issues studied in the paper it is assumed that left wing parties desire a higher level of public intervention (more public expenditure) and right wing parties wish the lowering of public intervention (lower levels of public expenditure). In the period of the analysis, there were four political parties competing in municipal elections that were elected in at least one Portuguese municipality. Two of these parties have little ideological differences between them and are generally positioned in the center of the ideological distribution (social democrat party - PSD; socialist party - PS)<sup>13</sup>. One of the other two is a left wing party (communist party – PCP/CDU) and the other is a right wing party (popular party – CDS/PP)<sup>14</sup>. The voters in the communist party evidence a stronger ideological fidelity (that is sustained even in municipal elections) than the voters in the other parties that can be apprehended by the correlations between the 1993 results of municipal elections and the results of the parliamentary elections held in 1991 and in 1995. They are extremely high for the communist party (0,91 in both cases) and none of the other parties evidence correlations higher than 0,78.

The equation (14) is estimated for two moments in the electoral cycle: the beginning (post-electoral moment - 1995) and the ending (pre-electoral moment – 1997). This procedure allows apprehending differences in the politicians' behavior in different moments in the electoral cycle. In addition, to the direct comparison of the results of both regressions, the detection of the political cycle effect may be reinforced by the

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<sup>13</sup> Since 1974 (after dictatorship), each of these parties got more votes in all Portuguese elections than the others competitors. In the municipal elections held in December of 1993 they won in 178 municipalities from a total of 224 municipalities included in regressions. Despite the fact of in 1995 and in 1997 (years of analysis) Portugal Continental (the study does not include the ultramarine municipalities) being divided into 275 municipalities. 51 municipalities were not included in the study because they were in one of the following situations: some of the four political parties running in the 1993 municipal elections colligated between themselves (41 municipalities); there was no data in at least one of the variables included in the regressions (10 municipalities).

<sup>14</sup> In the 1993 municipal elections, CDS won in 11 of the 224 relevant municipalities and PCP won in 35 municipalities.

Chow test. If the behavior of elected politicians does not change between the post-election moment and the pre-election moment, the hypothesis that the two regressions (estimation of equation (14) in two moments of the electoral cycle) are equal shall not be rejected. If the Chow test hypothesis is rejected, an indication of rulers' political influence raises.

In this study three different public issues are analyzed. Firstly, I consider one general political issue – current municipal intervention – that aggregates a bundle of public services, each of them being weakly perceived by the generality of voters. However, the whole package is the most relevant dimension of people's vote. For this issue, I expect a combination of significant influences: median voter (suffering from fiscal illusion), interest group and ideology. The regressions on this issue include one interest group – building sector. I hypothesize that this is an influential group in municipal decisions, because a large part of the municipal intervention is related to the provision of goods and facilities that increase the value of property. Building sector is interested in higher levels of provision of such public goods and facilities. On the other hand, municipalities are interested in pleasing building activities, because they are the most important local font of government revenue.

Secondly, I include a specific issue that normally is less visible to the median voter (and to the generality of voters) and also less ideological, but that may also be under the lobbying of the building interest group – urban residuals treatment<sup>15</sup>.

Finally, the third political issue is the local public intervention in cultural activities<sup>16</sup>. I expect that the median voter (the generality of citizens) is not informed about local public choice on this issue (each of the cultural activities is produced and consumed by specific interested minorities), however, interest groups and political groups are interested in higher levels of public provision (everyone pay, and minorities benefit –

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<sup>15</sup> The substitution of the public provision of this service for private provision may be associated to ideological preferences, but in the period of analysis there was not private provision of this service in any of the municipalities.

<sup>16</sup> Sports are not included.

“common pool” problem). In relation to ideology, there’s an old and classical division between left and right on this issue. For left wing parties the provision of cultural activities is a classic obligation of the state; for right wing parties there are other priorities in government intervention: the private sector is the “natural” provider of those services. I am interested in analyzing the behavior of Portuguese parties on this issue, at local level.

The data<sup>17</sup> used in the paper cover 224 Portuguese Continental municipalities, in a total of 275<sup>18</sup> in 1995 and in 1997. I estimate cross-sectional regressions on the three issues, using WLS. I use two dummies to catch the political influence of politicians: RIGHT – takes value 1 if the municipality is ruled by politicians that were supported by CDS, 0 otherwise; LEFT – 1 if the municipality is ruled by politicians that were supported by PCP, 0 otherwise. The inclusion of the two dummies allows capturing differences in relation to CENTER – when PS or PSD supported the elected politicians that rule the municipality<sup>19</sup>. Table I shows the variables that I enclose in the regressions. All variables are in logarithms [see equation (14)].

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<sup>17</sup> Data for dependent variables, median voter variables (except “per capita” level of purchase power) and interest group variables is from the Regional Statistic Year-Book of 1996 and of 1998, published by the Statistical National Institute (INE). Data on the “per capita” level of purchase power was collected from Studies about Municipal Purchase Power 1995 and 1997, published by INE. Political data is from Elections National Committee (CNE).

<sup>18</sup> c. f. note 13.

<sup>19</sup> I also estimated the regressions separating PS from PSD (third dummy) and the results were not significantly different from those presented in next section: PSD was never significant, but multicollinearity was higher. The same occurs when PS is the third dummy.

Table I – Variables included in the regressions

VARIABLES	DESCRIPTION	COMMENTS	TAXONOMY	SIGNS
A) DEPENDENT V.				
Current intervention of municipalities	Municipal “per capita” current expenditure	-----	CURREXP	-----
Urban residuals treatment	Municipal “per capita” expenditure with urban residuals treatment	-----	URBRESID	-----
Cultural activities supported by municipalities	Municipal “per capita” expenditure with cultural activities	-----	CULTURE	-----
B) EXPLANATORY V.				
1) MEDIAN VOTER				
Median tax-share ( $\theta$ )	Ratio between population in the municipality and population older than 15 years old	There is no data on population older than 18 years old	TAXPRICE	(-)
Median income ( $y_m$ )	Municipal “per capita” level of purchase power (mpepp)	It is assumed that the distribution of mpepp is a good proxy to the distribution of median income.	INCOME	(+)
Population (N) – ( $\alpha$ )	Population in the municipality	$\alpha$ is the congestion parameter; values estimated on the basis of Census 1991	POPULATION	(-)
2) FISCAL ILLUSION ( $\eta$ )				
	Municipal current revenue minus current unconditional transfers, divided by current revenue	-----	ILLUSION	(-)
3) INTEREST GROUPS				
Building sector ( $x_1$ )	Revenue from the tax on the transfer of real estate (the structure of the tax is equal in all municipalities) weighed by disposable income of the municipality	Value of property transactions in the municipality weighed by the income dimension of the municipality	IGBUILDING	(+)
Cultural Group ( $x_2$ )	Number of libraries, museums, publications and radio stations in the municipality weighed by population	-----	IGCULTURE	(+)
4) IDEOLOGY				
Left wing ( $s_1$ )	Elected mayor supported by PCP	-----	LEFT	(+)
Right wing ( $s_2$ )	Elected mayor supported by CDS	-----	RIGHT	(-)



The  $X_2$  statistic is the result of the White test of heteroscedasticity. The weight variable of WLS is INCOME. I assume that the variance of the squared errors depends on the square of the INCOME. In the municipalities with higher income, the budget restriction is not so intense in influencing the choice between private and public provision, so it is expected a higher dispersion of the errors variances in richer municipalities. In the municipalities with lower purchase power, more frequently the public intervention is the only option for the community to enjoy the goods (this might be the case of generality of cultural goods and services).

The  $F_{Politics}$  is the result of the Wald test to the political dummies (LEFT; RIGHT)<sup>20</sup>.

## 5 - Results

In table II are the results of the WLS estimation of the current municipal intervention regressions. The specification performs well; the estimated coefficients of the variables are generally significant for the required level of confidence, with the expected signs. As expected, on this general issue results indicate that the interest group and the majority influence “per capita” current expenditure. The income demand elasticity is low (smaller than unity). This result is similar to the results of other studies about the local demand for public choice. The price elasticity exhibits a higher value than what is found in other empirical studies. This result might be explained by the separation of the fiscal illusion effect (also statistically significant with the expected sign). If fiscal illusion is mixed in the price elasticity, it is natural to find a lower value for the price elasticity. However, Gemmell, Morrissey and Pinar (2002) isolated the fiscal illusion effect and found smaller values for price elasticity in British counties. The results also show that local government intervention exhibits congestion in consumption, what is in harmony with the generality of the empirical literature about local public choice. One reason for a value of  $\alpha$  greater than unity might be the exhaustion of scale economies in addition to the congestion effect. Comparing the 1995 estimated regression with the

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<sup>20</sup> The Wald test was applied after correcting heteroscedasticity.

1997 regression for the median voter and interest group variables it is possible to see an increase in fiscal illusion and in lobbying influence in the end of the electoral cycle. In relation to the political – ideological variables, they exhibit the expected signs: LEFT is significant for 95% of confidence in 1995 and in 1997, but RIGHT is not significant in 1997. The Wald test to the political variables is significant for 95% of confidence in 1995 and in 1997. These results indicate that the local governments ruled by left wing politicians are more intervenient in local economy.

Table II – Results of CURREXP regressions

VARIABLES	1995	1997
Constant	5,776 (13, 214)***	6,302 (13,658)***
TAXPRICE	-2,059 (-3,771)***	-2,573 (-4,055)***
INCOME	0,525 (7,007)***	0,534 (6,627)***
POPULATION	-0,334 (-14,013)***	-0,341 (-12,445)***
ILLUSION	-0,145 (-2,078)**	-0,228 (-2,425)***
IGBUILDING	0,142 (4,759)***	0,207 (6,449)***
LEFT	0,130 (3,287)***	0,121 (2,544)**
RIGHT	-0,229 (-3,404)***	-0,098 (-1,253)
ADJUST. R <sup>2</sup>	0,75	0,72
F	193,63	162,91
F <sub>Politics</sub>	9,82***	3,53**
X <sub>2</sub>	15,99***	29,88***
SAMPLE	224	224
α	1,315	1,20

\*\*\* Statistically significant for a level of confidence of 99%; \*\* Statistically significant for a level of confidence of 95%; \* Statistically significant for a level of confidence of 90%; t values in parentheses

In table II it is also possible to see that the elasticity of LEFT falls when the following elections are closer. Surprisingly, from these results, we can conclude that ideology matters in municipal public choice, especially after elections. Ideological influence is weaker when the electoral cycle finishes. This might mean that politicians are trying to enlarge their dominium of voters, moving for less ideological preferences. The Wald test corroborates this behavior. Even though, results show that LEFT wing mayors always maintain some ideological choice.

Table III – Results of URBRESID regressions

VARIABLES	1995	1997
Constant	-0,844 (-0,593)	0,286 0,218
TAXPRICE	-5,275 (-2,966)***	-6,233 (-3,461)***
INCOME	1,259 (5,162)***	1,071 (4,688)***
POPULATION	-0,142 (-1,832)*	-0,193 (-2,486)**
ILLUSION	-0,123 (-0,542)	0,335 (1,260)
IGBUILDING	0,260 (2,671)***	0,092 (1,010)
LEFT	0,098 (0,757)	-0,061 (-0,451)
RIGHT	-0,467 (-2,136)**	-0,474 (-2,130)*
ADJUST. R <sup>2</sup>	0,38	0,36
F	16,47	13,27
F <sub>Politics</sub>	3,23**	3,38**
X <sub>2</sub>	7,18	6,61
SAMPLE	224	224
α	1,033	1,037

\*\*\* Statistically significant for a level of confidence of 99%; \*\* Statistically significant for a level of confidence of 95%; \* Statistically significant for a level of confidence of 90%; t values in parentheses

Generally, the two regressions perform well and in harmony with what was expected. Urban residuals treatment is a private good without a strong ideological character. The median voter variables are significant and their estimated coefficients exhibit the expected signs, but the fiscal illusion variable is not significant. This is not unexpected, because the variable used to capture the fiscal illusion effect measures the independence of the municipality in terms of its own fiscal revenues in relation to unconditional grants. Although the relation between the global level of local provision (enclosing all issues) and the degree of independence of the municipality from unconditional transfers is expected, at the level of one specific issue, it is perfectly admissible that the relation does not exist. The government can spend the unconditional transfers with other types of provision. If there is fiscal illusion on this issue, it is more probable that it might come from the non-existence of a specific tax directly related to the provision of these services. However, in this context, a surprise is the high value of the price elasticity, because it indicates that voters strongly react to changes in price, what would be natural if voters were informed about the tax-price. The influence of lobbying on this issue is also unclear, because the interest group variable is significant in 1995, but not in 1997 (both estimated coefficients with the expected sign).

The ideological variable LEFT is not significant (expected result), but the variable RIGHT is significant (unexpected result). It seems that, on the contrary to what I expected, ideology also plays a role on this issue. As a matter of fact, the Wald test to the political dummies are significant for 95% of confidence in both years, indicating that the influence of ideology might be relevant. It would be worth to know why right wing municipalities spend less in the provision of urban residuals treatment than those that are ruled by center parties. In the period considered all local governments provided these services, so the explanation to this result cannot be found in the choice of local rulers between private and public provision. However, it could be in the possibility of local authorities to sub-contract with cheaper private entities. More research on this topic is required.

Finally, the CULTURE results are described in table IV.

Table IV – Results of CULTURE regressions

VARIABLES	1995	1997
Constant	5,039 (2,370)**	3,181 (1,598)
TAXPRICE	-6,639 (-2,839)***	-4,171 (-1,775)
INCOME	-0,184 (-0,540)	0,527 (1,778)
POPULATION	0,078 (0,684)	-0,539 (-1,726)*
ILLUSION	-0,042 (-0,138)	-0,337 (-1,058)
IGCULTURE	0,407 (2,757)***	0,311 (2,053)**
LEFT	0,867 (4,923)***	0,525 (3,051)***
RIGHT	-0,236 (-0,785)	0,008 (0,028)
ADJUST. R <sup>2</sup>	0,21	0,19
F	9,79	8,46
F <sub>Politics</sub>	13,61***	5,49***
X <sub>2</sub>	7,60	12,89
SAMPLE	224	224
α	0,986	1,036

\*\*\* Statistically significant for a level of confidence of 99%

\*\* Statistically significant for a level of confidence of 95%

\* Statistically significant for a level of confidence of 90%

*t values in parentheses*

The overall quality of the adjustment is not high, however the results are interesting. Firstly, as expected, majority seems not to be influent on this issue. Price is the only significant variable among the median voter variables (expected sign) and its elasticity is very much high. Cultural services are not usually considered as essential as other type of local public intervention, so when the relative price rises, combining with the possibility of private provision (the result of  $\alpha$  is “private good”), a strong reaction to

the price might be natural. Secondly, as expected, the cultural interest groups (interested minorities) influence public choice on this issue. Finally, the Wald test on the political variables is significant for a level of 99% of confidence in both years. Combining this result with the results of the estimated coefficients of LEFT and RIGHT, it is possible to see that LEFT ideological preferences are significant in the cultural issue. The results do not indicate that the municipalities ruled by right wing politicians spend less on cultural services than those that are ruled by the center parties, but there is evidence on higher local public intervention of LEFT elected politicians. The comparison of the elasticity of LEFT between the regressions indicates that the political influence on the local expenditure in the cultural issue is weaker in the pre-election moment than in the post-election period. One possible explanation to the phenomena is the existence of political cycle on this issue.

As was referred in section 4, the Chow test may provide some information about changes in the behavior of politicians between the post-electoral and the pre-electoral periods. In table V are the Chow test results.

According to the results showed in Table V, the hypothesis of equal specifications in 1995 and in 1997 is rejected in the CURREXP and in the CULTURE regressions and it is not rejected in the URBRESID regressions. These results are coherent with the hypothesis of opportunistic political cycle on the issues with ideological attributes (the general issue current expenditure and the cultural issue). Combining the Chow test results (Table V) with the estimation results of the regressions, for these issues (Table II and IV), there is some evidence on the weaker influence of politicians' ideology in the pre-election moment than in the post-election moment. In order to solidify this conclusion, in future research, more electoral periods should be added to the analysis.

Table V – The Chow test results

ISSUE	CHOW TEST
CURREXP	15,01***
URBRESID	0,72
CULTURE	5,47***

\*\*\* Statistically significant for a level of confidence of 99%

\*\* Statistically significant for a level of confidence of 95%

\* Statistically significant for a level of confidence of 90%

## 6 - Conclusions

In this paper I estimate an empirical specification, based on the theoretical propositions of public choice theory, which are able to apprehend the influence of median voter, fiscal illusion, interest groups and ideology in local public choice. All conclusions depend on the theoretical contents and also on the assumptions of the theoretical body. The regressions were estimated for three municipal issues of different nature. One is a general issue – current intervention of local government – that is apprehended by the generality of voters (fiscal illusion discounted), by interest groups and that I hypothesize to be open to the ideological influence of elected politicians. The second issue – urban residuals treatment – is not ideological, and might not be so visible to the generality of voters. The third issue – local public expenditure with cultural services – is not perceived by the generality of voters, but I believe it is under the lobbying of interest groups and under the influence of the ideological preferences of elected politicians.

The regressions were estimated for Portuguese municipalities in 1995 (the middle of one electoral cycle – post-election moment) and in 1997 (the ending of the electoral cycle – pre-election moment). The results for the issue represented by current expenditures indicate that ideology matters at the municipal level. This is an interesting and somewhat unexpected result. Majority (median voter) influences local public choice, but also interest group and the ideological preferences of the rulers of the municipalities. Local government intervention is a “normal good”, but, discounting the significant fiscal illusion, it evidences strong price elasticity. From the results it is also

possible to see that in the pre-election moment the ideological influence weakens and the lobbying influence and fiscal illusion increase. This might be an indication of political cycles on municipal ruling.

The results on urban residuals treatment are not conclusive. Despite the non-existence of a specific tax to finance the provision of the service, the price effect is strong, but fiscal illusion is not significant. It seems that majority is informed about the tax-price of this issue. In addition, the interest group included in the regressions is influential in 1995, but not in 1997. Finally, despite the low ideological nature of this issue, I found some ideological influence in right wing municipalities: they significantly spend less on the issue than center ruled municipalities. According to the Chow test there is no evidence of political cycle on the expenditure with urban residuals treatment. Due to the non-ideological nature of this issue, this result was expected.

On cultural expenditures the results are curious. As expected the issue is not visible to the majority of voters (INCOME is not significant for 5% of significance), but the price effect is strong. Maybe a general belief on the non-essentiality of this type of intervention might explain this result. As expected, cultural interest groups (interested minority) are influential and left wing municipal rulers effectively spend more on this type of services than the elected politicians that were supported by center and right wing parties. According to the Chow test there is some evidence on the existence of opportunistic political cycle on the cultural issue.

The interpretation of these results is obviously restricted by the defined assumptions, by the use of proxies and by the lack of data on the measurement of the really output of government. It is in progress the use of panel data ranging two electoral cycles and the use of an additional political issue - capital expenditure (it is expected more political discretionary power on this issue).



## 7 – Panel Data – Preliminary Results

A panel data on two electoral cycles is being tested. It includes two pre-election moments (1997 and 2001) and two post-election moments (1995 and 1999). The number of municipalities with the required data is smaller (from 224 to 182) but it still includes a large part of the population of 275 municipalities. This fact and the plausibility of some relationship between the individual effects and the explanatory variables justify the hypothesis of individual (municipalities) fixed-effects. The estimation method is GLS with Cross Section Weights and the t tests are reported from White Heteroskedasticity-Consistent Standard Errors and Variance.

Missing data in some cases and a deep reflection in others led me to introduce some changes in the explanatory variables. The substitution of municipal purchasing power by “per capita” household income and the moving back of museums and libraries from the cultural interest group variable are explained by missing data on the original variables. The use of the first definition of fiscal illusion described in section 3-ii (instead of the second one)<sup>21</sup> is due to the mixed effect associated to the original variable (see 3-ii). The inclusion of the dummy variable DIN (if the actual mayor was also the mayor in the last legislature - incumbent) can be justified by hypothesizing a more efficient and an electoral more independent action of experienced mayors (expected signal -). The incumbent experienced a learning process and has some advantages in competition because her image is well known among voters. As a matter of fact, normally she needs not so much public action proposals (expenditure) to conquer votes as her competitors. CGP (if the elected mayor was supported by the party that is ruling central government) tests the hypothesis of some positive influence (expected signal +) of central government rulers favoring the political affinity of mayors. Finally, a third dummy variable is included to apprehend the existence of opportunistic political cycles (PRE, if the year is a pre-election moment – expected signal +).

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<sup>21</sup> Now the expected signal is positive (+).

The specification was estimated for two additional issues: “per capita current expenditures minus local public officials wages”; and “per capita” capital expenditure. Public official wages were retired because it is not easy to change their level according to opportunistic preferences (lifetime contracts, monitoring of Accounting Court), so it is expected that opportunistic cycles be better apprehended when this item is removed. “Per capita” capital expenditure is one issue in which we might expect a significant influence of CGP, because central government frequently supports part of local government investments. If the number of local investments increases because of the participation of central government, capital local expenditure will also grow up.

The results of the panel data estimation are in table VI.

The panel data results on the general issues (“per capita current expenditure” with and without public official wages) are quite different from the cross section results (“per capita” current expenditure). The specification fits well to data in both estimations. In the panel data the tax price is not statistically significant and the variable LEFT is significant but exhibits a negative influence on “per capita” expenditure. The fiscal illusion, income, population and interest group influences remain significant with the expected signals. Accordingly to what was expected, but on the contrary to the previous results, it seems that this generic issue is not ideological at municipal level. Both LEFT and RIGHT municipalities spend less than municipalities ruled by center parties. One explanation may be found in the results obtained for the variable CGP, whose statistical significance and the positive signal (as expected) indicate that mayors elected by the same party that is governing the country spend more than the other mayors. DIN is significant with the expected negative influence. On the supply side of the political market, these results reveal that on this issue the ideological influences are not so important as political motives. The positive and significant influence of PRE, once again points to the existence of opportunistic political cycles.

Table VI – Panel data results

VARIABLES	“per capita current expenditure” (a)	= (a) excluding public officials wages	“per capita capital expenditure”	“per capita expenditure with urban residuals treatment”	“per capital cultural expenditure”
TAXPRICE	-0,248 (-1,751)*	-0,227 (-0,929)	-0,742 (-4,145)***	-0,375 (-1,242)	-0,580 (-1,266)
INCOME	0,737 (103,180)***	0,580 (48,229)***	1,226 (54,051)***	1,145 (32,497)***	2,056 (36,787)***
POPULATION	-0,903 (-63,343)***	-0,688 (-19,993)***	-1,244 (-20,302)***	-1,464 (-15,807)***	-1,107 (-5,275)***
ILLUSION	0,249 (15,752)***	0,325 (14,303)***	0,384 (8,138)***	-0,156 (-4,414)***	0,245 (3,194)**
IG(CONSTRUCTION / CULTURE)	0,087 (21,063)***	0,125 (20,900)***	0,178 (13,383)***	0,004 (0,258)	0,136 (3,559)***
LEFT	-0,067 (-10,986)***	-0,071 (-7,402)***	-0,046 (-0,977)	0,007 (0,211)	0,385 (7,951)***
RIGHT	-0,172 (-5,015)***	-0,132 (-4,621)***	-0,411 (-16,359)***	-0,655 (-20,095)***	-0,301 (-3,953)***
CGP	0,01 (5,917)***	0,025 (7,633)***	0,050 (7,784)***	-0,015 (-1,357)	0,066 (3,789)***
DIN	-0,007 (-3,554)***	-0,015 (-5,612)***	-0,029 (-3,836)***	-0,050 (-3,786)***	-0,022 (-1,073)
PRE	0,09 (72, 010)***	0,137 (60,253)***	0,225 (42,826)***	0,126 (13,724)***	0,324 (24,906)***
UNWEIGHTED ADJUST. R <sup>2</sup>	0,949	0,871	0,752	0,657	0,609
F (WEIGHTED)	281302,0***	74645,14***	20273,31***	1214,675***	865,247***
Cross section indiv	182	182	182	182	182
Total observations <sup>22</sup>	727	727	727	727	728

\*\*\* Statistically significant for a level of confidence of 99%; \*\* Statistically significant for a level of confidence of 95%; \* Statistically significant for a level of confidence of 90%; t values in parentheses; individual fixed effects are not reported.

<sup>22</sup> In the municipality “Batalha” there is no data on the real state tax revenue, so there is one observation missing in the regressions that use the interest group of construction. The municipality remains in the sample, because it is one of the few that are ruled by a right wing mayor.

The results on “per capita” capital expenditures are relatively to the current expenditure results, but the influence of tax price is significant and negative (as expected) and LEFT is not significant. It is interesting to note that the elasticity of the variable that expresses the coincidence between the party of the mayor and the party elected for central government elections (CGP) is significant and higher in the case of capital expenditure than in the case of current expenditure. It reveals some political discrimination in the central government relationship with municipalities. The influence of the construction interest group is also higher on this issue.

For urban residuals treatment the main difference between the cross section results and the panel data results is the non-significance of tax price in the panel data. The price elasticity was surprisingly high in the cross section estimation and now is not statistically different from zero. The fiscal illusion influence is significant but negative. Nevertheless it is not expected fiscal illusion on this issue, because, after 1997, in most municipalities people are informed about the price of these services, which are paid jointly with the water invoice. LEFT is not significant and RIGHT is significant with negative influence on “per capita” expenditure with urban residuals treatment. This result expresses some ideological influence on the issue.

Excluding the cultural issue, DIN is always significant and negative, giving some support to the hypothesis of efficiency gains from experience in the job or to the hypothesis of more independence of incumbents in relation to the electorate.

The cultural expenditure results of the panel data are quite similar to the results of the cross section estimation. Ideology strongly influences the cultural municipal expenditure in Portugal. In addition cultural interest groups, political discrimination and fiscal illusion deviate the local public choice on this issue from majority preferences. However, politicians believe that there is some political visibility on this issue because PRE shows some evidence on opportunistic political cycle in cultural public choice.

In all issues LEFT ruled municipalities spend less than center ruled municipalities. In all issues opportunistic political cycling is found.

It should, however, be noted that the panel data analysis is very preliminary, and it is necessary to test the adequacy of the fixed effects option and to produce a structure test between the panel pre-election and the panel pos-election. In addition, as soon as the 2003 municipal statistics are published, it will be possible to introduce another electoral cycle in the analysis.

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