

Who is fitting better to Portuguese local demand for public choice: central government or municipal governments?

JOSÉ NEVES CRUZ

Rua da Arrochada 247

4412-162 Carvalhos

Tel. 351227832918

E-mail: josec@upt.pt

Department of Economics

UNIVERSIDADE PORTUCALENSE

PORTUGAL

2002

JEL CLASSIFICATION: D72; H40; H59; R59

KEYWORDS: Economic Models; Median Voter; Interest Groups; Decentralization; Local Government

ABSTRACT:

When applying median voter and interest group models to Portuguese municipalities, two local political issues were compared with two cases of central government intervention. Empirical results show that the response of public choice to political demand is quite similar whatever the responsible level of government. The easy-communicability between central government and local interest groups calls centralization into question. Setting up the results for local provision as reference, if decentralization occurs, the destruction of nationally organized lobbying will not strongly reinforce local interest group pressure. Consequently, at a national perspective, decentralization may bring public choice closer to the preferences of majority.

1 – Introduction

The study of political decisions under the rule of simple majority (50%+1) has been the target of a large amount of analysis in Public Choice literature. It is possible to identify two main approaches on the demand of the political market: the median voter hypothesis and the interest group political influence hypothesis. In this study they are briefly discussed and the models they originate (median voter model (MVM) and interest group influence model (IGM)) are empirically applied to Portuguese municipalities. Finally, some conclusions are extracted from the empirical results and used in a short reflection about institutional innovation through decentralization.

2 – Theoretical Context

The median voter hypothesis postulates that the median voter is decisive in elections under the rule of majority (50%+1). As stated by Downs (1957), any proposal different from the most preferred by the median voter, will be rejected by a majority of voters. Despite being attractive for its simplicity and for its ability for empirical application, this hypothesis relies on strong assumptions that affect its realism. Accordingly to Holcombe (1989), it can be compared to the perfect competition model in the private market, because it is assumed that: voters act individually; they are perfectly and equally informed about politicians intentions and actions; there is only one issue in decision that is homogeneous for all voters; voters' preferences are unimodal and they do not vote strategically. There are several empirical studies that compare the estimation of the demand for public goods using other methodologies with the MVM procedure and they find a strong similarity between results¹. According to the MVM, the community's aggregate demand for public intervention (in any dimension in analysis) is given by:

$$G^* = f(t_m, y_m, N) \tag{1}$$

G^* is the output level of provision of the public good in each community (or expenditures with the provision of the public good). The variable tm is the tax share of the median voter and captures the tax price the median voter has to pay for the provision of the public good. The variable ym is the income of the household with median income in each community. The variable N is the population of the community and captures the

level of congestion in the consumption of the good. If there is congestion the good is not a pure public good.

Almost all empirical studies estimate the demand function in terms of logarithms, which implies that each β coefficient of independent variables is a measure of elasticity²:

$$\ln G^* = \beta_0 + \beta_1 \cdot \ln(tm) + \beta_2 \cdot \ln(ym) + \beta_3 \cdot \ln(N) + u \quad (2)$$

The second strong approach to political market demand is the hypothesis of interest group competition. When MVM assumptions do not occur, imperfect competition in the political market takes place and interest groups become decisive. Individuals do not act individually; instead they are members of different interest groups that try to lobby government in order to obtain decisions favourable to their interests. Information, resources and members affiliation is not identical in all groups, creating an asymmetric political power between voters. Olson (1965) studied if it would be rational for a member of an interest group to contribute to its collective action. He concluded that large groups would face strong difficulties in getting organized and in pressuring political power, because of free-riding problems. This would be the case of majority in elections whose members would not be informed about political proposals and, consequently, the median voter would not be decisive³. Congleton and Bennett (1995) specified the interest group influence model (IGM), admitting that the pressure strength of groups depended on their number of members⁴. Other studies consider the level of their resources as a proxy to their ability for doing lobby. Following Congleton and Bennett (1995) the IGM can be defined as:

$$G^* = s(N_{1+}, \dots, N_{i+}, N_{i+1-}, \dots, N_{n-}, I) \quad (3)$$

The level of provision of the public good depends on the competition between the pressure of groups that favour a higher level of provision ($N_{1, \dots, i+}$) and groups that favour a lower level of provision ($N_{i+1, \dots, n-}$), and also on some specific institutional factors (I). N can be the number of members of each group or the level of resources of each group or other proxies to lobbying. Institutional factors are, for example, the existence of referenda or the existence of specific legislation.

Several authors argue that it is necessary to admit that both the median voter and interest groups influence public choice (for example, Niskanen, 1994). Congleton and

Bennett (1995) defined a combined specification of the two models that is adopted in this analysis of Portuguese public choice:

$$G^* = w_1 \cdot [f(t_m, y_m, N)] + (1 - w_1) \cdot [s(N_1+, \dots, N_i+, N_{i+1}-, \dots, N_n-, I)] \quad (4)$$

with $0 \leq w_1 \leq 1$

The overall demand for public good is a weighed sum of the median voter's demand with the relative power of interest groups where w_1 can be seen as an index of democratisation of state politics. If $w_1 = 0$, this means that interest groups control public choice. If $w_1 = 1$, the median voter is decisive and public decisions respond to her preferences. If $0 < w_1 < 1$, public choice results from the influence of both the median voter and interest groups. w_1 cannot be estimated directly, however, using the *J* test (Davidson and MacKinnon, 1981) it is possible to test if its value is zero for the two models. If both models cannot be rejected, the combined influence of the median voter and interest groups might be the best way of describing the demand for public choice.

3 – Application to Portuguese Municipalities

The empirical application to the Portuguese case of the referred specifications follows two essential goals: to apprehend who is dominating public choice in Portuguese municipalities; to compare the results between the case of local provision with the case of central government provision and extract some conclusions about the possibility of decentralization by substituting central government provision by local government provision. The political issues in analysis are in essence decided under simple majority (50%+1) rule. It is considered that public choice is “good” when it fits median voter preferences (majority) and it is considered “bad” when there are deviations favouring the preferences of minorities (interest group preferences). Two municipal issues were studied: current intervention of municipalities (current expenditures); municipal intervention in the dominium of environmental resources management (management of water resource – provision of water, drainage and treatment of residual water; management of urban waste; bio-diversity and landscape protection, whose most relevant parcel is fire-protection). For central provision to municipalities, undergraduate education⁵ and healthcare services of healthcare centres were analysed⁶. Although in Portugal these two types of services are provided by central government, their scale of action is restricted to the municipality and they mostly serve only one community⁷.

Consequently central provision cannot be justified by scale economies⁸ or by gains associated to “spill over” economies. That’s why it is appropriate to inquire why these public services are assumed by the central government, and what if they weren’t.

Using OLS, the MVM and the IGM cross-sectional regressions were estimated for Portuguese municipalities (275 continental municipalities). The data of the sample refers to the year 1995. The variables are in logarithms and heteroscedasticity was corrected using “White Correction” (White, 1980). The comparison of the models was done using the *J* test⁹. The dependent variables are:

-For local government provision: “per capita” current expenditures of municipalities in 1995 (CURREXP); “per capita” municipal expenditures in the management of environmental resources in 1995 (ENVIRONMENT).

-For central government provision to municipalities: “per capita” expenditures in healthcare centres in 1995 (HEALTHEXP); a proxy to “per capita” output of healthcare centres in 1995¹⁰ (HEALTHCARE); “per capita” expenditures of central government in undergraduate education in the scholar year of 1997-1998 (EDUCATION).

4 – Estimation of the Median Voter Model (MVM)

4.1 – Explanatory variables of the MVM:

INCOME – Unconditional grants multiplied by median tax-share in the municipality plus median income: unfortunately in Portugal this information is not available at municipal level. “Per capita” income was considered instead of median income. The correlation between the municipal distribution of median income and the municipal distribution of “per capita” income was calculated for Galicia (a Spanish territory neighbour to Portugal, with many similarities). A high correlation ($\rho = 0,83$) was found. For Galicia the substitution of the median income for “per capita” income did not influence the MVM results. It is expected the same behaviour in the Portuguese case. Admitting that the members of each community equally share unconditional transfers, “per capita” unconditional transfers from central government were added to “per capita” income (expected signal for the estimated coefficient of INCOME: +).

PRICE – Median voter tax-share: usually, in MVM literature this variable is expressed as the ratio between the revenue from the property tax on the median property in each jurisdiction and the total revenue of property tax in the community. Property tax is chosen because normally it is the most important local tax font that is used to finance the local provision of public goods. The same occurs in Portuguese municipalities, (42% of total current revenues generated in Portuguese municipalities, in 1995). Unfortunately, for Portuguese municipalities data on the value of the median tax revenue on property is not available. A proxy to median voter tax-share had to be built. Portuguese municipalities obtain two types of property income. One derives from a tax on the transaction of property (SISA) and the other comes from the possession of property (“Contribuição Autárquica”). It is assumed that the median voter does not transact her property. Consequently in proxy PRICE only “Contribuição Autárquica” is relevant¹¹ (28% of total current revenues generated in Portuguese municipalities, in 1995). However, municipalities cannot freely determine the rate of property tax. In 1995, central government was imposing for rural property an equal rate for all municipalities of 0,8%. For urban property, the relevant rate for tax payment in 1995 could change between 1,1% and 1,3%¹² (in 1995 45% of Continental Portuguese municipalities adopted the tax rate 1,3%; 29% of the municipalities adopted the tax rate 1,2%; 26% of the municipalities adopted the tax rate 1,1%¹³). Because of this low fiscal flexibility in the most important local fiscal font, it is not too unrealistic to assume that differences in the median property tax revenues across municipalities depend mainly on the differences between property values. However information about differences in property values is not available, either. There is only one study published by the Statistic National Institute (INE, 2001), about differences on property values among the municipalities for the metropolitan areas and for those municipalities that are capitals of district (18 municipalities). So, in order to approach the differences between median property values across municipalities it is necessary to assume that: the dimension (m^2) of the median property (a) is equal in all municipalities; the municipal register of the value of median voter property in all municipalities is recent, but old enough not to be exempt from property tax¹⁴; the value of property in a municipality depends only on the population density (DENSITY) and on the tourist booking in the municipality (TOURIST). According to all these assumptions and the available data, the proxy to the median voter tax-share for the case of median urban property was defined as:

$$PRICE = \log \left[\frac{(I_1 \cdot DENSITY + I_2 \cdot TOURIST) \times t_i \times a}{PROPERTY \cdot TAX \cdot REVENUE} \right] = k + \log \left[\frac{(I_1 \cdot DENSITY + I_2 \cdot TOURIST) \cdot t_i}{PROPERTY \cdot TAX \cdot REVENUE} \right] \quad (5)$$

For the case of median rural property the definition is:

$$PRICE = \log \left[\frac{(I_1 \cdot DENSITY + I_2 \cdot TOURIST) \times t \times a}{PROPERTY \cdot TAX \cdot REVENUE} \right] = A + \log \left(\frac{I_1 \cdot DENSITY + I_2 \cdot TOURIST}{PROPERTY \cdot TAX \cdot REVENUE} \right) \quad (6)$$

with: A , a , k , t = Constants; t_i = Urban property tax rate in the municipality; I_1 = Average for all municipalities of the ratio between population and the sum of population with the number of tourists in the municipality in the year under analysis; and I_2 = Average for all municipalities of the ratio between the number of tourists in the municipality in the year under analysis and the sum of population with the number of tourists in the municipality¹⁵.

The correlation between the calculated values of variable PRICE, according to the two definitions (5) and (6) is extremely high ($\rho = 0,997$), because of the low flexibility left to the municipalities in fixing t_i . As a matter of fact, the MVM estimation results are practically the same whatever the definition chosen¹⁶. Consequently, the option was taken of only presenting MVM results on the base of definition (6).

There is a high correlation ($\rho = 0,76$)¹⁷ between the distribution of the value of property obtained from $(I_1 \cdot DENSITY + I_2 \cdot TOURIST)$ and the distribution of the value of property obtained in the inquiry of INE (2001) for the municipalities that are district capitals. This means that the proxy PRICE may be acceptable. The expected signal for the estimated coefficient of PRICE is negative (-).

POPULATION – This variable is used to apprehend the existence of congestion in the consumption of publicly provided goods. The MVM specification allows for the estimation of the rivalry degree in the consumption (α). According to the MVM definition the calculus of α is possible through the estimation of equation (2): $\beta_3 = \alpha (1 + \beta_1) - 1$ ¹⁸ (expected signal for the estimated coefficient of POPULATION: -).

The specification of the MVM regressions is expressed by:

$$\ln \left(\frac{E_i}{POPULATION} \right) = \beta_0 + \beta_1 \cdot \ln(PRICE) + \beta_2 \cdot \ln(INCOME) + [\alpha \cdot (1 + \beta_1) - 1] \cdot \ln(POPULATION) \quad (7)$$

E_i = public expenditures (public “output” in HEALTHCARE) for the provision of good i

It is assumed that if basic healthcare and undergraduate education were provided by the municipal government, the property tax would be the local fiscal font used to finance their provision (as for the other municipal services) and there could also exist an increase in unconditional grants from central government, leaving the median tax-share unchanged¹⁹.

4.2 – The MVM estimation results:

Table 1 – Results from the estimation of the median voter model

DEPENDENT VARIABLE	MUNICIPAL	PROVISION	CENTRAL	GOVERNMENT	PROVISION
	CURREXP	ENVIRONMENT	HEALTHEXP	HEALTHCARE	EDUCATION
IND. TERM	3,68** (8,94)	-3,84** (-5,34)	2,34** (5,57)	2,53** (6,64)	1,72** (3,50)
INCOME	0,52** (11,21)	1,17** (10,53)	0,35** (4,37)	-0,02 (-0,33)	0,65** (10,09)
PRICE	-0,09** (-5,52)	-0,10* (-2,05)	-0,12** (-5,89)	-0,08** (-3,83)	0,00 (0,01)
POPULATION	-0,38** (-17,41)	-0,23** (-5,59)	-0,19** (-6,62)	-0,16** (-6,59)	-0,19** (-7,15)
α	0,59	0,75	0,78	0,91	0,81
Adjust. R ²	0,63	0,28	0,47	0,38	0,41
F	154,24	25,80	22,73	15,65	19,19
Observations	275	191	74	74	79

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

* Statistically significant for a level of confidence of 95%

t values in parentheses

Accordingly to Table 1, the MVM provides a good fitting to data in all types of public services²⁰. The explanatory power of the estimated regressions is high and the explanatory variables are statistically significant for 95% of confidence²¹. Only the variable INCOME in HEALTHCARE and the variable PRICE in EDUCATION are not statistically significant for 95% of confidence²².

The locally provided goods (municipal provision and central government provision) exhibit a low-income elasticity of the demand (normal goods). Only in ENVIRONMENT is a value obtained for that elasticity slightly superior to one. All the analysed services are inelastic to price changes. The results obtained for α (indicating that none of the services are a pure private or a pure public good) for local provision are

not different from what would be expected. These results are in harmony with the empirical literature of the MVM²³.

For healthcare and education the high level of congestion in consumption evidenced by α underlies their private characteristics and call in question their public provision. However, constitutional law forbids exclusion due to the presence of externalities or due to equity goals. But the importance of private benefits is incontestable in the net product of education and healthcare, so, according to Pigou (1920), externalities could merely justify the presence of public sector as a complement of private provision (the “full bounty” argument could not be invoked). The opposite occurs in Portugal. Having put away reasons of efficiency for justifying the importance of public provision rests the argument of equity or, in a non-benevolent approach, the argument of interest group influence. Even if public provision is not questioned, according to α results it is rather appropriate to wonder why not local sovereignty in public provision.

A surprising result obtained from the estimation of the MVM is the ability of central government provision in attending to the local median voter demand. According to this result, to decentralize the provision of these types of services would not improve very much the adequacy between public provision and local demand.

5 - Estimation of the Interest Group Influence Model (IGM)

5.1 – Explanatory variables of the IGM:

The explanatory variables of the IGM are proxies to the influence of local interest groups: some of them acting as organized groups (bureaucracy, press); others acting as latent groups with strong common interests (building sector, elderly, doctors); and others, not organized, sharing the fact of not benefiting from the provision of the public services (non-served population and pupils in private schools).

BUREAUCRACY – According to the literature initiated with Niskanen (1971), bureaucrats desire to maximize public expenditures in order to obtain some privileges and prestige. This variable was considered for all types of publicly provided goods in analysis. For CURREXP the proxy to the political influence of bureaucracy was defined

as the ratio between bureaucrats' wages and current expenditures of municipalities; for ENVIRONMENT the proxy was defined as the number of bureaucrats affected to the services included in this category of local services; for HEALTHEXP and HEALTHCARE the proxy was defined as the number of employees in healthcare centres (excluding doctors); for EDUCATION the number of all employees (teachers and other staff) in undergraduate schools was included (expected signal for the estimated coefficient of BUREAUCRACY: +).

The non-inclusion of doctors in BUREAUCRACY is due to their simultaneous permanence in the public and in the private sector. As a matter of fact, a large number of doctors working in healthcare centres also exert private medical practice. In this case they face contrasting interests: as bureaucrats they are interested in more public expenditures, but because of competing with public sector, they are interested in the decrease of public intervention. Unfortunately, at municipal level, information about the proportion of doctors working in healthcare centres that were simultaneously in the private and in the public sector was not available. Consequently doctors were excluded from the variable BUREAUCRACY.

BUILDING – Building sector (building and transactions of immovable property) is interested in current intervention of municipalities (CURREXP), because the existence of a wide range of public facilities increases the property value and turns their activity more profitable. For the same reasons, they are especially interested in the quantity and quality of the local services included in environmental resources management (ENVIRONMENT). In addition, municipalities are interested in pleasing building sector interests because local fiscal revenues depend largely on building activities (property taxes and rates and tariffs on building²⁴). The proxy to the intensity of building pressure on local governments was defined as the ratio between tax revenues from the tax on property transactions (SISA) and the global income in the municipality (expected signal for the estimated coefficient of BUILDING: +). A problem of causality in both directions may exist with the inclusion of this variable, because it is admissible that the level of “per capita” municipal intervention might also influence the level of building activities. In the case of municipal current intervention, as the analysis focus only on current expenditures (capital expenditures are excluded because time is restricted to one period), which are more flexible than building sector mobility, the

hypothesis of current expenditures being responding to building sector pressure seems more plausible than the opposite. In the case of environmental resources management (mostly consisting of municipal provision of potable water and urban residuals management), normally Portuguese municipalities install these services following the demand of community (giving priority to the areas where building concentration is higher). Rarely do municipalities advance them as a bait to capture building activities. Looking for data of NONSERVED it is possible to see that in relation to environmental resources management, the majority of municipalities still have very much to do in order to attend to the existing necessities in their communities. So, it seems more plausible that the direction of causality is from BUILDING to ENVIRONMENT.

PRESS – The power of the media to influence political decisions is incontestable. In many ways the media is determinant of political agenda and politicians put a lot of care into their relationship with them. Very often the media is accused by political candidates of not being neutral and of being responsible for their defeat in elections. On one hand, press and other media play an important role in the diffusion of information across voters. On the other hand, if they are controlled by interest groups they can distort information by not being neutral, becoming an important means of exerting pressure in favour of those groups. The presence in a municipality of local press may influence political decisions and normally shed light on the necessity of more intervention (expected signal for the estimated coefficient of PRESS: +). Variable PRESS was not only included in the regression CURREXP, because municipal current intervention is a general issue in relation to which it is difficult to realise the necessity of more or less public intervention. Normally press focus separately in the specific issues and not in the general issue current intervention. The proxy to the influence of media is the “per capita” number of printed newspapers and periodicals in the municipality during one year (PRESS).

ELDERLY – People older than 64 years old are interested in the provision of healthcare (HEALTHEXP and HEALTHCARE). The probability of needing these services is higher for this group of population (expected signal for the estimated coefficient of ELDERLY: +). This variable was also introduced in CURREXP, because, according to Bergstrom and Goodman (1973), the elderly demand for higher levels of public provision than the other groups of population. They do not have to worry so much about

future consumption. However, in CURREXP the variable is not restricted to the representation of interest group influence, but it also represents the redistributive logic of central government unconditional transfers to the municipalities. As a matter of fact, in Portugal, the elderly are the highest proportion of population in poorer municipalities (correlation between “per capita” income and ELDERLY is $-\rho = -0,41$). The correlation between “per capita” unconditional transfers and ELDERLY is even higher ($\rho = 0,78$). In order to avoid miss-specification the variable was included. ELDERLY is preferable to TRANSFERS, because it apprehends two types of influences: interest group pressure and redistribution. However its results cannot be interpreted as “pure” interest group influence.

DOCTORS –This variable was defined as the number of doctors “per 1000 inhabitants” in the municipality and was included in HEALTHEXP and in HEALTHCARE. The expected signal for the estimated coefficient of DOCTORS is unknown, because the variable includes those doctors that were working in public sector, those that were working in private sector and those that were working simultaneously in both sectors. On one hand, a negative signal is expected, because doctors that compete with public services desire less public intervention. It is expected that they lobby government to avoid competition from public sector. On the other hand, a positive signal is expected if a large proportion of doctors in the municipality are exclusively working in the healthcare centres (bureaucrats). In addition, the variable cannot merely be viewed as the expression of interest group influence. A negative relation with the dependent variable may exist because the presence of more doctors working in private sector “per 1000 inhabitants” in one municipality may reduce the need of public intervention, as people find other options than healthcare centres. However, when almost all doctors in the municipality are working in healthcare centres, a positive relation is expected, because if there are more doctors “per 1000 inhabitants”, “per capita” expenditures and “per capita” output naturally rise in the municipality.

The inclusion of DOCTORS may introduce a problem of causality in the regressions, because the level of public expenditures in healthcare services can influence the establishment of doctors in each municipality. The variable was kept to avoid miss-specification.

NONSERVED – This variable is measured by the average number of people in the municipality that do not benefit from two types of local services: potable water provision and urban residual treatment. They would prefer local government spending in the provision of services that they could benefit from. The variable was included in ENVIRONMENT (expected signal for the estimated coefficient of NONSERVED: -). It is important to note that a negative relationship between “per capita” expenditures in environmental resources management and NONSERVED may not be the expression of “pure” interest group influence. The fact of existing more people that are not served may lower “per capita” expenditures. In relation to this variable a problem of causality can arise because NONSERVED might be a consequence of the level of “per capita” expenditures. The variable is kept in the regression to avoid miss-specification.

PRIVATE – Number of pupils in private undergraduate education in the municipality. The reasons for the inclusion of this variable in EDUCATION are the same that underlie the inclusion of NONSERVED in ENVIRONMENT (expected signal for the estimated coefficient of PRIVATE: -). The problems indicated to NONSERVED can also emerge with the inclusion of PRIVATE, but in a lower degree. Then, it is also necessary to be cautious about the interpretation of PRIVATE results as being the expression of “pure” interest group pressure.

Table 2 summarizes the explanatory variables of the IGM regressions.

Table 2 – IGM explanatory variables

DEPENDENT VARIABLE	EXPLANATORY VARIABLES			
CURREXP	BUREAUCRACY	BUILDING	ELDERLY #	-----
ENVIRONMENT	BUREAUCRACY	BUILDING	PRESS	NONSERVED #
HEALTHEXP	BUREAUCRACY	ELDERLY	PRESS	DOCTORS #
HEALTHCARE	BUREAUCRACY	ELDERLY	PRESS	DOCTORS #
EDUCATION	BUREAUCRACY	PRESS	PRIVATE #	-----

Variable that may not express “pure” interest group influence

5.2 – The IGM estimation results

In the analysis of the IGM estimation results, described in Table 3, attention is focused on the variables that more clearly describe “pure” interest group influence. The others

(signalized in Table 2 with #), with the exception of DOCTORS, are statistically significant for 95% of confidence and their estimated coefficients exhibit the expected signal. In HEALTHEXP and in HEALTHCARE regressions, DOCTORS is not statistically significant for the required level of confidence. This result is not unexpected and it might be the consequence of contradictory interests between those doctors who are public officials and those who are working in the private sector. As was referred in section 5.1, these variables may be describing interest group influence, but they can also be expressing other things.

Table 3 – Results from the estimation of the interest group influence model

DEPENDENT VARIABLE	MUNICIPAL	PROVISION	CENTRAL	GOVERNMENT	PROVISION
	CURREXP	ENVIRONMENT	HEALTHEXP	HEALTHCARE	EDUCATION
IND. TERM	6,45** (29,85)	3,00** (5,31)	3,95** (19,34)	2,03** (13,82)	3,66** (14,76)
BUREAUCRACY	0,46** (3,43)	0,25** (5,80)	0,10* (2,56)	-0,00 (-0,03)	0,10** (3,89)
BUILDING	0,19** (5,54)	0,26* (2,53)	-----	-----	-----
ELDERLY	0,85** (17,00)	-----	0,47** (6,20)	0,42** (5,71)	-----
PRESS	-----	0,03 (0,07)	-0,02 (-0,68)	0,04* (2,36)	0,05** (3,16)
DOCTORS	-----	-----	0,01 (0,16)	0,02 (0,51)	-----
NONSERVED	-----	-0,13** (-3,97)	-----	-----	-----
PRIVATE	-----	-----	-----	-----	-0,09** (-5,79)
Adjust. R ²	0,50	0,21	0,17	0,38	0,14
F	92,06	13,52	4,80	12,36	5,33
Observations	275	191	74	74	79

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

* Statistically significant for a level of confidence of 95%
t values in parentheses

In relation to “pure interest group influence”, for current municipal intervention, Table 3 shows that all the explanatory variables are statistically significant for 95% of confidence. The IGM specification provides a good fitting to data. In relation to environmental resources management only PRESS is not statistically significant for the required level of confidence. On the whole, it seems that local interest groups -

municipal bureaucracy and building sector - influence these two types of local government public choice.

For central government provision of services to the municipalities, it is interesting to compare the results obtained for HEALTHEXP and for HEALTHCARE. In both regressions ELDERLY is statistically significant for 95% of confidence, exhibiting the expected signal (+). In HEALTHEXP, bureaucracy is statistically significant, meaning that bureaucrats influence the level of “per capita” expenditures on this issue. However the variable is not statistically significant in HEALTHCARE, meaning that the presence of more bureaucracy does not affect the level of output “per capita”. This is an interesting result that is in harmony with the literature about the “slack” provoked by bureaucracy pressure for more expenditure. The increasing of costs is not reflected in an increasing of output. It is bureaucracy, not the patients, who get the benefits from more public expenditure.

Continuing with the comparison between HEALTHEXP and HEALTHCARE, the results obtained for PRESS are also interesting. Local press is not influential on “per capita” expenditures in healthcare services, which are decided under the authority of central government, but it is influential on local “per capita” output. According to these results, the presence in the municipality of local press pressures public services of basic healthcare to be more productive.

For undergraduate education it was not possible to analyze public output, but merely the level of “per capita” expenditures. Table 3 shows that all explanatory variables are statistically significant for 95% of confidence and their estimated coefficients exhibit the expected signal.

The most surprising conclusion extracted from the analysis of Table 3 is the ability of local interest groups to affect decisions under the authority of central government. As in the MVM estimation case, the results of the IGM do not show important differences between the case of local provision and the case of central provision. Once more, a strong communicability was found between central government and local communities.

6 – *J* - test

For all types of public services (local provision and central government provision), Table 4 shows that neither the MVM, nor the IGM should be rejected. The public issues under analysis are influenced not only by local median voter’s preferences but also by the political pressure of local interest groups.

Table 4 – *J*-test results

Dependent Variables	t _{MVM}	t _{IGM}	COMMENTS
CURREXP	(13,63)**	(7,66)**	MVM and IGM are not rejected.
ENVIRONMENT	(5,44)**	(3,26)**	MVM and IGM are not rejected
HEALTHEXP	(6,96)**	(2,54)*	MVM and IGM are not rejected
HEALTHCARE	(3,61)**	(3,00)**	MVM and IGM are not rejected
EDUCATION	(7,21)**	(3,35)**	MVM and IGM are not rejected

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

* Statistically significant for a level of confidence of 95%

t values in parentheses

7 – Conclusions

Two main conclusions emerged from the empirical application of the median voter model and of the interest group influence model to several political issues:

- 1) Public choice results from the demand of the median voter and of the pressure of interest groups.
- 2) In Portugal, for central government provision of basic healthcare and of undergraduate education, there is a surprising adequacy between the local government demand and central government provision.

The first conclusion is in harmony with other studies that compared the two models²⁵. Although median voter hypothesis assumptions are very much restrictive, median voter preferences are still important in public intervention. This is good news for democracies where decisions are taken under simple majority rule.

The second conclusion calls for some reflection about an important question that has been frequently on the agenda of Portuguese politicians: decentralization. As was initially referred, the characteristics of the provision of basic healthcare and of undergraduate education in Portuguese municipalities are more appropriated for the local provision model (intervention restricted to the municipality²⁶), however central government continues to keep the decision power. The results of the estimation of the MVM clearly show that non-rivalry cannot be invoked to justify central government intervention, because benefits are appropriated in consumption. So, the question of decentralization is rather pertinent.

The easy-communicability between central government and local demands expressed in the empirical results has two contrasting consequences for the hypothesis of decentralization. On one hand, it empties the argument of justifying decentralization through the expectation of significant improvements on the adequacy of public provision to local median voter preferences. The MVM results indicate that in a centralized context some adequacy already exists. On the other hand, the ability of local interest groups to pressure central government provision, described in Table 3 and in Table 4, annuls what would be an expected advantage of central provision: the elimination of public choice favorable to local minorities succeed in pressing local governments (“bad” public choice). As a matter of fact, this study produces some evidence that decentralization could origin public choice closer to the preferences of the “national majority” (“better” public choice), because, according to the literature, it would reduce the political distance between those who take decisions and voters (improvement in the rationality of voters’ behaviour, caused by the fact of being better informed) and it would eliminate the pressure exerted on central government by nationally organized interest groups. The problem would be the increasing of lobbying activities on local governments. However, empirical results show, for the analyzed issues, that this type of pressure exists, and the comparison with local provision, indicates that it would not increase significantly with decentralization. Consequently the results of the interest group influence model are favorable to decentralized public provision.

Finally it is important to note that decentralization could origin other benefits and other costs. The former derive from the opportunity of change that would bring the possibility of introducing institutional innovation in organization and proceedings, either allowing for changing efficiency and equity. The last are associated to the “dark side of change”, expressed in the costs of creating new proceedings, in the traditional resistance to change in face of incertitude and in the material and psychological costs of destroying an organized structure and substituting it for a new one. Both these benefits and costs are out of the scope of this study, but would be decisive in the presence of a concrete decision of decentralization.

On balance, the empirical results are not sufficient to indicate if decentralization, through the substitution of Portuguese central government for municipal governments in the provision of basic healthcare and undergraduate education, would be worth it. However, from a political perspective, the analysis of the results shows that decentralization would be desirable, because of weakening the response of public decisions to established lobbies (reducing “bad” public choice).

References:

AHAMED, S., 1998, Local government budgetary behaviour and size: Evidence from New York State counties on institutional, political and socioeconomic theories (unpublished Ph. D. Dissertation, Graduate School of the State University of New York, USA).

ARROW, K., 1951, Social choice and individual values, (2nd ed., 1963, New Haven, Conn.: Yale University Press).

AUSTEN-SMITH, D., 1997, Interest groups: money, information and influence, in: Dennis Mueller, eds., Perspectives on public choice: A handbook, (Cambridge University Press) 296–321.

BAHL, R., 1980, State and local government expenditure determinants: The traditional view and a new approach, in: R. Bahl, J. Burkhead and B. Jump, Jr., eds., Public employment and state and local government finance, (Cambridge, MAA: Balinger Publishing Co.) 65-119.

BERGSTROM, T. AND R. GOODMAN, 1973, Private demand for the services of non-federal government, American Economic Review 63 (June), 280-296.

- BORCHERDING, T. AND R. DEACON, 1972, The demand for the services of non-federal governments, *American Economic Review* 62 (December), 891-901.
- CONGLETON, R. AND R. BENNETT, 1995, On the political economy of state highway expenditures: Some evidence of the relative performance of alternative public choice models, *Public Choice* 84 (1-2), 1-24.
- COSTA, J., M. SILVA, J. CARVALHO E A. GOMES, 1998, *Taxas e tarifas municipais*, Study for North Region Coordination Committee, (ISFEP, Porto).
- CRUZ, J., 1998, Análise económica da procura no mercado político: quem determina as escolhas públicas: Eleitores ou grupos de interesse? (eds. *Vida Económica*).
- DAVIDSON, R. AND J. MACKINNON, 1981, Several tests for model specification in the presence of alternative hypotheses, *Econometrica* 49 (3), 781-793.
- DOWNS, A., 1957, *An economic theory of democracy* (New York: Harper & Row).
- HOLCOMBE, R., 1989, The median voter model in public choice theory, *Public Choice* 61 (2), 115-125.
- INE (Statistic National Institute), 2001, Inquérito à avaliação bancária da habitação, in: *Destaque do INE*, Internet Site: www.ine.pt, 37 pages.
- MITCHELL, W. AND M. MUNGER, 1991, Economics models of interest groups: An introductory survey”, *American Journal of Political Science* 35 (2), 512-546.
- NISKANEN, W., 1971, *Bureaucracy and representative government* (Chicago: Aldine-Atherton).
- _____, 1994, Why our democracy doesn't work, *Public Interest* 116 (Summer), 88-95.
- OLSON, M., 1965, *The logic of collective action* (Cambridge: Harvard University Press).
- PERKINS, G., 1977, The demand for local public goods: elasticities of demand for own price, cross prices and income, *National Tax Journal* 30 (4), 411-422.
- PIGOU, A., 1920, *The economics of welfare* (Macmillan, London).
- POMMEREHNE, W. AND B. FREY, 1976, Two approaches to estimating public expenditures, *Public Finance Quarterly* 4 (4), 395-405.
- POTTERS, J. AND R. SLOOF, 1996, Interest groups: A survey of empirical models that try to assess their influence, *European Journal of Political Economy* 12 (3), 403-442.
- TURNBULL, G. AND S. DJOUNDOURIAN, 1994, The median voter hypothesis: evidence from general purpose local governments, *Public Choice* 81 (3-4), 223-240.

AND P. MITIAS, 1999, The median voter model across levels of government, *Public Choice* 99 (1-2), 119-138.

VAN WINDEN, F., 1999, On the economic theory of interest groups: towards a group frame of reference in political economics, *Public Choice* 100 (1-2), 1-29.

WHITE, H, 1980, A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity, *Econometrica*. 48 (May), 817-838.

¹ For a critical review of the Median Voter Model (MVM) see Cruz (1998).

² Median Voter Model (Cruz, 1998: 54): In logarithms, considering “per capita” public expenditures:

$$\ln\left(\frac{E}{N}\right) = e + b \cdot \ln(Ym + tm \cdot T) + c \cdot \ln(tm) + [\alpha(1+c) - 1] \cdot \ln(N).$$

³ For a review of interest group literature see: Mitchell and Munger (1991); Potters and Sloof (1996); Mueller (1997); van Winden (1999).

⁴ This does not contradict Olson (1965), because Congleton and Bennett (1995) considered small, organized and relatively homogeneous groups. Between these, we can admit that those that are bigger are also stronger (scale economies in political pressure).

⁵ The municipalities without secondary schools (with only elementary schools) were excluded from the analysis because other municipalities respond to their demand.

⁶ The municipalities that are equipped with hospitals were excluded from the analysis, because hospitals add healthcare services to the healthcare provided by healthcare centres and “export” services for several communities (municipalities).

⁷ In the case of education, the municipalities in the neighbourhood serve municipalities where secondary schools do not exist.

⁸ Scale economies in relation to purchases could subsist in a decentralized context, because a centralized organization could assume purchases and sell the necessary commodities to the decentralized healthcare centres.

⁹ The use of logarithms reduced the number of cases. For public expenditures in healthcare and in undergraduate education, information at municipal level was not available and it was directly requested to the Healthcare and the Education National Departments. Healthcare Department only provided information for 134 municipalities and Education Department only provided data for 1997. Other data came from Statistics National Institute (Regional Statistics Year-book) and Population Census 1991.

¹⁰ The proxy to the healthcare output consists of the addition of ambulatory service (number of external consultations), with permanent consultation services, and with days of internment (admitting one medical consultation each day for each patient).

¹¹ The results of the estimation of the MVM with the inclusion of SISA in PRICE were not significantly different.

¹² In 1995 rates changed (between 0,8% and 1,1%), but the new rates would only affect tax payments in 1996.

¹³ Data from “Guia do Fisco 95”, edited by “Edifisco”, 1995, pag. 467 – 492.

¹⁴ In Portuguese municipalities the registered value of ancient property is distorted, so it is assumed that median property is relatively recent. However, accordingly to legislation of 1995, it cannot be extremely recent, because, there was a tax exemption for urban property during ten years following the moment of register. But if it is admitted that expectations about future affect the actual behaviour of the median voter, the non-exemption restriction may fall down.

¹⁵ The value of I_1 is nearly 80% (I_2 is approximately 20%). We also tested the MVM estimation with $I_1 = 50%$ ($I_2 = 50%$) and results were not substantially different.

¹⁶ So, irrelevant small differences are expected if the median property is a mix of urban and rural property.

¹⁷ With the inclusion of the municipalities of metropolitan areas the correlation falls to 0,55. However those municipalities, because of their specific characteristics, are not representative of the variation of property values in the national territory. Whatever sample is chosen, if TOURIST is taken out from the proxy, the referred correlation is always smaller, meaning that the TOURIST factor is important for the determination of property value.

¹⁸ c.f. note 3.

¹⁹ With a conditional matching grant the median voter price would be affected: $tm * (1-m)$; m being the proportion of grant by each unit of public good. The MVM could also be estimated considering this change; see Perkins (1977).

²⁰ ENVIRONMENT was also estimated, considering the variable price of potable water in each municipality (WATERPRICE). The management of water resource is an important component of ENVIRONMENT (43% of “per capita” expenditures with environmental resources management, in 1995). For this reason, it is admissible that median voter also establishes a relation between WATERPRICE and ENVIRONMENT. In the estimation of the MVM for ENVIRONMENT, with the variable WATERPRICE substituting PRICE, WATERPRICE is not statistically significant for 95% of confidence and the estimated coefficient of the variable exhibits the signal (+). The estimated coefficients of the other explanatory variables ($\beta_{INCOME} = 1,22^{**}$ and $\beta_{POPULATION} = -0,21^{**}$) are quite similar to the estimated values with PRICE in the regression ENVIRONMENT.

²¹ The number of observations used in the MVM estimation could have been superior for other types of public goods than current municipal intervention, but it was considered the same number of observations used in the estimation of the IGM to make the comparison of the models simpler. However the results of the estimation of the MVM: for ENVIRONMENT with 275 observations; for HEALTHEXP with 108 observations; for HEALTHCARE with 188 observations (INCOME becomes statistically significant for 95% of confidence, exhibiting the expected signal); for EDUCATION with 146 observations; are similar to those that are presented in Table I.

²² The non-significance of the variable PRICE in the regression EDUCATION might be derived to the “exportation” of services to municipalities where secondary schools do not exist.

²³ See Borcharding and Deacon (1972); Bergstrom and Goodman (1973); Pommerehne and Frey (1976); Bahal (1980); Holcombe (1989); Turnbull and Djoundourian (1994); Turnbull and Mitias (1999).

²⁴ See Costa, Silva, Carvalho and Gomes (1998).

²⁵ See Congleton and Bennett (1995) and Ahmed (1998).

²⁶ c. f. note 7.