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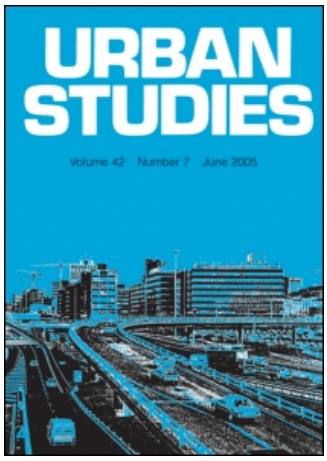

Urban Studies
Publication details, including instructions for authors and subscription information:
http://www.informaworld.com/smpp/title~content=t713449163

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Online Publication Date: 01 July 2007
To cite this Article: Dubois, Eric, Leprince, Matthieu and Paty, Sonia , (2007) 'The Effects of Politics on Local Tax Setting: Evidence from France', Urban Studies, 44:8, 1603 - 1618
To link to this article: DOI: 10.1080/00420980701373487
URL: http://dx.doi.org/10.1080/00420980701373487

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Urban Studies, Vol. 44, No. 8, 1603–1618, July 2007

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The Effects of Politics on Local Tax Setting: Evidence from France

Eric Dubois, Matthieu Leprince and Sonia Paty

[Paper first received, December 2005; in final form, July 2006]

Summary. This paper investigates the hypothesis that local politics has an impact on local taxation in the French public sector by using a cross-sectional dataset on departments in 1999. Political variables are included in a tax-setting equation to provide empirical evidence whether local governments in France adopt business taxation behaviour closer to the Leviathan government hypothesis, with higher tax rates when political competition decreases, or to the partisan government hypothesis, with differences in tax rates according to partisan variables. It is shown that the wider the seat's margin, the lower the tax rates, and that this cut is weaker in the case of a left-wing local majority than a right-wing majority. It is therefore concluded that the partisan government hypothesis is more supported by the French data than the Leviathan one, even after controlling for tax interdependencies between departments.

1. Introduction

For at least three decades, political determinants of fiscal policy have been well identified in the economic literature. For example, the political system (presidential/parliamentary) and the voting rule (majority/proportional) may affect the size of the government (Persson and Tabellini, 1999; Milesi-Ferretti *et al.*, 2002). In the same way, the degree of centralisation of the political system also matters: the more centralised the system is, the better the control over spending will be (Persson and Tabellini, 1999). The budgetary process also plays an important role. For example, the way the budget is voted (agenda, etc.) or the transparency of the rules can influence the budgetary variables (von Hagen, 1992; de Haan and Sturm, 1994). According to another theory, divided governments or governments formed by a coalition of parties increase public spending because several conflicting political objectives have to be reconciled (Alt and Lowry, 1994, 2000; Poterba, 1994). Antagonist objectives among interest-groups can also delay reform that could reduce deficits (Alesina and Drazen, 1991; Spolaore, 2004). Political instability (frequent changes of government) is also a source of large deficits (Roubini and Sachs, 1989a, 1989b) so that democracy may enhance public spending (Persson and Tabellini, 2003). Finally, the size of the governing institutions may also matter (Pettersson-Lidbom, 2006). However, the explanation that has given rise to the largest

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0042-0980 Print/1360-063X Online/07/081603–16 © 2007 The Editors of Urban Studies
DOI: 10.1080/00420980701373487

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literature is the politico-economic cycle, which can be divided into two approaches. According to the first, introduced by Downs (1957) and formally developed by Nordhaus (1975), Rogoff and Sibert (1988) and Rogoff (1990), governments are opportunistic in the sense that they only care about their re-election. They manipulate monetary and fiscal instruments to satisfy voters before the election which creates a cycle (a 'political business cycle') in the main macroeconomic variables. This type of behaviour rests on the hypothesis that all voters have the same expectations about the economy (for example, in the case of an inflation–unemployment trade-off, they all want less unemployment and more inflation) and that parties' policies converge to satisfy the median voter. By contrast, in a second strand of the literature, since voters are heterogeneous, parties do not converge. Each party has its own objective function that reflects the preferences of its voters. The cycle in macroeconomic variables which depends on the governing party is called the 'partisan cycle'. Classic references are Hibbs (1977) and Alesina (1987, 1988). Among recent works on politico-economic cycles in fiscal variables, one can cite Alesina *et al.* (1997) who survey and test both opportunistic and partisan theories.

A closely related strand of the literature has an approach in terms of political competition rather than in terms of cycles. On the one hand, the Leviathan government hypothesis first developed by Brennan and Buchanan (1980) suggests that, irrespective of the government's ideology, a lower intensity of political competition leads to an increase in the size of the public sector. Indeed, political competition forces the government, whatever its ideology, to control the increase in tax rates and then to reduce (in a relative sense) the public sector's size (see Caplan, 2001). On the other hand, according to the partisan-type hypothesis, intense competition will not have a clear effect on the size of the public sector. The incumbent government will find it easier to implement its platform when the competition is weak. Then, left-wing governments, that prefer a larger public sector, increase spending and taxes when competition decreases, whereas right-wing governments do the opposite (Boyne, 1994). Solé Ollé (2006) provides empirical evidence in favour of the partisan hypothesis over the Leviathan one by using a panel dataset of Spanish municipalities in the 1990s. He finds that, for left-wing governments, spending, taxes and deficits increase as the electoral margin increases, while for right-wing governments, weaker competition leads to reductions in all these variables.

From the political economy point of view, the literature mainly focuses on behaviour relating to the amount of taxes collected (see Besley and Case, 1995b; Kneebone and McKenzie, 2001, among others, for recent examples). Papers that examine the determination of tax rates are scarce (but see Pettersson-Lidbom, 2000) and political factors that affect tax rates remain largely unknown.

Our contribution is twofold. First, we want to provide evidence on the effects of political variables on local tax-setting in France where no previous evidence exists. Secondly, we study the effects of political competition on tax choices in the same framework. Since the end of the 1990s, our understanding of tax-setting in France has increased considerably (Feld *et al.*, 2002; Leprince *et al.*, 2005; Madiès *et al.*, 2005), but all these studies exclusively focus on the role of socio-demographic and economic determinants in explaining tax rates while political factors are neglected. Consequently, the absence of such relevant explanatory variables might lead to misspecified regressions and biased estimations.

The evidence on the effect of local politics on fiscal choices in other European countries—Solé Ollé (2003) in Spain, Bordignon *et al.* (2003) in Italy—is very scarce. However, they estimate the same tax-setting equation in which the dependent variable is the local tax rate while the explanatory variables are socio-demographic, economic and political factors. They also take into account one major aspect of the determination of tax rates—that is, the possible influence of tax choices set by nearby jurisdictions which can bias regression results if not included as

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explanatory variables. The existence of horizontal tax interactions is a common prediction of both the tax competition and the yardstick competition literature (Brueckner, 2003). Indeed, policy-makers may mimic the tax policies of their neighbours from a fear of tax-base mobility (tax competition hypothesis) or of not being re-elected (yardstick competition hypothesis). Consequently, the empirical study of political determinants of local tax-setting must be conducted by controlling the possible existence of horizontal tax interactions. Methodologically, we will use the appropriate specification and estimation procedure based on spatial econometrics developed by Anselin (1988). As is well known from this literature, ignoring such spatial dependence would lead to biased estimators.

We will focus on the business tax choices of the department (*département* in French) which is the intermediate level of French local governments. In the early 1980s, the 'decentralisation laws' granted greater power to the three levels of local government: municipalities, departments and regions. As a consequence, each layer of government can set independently its own business tax rate on the same base.

We obtain two main results. We first show that governments with large seat margins tend to set lower tax rates. Therefore, we reject the Leviathan behaviour hypothesis and we also give empirical evidence in favour of the partisan model hypothesis. Left-wing governments tend to set higher tax rates than right-wing governments and also tend to cut their tax rates less when their margin increases. However, we also show that none of the political variables, including the characteristics of the local incumbent, is significant. Features such as seniority, proximity to other local or national assemblies and/or a plurality of local and national mandates have no impact on local tax decisions.

The paper is organised as follows. Section 2 gives a brief description of the French system of local politics. Section 3 presents the empirical model. Section 4 describes the dataset and the results; and section 5 concludes.

2. Local Politics in the French Departments

2.1 General Features of County Elections

From the local viewpoint, metropolitan France is divided into 22 regions, 96 departments and 36 600 municipalities. Since the 'decentralisation laws' in the early 1980s, greater power has been granted by the central government to regions, departments and municipalities. Each has its own budget that is mainly financed by grants from the central government (about 25 per cent) and by local tax resources (about 50 per cent)[1]. In this paper, we will concentrate on the business tax rate voted by the departments, the intermediate level of local government in France.

A department is composed of several counties (*cantons* in French) and of several constituencies (*circonscription* in French). There are in metropolitan France 3809 counties[2] and 555 constituencies. In constituencies, voters elect their representatives at the National Assembly and, in counties, voters elect their representatives at the General Council.[3] The General Council has the executive power at the departmental level. Finally, each constituency and each county are made up of several municipalities.

Voters elect one general councillor (*conseiller général* in French) by county, at the majority vote with two rounds, for a six-year term. In each department, half the General Council is elected every three years. After every election, the General Council elects a president. In the case where there is no majority, the councillor with the greatest seniority on the Council presides over the assembly.

To be elected in the first round, a candidate must get at least half of the vote plus one and a number of votes equal to at least 25 per cent of the registered voters. To be a candidate in the second round, it is necessary to have obtained in the first round a number of votes equal to at least 10 per cent of the registered voters. However, if only one candidate clears this threshold, the candidate ranked second can remain a candidate. The candidate who gets

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the biggest number of votes in the second round is elected.[4] The dates of the most recent county elections are the following: 22 and 29 March 1992, 20 and 27 March 1994, 15 and 22 March 1998, 11 and 18 March 2001, 21 and 28 March 2004.

To analyse the possible impact of the local political market features on the departments' fiscal choices in 1999, we have retained the characteristics of the political equilibrium observed within the General Council after the cantonal elections of 15 and 22 March 1998, and partially stemming from the elections of 20 and 27 March 1994, since the majority after the 1998 ballot is composed half of general councillors elected in 1994 and half of general councillors elected in 1998.

2.2 Political Competition in Departments and the Related Literature

Two sets of political variables are available at the department level for the year 1999. Group I is made of variables describing the features of the president of the General Council: the possible plurality of electoral mandates, the partisan proximity with the other levels of local or national administration and the seniority in office. We use these variables to test the hypothesis that the president of the General Council uses these characteristics to reduce the degree of local political competition.

The plurality of assignments is one of the specificities of the French political system even though other European countries such as Germany, Spain and Italy share this institutional characteristic (Debrenne and Revel, 1998). According to *Quid 2000* (http://www.quid.fr), there were, in the whole of France,[5] in 1999, 504 129 electoral seats distributed as follows: 4214 general councillors, 1829 regional councillors, 497 188 municipal councillors, 321 senators and 577 members of the National Assembly (MNAs) (the European MPs are not included in this number). In other words, there is, in France, close to 1 elected representative for every 100 inhabitants, compared with 1 for 397 in Italy and one for 2605 in the UK (Caille, 2000, pp. 1736–1737). In 1997, of the 577 MNAs sitting in the National Assembly, only 48 did not have another assignment. Similarly, 262 of the 321 senators had a second mandate (Hoeffel, 1998, p. 15).

A first explanation of this plurality of assignments lies in the multiplication of the positions caused by the decentralisation of responsibilities to three levels of local government, few countries offering as many assignment opportunities to their citizens as France. A complementary explanation would be the weakness of political parties not finding enough active members to provide each elective function individually (Knapp, 1991).

The phenomenon of plurality of assignments has generated a literature in the field of law, discussing legal arrangements,[6] and in international comparisons (see, among others, Knapp, 1991; CREAM, 1998; Caille, 2000). The main exceptions are Olivier (1998), who examines the perception of the plurality of assignments by voters through an opinion poll, and Foucault (1999) who studies the impact of the plurality of mandates on the vote. To our knowledge, its impact on the economy and on the budgetary behaviours of local governments has not yet been studied in France.

In this article, the plurality of mandates of the president of the General Council is taken by three dummies. The first, noted MNA, is equal to 1 if the president of the General Council is also an MNA, and 0 otherwise. The second, noted SENATOR, is equal to 1 if the president of the General Council is also a senator, and 0 otherwise. Finally, the third, noted MAYOR, is equal to 1 if the president of the General Council is also a mayor, and 0 otherwise.

Besides the variables characterising the plurality of mandates, group I contains two other variables describing the president of the General Council. The first is a dummy variable denoted POLITICAL PROXIMITY, equal to 1 if the General Council is headed by an elected representative close to the majority of the regional council or the

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National Assembly, and 0 otherwise. It allows us to test the possibility of collusion between the General Council and another assembly, the source of collusion being partisan proximity. For example, the president would negotiate fiscal advantages for economic activities in his/her department or negotiate the location of new (public or private) jobs in the department. One can also conceive that the president uses information from his/her national assignment (for example, fiscal reforms considered by the government), differentiating him/her from a president without a national assignment.

The last variable of the group I characterising the president of the General Council is the number of presidency years (denoted SENIORITY) in order to test a possible tendency by a long-established president to increase tax rates because of lower political competition in the department. Note that in France, the president of the General Council is not constrained by a limit on the number of his/her successive mandates. Therefore, one cannot verify the effect of this limit on the propensity to imitate neighbouring fiscal policies—as, for example, Bordignon *et al.* (2003) do it in the Italian case.[7]

Group II consists of variables that characterise the majority of the General Council. First of all, in accordance with comparable work available for Spain (Solé Ollé, 2006) and Italy (Bordignon *et al.*, 2003), we construct a variable measuring the intensity of the political competition that might constrain the fiscal choices of the local elected representative. In the literature, this indicator is measured by the electoral margin, measured as the percentage of the vote received by the incumbent majority in the most recent local elections minus 50 per cent. In the Leviathan local government hypothesis, the expected effect is: the weaker the margin, the stronger the political competition—and thus the lower the tax rates chosen by the local elected representative, other things being equal. Therefore, a positive and significant effect of the margin on tax rates is interpreted as empirical evidence in favour of a Leviathan fiscal choice model.

In the French case, the use of electoral margins expressed in seats rather than in votes is recommended for several reasons. First, it is the consequence of the electoral rules concerning the county elections with a General Council renewed by half every three years. So the composition of the General Council after county elections in year t reflects both the election results in year t and in year t-3. The general councillors elected in t-3 have not been renewed in year t and are still in office. At date t, a president may keep his/her seat majority in spite of an electoral defeat in year t if the margin of seats resulting from the election in t-3 is sufficient.

The second specificity that complicates the computation of vote margins in France is the importance of the extreme right. The left or the moderate right obtain a majority of seats with less than 50 per cent of the votes. Indeed, considering the scores of the extreme right, the left and moderate right total is about 90 per cent of the total ballot in the first round of the county elections.[8]

Finally, a third difficulty that prevents us from providing a simple definition of a vote margin concerns the correct choice of the relevant electoral round to calculate the margin. Do we consider that the first round better reflects the voters' preferences when they vote 'with their heart', or do we consider that the second round really 'makes the election' considering that in the vast majority of counties a second round is usually necessary to determine a winner? As yet, there is no clear response to this question in the literature.

In order to construct a margin, we do not use the results in terms of total vote but instead we use the results in terms of number of seats. Then, the three problems mentioned above disappear. Indeed, the choice of the relevant elections and of the relevant round no longer exists. Regarding the disruptive effect of the extreme right, this is attenuated by the fact that the extreme right obtains only very few elected representatives: 5 elected representatives out of 3805 general councillors after the county elections of 1998.[9] Thus, we kept the percentage of seats held by the majority in the General Council. The elected representatives

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of the extreme right have been systematically included in the opposition. Furthermore, over the period under consideration, no seat was held by an elected representative without any partisan attachment. All general councillors have been politically polarised.

Besides the effect of the seat margin, we also study the link between tax rates and the ideology of the department president. More precisely, we allow the impact of the margin to be different depending on his/her ideology ('left' or 'right'). To examine this question, we constructed a crossing variable by multiplying the seat margin previously defined by the LEFT dummy variable (equal to 1 if left-wing parties have a majority, and 0 otherwise). Finally, a direct effect of the ideology on the tax rate levels is also possible. According to the literature, the effect of the LEFT variable would be positive, all other things being equal, indicating that partisan local fiscal policies drive the left-wing local elected representatives to develop public services or social expenditures more than the right-wing local elected representatives. In order to test this hypothesis in France, we also introduced the LEFT variable alone in the regression equations (see Table 1). Significance of any ideology variable would add empirical evidence in favour of the hypothesis that local governments in France adopt a partisan-type model when they choose their tax rates.

3. The Econometric Model

Our first empirical purpose is to investigate the effect of politics on the choice of tax rates by local government in France. Secondly, we want to provide evidence of the effects of political competition on tax choices. We thus attempt to test whether local officials tend to adopt a Leviathan behaviour—for example, by increasing tax rates when the political competition is low—or whether they tend to adopt a partisan behaviour, their ideology being a significant explanatory variable of differences in tax rates. To do so, we include various political variables in the tax-setting equation. Following the existing but small literature (Solé Ollé, 2003; Bordignon *et al.*, 2003), we will estimate a tax-setting equation in which the dependent variable is the local tax rate while the explanatory variables are socio-demographic, economic and political factors. We will also take into account one major aspect of the determination of tax rates—that is, the possible influence of tax choices set by nearby jurisdictions which can bias regression results if not included as explanatory variables. The existence of such horizontal fiscal interactions is a common prediction of both the tax competition and the yardstick competition literature (Brueckner, 2003): policy-makers may mimic the tax policies of their neighbours from fear of tax-base mobility (the tax competition hypothesis) or of not being re-elected (the yardstick competition hypothesis). Consequently,

Table 1. The political variables

Group	Nature of the variables	List of the political variables in department *i*
Group I	Features of the president of the General (or department) Council	SENATOR = 1 if the president is also a senator, 0 otherwise
		MNA = 1 if the president is also an MNA, 0 otherwise
		MAYOR = 1 if the president is also a mayor, 0 otherwise
		POLITICAL PROXIMITY = 1 if the president is close to the political majority of the National Assembly or the regional council
		SENIORITY: number of years of presidency
Group II	Features of the majority of the General (or department) Council	MARGIN: seat margin in favour of the majority
		LEFT = 1 if the majority is left-wing, 0 otherwise

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the empirical study of political determinants of local tax-setting must be conducted by controlling for the possible existence of horizontal tax interactions. Econometrically, we will test the existence of such spatial dependence and use the appropriate specification and estimation procedure based on spatial econometrics developed by Anselin (1988). As is well known from this literature, ignoring such spatial dependence would lead to biased and inefficient estimators. Assessing the magnitude of these horizontal externalities has been the purpose of a growing empirical literature. Many articles (such as those of Ladd, 1992; Case, 1993; Case *et al.*, 1993; Buettner, 2001; Heyndels and Vuchelen, 1998; Brueckner, 1996; Brueckner and Saavedra, 2001; Feld and Reulier, 2002; Feld *et al.*, 2003; and Solé Ollé, 2003) find empirical evidence of fiscal mimicking among local governments using various datasets. Following this literature and more particularly the article of Leprince *et al.* (2005) which provides evidence of tax interactions between French departments in a fiscal model but without including the political factors, we will take into account this possible mimicking behaviour by estimating a spatial autoregressive or 'spatial lag' model that includes a weighted average of the tax rates of competing departments in the tax-setting function.

The tax-setting equation can be written as follows

$$t_i = \rho \sum_{j \neq i} w_{ij} t_j + \alpha \mathbf{P}_i + \beta \mathbf{X}_i + \varepsilon_i \qquad (1)$$

where, the index i refers to the department ($I = 1, \ldots, 93$);[10] and t_i represents the business tax rate set by department i. Thus, the parameter ρ measures the magnitude of horizontal tax interactions between neighbouring departments. $\mathbf{P}_i$ is a vector of political controls and $\mathbf{X}_i$ is a vector of explanatory socioeconomic variables also used as control variables.

The estimation of the magnitude of horizontal interactions requires specifying which departments department i will compete with. This is done by choosing the nature of the (93×93) spatial weight matrix $\mathbf{W}$ included in equation (1), where w_i denotes its ith row. Basically, the simple contiguity weight matrix $\mathbf{W}$ attributes neighbours to each department. This geographical criterion is adopted in the sense that two departments are treated as neighbours if they share a border. The element w_{ij} is equal to 1 if departments i and j share a common border, and equal to zero otherwise. Matrix $\boldsymbol{W}$ is then standardised so that elements of each row sum to 1. Note that, as is usual in this literature, these weights are arbitrary (Brueckner and Saavedra, 2001).[11]

As is well known from the literature on spatial econometrics (Anselin, 1988), several econometric issues must be confronted in estimating equation (1). These are the endogeneity of the tax rates voted by competing departments and the possible spatial error dependence (Brueckner, 2003).

First, equation (1) cannot be consistently estimated by standard ordinary least squares (OLS) because there is an endogeneity problem which is well known in the spatial econometrics literature (Cliff and Ord, 1973). On the one hand, a given department's tax-setting behaviour is influenced by tax rates voted by neighbouring departments. On the other hand (and at the same time), the tax-setting behaviour of neighbouring departments is also influenced by the tax-setting behaviour of their neighbours, one of which is the given department. The coefficient ρ is then correlated with the error term (ε) (Anselin, 1988) and using OLS would lead to a biased and inefficient estimation of this parameter. Different approaches to tackle spatial simultaneity have been suggested, such as maximum likelihood (ML) and instrumental variables (IV) estimation techniques. Under the first method, the parameter ρ enters non-linearly in equation (1) and a non-linear optimisation routine must be used to estimate it. In the current paper, we have implemented the ML approach, basically following Case *et al.* (1993), Besley and Case (1995a, 1995b), Brueckner (1996), Saavedra (2000) and Brueckner and Saavedra (2001).

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Secondly, the error term in equation (1) may exhibit spatial dependence—i.e. it may be correlated across departments. When spatial error dependence is present, the error vector ε satisfies the following the relationship

$$\varepsilon = \lambda W\varepsilon + \mu \quad (2)$$

where, λ is an unknown parameter; **W** is a weight matrix which is often assumed to be the same as in (1); and μ is a well-behaved error vector. Spatial error dependence is likely to arise when ε includes omitted variables that are themselves spatially dependent. Case *et al.* (1993) point out that when this spatial error dependence is ignored ($\lambda = 0$), estimation of (1) might provide false evidence of strategic interaction. Several approaches exist for dealing with this problem (see Brueckner and Saavedra, 2001). One is to estimate equation (1) taking account of the error structure given by equation (2), as is done by Case *et al.* (1993). However, as Anselin (1988) claims that reliable estimation of the two separate parameters may be difficult, we turn to another method. This method is to test separately the hypotheses $\rho = 0$ and $\lambda = 0$ using the robust Lagrange multiplier tests developed by Anselin *et al.* (1996). First, for ρ, the usual LM test would evaluate the increase in the likelihood function as ρ diverges from zero, rejecting the hypothesis $\rho = 0$ when the increase is sufficiently large. The test statistic is adjusted in order to take into account the influence of λ, but this adjustment does not require knowledge of its true value. This is called a robust test. We also use the same kind of procedure to test for the hypothesis that $\lambda = 0$.

4. Dataset and Results

In order to test the impact of political competition on local taxation, we use data corresponding to the business tax rates set by the French departments for the year 1999. We focus on the business tax because this tax plays an important role in capital and employment decisions since firms may look at the level of the business tax rate to choose their location. Despite the fact that local economic development is also a regional and not only a departmental responsibility, many case studies in France show that departments have increasingly awarded grants to firms and tend to develop strong local economic programmes to maintain or attract new firms. Furthermore, even if firms do not vote, local incumbents pay attention to this tax because they know that a change in its level may affect unemployment and consecutively their re-election probability. Unemployment is indeed one of the key factors of the vote (see, among others, Auberger and Dubois, 2005). Another argument to justify the choice of the business tax is that the amount collected through this tax represents the main tax resource of departments, with about 32 per cent of their total tax receipts in 1999 (DGCL, Ministère de l'Intérieur).

The data on business tax rates come from the publications of the Direction Générale des Collectivités Locales (DGCL, Ministère de l'Intérieur). Our sample comprises the 96 French metropolitan departments except the three following departments: Haute-Corse, Corse-du-Sud and Paris. The two Corsican departments were excluded because the allocation of responsibilities in these departments differs significantly from what is observed in other departments and because they have not voted any business tax rates since 1995. Paris being at the same time a municipality and a department does not vote a business tax rate at the departmental level. We therefore use a sample of 93 metropolitan French departments.

As mentioned earlier, we include two sets of political variables

—The first set comprises the features of the president of the department council: SENIORITY, that is the number of years being president of the council, other possible mandates (SENATOR or MNA, or MAYOR) and, finally, POLITICAL PROXIMITY with the political majority in the National Assembly or the Regional Council.

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—The second set represents the department council's characteristics: the seat MARGIN obtained by the majority in the previous election and the ideology of the majority (left or right).

Political data are very difficult to gather at the local level in France. Data for the first group were mainly collected from the Internet. Our main reliable source was the website of the French National Assembly. For the second group, data were much more difficult to gather, especially the MARGIN variable. To our knowledge, no computer records exist of the seats obtained by parties at county elections. The French Home Office, that runs elections in France, is unable to provide these data. We have thus reconstituted the composition of each General Council, seat by seat. Each of the 3805 counties has been examined and then attributed to the left or to the right. Our sources were the two main daily French newspapers, *Le Monde* and *Le Figaro*. For this specific reason, although we know that using a panel data model would probably be the best specification to test the impact of political variables on tax choices, we were not able to gather time-series data and had to deal with the cross-sectional nature of our sample.

However, using more elections would address another issue because, in France, demographic and sociological variables are alas not available annually. They are known only for the census years—that is, for the three past decades, for 1982, 1990 and 1999. Analysis of tax rate setting is then possible for census years only. This is also why a panel dataset is not easy to construct. We finally retain 1999 as the studied year.

We ran the usual tests when using cross-sectional data, such as the White test for homoscedasticity whose results guarantee that none of the explanatory variables is correlated with the error term, the Jarque–Bera test (which tests for the normality of regression of residuals) and the spatial tests (Moran test and Lagrange multiplier tests). As the latter detected the existence of spatial dependence, we then used the appropriate specification of the model (a spatial lag model) and the appropriate estimation method (maximum likelihood method). We finally tried to control for cost factors by using the appropriate socio-demographic and economic control variables.

As noted above, department tax policies also reflect the impact of differences in economic and demographic factors grouped in the vector **X**. Following the empirical literature and knowing that departments are in charge of specific areas such as economic development, social assistance, departmental roads maintenance and building and secondary schools, we included two sets of control variables.

The first set comprises economic resource variables, such as PERSONAL INCOME PER CAPITA and BLOCK GRANTS PER CAPITA. PERSONAL INCOME PER CAPITA is included to capture its positive effect on the demand for department public services and hence on business tax rates. The expected sign remains uncertain, however, because this variable is also known to be a proxy for the business tax-base, omitted in the estimated equation to avoid endogeneity problems, and might thus have a negative effect on the tax rate. The expected effect of BLOCK GRANTS is positive on public spending but remains an empirical question on tax rates.

The second dataset comprises 'expenditure needs' variables, such as the size of the POPULATION, the department AREA, the URBANISATION RATE, the SHARE OF OLD PEOPLE and the RATE OF UNEMPLOYMENT. The expected signs are somewhat controversial. Some find that the higher these expenditure needs variables, the heavier the fiscal burden and the higher the tax rates. However, these variables could alternatively exhibit a negative sign because of the existence of economies of scale in the supply of public goods and services. The coefficients of the variables SHARE OF OLD PEOPLE and RATE OF UNEMPLOYMENT are expected to be positive. They represent two categories of people who have specific needs in public spending and benefit from department programmes.

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These two sets of data come from the National Institute of Statistics (INSEE, Institut National des Statistiques et des Etudes Economiques). Table 2 provides some descriptive statistics for each variable used. The estimation results are presented in Table 3.[12] Column 1 presents OLS estimates of equation (1) with no horizontal tax effects—that is, setting the autoregressive coefficient ρ equal to zero in the specification. Columns 2–5 show ML estimates of equation (1) with horizontal effects and the various political variables.

The specification used in columns 2–5 has been chosen after having performed various tests on the nature of spatial interdependencies. The Lagrange multiplier tests are based on the OLS results and use the simple contiguity weight matrix $\mathbf{W}^{cont}$. As the slope parameter ρ may be statistically different from zero when $\rho = 0$ holds in the true model but there is spatial error dependence, we first performed a robust Lagrange multiplier test of the $\rho = 0$ hypothesis. This test remains valid in the presence of uncorrected spatial error dependence. The results showed that the slope parameter ρ is significantly different from zero at the 5 per cent level (see column 1), leading us to use the ML technique for the following estimations. The robust Lagrange multiplier test of the spatial error dependence also shows that λ is not significantly different from zero. We therefore conclude that the error term in (1) does not exhibit spatial dependence.

Column 2 shows the results obtained without including the political variables, while columns 3–5 correspond to the estimation of the spatial tax choice model extended to test the influence of political competition on tax rates. First, the results in column 3 show that none of the political variables of the first group (the features of the president of the department council) is significant. Although one might think that characteristics such as seniority, proximity to other local or national assemblies and/or a plurality of local and national mandates make it possible for the president of the department assembly to reduce the intensity of political competition to increase tax rates or to advance his/her platform, empirical evidence suggests that this is not the case.[13] The plurality of mandates might thus be exploited by local politicians before the election to reduce the competition in the party and obtain nomination.

However, the political variables of the second group (the characteristics of the department council itself) are both significant

Table 2. Summary statistics

Variable	Mean	Maximum	Minimum	Standard deviation
DEPARTMENT BUSINESS TAX RATES (percentage)	7.56	12.12	3.72	1.90
SHARE OLD POPULATION (percentage)	23.38	34.40	14.20	4.34
UNEMPLOYMENT RATE (percentage)	10.72	17.00	5.70	2.45
URBANISATION RATE (percentage)	65.06	100.00	23.80	16.76
POPULATION	603 580	2 555 020	73 509	440 945
BLOCK GRANTS PER CAPITA (francs)	349.79	1 482.81	170.69	177.08
INCOME PER CAPITA (francs)	46 375	80 418	38 654	6 191
AREA (sq km)	5 754	10 000	176	1 853
SENIORITY (years)	8.98	25	2	6.60
SENATOR	0.39	1	0	0.49
MNA	0.18	1	0	0.39
MAYOR	0.58	1	0	0.50
POLITICAL PROXIMITY	0.77	1	0	0.42
MARGIN (percentage)	67.19	91.18	50.00	11.54
LEFT	0.34	1	0	0.48

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Table 3. Estimates of the business tax model

Variables	1. MCO	2. MV	3. MV	4. MV	5. MV
DEPARTMENT BUSINESS TAX RATE (ρ)		0.89** (75.4) [0.00]	0.88** (70.5) [0.00]	0.87** (58.7) [0.00]	0.87** (52.8) [0.00]
POLITICAL PROXIMITY			0.00 (0.05) [0.80]		
SENIORITY			0.02 (0.90) [0.34]		
SENATOR			−0.05 (2.18) [0.14]		
MNA			−0.01 (0.09) [0.76]		
MAYOR			−0.02 (0.63) [0.42]		
MARGIN				−0.14* (2.87) [0.09]	
LEFT*MARGIN				0.03** (13.2) [0.00]	
LEFT					0.12** (11.6) [0.00]
BLOCK GRANT PER CAPITA	0.15* (1.7) [0.08]	0.11 (2.55) [0.11]	0.12* (2.64) [0.10]	0.09 (1.89) [0.17]	0.09 (1.62) [0.20]
POPULATION	−0.05 (−1.1) [0.27]	−0.06 (2.11) [0.14]	−0.05 (1.42) [0.23]	−0.06 (2.48) [0.11]	−0.06 (2.47) [0.11]
SHARE OLD POPULATION	0.58** (3.5) [0.00]	0.39** (8.01) [0.00]	0.45** (10.1) [0.00]	0.32** (6.06) [0.01]	0.31** (5.52) [0.01]
UNEMPLOYMENT RATE	0.16 (1.4) [0.16]	0.15* (2.58) [0.10]	0.15* (2.63) [0.10]	0.07 (0.59) [0.44]	0.10 (1.31) [0.25]
INCOME PER CAPITA	−0.63** (−2.4) [0.01]	−0.63** (7.98) [0.00]	−0.60** (6.36) [0.01]	−0.51** (5.97) [0.01]	−0.50** (5.53) [0.01]
URBANISATION RATE	0.27** (2.41) [0.01]	0.22** (5.38) [0.02]	0.23** (5.72) [0.01]	0.16* (3.11) [0.07]	0.15 (2.53) 0.11
AREA	−0.13** (−4.2) [0.00]	−0.13* (23.0) [0.00]	−0.12** (18.5) [0.00]	−0.11** (16.9) [0.00]	−0.11** (16.4) [0.00]
Constant	6.57** (2.21) [0.03]	5.82** (5.22) [0.02]	4.97* (3.32) [0.06]	5.78** (5.76) [0.01]	5.1* (4.47) [0.03]
Adjusted R^2	0.527	–	–	–	–
Log likelihood	34.89	43.37	45.09	50.35	48.85

(*Table continued*)

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Table 3. Continued

Variables	1. MCO	2. MV	3. MV	4. MV	5. MV
LM robust test of spatial lag dependence	[0.00]	–	–	–	–
LM robust test of spatial error dependence	[0.65]	–	–	–	–

Notes: The dependent variable is the DEPARTMENT BUSINESS TAX RATE. All variables are log-transformed. Student values (Wald statistics) are reported in parentheses with OLS (ML) estimation techniques. Probability values are given in brackets. **indicates significant at 5 per cent; *significant at 10 per cent. Number of observations: 93. Year: 1999.

(see columns 4 and 5). Basically, the coefficient of the seats MARGIN exhibits a negative sign suggesting that governments with a high margin tend to set lower tax rates. For example, when the seat margin increases by 10 per cent, the business tax rates in right-wing departments decrease by 1.4 per cent, *ceteris paribus*.

This result also means that when party competition is low (or when MARGIN is high), officials tend to set lower business tax rates. Hence we interpret this evidence in the French local public sector as suggesting that the hypothesis of a Leviathan behaviour by local incumbents can be rejected since this hypothesis predicted a positive effect of MARGIN on tax rates.

Even if the ideology of local governments does not influence the sign of the coefficient of the seat MARGIN, it influences its level. Indeed, the coefficient of the variable LEFT X MARGIN takes a positive sign which means that the tendency to set lower tax rates when the seat margin increases is weaker for left-wing governments. We interpret the high significance of the coefficient as evidence in favour of the partisan government hypothesis. Note that Solé Ollé (2006) also concludes that empirical evidence supports the partisan model in Spain, but the sign of the effect of margin on budget outcomes is positive for left-wing governments and negative for right-wing governments. We therefore demonstrate that ideology in France has a specific effect on the link between political competition and local tax rates: differences due to ideology exist, but this does not lead to a different sign of the effect of the margin on tax rates. Moreover, the results in column 5 show that the coefficient of the dummy variable LEFT takes a significant and positive sign. We then confirm the hypothesis according to which left-wing governments tend to set higher tax rates than right-wing parties, *ceteris paribus*. This result is also observed by Solé Ollé (2003) in Spain.

These three previous results provide empirical evidence that local governments in France (departments) choose their tax rates in a way that is more in line with the partisan government hypothesis than the Leviathan one. This evidence is the first available in France and is in line with evidence from Spain, although with specificities.

Concerning spatial dependence, the results show that in the fiscal model extended by political controls horizontal tax interactions between departments are quite strong. The estimate of the spatial coefficient ρ is large and statistically significant. In the specification of columns 2–5, the estimates of ρ range from 0.87 to 0.89 with the ML method. This implies that an average business tax increase of 10 per cent in the neighbouring departments induces an increase of 8.7–8.9 per cent in the department's business tax rate. This gives additional evidence that, even in tax models extended to account for the effect of political competition and ideology, tax mimicking between local governments in France is a robust finding.

This result can be explained by a standard tax competition argument or by a yardstick competition argument. Indeed, departments might want to 'copy' their neighbours because of the spatial mobility of tax-bases and/or because

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they fear an electoral defeat. Unfortunately, our test cannot discriminate between these two hypotheses as we cannot allow for different reactions to neighbours' tax rates by government ideology (see Solé Ollé, 2003). Indeed, Solé Ollé (2003) provides evidence of yardstick competition between Spanish municipalities by showing that the reaction to neighbours' tax rates is lower when left-wing parties control the government.

Finally, concerning the socioeconomic features, the results in Table 2 show that POPULATION and AREA always exhibit a negative sign, which can be explained by the existence of economies of scale. However, the URBANISATION RATE takes a positive sign. Both the coefficients of the UNEMPLOYMENT RATE and the SHARE OF OLD PEOPLE take a positive sign, suggesting that these categories of population need specific public spending. When significant, BLOCK GRANTS exhibit a positive sign, while the expected negative sign of the INCOME PER CAPITA is confirmed.

5. Conclusions

This paper has investigated the hypothesis that local politics has an impact on local taxation in the French public sector by using a cross-sectional dataset for departments in 1999. We studied the departmental choice of the tax rate of the main local tax in France: the business tax called *taxe professionnelle*. For this purpose, we first gathered political data on seats in the General Council of each department and on the partisan and personal characteristics of the president, and then estimated tax-setting equations to establish the possible political determinants of local business taxation choices. This allows us to give original empirical insights from French local governments in the political economy literature that distinguishes two alternative models of government behaviours—that is, the Leviathan government hypothesis and the partisan government hypothesis.

Our estimation results mainly show that the wider the seat margin, the lower the tax rates, and that this cut is weaker in the case of a left-wing local majority than when the local majority belongs to the right. Therefore, we conclude that the partisan government hypothesis is more supported by our French local government data than the Leviathan one. Importantly, the estimated local business tax equations suggest these results remain valid after controlling both for socioeconomic factors and the presence of tax interdependencies between departments as recommended by the recent literature (see Brueckner, 2003) on the determinants of local taxation. Such empirical evidence in the French local public-sector context is the first concerning how the intensity of political competition influences the tax rate choices and how ideology interacts with this political competition. However, we also show that none of the political variables including the characteristics of the local incumbent is significant. Features such as seniority, proximity with other local or national assemblies, and/or a plurality of local and national mandates have no impact on local tax decisions.

This first evidence suggests that the link between local taxation and politics might have been underestimated by the literature on the French case. Further insights are thus needed. One extension would be to focus on the municipal level of decision. However, using a municipal database may also address another issue. Since the late 1990s, each French agglomeration has belonged to a 'group of localities' (*Etablissements publics de coopération intercommunale*) which sets the same business tax rate for all municipalities. Nevertheless, the president of this group of localities is not elected by inhabitants but by the mayors of the municipalities. The interplay between local politics and business taxation is therefore harder to analyse at the municipal level of local government. Finally, further research should analyse in more depth the reason why local tax behaviours exhibit differences related to local politics. One suggestion would be to study the way voters choose between candidates to document how local governments might use budget outcomes to influence election outcomes. Therefore, this is the interplay

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between elections and tax behaviours at the local level of government that should be modelled more precisely and explicitly.

Notes

1. Basically, fiscal resources are determined as follows

$$B \times (t^R + t^D + t^M)$$

where, B is the tax-base; t^R, t^D, t^M are the tax rates voted by the region, the department and the municipality respectively.

Tax payments are collected by the central government that pays back one part to the region, one part to the department and one part to the municipality according to the tax rates they have voted.

2. In 2001. This figure may vary due to county boundary changes.
3. Due to these two different electoral levels, constituencies are not divided in counties and the geographical limits of constituencies and counties do not coincide.
4. There are no county elections in Paris. The Council of Paris serves as both a General Council and a municipal council. These Parisian political particularities, and also those of a budgetary nature (the budget of the city and the budget of the department strongly overlap), have made it necessary to exclude the Paris department from the analysis.
5. "The whole of France" is metropolitan France plus the overseas territories.
6. The main rules dealing with the limitation of the plurality of electoral assignments and elective functions have been settled by three laws: the organic law No. 2000-294 of April 2000, relative to the incompatibilities between electoral assignments (for the MNA); the law No. 2000-295 of April 2000, relative to the limitation of the plurality of electoral assignments and elective functions (that concerns local elected representatives, European MPs and the incompatibilities between local executive functions); and the law No. 2003-327 of April 2003, relative to the election of regional councillors and European MPs (see the following site for more detailed information on these three laws: http://www.interieur.gouv.fr).
7. They show that mayors of cities in Lombardy who cannot be re-elected have no incentive to mimic the fiscal policies of the neighbouring elected representatives.
8. The extreme right achieved 10.21 per cent in the first round and 2.64 per cent in the second round in 1994, and 14.10 per cent in the first round and 7.45 per cent in the second round in 1998 (BDSP, Home Office).
9. An elected representative in each of the following departments: Eure-et-Loir, Manche, Oise, Haut-Rhin and Var.
10. See the data section for details of the sample.
11. Since weights are arbitrary, this specification of the nature of horizontal interactions has been tested against an alternative. Results were similar and are therefore not presented here. This second scheme is given by W^d and imposes a smooth distance decay, with weights given by $1/d_{ij}$ where d_{ij} is the distance between departments i and j for $j \neq i$.
12. All the estimates have been calculated using MATLAB. The specific programme used to take into account spatial dependence has been courteously provided by Professor Hubert Jayet (University of Lille) but is also freely downloadable on the James P. LeSage's website (www.spatial-econometrics.com).
13. Since BLOCK GRANTS is a budgetary variable set by the central government, we may think that there is a correlation between this variable and the characteristics of the president or the General Council (a political proximity, for example, may help to obtain more subsidies). Inspection of the correlations shows that this is not the case, all the correlations between the political variables and BLOCK GRANTS being below 0.3 in absolute value.

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