

Two-round elections, one-round determinants?

Evidence from French municipal elections*

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Abstract

Using a new database on French municipalities, covering 586 towns and two elections (2001 and 2008), we study how local spending, economic conditions and political considerations affect the incumbents' share of votes. The paper explicitly deals with the specificities induced by the two-round process of the French electoral rule. Firstly, we show that the municipal budget structure has an impact on the share of votes of the incumbent's party, but only in the first round. Secondly, local economic performances, considered through personal income and unemployment, do not seem to play a significant part in voters' decisions. Finally, political variables play a role at both rounds, especially the number of candidates, and national partisan waves. This is especially true for bigger cities, where they appear to be the main determinants of the incumbent success. All these results imply that the determinants of a two-round election are different in the two rounds.

JEL classification: D72 - H72 - H76

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1 Introduction

In the last decades, since Downs' (1957) seminal work and the classical studies by Key (1966), Kramer (1971), or Frey and Schneider (1978), the significant impact of economic conditions on voting behavior has been repeatedly confirmed. Strikingly, it has also been shown that voters have a retrospective behavior: they hold incumbent politicians accountable for past and current (but not prospective) economic outcomes. Such behavior was given theoretical foundations in Rogoff and Sibert (1988) in a competency model with rational expectations where political parties also differ by their ability to deliver good economic outcomes to the population. As ability cannot be directly observed, past and present outcomes find their way into the electorate's evaluations and votes. A similar result can be derived from Alesina and Cukierman's (1990) model, where voters are not informed about parties' preferences and have to guess future policies from current developments. Harrington (1993) elaborates on both models to build a synthetic one, with the conclusion unchanged about voters' behavior, relying on past and current data.

While first developed to analyze presidential elections in bipolar political environments (and thus for the United States), the literature has since devoted attention to lower level elections, allowing the small sample problem of presidential runs to be overcome. Moreover, the growing literature on sub-national elections also reveals that politicians can influence voters with the instruments they can more easily use at this level, particularly the repartition of budgets between investment and operating expenditures, and the number of public employees they can hire. Veiga and Veiga (2007), for Portugal, show that increases in investment expenditures and changes in the composition of spending favoring highly visible items are associated with higher vote percentages for incumbent mayors seeking reelection. Sakurai and Menezes-Filho (2008), for Brazil, analyze the influence of public expenditures on the probability of mayors' reelection, and show that mayors who spend more during their terms of office increase the probability of their own reelection or of a successor of the same political party. For France, Dubois and Paty (2008), testing the yardstick competition hypothesis at the municipal level, show that voters sanction their incumbent if their own local housing tax is high compared to their close geographical neighbors.

Our aim in this paper is to build on this emerging literature to check the influence of the local budget structure on incumbents' results and reelection prospects. To do so, we look at the French local (municipal) elections of 2001 and 2008. The French case is interesting in itself given its specific legal framework and the (induced) multiparty political arena. It is also interesting the strategic room of manoeuvre of the politicians is reduced, because of the identical institutional structure and of the fixed election dates, both exogenous (from their perspective). A final interest comes from the fact that the election can include two rounds, a feature that has not been acknowledged before.

This paper contributes to the existing literature at two levels. First, the empirical methodology we build allows the identification of specific determinants for the first and the second rounds of the electoral process. In the first round, the incumbent faces three possibilities (reelection, defeat or standing again in the second ballot) while, if the incumbent has to stand again in the second ballot, there are two

possibilities for him (like in existing studies focusing on one-stage elections): reelection or defeat. Second, political variables are known to be less explored in the vote function literature than economic variables (Nannestad and Paldam, 1994), especially for local elections. We then introduce several political variables for each round, reflecting both local and national concerns.

Moreover, we build our database not from individual politicians' results, but from their political parties' results. Partisan endorsements are the variable of interest here. The logic behind this choice is that it allows for investigation of the crossed influence of partisanship, incumbency, and economic performance (here assessed notably from the expenditures side) on the election results, without noise from individual characteristics. The durable attachment of most voters to one or another political party has been noted since at least Campbell et al. (1960), and empirically and theoretically confirmed ever since (see, e.g. Degan and Merlo, 2009). Here, given the French political and legal systems, we have an opportunity to test the influence of endorsements by political parties on voters' behavior. Bartels and Brady (2003) insisted on the necessity to account for this dimension in the analysis.

Our findings can be summarized as follows: first, the municipal budget structure has an impact on the share of votes of the incumbent's party, but only in the first round. More precisely, operating expenditures, apart from staff costs, have a significant negative impact on the first round. Equipment spending plays a positive role on the incumbent party's share of votes. In any case, and interestingly, no effects from the local budgetary variables could be detected at the second round, which strongly argues for a careful modelling of the two rounds in a two-round election.

Second, local economic performances, considered through personal income and unemployment, do not seem to play a significant part in voters' decisions. Conversely, the size of population is a relevant variable, which hints at the fact that political parties tend to invest more (and appoint politicians with higher stature) in bigger strongholds. In other terms, big municipalities are strategic for political parties, which do their best to keep the control of the municipality.

Third, many political variables tend to influence the share of votes at the first round, but not at the second. Regarding the latter, the political links with the majority in Parliament, the relationship with the President's political affiliation and the incumbent's performance at the previous election have an impact. These results emphasize the role of partisan waves and vote inertia to get (re)elected. Another interesting result relates to the number of competing candidates. At both rounds, a higher number of candidates (or an increase in dispersion of votes) decreases the share of votes.

The following section details the background literature, while Section 3 specifies the legal and political contexts of the study. Section 4 introduces the data, and section 5 presents our empirical strategy, while empirical results are commented on Section 6. Section 7 concludes.

2 Background literature

Vote functions explain the voting behavior by economic and political variables. Since the beginning of the 1970s and Kramer's (1971) seminal paper for the United States, numerous studies have shown the

influence of economic conditions on elections outcomes at the national level (see the survey by Nannestad and Paldam, 1994). Since then, a literature has emerged that focuses on local elections, studying interactions between politics and economics at the local level. However, a large part of the literature considers the political business cycle of municipal economics (i.e. considers the electoral variables as independent ones). The estimation of vote functions at the local level (i.e. where the electoral variables are the dependent ones), including politically strategic determinants and/or economical variables, has more recently emerged. A first strand of the literature deals with the composition of public budgets, while another focuses on the effect of local tax rates and focuses on testing the yardstick competition hypothesis.

Silva and Silva Costa (2006) introduce the levels of performance of Portuguese incumbents in a vote function for local jurisdictions. However, the efficiency of local governments does not appear as an important factor in explaining the vote shares whereas ideology has some influence on the voters' decisions. Regarding local public finances, the evidence provided by the literature shows that voters tends to penalize high preelectoral deficits, but may also reward preelectoral higher spending, especially the immediately visible ones. Brender (2003) studies the reelection of mayors in Israeli cities. When voters are able to effectively monitor the fiscal choices of local officials, any build up of large pre-election deficits harms an incumbent's chances of being reelected. Though voters in Israel penalize election year deficits, they reward high expenditure in development projects in the year preceding an election. Drazen and Eslava (2010) analyze Colombian mayoral elections by considering a panel of Colombian cities during the 1992-2000 period. Their results indicate that the share of votes received by the incumbent's party is decreasing in the level of the deficit in the year preceding the election. Using data from Portuguese municipalities, Veiga and Veiga (2007) find that increases in investment expenditures and changes in the composition of spending favoring highly visible items are associated with higher vote percentages for incumbent mayors seeking re-election. In a comparable way, Sakurai and Menezes-Filho (2008), for Brazil, analyze the influence of public expenditures on the probability of mayors being reelected, and show that mayors who spend more during their terms of office increase the probability of their own reelection or of a successor of the same political party. In a study evaluating local Russian governmental entities, Akhmedov and Zhuravskaya (2004) also find that pre-electoral manipulation of fiscal instruments increases the incumbent's chances of being reelected. It therefore appears from this first strand of the literature that well-informed voters are not only hard to buy through spending increases, but are also averse to high overall government spending and deficits.

Vote functions have also been studied by the yardstick competition literature. Assuming that voters are sensitive to neighbors' choices, this literature, by definition, focuses on taxes, not expenditures. As the argument goes, if all her neighbors lower their tax rates in the election year, it is desirable for the incumbent to lower her own tax rate in order to be reelected. Tests of this hypothesis generally relied on the estimation of tax reaction functions, and proved to be conclusive most of the time. In their pioneer work, Besley and Case (1995) mainly explain the incumbent's probability of being defeated in the US States from 1960 to 1988 by own tax change (coming with a positive sign) and neighbors' tax

change (coming with a negative sign). In another study, Revelli (2002) attempts to test a possible yardstick competition effect in 122 English districts on the 1979-1987 period. His results confirmed the yardstick competition hypothesis with a negative effect of own property tax increases and a positive effect of neighbors' property tax increases on the incumbent's vote share. Veirmer and Heyndels (2006) investigated yardstick voting in Flemish municipal elections during the period 1982-2000. They found that higher rates of local income tax and property tax in neighboring municipalities were favorable to the incumbents. Bosch and Solé-Ollé (2007) confirmed that property tax increases in Spanish municipalities, both at municipal and neighborhood levels, have the expected impact on the incumbent's share of the vote in three local elections (1995, 1999 and 2003). Estimating a fully specified vote function on a panel data set of 104 French municipalities (including both political and economic determinants at both national and local levels), Dubois and Paty (2008) show that voters sanction the incumbent if their own local housing tax is high compared to their close geographical neighbors. Finally, the yardstick competition hypothesis has been rejected only for Italy by Bordignon et al. (2002). They estimated a vote function equation on a cross-sectional sample of 97 municipal elections held in Lombardia between 1998 and 2000, and found that both levels and changes in neighbors' business property tax rates were insignificant. However, as stated above, this strand of the literature does not consider the expenditure side of the budget.

To sum, none of the vote function papers on French mayoral elections include budgetary variables¹. In studies relying on other countries including disaggregated local expenditures, the description of the political scene is quite limited. Moreover, the specific setting of some municipal elections, which take the form of two-stage processes is never clearly taken into account. The purpose of this paper is to fill these gaps.

3 Legal and political environment

Compared to the existing studies in the field, both the legal and political contexts of French local elections are very different. First, the French political arena is not a bi-partisan one. In the chosen sample (described below), a lot of different parties exist (and cannot be considered as marginal). For each election we consider, voters are given the choice among more than ten parties. Simply differentiating the Right from the Left would thus clearly not be relevant. This would have combined, for example, in 2001, the National Front (FN, far-right party, leader: Jean-Marie Le Pen) with the Rally for the Republic (RPR, moderate right, leader: Jacques Chirac), whereas the latter always rejected any kind of agreement with the former.

The legal context for local elections has historically evolved several times, but has remained fixed since 1982 (and applied since 1983). Elections normally take place every six years². A 3,500-inhabitant threshold is fixed, the voting system being different for smaller towns. As our sample is composed only of

¹Note that including both taxes and expenditures would lead to endogeneity and collinearity problems, especially in the French context. This explains why, in what follows, we concentrate on the expenditure side.

²Except between 2001 and 2008, the election being postponed to avoid electoral weariness in 2007, a year in which both the Presidential and Assembly elections were taking place.

towns with population numbers above the threshold (see below), we only describe the relevant system: the poll competition is organized by lists, with two rounds (possibly) taking place. The winning list receives half the seats to be filled in the town council, the other half of the seats being distributed proportionally between all the lists (including the winning list) that have received more than 5% of the votes. If a second round is necessary, all the lists with more than 10% of the votes can compete but the lists with more than 5% of the votes can merge between the two rounds. As a consequence of the multi-partisan context, the electoral law offers the possibility to the lists defeated in the first round to merge with one (or several) of the runners-up in the second round of the election.

Hence, to our knowledge, this study is the first at the local level to provide a full view of the two-stage election process and to simultaneously account for the number of candidates.

4 Data and variables

Due to data availability constraint, municipalities in our sample are above 10,000 inhabitants. This threshold allows to reduce economic disparities, to compare and to have a good representation of the French population. However, in some rural departments, the biggest cities are under the threshold: in this case, only the biggest cities of the department are included.³ So all departments are represented, excluding overseas territories. This gives us coverage of 586 cities, or about half the French population, which is certainly something that can be considered as representative. Moreover, this threshold also ensures that the institutional (political and legal) context is consistent through the sample. At the city level, spending data is available over the period 2000-2007, so we cover for the elections of 2001 and 2008. The time-period is sufficiently short to comfortably assume a constant electoral behavior and, to our knowledge, our geographic and demographic coverage is larger than in the existing literature on French vote functions.

4.1 Dependent variable

The observed variable we want to explain is the electoral result of the incumbent mayor's party, i.e. the incumbent party's share of votes, called *INC*. This means that if the incumbent mayor does not run for the following election, we consider the candidate of the same party as the incumbent. This is clearly designed to capture partisan effects, as we want to explain the party's result, not the individual result. The underlying theory goes back to Hibbs (1977), who supposed that politicians tend to adopt policies that favor their supporters. Powell and Whitten (1993) and Swank (1993) have also introduced partisan effects in the literature on voters' behavior.

Here, our option is to consider parties' shares of votes to account for partisan effects. As a consequence, we will not need to resort to partisan effect dummies, as our dependent variable, the party's share of the votes, includes this information. Of course, we do not ignore the fact that a charismatic incumbent can

³Beyond data availability constraints, it has to be stated that looking deeper (at municipalities largely under the 10, 000 inhabitants threshold) would blur the message, as personal links between the mayor and its population are much stronger than in bigger cities.

help her party. More precisely, in link with the two-step electoral process, we define two incumbent party shares of the vote: *INC1* corresponds to the share of votes obtained by the incumbent candidate *i* at the first round while *INC2* represents the share of votes received by the incumbent candidate *i* at the second ballot when the incumbent has to stand again in the second round.

4.2 First set of explanatory variables: Spending variables

As the structure of the budget can be used by politicians to swing elections, a first data set includes budgetary data at the city level (as in Veiga and Veiga, 2007, or Sakurai and Menezes-Filho, 2008). Budgetary data is available from the French Data Census of the Ministry of Finance over the period 2000-2007. We consider staff costs (*STAFF*), operating expenditures excluding staff costs (*OPER*) and equipment spending (*EQUIP*). All these variables are expressed per capita. Perceived as a manifestation of bad government, operating expenditures excluding staff costs should have a negative impact on the dependent variable. Conversely, equipment spending, as new investments, should positively impact the dependent variable. The sign of the coefficient on staff spending is less clear: on the one hand, high staff spending, like other operating costs, can be interpreted as bad government; on the other hand, more staff spending can also entail more jobs or higher wages, increasing voters' welfare (or simply buying votes). It will definitely be interesting to empirically identify which of these two effects dominates.

4.3 Second set of explanatory variables: Socioeconomic variables

The second data set includes economic variables. We follow Peltzman's (1987) argument about voters considering local economic variables. The literature often uses the personal income, and so do we. The model will also account for the unemployment rate. It could be argued that this variable is rarely significant in the literature. In European countries, however, where the unemployment rate is higher and has been high under the period we consider, we think that this variable should not be dismissed peremptorily. We consider the gross personal income per capita and annual unemployment rate for each local authority. For these two variables, we use the gap between municipal value and the average of all other municipalities of the sample (*INCOME_GAP* and *UNEMP_GAP*). In conformity with the literature, it seems sensible to consider that voters will not decide their vote considering the absolute level of these variables, but rather the size of the gaps to their national counterparts – or in our context, the averages at the city level. We expect the coefficients on the gaps to average personal income and to average unemployment rate to be positive and negative, respectively. Finally, we introduce the size of the municipal population (*POP*). We expect a positive sign for this variable, as a control variable catching the fact that political parties tend to invest more in bigger strongholds, notably by appointing well-known politicians to benefit from their national reputation.

4.4 Third set of explanatory variables: Political variables

We include political variables relative to the past and present specificities of the local election, and others controlling for national political stakes. For first round estimations, we include the vote share of the

incumbent party in the preceding municipal elections (*INCPREC*). In the second round, this variable is replaced by *INC1*, the share of votes received by the incumbent in the first round. As pointed out by Dubois and Paty (2008), the previous local vote expresses a long-term strength or vote inertia, since many voters vote the same way from one election to the next: the expected sign for both variables is therefore positive. This variable may be viewed as a proxy for socio-demographic determinants (religious practice, age, occupation. . .).

Another way to deal with past electoral results is to introduce a dummy *DROUND* which is equal to one if the mayor was elected in the first round of the preceding election and zero otherwise. A positive sign is expected, as it indicates that the mayor was easily elected at the previous election. *DUR* is a duration variable that is defined as the logarithm of the number of consecutive mandates spent by the incumbent as mayor. This variable has an unknown expected sign, since it can be viewed as a proxy for experience (positive) but also as a measure of weariness (negative). We will also include the square of this variable (DUR^2) in our estimates to check for non-linearities in the duration phenomenon. The distribution of this variable is given in table 1⁴.

[Table 1 about here]

We introduce the number of candidates in each of the corresponding rounds (*NBCAND1* and *NBCAND2*). All candidates, whose scores in the first round are higher than 10% of the total vote, qualify for the second round. Then, depending on the results of the first round, more than two candidates may be present in the second round. As shown in table 2, 40% of the second round races are two-candidate races, generally between a right-wing and a left-wing candidate whereas in another half (46.5%), a third candidate is present (usually from the far-right party, the National Front), or even a fourth or a fifth one (in 4 cases over the sample).

[Table 2 about here]

If there are more than two candidates in the second round, the winner is the one getting the simple majority of the votes. According to Foucault and François (2005) and Fauvelle-Aymar and François (2003), an increase in the number of candidates leads to a dispersion of votes that penalizes the incumbent. Hence a negative sign is expected for both the *NBCAND1* and *NBCAND2* variables.

To control for the link with national political trends, we include a dummy *PARL* equal to 1 if the incumbent mayor and the majority in Parliament belong to the same political party, 0 otherwise. The main purpose of having included this variable is to control for the potential influence exerted by the government's popularity in local elections. It has been common for French voters to consider municipal elections as mid-terms, using them as a way to penalize the government and the parliamentary majority in charge: a negative sign is therefore expected on this variable. The variable *PRESID* is the vote share received by the incumbent mayor's party presidential candidate in the second round of the preceding

⁴Due to changes in the electoral rules in 1982 and data availability, we did not take into account elections before 1977 for computing the *DUR* variable.

presidential election⁵. In our sample, the concerned elections are the 1995 and 2008 Presidential elections. The expected sign is positive for this variable, as it has been shown for France that the incumbent coalition benefits from the vote-share of parties close to her obtained in the second round of the preceding national elections (Dubois and Paty, 2008).

Table 3 below summarizes the data sources, the definitions of our variables and the expected signs of the related parameters while table 4 gives summary statistics.

[Table 3 about here]

[Table 4 about here]

5 Empirical methodology

We study the effect of budget structure, economic context and political variables on the incumbent’s party share of votes⁶ building our empirical methodology to explicitly account for the two rounds of the French municipal elections⁷.

First round. The incumbent faces three possibilities in the first round of the election: 1. To receive enough votes (more than 10% of votes) to stand again in the second ballot; 2. To receive less than 10% of the votes in the first round and not be allowed to compete in the second round; 3. To have more than 50% of the votes and to be reelected directly. On average over the two considered elections (2001 and 2008), 48.7% of the incumbents were in a “stand again” position, 3.7% were defeated and 47.5% were reelected.

For the first round, the impact of the set of explanatory variables detailed before on the incumbent’s share can be estimated through a standard linear equation, which can be written as follows:

$$INC1_{it} = \alpha_i U_{it} + \beta_i \phi_{it} + \gamma_i \Omega_{it} + \eta_t + c + \varepsilon_{it} \quad (1)$$

Second round. We estimate a similar equation for the second round if any. From the first equation, we replace the vote share for the incumbent in the first round of the previous municipal elections by the vote share in the first round of the present election. We also introduce the number of candidates in the second round instead of the number in the first round.

$$INC2_{it} = \delta_i U_{it} + \rho_i \phi_{it} + \kappa_i \Omega_{it} + \eta_t + c + \varepsilon_{it} \quad (2)$$

⁵If the mayor of municipality i is from the right, we report the result of the right wing candidate in the municipality at the Presidential election.

⁶As in the studies by Happy (1992) on Canada, Drazen and Eslava (2010) on Colombia, Veiga and Veiga (2007) on Portugal and Dubois and Paty (2008) on France.

⁷One could think that, given the two-rounded structure of the French municipal elections, a system estimation method (like e.g., seemingly unrelated regressions) could be considered as an option. This choice would not be relevant, however: since an important share of incumbents are elected directly at the first round (almost half on average over the two considered elections, see below), samples are not identical between the two rounds. A system estimation method would therefore make no sense as it would not distinguish one-rounded from two-rounded elections.

Both equations control for year specific effects by including a time (η_t) dummy. For both rounds, we expect the coefficients on *INCOME_GAP* and *UNEMP_GAP* to be positive and negative respectively. Regarding budgetary variables, we expect the coefficients on *OPER* and *EQUIP* to be negative and positive respectively, while the sign on *STAFF* has to be empirically settled. Turning to political variables, we expect the coefficient on *INCPREC* (first round) and *INC1* (second round), *PRESID* and *DROUND* to be positive; the coefficient on *PARL* is expected to be negative; finally, signs on *DUR* and *DUR2* have to be empirically determined. The importance of the differences between these two sets of estimates should provide useful insights on which variables are decisive respectively for the first and second round⁸.

Econometric Issues. In order to check for potential multicollinearity between regressors, we compute the Variance Inflation Factor (VIF) for each of them. The VIF shows how the variance of an estimator is inflated by the presence of multicollinearity. The larger the VIF value, the more collinear the variables will be. A common rule of thumb is to consider a VIF exceeding 10 as an indication of high collinearity of the considered variable (Gujarati, 2004). For all our variables, the VIF ranges between 1.06 and 4.32⁹, confirming that our variables do not suffer from any multicollinearity problems.

While the extra orthogonality condition used by the random effects estimator can be considered in our context as a dubious assumption¹⁰, the lack of time variance prevents to estimate specifications 1 and 2 including city-level fixed effects¹¹. However, we control for a potential influence of unobserved heterogeneity by two different means. First, we will present estimates that are run separately on each year, 2001 and 2008. Second, we run another set of estimates on first-difference variables, which is another standard method to eliminate unobserved heterogeneity¹².

Besides, if specification 1 can be straightforwardly estimated using Least Squares, it is not the case for specification 2. We are confronted here to the problem that a simple OLS estimation of equation 2 may be affected by a potential selection bias coming from first round results. Therefore, we implement the Heckman two-stage estimation procedure to correct for a potential selection bias. We use the party share of votes at the preceding election, *INCPREC*, as the city-level selection variable. This variable proved to influence the probability of standing again at the second round (the selection equation), but not the share of votes (specification 2, see Wooldridge (2002) for more details on that matter.)¹³.

Besides, endogeneity may be a concern for city-level economic and budgetary variables. Due to the limited degrees of freedom, we cannot perform IV estimates. Therefore, we use first-lagged values of the right-hand side variables to address the simultaneity of city-level variables issue.

⁸Note that we will not include any dummy variable in specification to account for the possibility of merging the lists between the two rounds of the election, due to endogeneity concerns. There is indeed an obvious issue of reverse causality on the dependent variable and the possibility of merging: the expected share of votes for the incumbent at the second round clearly impacts the probability of merging. Without any robust option to instrument this variable, we prefer to remove it from the incumbent party's share of votes estimations.

⁹Complete results of VIF tests available upon request.

¹⁰Namely, the assumption that the city-specific intercept is exogenous, or, alternatively, that the regressors are uncorrelated with the time-invariant city-specific component of the error term.

¹¹Similarly to Dubois and Paty (2008), *INCPREC* is not a lagged dependent variable in the strict sense. Besides, since we do not include city-level fixed effects, our estimates do not suffer from systematic bias in the lagged dependent variable, which is traditionally solved by taking a within transformation, and then applying instrumental variables (IV) estimation or Generalized Method of Moments (GMM) estimation. Therefore, estimators of the Arellano-Bond type are not necessary.

¹²This set of results is not reported in order to save space and remain available upon request to the authors. These outcomes are quantitatively and qualitatively almost identical to the ones reported here.

¹³All estimates including the selection variable *INCPREC* are available upon request.

Finally, the structure of our data confronts us with the problem of the clustering of errors. It is to be expected that observable and unobservable characteristics of the cities are correlated (cf. Moulton, 1986, 1990). Here, in addition to the standard White correction for heteroskedasticity, we correct for clustering using the Froot correction (Froot, 1989). We therefore correct for the correlation of errors at the city level.

6 Empirical evidence

6.1 Main results

Estimation results for equations 1 and 2 are shown in table 5. More precisely, column (a) (respectively (d)) reports the results from estimating equations 1 (respectively, 2) on the full sample, while columns (b)/(c) (round 1) and (e)/(f) check with yearly estimates how the results obtained on the pooled series hold for each year considered separately.

[Table 5 about here]

Regarding the first round, all budgetary variables appear significant on the whole sample, with the expected signs for operating expenditures (negative) and equipment spending (positive). Staff costs appear to impact positively the incumbent's share of votes, supporting the idea that voters do not consider them as standard operating expenditures, but rather as useful spending. Equipment spending seem also to be significantly valued by voters. Finally, when splitting the sample between the two considered elections, one sees that these results hold for 2008, but not for 2001: for this year, political variables seem to be the main determinants of the incumbent's share of votes (see below). Hence, all things considered, this awareness amongst voters of the budget structure confirms the preceding results on Portugal and Brazil, for example, but had not been shown for France before.

The inclusion of the local income performance (relative to the sample's average) shows no or weak influence on the incumbent's party results. This result contrasts with those generally obtained, notably since Peltzman (1987). More in line with the literature (see Hibbs, 2006) is the result that unemployment does not seem to influence robustly voters' decisions, except in 2001¹⁴. Although the two results seem to imply that voters do not react to economic conditions, it may be argued that these are already implicitly included in the spending variables, given that municipalities' receipts are sensitive to the business cycles, and that they are in charge of some welfare transfers. As for the municipal population variable, incumbents in bigger cities seem to receive higher shares of votes, which witnesses the well-known feature that political parties will invest more strongly in bigger cities, notably by appointing there nationally well-known candidates, as it is strategic to maintain the leadership of big cities.

As for political variables, they similarly impact the incumbent's share of votes, no matter if we consider the whole sample or each election separately. The past local elections play roles in the reelection process:

¹⁴Voters may punish the incumbent party only if it belongs to the majority in Parliament, because reducing unemployment is a task of the central government.

the higher the past vote share, the higher the present one (highlighting a strong incumbency premium). Moreover, if the mayor has been elected in the first round in the past, he will receive more votes at the present election. There is some evidence of non-linearities regarding the duration variable: it seems that *DUR* has a negative and significant impact on the whole sample. In other terms, our estimates support the idea of a tiredness effect for mayors running successive mandates: being in office during many mandates tends to reduce the incumbency premium. But interestingly, it seems that after a certain number of terms, inertia effects and/or personal charisma gain the upper hand: DUR^2 positively impacts the share of votes.

The number of competing candidates has a negative impact on the incumbent's vote share. This confirms the result by Foucault and François (2005) and Fauvelle-Aymar and François (2003): an increase in the number of candidates leads to a dispersion of votes that penalizes all the candidates, including the incumbent. *PRESID* and *PARL* variables control for the link with national political trends. The *PARL* dummy variable is strongly significant and shows up negatively in this specification, adding weight to the view of voters seizing the first electoral opportunity to send a message of discontent to the national majority, whatever its color. Other studies on French elections report this effect (see for example Auberger and Dubois, 2005 who analyze reciprocal local-national influences on legislative elections). Concerning *PRESID*, the expected positive sign is confirmed, which tends to support the fact that (national) partisanship matters.

As shown by estimates (b) and (c) in table (5), the political variables impact the behavior of voters in 2001, but not most of the other variables. It thus seems that, in this specific election, political and ideological concerns have been preponderant in voters' decisions.

Turning now to the second round, the 1% significance of the Mills ratio in all estimates represents a strong evidence of selection (see Wooldridge, 2002, for more details on that matter), confirming the relevance of our choice for a Heckman two-step procedure. Economically, the results show that many variables that have a significant impact on the vote share in the first round lose their significance in the second round, especially budgetary variables. The local incumbent is rewarded or punished for his local management in the first round but in the second, only some specific political factors matter. The result of the first round, *INC1*, appears initially to explain a high part of the result of the second round over the whole sample, but the result does not hold when each year is considered independently. In the second round, if there are more than two candidates, the vote-share of the incumbent is again reduced. Similarly, being reelected at the first round at the previous election still exerts a positive influence on the incumbent's share of votes, highlighting the importance of persistence in voters' behavior. The "mid-term effect" of the municipal elections is also much less visible than for the first round: *PARL* appears significant only in 2001. *PRESID* is no longer significant, revealing the dilution of partisan effects between the two rounds.

6.2 The size of the municipality matters

In some departments, there is no municipality with more than 10,000 inhabitants. In order to represent all French departments, the biggest cities of each department were introduced even if their size was

under the threshold. However, it is interesting to perform the estimations on a sub sample of big cities. Proceeding this way shows whether our results are driven by the smallest municipalities. Note that our full sample contains 586 municipalities. Dropping municipalities with less than 10,000 inhabitants only reduces the sample by 21 municipalities. Results reported in table 6 below allow to conclude that there is no difference in voters' behavior between the full sample and the sub sample with municipalities with more than 10,000 inhabitants. This result validates the choice to increase the geographic coverage to introduce the biggest cities of each department when there is no municipality above the threshold.

[Tables 6 about here]

Performing estimations on the 211 municipalities with more than 30,000 people changes the picture for several key variables¹⁵. Notably, it is striking to note that the structure of local spending does no longer have any systematic robust influence: only political variables matter to gain more votes at the first round in the cities with more than 30,000 inhabitants. This supports the idea of an increased importance of political and ideological considerations in the biggest cities, relatively to more local concerns.

At the second round however, most political variables loses their influence on the share of votes: neither national or local political concerns seem to matter anymore. Only the share of votes obtained at the first round seems determinant in getting more votes for the incumbent. Compared to the full sample specification, this means that only the dynamics inherited from the first round are decisive. This result could be related to the particular charisma (or national standing) of mayors in big cities.

7 Conclusion

This paper assesses the respective parts of local spending, economic variables and political considerations on the 2001 and 2008 elections in French municipalities. We first show that municipal budget structure has an impact on the result of the incumbent's party, but only in the first round. More precisely, operating expenditures excluding staff costs have a significant negative impact in the first round on the incumbent's result. Equipment spending plays a positive part on the incumbent party's share of votes. These results confirm those of similar empirical studies in other countries. The distinction between productive and unproductive expenditures, emphasized by endogenous macroeconomic models, meets with a response in the voters' mind and shows a need to operate on data as disaggregated as possible. This latter result confirms the role of "highly visible" expenditures on voters' behavior Veiga and Veiga (2007) emphasized. However, our results also strongly point to the need to carefully model the two potential rounds of an election, to disentangle their respective determinants.

Turning to political grounds, an interesting result is that, at the second round, a higher number of competing candidates decreases (full sample) or leaves unchanged (cities with more than 30,000 inhabitants) the incumbent's share of votes. In bigger cities, this clearly means that the incumbent is less

¹⁵Our results are qualitatively robust to the other thresholds we have tried, based on the different moments of the distribution.

penalized by vote dispersion than the other competitors. We also highlight a non-linear effect of the time spent in office, at the first round. First, tiredness effect for mayors running successive mandates emerges, but it seems that after a certain number of terms, the effect reverses: personal charisma and strong personal links become more important again. More strikingly, the fact that the incumbent belongs to the party that has the majority in Parliament tends to reduce the incumbent's share of the vote, but impacts mainly at the first round. Furthermore, local socio-economic (gap to the average) variables do not come into play in voter's minds or are accounted for by budget variables. Finally, purely local considerations seem more determinant in smaller cities (less than 30,000 inhabitants) than in bigger cities (more than 30,000 inhabitants), where political stakes and electoral configuration seem to be crucial in explaining the incumbent's success. Here again, our results point to the need for a careful examination of the sample's distribution, as electoral behavior may change from one scale to another.

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Tables

| Duration | Proportion (in %) | Duration | Proportion (in %) |
|-----------------|--------------------------|-----------------|--------------------------|
| 1 | 40.9 | 4 | 14.6 |
| 2 | 25.3 | 5 | 3.5 |
| 3 | 15.6 | 6 | 0.1 |

Table 1: Number of consecutive mandates spent by the incumbent as a mayor

| Number of candidates | First round | Second round |
|-----------------------------|--------------------|---------------------|
| 1 | 1.1% | / |
| 2 | 17.7% | 40.9% |
| 3 | 28.1% | 46.5% |
| 4 | 22.5% | 11.9% |
| 5 | 15.3% | 0.7% |
| 6 | 6.7% | / |
| 7 | 5.0% | / |
| ≥ 8 | 3.6% | / |

Table 2: Repartition of the number of candidates

Table 3: Data and expected empirical impacts

| Variables | Definition | Source | Expected Signs Incumbent's share of votes <i>First round</i> <i>Second round</i> |
|--|--|-----------------------------------|--|
| OPER STAFF EQUIP | Spending variables (U_{it}) Operating costs (per capita) Staff costs (per capita) Equipment spending (per capita) | Census of the Ministry of Finance | - - +/- +/- + + |
| UNEMP_GAP INCOME_GAP POP | Socioeconomic variables (ϕ_{it}) Unemployment rate gap Gross personal income gap Population of the municipality | INSEE | - - + + + + |
| INC1 INCPREC NBCAND1 NBCAND2 PRESID PARL DUR DROUND | Political variables (Ω_{it}) Incumbent party's share of votes at the first round Mayor's share of votes at the previous election Number of candidates at the first round Number of candidates at the second round Incumbent party share of votes at the presidential election 1 if the incumbent mayor and the majority in Parliament belong to the same political party, 0 otherwise Number of consecutive mandates 1 if the mayor was elected in the first round of the preceding election, 0 otherwise | Ministry of Internal Affairs | + + - - + + - - +/- +/- + + |

Table 4: Summary Statistics

| | Obs. | Mean | StdDev | Min | Max |
|---|------|--------|--------|--------|---------|
| Spending variables (U_{it}) | | | | | |
| OPER | 1172 | 562.73 | 197.46 | 158.00 | 2129.00 |
| STAFF | 1172 | 566.54 | 174.44 | 127.00 | 1404.00 |
| EQUIP | 1172 | 318.14 | 172.89 | 13.00 | 1876.00 |
| Socioeconomic variables (ϕ_{it}) | | | | | |
| UNEMP_GAP | 1172 | 0 | 0.30 | -0.67 | 1.28 |
| INCOME_GAP | 1172 | 0 | 0.34 | -0.59 | 3.69 |
| POP | 1172 | 35761 | 39958 | 4239 | 437715 |
| Political variables (Ω_{it}) | | | | | |
| INC1 | 1172 | 49.90 | 13.60 | 8.20 | 100.00 |
| INC2 | 571 | 47.31 | 8.43 | 13.65 | 100.00 |
| INCPREC | 1172 | 53.61 | 9.03 | 22.98 | 100.00 |
| NBCAND1 | 1172 | 3.93 | 1.66 | 1.00 | 11.00 |
| NBCAND2 | 571 | 2.72 | 0.69 | 2.00 | 5.00 |
| PRESID | 1151 | 54.5 | 7.10 | 32.50 | 86.80 |
| PARL | 1172 | 0.51 | 0.50 | 0 | 1 |
| DUR | 1170 | 2,1 | 1,2 | 1 | 6 |
| DROUND | 1172 | 0.43 | 0.49 | 0 | 1 |

Table 5: Incumbent party's share of votes at first and second round

| Dep. Var | <i>INC1_{it}</i> | | | <i>INC2_{it}</i> | | |
|--------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|----------------------------------|-----------------------------------|
| | <i>Full sample</i> | 2001 | 2008 | <i>Full sample</i> | 2001 | 2008 |
| | (a) | (b) | (c) | (d) | (e) | (f) |
| OPER | -3.0156 ^b (1.3847) | -2.5936 (1.7949) | -3.6336 ^b (1.8133) | -0.2216 (0.1822) | -0.1684 (0.1893) | -0.0624 (0.3369) |
| STAFF | 3.8496 ^b (1.6385) | 3.0021 (2.0865) | 6.8981 ^a (1.9326) | 0.0215 (0.1873) | 0.0741 (0.2352) | -0.1080 (0.3432) |
| EQUIP | 2.0973 ^a (0.7101) | 1.1040 (0.8969) | 2.2054 ^b (0.8660) | 0.0104 (0.0847) | -0.0832 (0.0967) | 0.0345 (0.1427) |
| INCOME_GAP | -0.7152 ^c (0.4218) | -0.8186 (0.5220) | -0.2697 (0.5169) | -0.0272 (0.0579) | -0.0347 (0.0650) | -0.0512 (0.0883) |
| UNEMP_GAP | 0.1121 (0.1825) | 0.3804 ^b (0.1585) | -0.2882 (0.2005) | 0.0179 (0.0197) | 0.0286 (0.0231) | -0.0109 (0.0373) |
| POP | 6.0942 ^a (0.8288) | 6.2981 ^a (1.0211) | 5.5003 ^a (1.1173) | 0.1478 (0.1143) | 0.1690 (0.1474) | 0.0917 (0.1929) |
| INCPREC | 0.3052 ^a (0.0482) | 0.2630 ^a (0.0545) | 0.3971 ^a (0.0622) | | | |
| INC1 | | | | 0.8906 ^b (0.3908) | 0.6552 (0.4163) | 1.1019 (0.7435) |
| PARL | -3.4380 ^a (0.5643) | -1.6852 ^b (0.8237) | -5.5300 ^a (0.8071) | -0.1176 (0.0756) | -0.2088 ^b (0.1050) | -0.1669 (0.1360) |
| NBCAND1 | -22.4024 ^a (1.1665) | -22.8607 ^a (1.4809) | -20.2998 ^a (1.5304) | | | |
| NBCAND2 | | | | -0.9137 ^a (0.1728) | -0.6476 ^a (0.2168) | -0.9720 ^a (0.2862) |
| PRESID | 11.8652 ^a (2.5986) | 11.7078 ^a (3.2813) | 13.9400 ^a (2.7222) | 0.2184 (0.3285) | -0.3906 (0.3962) | 0.7648 (0.4925) |
| DUR | -2.9591 ^a (1.0560) | -5.2023 ^a (1.7652) | -1.2434 (1.3555) | -0.2261 (0.1388) | -0.3887 ^c (0.2088) | -0.1854 (0.2072) |
| DUR ² | 0.4522 ^b (0.1971) | 0.8922 ^b (0.3676) | 0.1458 (0.2404) | 0.0358 (0.0264) | 0.0756 ^c (0.0423) | 0.0266 (0.0373) |
| DROUND | 3.1832 ^a (0.7720) | 4.0136 ^a (1.0277) | 2.5847 ^a (0.9947) | 0.2756 ^a (0.0951) | 0.1973 (0.1249) | 0.3677 ^b (0.1654) |
| Mills ratio | | | | -11.2515 ^a (0.5158) | -9.8278 ^a (0.3909) | -12.1324 ^a (1.1081) |
| Observations | 1127 | 574 | 553 | 1118 | 546 | 503 |
| Estimations | | OLS | | Heckman selection model | | |
| Selection Variable | | | | INCPREC | | |
| R ² | 0.5892 | 0.5460 | 0.5521 | 0.6643 | 0.7893 | 0.6022 |

Note: Robust errors into parentheses. Estimates reported on column (a) include a year dummy. Significance levels: ^c10%, ^b5%, ^a1%. Intercept not reported. Froot (1989) correction for city-level cluster correlation.

Table 6: Checking for population's size impact

| Dep. Var | $INC1_{it}$ | | | $INC2_{it}$ | | |
|------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|----------------------------------|
| | $> 10,000$ inhab. | $< 30,000$ inhab. | $>30,000$ inhab. | $> 10,000$ inhab. | $< 30,000$ inhab. | $>30,000$ inhab. |
| | (a) | (b) | (c) | (d) | (e) | (f) |
| OPER | -3.3972 ^a (1.2218) | -2.8799 ^b (1.4537) | -3.1157 (2.0090) | -0.2223 (0.1873) | -0.1611 (0.2220) | 0.0730 (0.2487) |
| STAFF | 5.7379 ^a (1.4539) | 5.2417 ^a (1.6017) | 5.9777 ^b (2.7061) | -0.0149 (0.1923) | 0.0165 (0.2467) | -0.2320 (0.2516) |
| EQUIP | 1.8584 ^a (0.6436) | 2.5444 ^a (0.7677) | 0.3065 (0.8711) | 0.0123 (0.0864) | 0.0624 (0.1130) | -0.0494 (0.0941) |
| INCOME_GAP | -0.4846 (0.3974) | 0.4912 (2.6519) | -0.3824 (0.5307) | -0.0335 (0.0608) | -0.3301 (0.3215) | -0.0389 (0.0643) |
| UNEMP_GAP | 0.1691 (0.1330) | 0.0931 (0.1814) | 0.1482 (0.2174) | 0.0198 (0.0205) | 0.0046 (0.0282) | 0.0035 (0.0340) |
| POP | 5.8274 ^a (0.7873) | 5.2145 ^a (1.9009) | 3.0981 ^c (1.7104) | 0.1623 (0.1219) | 0.3249 (0.2259) | 0.1545 (0.2110) |
| INCPREC | 0.3472 ^a (0.0434) | 0.3339 ^a (0.0556) | 0.3299 ^a (0.0539) | | | |
| INC1 | | | | .9173 ^b (0.4040) | 0.5013 (0.4677) | 0.7776 ^b (0.3484) |
| PARL | -3.6731 ^a (0.5351) | -2.9533 ^a (0.7152) | -4.4387 ^a (0.7754) | -0.1241 (0.0773) | -0.1159 (0.1025) | -0.0143 (0.0936) |
| NBCAND1 | -21.7287 ^a (1.0892) | -25.9633 ^a (1.3571) | -14.2058 ^a (1.2797) | | | |
| NBCAND2 | | | | -0.9183 ^a (0.1774) | -0.8664 ^a (0.2403) | -0.1116 (0.2705) |
| PRESID | 13.4991 ^a (2.2913) | 14.2952 ^a (2.9219) | 11.6583 ^a (3.6340) | 0.2516 (0.3335) | 0.1784 (0.4301) | 0.0913 (0.4573) |
| DUR | -3.1089 ^a (1.0064) | -2.6561 ^b (1.3065) | -2.7211 ^c (1.3889) | -0.2359 ^c (0.1412) | -0.1300 (0.1976) | -0.0723 (0.1690) |
| DUR ² | 0.4973 ^a (0.1876) | 0.4448 ^c (0.2452) | 0.3837 (0.2570) | 0.0378 (0.0267) | 0.0152 (0.0379) | 0.0143 (0.0313) |
| DROUND | 3.0279 ^a (0.7327) | 1.9220 ^b (0.9603) | 4.9649 ^a (1.0188) | 0.2673 ^a (0.0971) | 0.1877 (0.1162) | -0.0677 (0.1084) |
| Mills ratio | | | | -11.3159 ^a (0.5436) | -10.3945 ^a (0.5804) | -8.4672 ^a (0.4244) |
| Observations | 1126 | 727 | 422 | 1084 | 692 | 339 |
| Estimation | | OLS | | | Heckman selection model | |
| R ² | 0.5348 | 0.5804 | 0.4608 | 0.6570 | 0.6590 | 0.8332 |

Note: Robust errors into parentheses. Estimates include a year dummy. Significance levels: ^c10%, ^b5%, ^a1%. Intercept not reported. Froot (1989) correction for city-level cluster correlation.