Società italiana di
economia pubblica

XXIII
CONFERENZA

INCUMBENT EFFECTS AND PARTISAN ALIGNMENT IN LOCAL ELECTIONS: A REGRESSION DISCONTINUITY ANALYSIS USING ITALIAN DATA

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Incumbent Effects and Partisan Alignment in Local Elections: a Regression Discontinuity Analysis Using Italian data

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First version: February 2011

Abstract

This paper provides a simple model to explaining the political and economics interdependence between different level of governments. We derive precise predictions that the probability that an incumbent being re-elected depends on her political alinement with an upper level of governments, moreover we study the link between alinement and the size of the local public sector. We test these predictions using a new dataset on Italian, central, regional and local elections and public finance.

KEYWORDS:

JEL CLASSIFICATION: H2, H77, H87, D7

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1. Introduction

The starting point is that there are interdependence between public goods (or policies) provided by different level of governments. These interdependencies arise for several reasons. First, even if some public goods are provided by one level of government, they are actually funded by more than one level through intergovernamental grants (for example the local level of government is in charge a the policy but the funding comes partially or entirely from the regional or central level). Other goods or services are provided by more levels of government at the same time (think about roads, education etc). In other cases goods and services provided by one tier of governments are complementary to the ones provided by a different tier, think about social services (which are generally provided by the local level of government) and health (which is provided in many countries by the regional level of government).

This follows that the decisions taken by the government at one level will effect the performances of other governments at different level. So we should expect that if the government of a region decides to target a particular sub-area in the same region by spending some public funds, we should observe two effects. The first one, a direct one, is on the popularity of the ruling party at the regional level of government. The second one, an indirect one, on the popularity of the party ruling at the local level because of the afored mentioned externalities.

Also it is reasonable to think that voters are not able to fully distinguish between the competencies of each level of government when they make their voting decisions, so there is a further externality at work, which can go on both directions from the local level toward the central level and vice versa. Voters observe the total level of "local public" goods in their jurisdictions and the overall amount of taxes paid and they make their voting decisions. Consider for example the case of a party is in power in a region and that a set of local authorities in that region are ruled by the same party as the upper level while the remaining by the opposing party. Assume that in order to win the next elections the party in power at the regional level, must win in the majority votes in at least 50% of the of the local authorities. So, intuitively, the best strategy for the incumbent party at the central level is to overspend in the local authorities where the same party is in power, but especially, with a narrow majority. So that they will have an advantage over the ones ruled by the opponent party, and therefore their probability of victory of the incumbents at local level will increase (this is part of the story of the incumbent effect that is often found).

The idea that aligned jurisdictions should get more funds from the central level is not knew (see for Lindebeck and Weibull (1987) Dixit and Londregan (1998), Arulampalam et al (2008) and Sole'-Olle' and Navarro (2008)) however the focus of these papers is on the strategic behavior of the *central* government that channels funds toward local jurisdictions in order to win elections, in all the previous set up the role

of the local governments is a passive one. Instead the focus of our theoretical analysis and the empirical testing is mainly on the behavior of the *local* governments on how they respond to transfers from the upper level and on how they pursue they electoral goals themselves.

To address these issues we develop a simple model which verifies and refines this intuition following Dixit and Londregan (1998), Arulampalam et al (2008) and Sole'-Olle' and Navarro (2008). We model the behavior of two levels of government in a nation, where each of the incumbent governments manipulate grants and taxes in order to being re-elected, the central government set a income tax on residents in order to collect tax revenue to *discretionally* redistribute to lower levels of governments. Lower levels of government receive the grants an set a local income tax on their residents in order to fund the local public goods. Voters make their voting decisions based both on economic grounds and on ideology. We derive some testable predictions that aligned and swing municipalities get more funds from the central level than non aligned ones,have higher probability that the incumbent will be re-elected at the next elections,.

We then take the model to the data to test this predictions. We use regression discontinuity analysis to overcome the fundamental identification problem that arises from the likelihood that whether or not the identity of a party in power in a municipality does depends on the particular characteristic of the municipalities itself. Other paper have use similar analys to investigate the incumbent and party effect on policy like Lee, Moretti, Buther (2004) and Ferreira and Gyourko (2009) and Pettersson-Lidbom (2008) . In particular Ferreira and Gyourko (2009) find that when Democrats barely win and election the have about a 66% chance of winning the next election and if they barely loose it they have a third chances. However they do not attempt to give a theoretical explanation on why this should occur, which is is a distinctive contribution of our paper.

The paper is organised as follows. The next section introduces the economic environment and the model. Section three presents the some background information on Italy, data description and econometric stratey. Section five discusses the main results. Conclusions are in the last part of the paper.

2. Theoretical Framework

Following [1], [5] and [19], we build a theoretical model to show that the incumbent party at the center can use center-local transfers to promote its electoral prospects. Advancing on the abovementioned models, we also investigate how local government strategically respond to the central government strategy, through setting a local income tax.

There are two parties, L and R, and two levels of government, central and local. Without loss of generality we assume that party L is the incumbent at the central level, and in a subset of local

government S^L, while party R rules in all other local jurisdictions S^R. The central government may want to transfer more funds to jurisdictions where it is in power, in order to increase its party's electoral prospects. It may also distinguish between jurisdictions that were marginally won (or lost) by its party. The central government objective function therefore entails both a "welfare" component, that indicates that the central government is genuinely interested in promoting social welfare through the provision of public goods, and a "partisan" component, that points to the fact that transfers to local government may also respond to political and re-election objectives.

This framework is further enriched by the fact that local governments are free to impose a local tax on their jurisdiction, in order to increase the public good provision in their localities. We assume that local governments are second-mover with respect to the central government [*justify, predict outcomes/dynamics*].

2.1. Benchmark

Electoral competition takes place between two parties, L and R, simultaneously at the central and local levels.

The provision of a local public good is financed though grants from the central government Tr_s, and through a local income tax t_s. Voters have an imperfect understanding of where the funds of the public goods they enjoy come from, therefore the goodwill generated by public good provision is shared between the two tiers of government. We define $\theta \in [0, 1]$ as share of goodwill accruing to the central government.

Voters instead are perfectly able to impute the "negative goodwill" of the local income tax to the party ruling at the local level. The intuition behind this choice is that in many countries taxes accruing to local government (i.e. the Council Tax in the UK, the property tax *ICI* in Italy) are paid separately from the other taxes (e.g., the income tax). This increases voters' awareness on the nature of the tax. On the other hand voters may be less aware of the sources of funding of, say, public works being done in their constituency.

Within each state there is a continuum of voters of mass N_s. Voters' ideologies are heterogeneous, and uniformly distributed in the interval $\left[-\frac{1}{2\phi_s}, \frac{1}{2\phi_s}\right]$. The distribution is common knowledge and, as indicated by the presence of a subscript s, varies across jurisdictions.

Moreover voters' preferences are hit by a common idiosyncratic shock δ, uniformly distributed within the interval $\left[-\frac{1}{2\psi}, \frac{1}{2\psi}\right]$. This, that can be thought as a popularity shock, hits voters' preferences after policies have been decided, and introduces uncertainty in the electoral outcome.

We define as Tr_s the amount of grants per capita transferred from the central to the local government, and t_s as the (per capita) local income tax levied by the local government. Each local government spends the money accruing from central government grants and from local income taxes in providing public good g_s to its residents, such that $g_s = Tr_s + t_s$. Local tax revenue and grants are therefore, from the public

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good provision point of view, perfect substitutes. In each jurisdiction voters will vote retrospectively according to how much public good per capita g_s has been delivered to them, to the amount of local taxes t_s they have to pay, and to their ideology.

Let us consider first a jurisdictions a whose government is politically aligned with the central one, i.e. the one belonging to the subset S^L of localities ruled by party L. Let us also define a goodwill function, whose argument is the amount of public good delivered in the locality: $u(g_s)$, with $u'(g_s) > 0$ and $u''(g_s) < 0$. In this locality, a citizen with ideology X_j votes for party L if:

$$u(g_a) - t_a - X_j - \delta \geq 0 \tag{2.1}$$

and votes for R otherwise. The share of votes accruing to party L in jurisdiction a will be therefore:

$$\pi_a = \frac{1}{2} + \phi_s \, X_a \text{ with } X_a = u(g_a) - t_a - \delta \tag{2.2}$$

and the probability of winning for party L is:

$$p_a = Pr[\pi_a > \frac{1}{2}] = \frac{1}{2} + \psi(u(g_a) - t_a) \tag{2.3}$$

If locality u's government is unaligned with the central government, i.e if $u \in S^R$, the positive goodwill generated by the provision of public good and the negative goodwill generated by the local tax t_u are accruing to the local government for a share $(1-\theta)$, and to the central government for the complementary share θ. Consequently, a voter j will vote for party L if:

$$\theta u(g_u) - X_j - \delta \geq (1 - \theta)u(g_u) - t_u \tag{2.4}$$

and votes for R otherwise. The share of votes accruing to party L will be therefore:

$$\pi_u = \frac{1}{2} + \phi_u X_u \text{ with } X_u = (2\theta - 1)u(g_u) + t_u - \delta \tag{2.5}$$

and the probability of winning for party L is:

$$p_u = Pr[\pi_u > \frac{1}{2}] = \frac{1}{2} + \psi[(2\theta - 1) \, u(g_u) - t_u] \tag{2.6}$$

Recalling that $g_s = Tr_s + t_s$, we can see how, very intuitively, the central government would increase its votes as long as aligned jurisdictions lowered their taxes, and unaligned jurisdictions raised them. Moreover, we can see how the central government takes (electoral) advantage of an increased provision of public goods by unaligned municipalities, only in the case the goodwill from it is large enough ($\theta > 1/2$).

The timing of the game is as follows:

1. The central government decides the vector of grants $\{Tr_s\}_{s=1}^{s=N}$

2. Each local government decides on its level of taxation t_s.

3. Public good is delivered

4. The idiosyncratic shock δ hits voters' preferences.

5. Observing the taxation level and the public good provision in their locality, voters vote sincerely and retrospectively

The choice of timing is obviously not neutral with respect to the outcome of the model. It appears anyway reasonable that the central government has a first-mover advantage with respect to the mass of local governments seems reasonable. More specifically, in the case of study of this paper, it is even more appropriate. In Italy in fact by the end of the calendar year the Parliament has to pass the Budget Bill, which contains all the details regarding intergovernmental grants originated by the central government. Also all other tiers of government have to pass their budget by the end of the calendar year. Nevertheless it is only by the end of March that municipalities (*Comuni*) have to decide on the tax rate of the personal income surtax applied to their residents, in view of the personal income tax declarations due in May.

Let's find the subgame perfect Nash equilibrium through backward induction.

3. Theoretical Findings

Let us first find out the optimal taxation strategy of local jurisdiction, given the amount of grants they receive. As we can imagine the optimal behavior will depend on the transparency of the political arena θ, on the amount of grants received by the given locality Tr_s, and the political allegiance of the local government.

The local government's objective function is to maximise the amount of votes accruing to its party in the municipality.

The local government maximises the probability to win the elections[1] $p_s(X_s)$. From (2.3) and (??) we can therefore calculate the optimal local tax:

Proposition 1. *A local government $a \in S_L$ which is ruled by the same party ruling at the central level, conditional on the level of grants Tr_a will impose a tax such that:*

$$t_a^*(Tr_a) = \arg\max p_a(X_a) = \max\{0, u'^{-1}(1) - Tr_a\} \tag{3.1}$$

[proof]

The local government will raise its tax rate as long as the marginal utility for voters of the extra public good is greater than the marginal disutility of taxation. As already mentioned, local taxes and central

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[1]Probabilmente, speriamo, sarebbe lo stesso se massimizzasse i voti ottenuti.

grants are perfect substitutes: this implies that the higher the grants from the central government, the lower will be the optimal taxation in localities ruled by the same party ruling the national government. This also implies that for level of grants high enough, the local jurisdiction's optimal strategy is not to impose any tax. One further important finding is that the optimal taxation strategy is not affected by the distribution of voters, even if obviously the vote shares in equilibrium are indeed affected by the voters' distribution.

For what concerns jurisdictions which are not aligned with the central government, the following proposition can be stated:

Proposition 2. *A local government $u \in S_R$ which is not ruled by the same party ruling at the central level, conditional on the level of grants Tr_u will impose a tax such that:*

$$t_s^* = \begin{cases} 0 \text{ if } \theta > 1/2 \\ \max\{0, u'^{-1}\left(\frac{1}{1-2\theta}\right) - Tr_u\} \text{ if } \theta < 1/2 \end{cases} \tag{3.2}$$

Proof:

$$\frac{\partial(1 - \Phi_k(X_k))}{\partial t_s} = -[(2\theta - 1)u'(Tr_k + t_k) + 1] \tag{3.3}$$

The value of this derivative is always negative as long as $\theta > 1/2$, i.e. as long as the majority of the goodwill from public good provision accrues to the central government. In these cases, the optimal taxation for the local jurisdiction is 0, i.e.:

$$\text{For } k \in S^R \text{ and } \theta > 1/2 : \ t_k^* = 0 \tag{3.4}$$

∎

As voters perfectly impute the cost of the tax to the local government, but think that most of the public good is provided by the central government, it is rational for the local government to reduce its damages, not levying any tax. In case instead $\theta < 1/2$, i.e. in case the local government is believed to deliver most of the public good, then the situation is more similar to the case in which local and central government belong to the same party.

Once again it is clear how grants and taxation are perfect substitutes, and how the local government is willing to raise locally the resources to let the marginal benefit of the public good provided being equal to the marginal cost of the tax. For higher level of grants, instead, where the public good produced is high enough, the local government optimal strategy is not to impose any tax, and just enjoy the share of goodwill generated from the public good provision. Once again the local taxation strategy is unaffected by the voters' distribution.

Because of the concavity of $u(\cdot)$, the optimal taxation levied by an unaligned local government is therefore strictly lower that the one levied by an aligned local government, holding constant the grants, and independently of the distribution of voters along the ideological spectrum. This of course it is valid only in the — unlikely — case in which the central government does not reward aligned jurisdiction with higher levels of grants.

Moreover, we can write the equilibrium level of public good provision given the maximising behavior of the local government. As $g_s = Tr_s + t_s$, we spell out the following corollary:

Corollary 3. *Given Propositions 1 and 2, the optimal amount of public good provision, given the taxation choices of local government is:*

$$g_s(t_s^*) = \begin{cases} \max\{Tr_s, u'^{-1}(1)\} \text{ if } s \in S^L \\ Tr_s \text{ if } s \in S^R \text{ and } \theta > 1/2 \\ \max\{Tr_s, u'^{-1}\left(\frac{1}{1-2\theta}\right)\} \text{ if } s \in S^R \text{ and } \theta < 1/2 \end{cases} \tag{3.5}$$

Note that in some cases the amount of public good provided is independent on central grants, as the local government, enjoying a sort of second-mover advantage, exactly offsets the decision of the central government, "topping up" the grants up to its preferred level.

3.1. Optimal central-government behavior

The central government maximises the probability to win in each jurisdiction s weighted by its population N_s.[2] Moreover, its utility function includes a loss function which is negatively affected by how uneven is the grant distribution across jurisdictions. This provision wants to capture the political and administrative cost of delivering and justifying too sharp differences in the treatment of different localities.

$$U^{CG} = \sum_{a \in S_L} N_a \, p_a + \sum_{u \in S_R} N_u \, p_u - \frac{\alpha}{2} \sum_{s \in \{S_L \cup S_R\}} N_s \, (Tr_s - \bar{T})^2 \tag{3.6}$$

where $\bar{T}$ is a reference level of grants. Finally, the government is also subject to a resource constraint

$$\sum_s Tr_s \le B$$

Following [1], we assume that the government optimal strategy is an interior solution. The first order condition of the central government utility maximisation problem, for localities politically aligned (i.e. $a \in S^L$) is:

$$\tau \phi_a = \lambda + \alpha(T_a - \bar{T}) \tag{3.7}$$

and for a jurisdiction $u \in S^R$ is:

---

[2] The weight N_s is actually irrelevant, but it makes sense to include it. In the FOCs it disappears

$$\text{For } \theta > \frac{1}{2} : (2\theta - 1)\tau\phi_u = \lambda + \alpha(T_s - \bar{T}) \tag{3.8}$$

$$\text{For } \theta < \frac{1}{2} : -\tau\phi_u = \lambda + \alpha(T_u - \bar{T}) \tag{3.9}$$

where λ is the Lagrange multiplier, t^* is the local government optimal taxation strategy, and Tr^* is the equilibrium level of grants.

The level of grants decided by the central government will therefore depend on the (anticipated) equilibrium behavior of local governments, on the fact that the local government is or is not aligned with the central one, and on the density of the population's ideological distribution at the cutpoint in each single jurisdiction.

3.2. Results

Assuming interior solutions, and focusing on the case in which $\theta < 1/2$ (i.e. the case in which most of the goodwill from public good provision goes to the central government):

- Between two jurisdiction with the same voter distribution, aligned ones receive more grants and impose lower taxes, and consequently the incumbents have a higher probability of being re-elected

- Holding the alignment constant, jurisdiction with more independent voters (higher ϕ) receive more grants

4. Empirical Analysis

4.1. Background Information on Italy

In this section we present some relevant background information on Italian electoral system and local public finance. In particular we describe the electoral system both at the central, regional and local level of governments and its major reforms during the last decades. Moreover we discuss the basic structure of transfers system and co-fundings from the central and regional levels towards the local level on which our paper is based.

4.1.1. Tiers of governments and elections

Italy is a unitary democratic state ruled by a parliamentary central government with three sub-national levels: 20 regions, 111 provinces, and 8101 municipalities (7391 with a population below 15.000). It is important to note that a minority group of five regions, composed by the two main islands in the south an three smallest border regions in the north, enjoy the status of special regions that gives them higher level of legislative autonomy from the central government.

At the beginning of the 1990s, again in response to the political and financial crises, the old proportional electoral systems adopted at various level of governments since the end of the II world war, were replaced with majoritarian systems in order to stimulate the electoral accountability of public officials. Before the reform, all local governments were ruled by a proportional parliamentary system similar to that adopted at the centre: citizens voted for members of the municipal councils and regional parliaments, where political parties won a number of seats proportional to their votes, then the mayor and the president of the region were elected respectively by the council or the regional parliament.

In 1993 the reform of municipal electoral system introduced the direct election of the mayor under plurality rule, with a single round for municipalities below 15,000 inhabitants, and with a runoff system above this threshold. Specifically, below the 15,000 population threshold, each party (or coalition of parties) presents a list of candidates for the council and supports one candidate mayor, voters then vote for the mayor and the council. The candidate mayor who gets the majority of votes becomes mayor and the list (or group of lists) that supports the elected mayor gain 2/3 of all seats. Above the 15,000 population threshold, again, parties (or coalitions of parties) present lists of candidates for the council and supports one candidate mayor. At the first round, however, voters vote for the mayor and the council and the mayor gets elected only if he or she win more than 50% of votes. Otherwise, after two weeks, the two top candidates will run again in a second round where voters vote only for one of the two mayoral candidates. Like in the single round system, the lists supporting the winning candidate mayor will enjoy a majority premium in the council.

The transition from the proportional to the majority electoral system immediately followed also for the election of the members of the national parliament. In 1994 the new electoral law replaced the previous proportional system introducing single-member constituency with first past the post method for the election of 3/4 of the members on the parliament. The remaining 1/4 of the members, instead, continued to be elected with a proportional method. Then in 2006 the electoral law was again reformed. Among the main innovations single-member constituencies have been repealed and the proportional system has been reintroduced with a majority premium for the party or the coalition of parties that obtained the majority of votes. The majority premium, however, was distributed on a national base for the composition of the lower chamber and on a regional base for the composition of the senate. Finally, under the new law voters

can not vote for a specific candidate anymore, since their vote can only be cast for a party, or coalition of parties, that support a specific candidate for the leadership of the central government.

The regional electoral system was reformed in 1995 in normal regions, and in 2001 in regions with special statues. Differently from the new municipal electoral rules, the base of the regional system remained proportional. The main innovation was that 20% of the seats would have been assigned by the majority method. This allows the winning party (or the winning coalition of parties) to form a government sustained by a stable majority in the parliament. Moreover, under the new electoral system, the names of the candidates for the presidency appeared, for the first time, on the ballots as heads of the electoral lists. As a result, beginning in 1995, the form of regional governments began to evolve towards a presidential regime, although it was only in 1999 that direct election of the heads of the regional governments was formally introduced.

Years	Elections		
	National Parliament	Regional Parliaments	Municipal Councils
2000		X	X
2001	X		X
2002			X
2003			X
2004			X
2005		X	X
2006	X		X

Table 1. Election Years at different level of Governments

4.1.2. Local Public Finance

According to the budget expenditure figures, health care is the most important function of regional governments, the provinces allocate most of their resources in providing environmental and extra-urban transport services, while the municipalities are mainly responsible for zoning & planning, environment, urban transport, and social care. It is important to stress that only regions and municipalities play an important role in the composition of the Italian local government. Therefore usually the attention is concentrated only on these two levels of sub-national governments. According to 2006 data, in fact, 20% and 11% of the total public expenditure is respectively allocated at regional and municipal level (the percentages correspond respectively to 173 and 83 billions of euros), whereas only 2% of the total public expenditure is allocated at the provincial level.

During the last 30 years the percentage of total public expenditure allocated at sub-national level has been roughly constant at around 30%. Instead, at the beginning of the 1990s, as a consequence

of the financial and political crisis of those years, a considerable part of intergovernmental grants have been replaced with the introduction of new local taxes. As a result the degree of fiscal decentralization, measured in terms of local fiscal revenues in percentage of total fiscal revenues, increased dramatically from 5% in 1990, to the actual 15%. In particular, councils' fiscal autonomy was substantially increased in 1993 through the introduction of the municipal property tax (ICI). Instead, regional governments' fiscal autonomy was increased mainly in 1998 introducing two new regional taxes: a value added tax on productive activities (IRAP), and a regional additional personal income tax. According to 2006 figures, the degree of municipal and regional fiscal autonomy (i.e. the percentage of own fiscal revenues as a percentage of total current revenues) amount respectively to 43% and 35%. The remaining source of revenues are represented by intergovernmental grants (mainly unconditional), tax sharing, and local debt. Finally, in 2001 a reform of the constitutional law introduced a higher degree of political and institutional decentralization.

4.2. Data Description

Our dataset includes municipal financial data, census data, and ballot data of the municipal elections and of the national parliament elections from 2001 up to 2006; all data are disaggregated at municipal level. The large number of municipalities implies that every year can be observed local election, instead general election have been held only in 2001 and 2006. We have restricted our analysis to comuni with at least 15,000 inhabitants, give the above mentioned electoral rules.

4.3. Empirical strategy

The main predictions from our theoretical model we are going to test are:

(i) Municipalities that are aligned and swing gets more grants or provide more public goods (less taxes) than municipalities that are not allied and swing (*aligned swing effect*).

(ii) The probability that the incumbent wins the elections is higher in aligned municipalities than non aligned (*incumbent effect*).

To test the aligned swing effect we use a different approach from Arulampalam et al (2008) and Sole'-Olle' and Navarro (2008) in order to overcome the fundamental identification problem that arises from the likelihood that whether or not a party in power in a municipality does depends on the particular characteristic of the municipalities itself (income, historical reasons, geographical location etc) we compare municipalities when the left coalition barely won the elections at local level with the ones where the right coalitions barely lost, which represent our swing municipalities in our theoretical model. Lee (2001, 2008) shows that this approach represents quasi-random variation in party winners, because when the race is very tight, the identity of the winning party is likely to be determined by pure chances as long as there

some unpredictable aspect of the votes.

So the model we are estimating to test the *aligned swing effect* take the following polynomial form:

$$
\begin{aligned}
TR_{m,t} \quad = \quad & \beta_0 + D_{m,t}\pi_0 + AL_{m,t}*D_{m,t}\pi_1 + MV_{m,t}\beta_1 + MV_{m,t}^2\beta_2 + MV_{m,t}^3\beta_3 + \\
& + AL_{m,t}*D_{m,t}MV_{m,t}\beta_4 + AL_{m,t}*D_{m,t}MV_{c,t}^2\beta_5 + AL_{m,t}*D_{m,t}MV_{m,t}^3\beta_6 + \\
& + D_{m,t}MV_{m,t}\beta_7 + D_{m,t}MV_{m,t}^2\beta_8 + D_{m,t}MV_{m,t}^3\beta_9 + v_{m,t}
\end{aligned}
$$

where $TR_{m,t}$ represents in turn transfers, local taxes and local public goods in municipality c at time t, $D_{m,t}$ is a dummy variable that take value of one if a Left candidate won the major's race in election t in municipality m, $AL_{m,t}$ is a dummy that takes value of one if the party at the upper level is the same as in the municipality. $MV_{m,t}$ is the margin of victory in election t, defined as the difference in votes between the winner and the second placed. The pure party effect is estimated controlling for the margin of victory in linear, quadratic, and cubic form, as well as the interaction of all of these terms with D and AL*D. We should expect the coefficient π_0 and π_1 being positive for transfers and public goods (negative for taxes).

In a similar way we test our *incumbent effect;* the dependent variable is now $D_{m,t+1}$.

$$
\begin{aligned}
D_{m,t+1} \quad = \quad & \beta_0 + D_{m,t}\delta_0 + AL_{m,t}*D_{m,t}\delta_1 + MV_{m,t}\beta_1 + MV_{m,t}^2\beta_2 + MV_{m,t}^3\beta_3 + \\
& + AL_{m,t}*D_{m,t}MV_{m,t}\beta_4 + AL_{m,t}*D_{m,t}MV_{c,t}^2\beta_5 + AL_{m,t}*D_{m,t}MV_{m,t}^3\beta_6 + \\
& + D_{m,t}MV_{m,t}\beta_7 + D_{m,t}MV_{m,t}^2\beta_8 + D_{m,t}MV_{m,t}^3\beta_9 + v_{m,t}
\end{aligned}
$$

5. Regression Results

5.1. The Main Results

5.2. Robustness Checks

6. Conclusions

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