The effects of partisan alignment on the allocation of intergovernmental transfers. Differences-in-differences estimates for Spain

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ABSTRACT:

In this paper we test the hypothesis that municipalities that are aligned with upper-tier grantor governments (i.e., controlled by the same party) will receive more grants than those that are unaligned. We use a rich Spanish database, which provides information on grants received by nearly 900 municipalities during the period 1993-2003 from three different upper-tier governments (i.e., *Central*, *Regional* and *Upper-local*). Since three elections have been held at each tier during this period, we have enough within-municipality variation in partisan alignment to provide difference-in-differences estimates of its effects on the amount of grants coming from each source. Moreover, the fact that a municipality may receive, at the same time, grants from aligned and unaligned grantors allows us to use a triple-differences estimator, which consists of estimating the effects of changing alignment status on the change in grants coming from the aligned grantors relative to the change in grants coming from the unaligned ones. The results suggest that partisan alignment has a sizeable positive effect on the amount of grants received by municipalities.

Key words: grants' allocation, alignment, electoral competition

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1. Introduction

The traditional literature on fiscal federalism justifies the use of intergovernmental transfers on efficiency and equity grounds (Musgrave, 1959; Oates, 1972). Under this view, grants should be used to foster spending in spillover-generating services, to reduce the use of inefficient local taxes (Dahlby and Wilson, 1995) or to guarantee similar access to essential public services across the country (Buchanan, 1959). However, many scholars have recognized that what grantor governments 'ought to do' does not help much in explaining what they 'actually do'. For example, Inman (1988) showed that the pattern of allocation of federal grants to the states in the US does not seem consistent with these normative prescriptions.

Recently, many papers have appeared with the purpose of testing several hypotheses regarding the effects of political incentives on the allocation of grants. Some of these hypotheses are derived from electoral competition models. For example, according to Lindbeck and Weibull (1987) and Dixit and Londregan (1998), upper layer governments should allocate more grants to the states with a high proportion of voters that are not particularly attached to any of the parties (the so-called 'swing voters'). The papers by Case (2001), Strömberg (2002), Johansson (2003) and Dahlberg and Johansson (2004) provide empirical evidence on the validity of this hypothesis. Some of these papers try to test this hypothesis against an alternative one (derived from Cox and McCubbins, 1986) that says that –if politicians are risk averse– funds will be allocated to the states where voters are clearly attached to the incumbent party (the 'core supporters'). The results in Dahlberg and Johansson (2004), and Castells and Solé-Ollé (2005) suggest that the evidence in favor of this hypothesis is not compelling, although, as Rodden and Wilkinson (2004) suggest, the task of separating the 'swing voter' and 'core supporter' hypotheses is not easy.

However, these approaches fail to answer a fundamental question: why should an upper-tier of government be interested in delivering transfers to unaligned governments (i.e., controlled by opposition parties), which will surely try to use these funds to advance its electoral prospects (and, therefore, to harm those of the grantor government)? Of course, one may argue that these grants use to be earmarked for specific purposes and that the grantor invests in making clear to the citizens where the monies come from (e.g., by compulsory use of placards stating who is the financial backer of the program).

Nonetheless, the crucial point here is that although the grantee is able to claim even some small proportion of the credit provided by the grant, the grantor will find less profitable to allocate funds to unaligned than to aligned governments (Dasgupta *et al*., 2004). This suggests that local governments that are aligned with the upper-tier grantor governments will receive more grants than those that are unaligned. Several papers[1] have tested this hypothesis, confirming, most of them, that aligned states receive more funds than the unaligned ones. A common problem than can be found in most of these empirical exercises is the fact that they consider periods of unchanged partisan control at the upper layer of government (e.g. Grossman, 1994; Levitt and Snyder, 1995). This characteristic entails some doubts on the validity of the results, since the variable that measures alignment can be picking up other factors influencing the allocation of grants (e.g., more needs in poor states controlled by the democrats).

In this paper we test this hypothesis with a rich Spanish database, which provides information on grants received by nearly 900 municipalities during the period 1992-2003 from three different upper-tier governments (*Central*, *Regional* and *Upper-local*). This database helps us to overcome data quality problems encountered by other authors in trying to test the alignment hypothesis. First, in our database, there is cross-section variation in the partisan control in two of the upper-layer governments (*Regional* and *Upper-local*). Second, since three elections have been held at each tier during this period, we have enough within-municipality variation in partisan alignment (due to changes in partisan control at all the layers of government) to provide difference-in-differences estimates of its effect on the amount of grants coming from each source. The fact that a municipality may receive, at the same time, grants from aligned and unaligned grantors allows us to use a triple-differences estimator, which consists of estimating the effects of changing alignment status on the change in grants coming from the aligned grantors relative to the change in grants coming from the unaligned ones. This estimator is robust to the exclusion from the equation of economic and political determinants of the grants allocated by each upper-tier. The results suggest that partisan alignment has a sizeable effect on the amount of grants received by municipalities.

[1] See, e.g., Grossman (1994) and Levitt and Snyder (1995) for the USA, Worthington and Dollery (1998) for Australia, and Dasgupta *et al*. (2004) and Khemani (2003) for India.

The paper is organized as follows. In the second section we provide a simple electoral competition model that accounts for the different incentives that grantors have regarding aligned and unaligned local governments. The third section performs the empirical analysis. In this section we explain the different estimation procedures that we are able to implement, the traits of our database and the way we measure grants and alignment. This section ends up with the presentation of the results. The fourth section concludes.

2. Theoretical model

In this section we develop an electoral competition model with the only aim of providing a simple framework for our empirical exercise. The purpose of the model is to account for the incentives that grantors have regarding aligned vs. unaligned governments. The section is organized as follows. We first describe the basic set-up of the model: layers of government and parties analyzed. Then we describe how a voter decides his vote, depending on the alignment between governments at different tiers. Then we describe the objective of the upper layers of government (parties) and the results of the electoral game in terms of grants allocated to each local government.

Basic set-up. In our model we have two upper-tier governments, each one with a jurisdiction covering the entire country, and $n+m$ municipalities. We will call the first tier U (*Upper-local*) and the second one R (*Regional*). For illustrative purposes, we assume that each upper tier government is controlled by a different party: the U government by the left party (l) and the R government by the right one (r). n municipalities are controlled by the r party and m by the l party. The parties r and l use the financial resources available at the layers of government they control to advance their electoral prospects[2]. Although each party controls a different government tier, and different elections are held at each tier, we analyze a game in which they are competing in the same electoral race, without specifying which concrete election we are talking about. We are in fact assuming that the politicians at all levels are interested in advancing the prospects of the party in general, and not only in winning the elections held at its layer. This may happen, if campaigns are highly centralized, if the electoral results of a party in a given election and jurisdiction are influenced by the results

[2] Note that the parties do not compete by promising transfer allocations as in more traditional spatial voting settings (see, e.g., Lindbeck and Weibull, 1987), but by distributing real funds. In this sense, this setting resembles more to models of allocation of campaign efforts among districts (see, e.g., Snyder, 1989, and Strömberg, 2002).

obtained in other contests, or if winning elections helps the party in rewarding its supporters through the allocation of posts.

Voters' behavior.

Voters vote on the basis of two criteria: (i) the welfare generated by grants, $u_j(g_j)$, with $u_j^{'}(g_j)>0$ and $u_j^{''}(g_j)<0$, and where $g_j = g_j^U + g_j^R$ are per capita grants in municipality *j*, coming from *U* and *R*, respectively; and (ii) ideology. We define X_i as the ideological bias of voter *i* in favor of *l*; $\Phi_j(X)$ is a municipality-specific distribution of X, with $\phi_j(X) = \partial\Phi_j(X)/\partial X$, which is common knowledge. $\Phi_j(X)$ is assumed to be symmetric and single-picked. There is a stochastic component in the voting behavior which is a popularity shock, δ_j, in favor or against the party in the *R* and *U* governments. We assume that voter *i* votes for party *r* if $u_j(g_j^R) - u_j(g_j^U) \geq X_i$ [3].

Now we assume that the voting decision of voter *i* depends on the alignment status of his local government. Following Dasgupta *et al.* (2004), we define θ as the proportion of utility from grants attributed to the local government; and $(1-\theta)$ as the proportion of utility from grants attributed to the grantor upper layer of government. If both layers are controlled by the same party, then all the utility from grants is captured by this party. If control is split between the two parties, then utility from grants must be shared. Thus, if the incumbent party at municipality *j* is *r*, i.e. *j* is aligned with *R*, voter *i* votes for party *r* if:

$$\underbrace{u_j(g_j^R) + \theta u_j(g_j^U) + \delta_j}_{\text{utility captured by } r} > X_i + \underbrace{(1-\theta)u_j(g_j^U)}_{\text{utility captured by } l}$$

or,

$$X^a = u_j(g_j^R) - (1-2\theta)u_j(g_j^U) + \delta_j > X_i \qquad (2a)$$

That is, expression (2a) says that if the municipality is aligned with *R*, all the utility coming from grants allocated by *R* is captured by the party *r* but, since the municipality is not aligned with *U*, also a proportion θ of the grants allocated by *U* is captured by party *r*. Similarly, If the incumbent party at municipality *j* is *l*, i.e. municipality *j* is unaligned with *R*, voter *i* votes for party *r* if:

[3] The voter will vote for *r* if the welfare gain obtained from *r* during the last term-of-office relative to the one obtained from *l* is higher than the ideological bias in favor of *l*: $\Delta u_j^r - \Delta u_j^l \geq X_i$. This welfare gain is hypothetical and should be interpreted as the welfare increase caused by grants coming from the government controlled by that party compared to a situation where all the grants came from the government controlled by the other party. Is only in this case that $\Delta u_j^r - \Delta u_j^l$ reduces to $u_j(g_j^R) - u_j(g_j^U)$.

$$\underbrace{(1-\theta)u_j(g_j^R)+\delta_j}_{\text{utility captured by } r} \geq X_i + \underbrace{u_j(g_j^U)+\theta u_j(g_j^R)}_{\text{utility captured by } l}$$

or,

$$X^u = (1-2\theta)u_j(g_j^R) - u_j(g_j^U) + \delta_j > X_i \qquad (2b)$$

Parties' behavior

The objective of each party is to maximize the expected number of votes assuming the decision of the other party is fixed (i.e., Nash behavior) and subject to a fixed budget constraint. For example, in the case of party *r* this can be expressed as:

$$\underset{g_1 \cdots g_m}{Max} \sum_{j=1}^{n} N_j \Phi_j(X^a) + \sum_{k=1}^{m} N_k \Phi_k(X^u) \quad \text{s.t.:} \quad \sum_{j=1}^{n} N_j g_j^R + \sum_{k=1}^{m} N_j g_j^R = G^R \qquad (3)$$

where N_j is the population of municipality *j* and G^R and G^U are the exogenous amounts of resources available to the *R* and *U* upper layer governments. The problem of party *l* can be stated in similar terms.

Solution

The FOCs for the party *r* (upper layer of governments *R*) are :

aligned (*j*=1,..,*n*): $$\phi_j(X^a)\, u_j'(g_j^R) = \lambda^R \qquad (5a)$$

unaligned (*k*=1,..,*m*): $$\phi_k(X^u)\, u_k'(g_k^R)(1-2\theta) = \lambda^R \qquad (5b)$$

The FOCs for the party *l* (upper layer of governments *U*) are :

unaligned (*j*=1,..,*n*): $$\phi_j(X^a)\, u_j'(g_j^U)(1-2\theta) = \lambda^U \qquad (5c)$$

aligned (*k*=1,..,*m*): $$\phi_k(X^u)\, u_k'(g_k^U) = \lambda^U \qquad (5d)$$

The FOCs state that the marginal benefit of allocating grants to municipality *j* should be equal to the marginal cost of revenues. The marginal benefit is the product of three terms: (i) the density at the 'cut-point', or the proportion of 'swing voters'; (ii) the marginal utility of grants; and (iii) in the case of unaligned governments, the transfer of utility to the other party due to unalignment, $(1-2\theta)$. This term is lower than one, reducing the marginal benefit of allocating grants to this municipality.

Note that if θ>0.5 (i.e., if the grantee captures more benefits than the grantor), the marginal utility of grants becomes negative. In this case we will have a corner solution with

zero grants allocated to unaligned municipalities. However, this seems to be an extreme case, for, at least, two reasons. First, if parties were not merely office-motivated but also pursue efficiency and/or equity objectives, the marginal benefit of grants in (5) would include an additional term, making the corner solution more difficult (e.g. see Dasgupta *et al.*, 2004). Second, there must be an upper bound on the utility derived from grants that spills over the opponent party. We assume that $\theta < 0.5$, meaning that although the grantee may obtain substantial utility from projects funded by the grantor, the former never obtains more utility than the latter.

Effect of alignment on grants' allocation

The analysis of the FOCs allows us to make two different predictions about the effects of the alignment status on the amount of grants allocated. The first prediction states that a grantor government allocates more funds to the aligned municipalities than to the unaligned ones. This hypothesis is obtained by comparing the two FOCs for the same grantor (either *R* or *U*). Look, for example, at the ratio between (5a) and (5b):

$$\frac{\phi_j(X^a)}{\phi_k(X^u)} \frac{u'_j(g_j^R)}{u'_k(g_k^R)(1-2\theta)} = 1 \qquad (6)$$

To isolate the effects of alignment from other influences, assume that $\Phi_j = \Phi_k = \Phi$ and $u_j = u_k = u$, meaning that both the shape of the distribution function and the utility function are the same in municipalities *j* and *k*. Let's also assume, for the moment, that the popularity shock is zero (i.e., $\delta_j = \delta_k = 0$). These assumptions imply that the density at the cut-point is equal in both municipalities and, thus, the ratio between the two densities is equal to one. In this scenario, given that θ<0.5, the denominator of the LHS of (6) is multiplied by a factor, (1-2θ), lower than one. Since $u' > 0$ and $u'' < 0$, then $g_j^R > g_k^R$ is needed to rebalance expression (6). Hence, in this case the *R* upper-tier of government (controlled by *r*) clearly gives more monies to the *j* municipality (aligned with *R*) than to the *k* one (unaligned). In the case where the party at the *R* government receives a negative popularity shock (i.e. $\delta_j = \delta_k < 0$), the density at the cut-point is higher for the aligned municipality than for the unaligned one[4], so a further increase of g_j^R (decrease of g_k^R) is needed to rebalance expression (6), reinforcing the

[4] In this case both cut-points are displaced to the left of the distribution function by the same magnitude. Since the departure point for *k*, X_k, is negative, the density at the cut-point is lower in *k* than in *j*, and the ratio is higher than one.

previous result. On the contrary, when the party at the *R* government receives a positive popularity shock, then, the density at the cut-point is higher for the unaligned municipality. Only in this case, the second effect could counterbalance the former one, precluding any clear conclusion about the effect of alignment on grants. However, note that the magnitude of this second effect depends on the curvature of the density function. Concretely, in this case $g_j^R > g_k^R$ if $(1-2\theta)\phi_k(X^u) > \phi_j(X^a)$.

When $\Phi_j \neq \Phi_k$ and/or $u_j \neq u_k$, the alignment effect may not hold because the municipality with a higher proportion of swing voters or with a higher spending valuation may receive more grants even if it is unaligned with the grantor. However, controlling for these variables, aligned municipalities could also receive more grants from a given grantor than unaligned ones. This result can be illustrated by assuming that the vote distribution functions for *j* and *k* is uniform on the intervals $[-1/2\psi_j, 1/2\psi_j]$ and $[-1/2\psi_k, 1/2\psi_k]$, respectively, and using the following specific utility function:

$$u_j(g_j) = \kappa + \frac{b_j}{1-1/\alpha}(g_j)^{1-1/\alpha} \tag{7}$$

where κ and α are constants, the latter measuring the concavity of the utility function; b_j is a parameter indicating that spending is more valuable to voters in some places. Substituting this function in (5a) and (5b), we obtain:

$$\frac{g_j^R}{g_k^R} = \left(\frac{\psi_j}{\psi_k}\frac{b_j}{b_k(1-2\theta)}\right)^{\alpha} \tag{8}$$

Whenever $(\psi_j b_j)^{\alpha} > (\psi_k b_k(1-2\theta))^{\alpha}$, then $g_j^R > g_k^R$, i.e. the aligned municipality will receive more grants than the unaligned one.

The second prediction says that a municipality receives more funds from the aligned grantor than from the unaligned one. This hypothesis is obtained by comparing the FOCs for the same municipality (*j* or *k*). Look, for example, at the ratio between (5a) and (5c):

$$\frac{u_j'(g_j^R)}{u_j'(g_j^U)(1-2\theta)} = \frac{\lambda^R}{\lambda^U} \tag{9}$$

Let's assume that $\lambda^R = \lambda^U$. Since θ <0.5, the denominator of the LHS of (9) is multiplied by a factor that is lower than one. Given that u_j' >0 and u_j'' <0, then $g_j^R > g_j^U$ is needed in order to rebalance expression (9). So, municipality *j* receives more monies from the

R grantor (aligned with municipality *j*) than from the *U* grantor (unaligned with *j*). When $\lambda^R \neq \lambda^U$, this result may not hold since the grantor with more resources may spend more in every municipality (aligned or unaligned) independently of their alignment. This result can be illustrated by using the same utility function than above. Substituting this function in (5a) and (5c), summing over all municipalities and using the budget constraint, we obtain:

$$\frac{g_j^R}{g_j^U} = \left(\frac{G^R}{G^U} \frac{1}{1-2\theta} \right)^{\alpha} \tag{10}$$

where G^R / G^U is the ratio between the exogenous amount of resources available to the grantors *R* and *U*, respectively. Controlling for the amount of resources at the disposal of *R* and *U*, if $(G^R)^{\alpha} > (G^U(1-2\theta))^{\alpha}$, an aligned upper-tier government still allocates more grants to a given municipality than an unaligned one.

3. Empirical analysis

3.1. *Background information on Spain*

Layers of government. Spain is a fiscally decentralized country with three layers of government: *Central*, *Regional*, and *Local*. There are seventeen regional governments, the so-called Autonomous Communities (AC), which have very important spending responsibilities as, for example, the provision of health care, education and welfare. Each AC is composed by one or several provinces. In the ACs composed by more than one province, there exists an upper-tier of local government, called *Diputación*. This upper-tier of local government has fewer spending responsibilities than the municipalities, which are the mayor players of the local public sector. Allocation of grants for capital infrastructure to municipalities is one of their more relevant tasks[5].

Spain has over eight thousand municipalities although most are quite small. Municipalities are multi-purpose governments, with major expenditure categories corresponding to the traditional responsibilities assigned to the local public sector (environmental services, urban planning, public transport, welfare, etc.) with the exception of education, which is a responsibility of the regional government. Current spending is financed out of own revenues (2/3 aprox.) and unconditional grants (1/3 aprox.), which are allocated by

[5] In ACs with only one province (there are six ACs of this kind), there is not *Diputación*, and its responsibilities are assumed by the regional government.

a formula that makes difficult its use for pork-barrel politics. However, the funding of capital spending depends heavily on grants: in 2003, capital grants represented the 13% of non-financial revenues and the 44% of capital spending. These grants came from the three upper-layers of government aforementioned: *Central* (15%), *Regional* (45%) and *Upper-Local* (21%)[6]. Most of the grants take the form of 'project grants': there is an open call at regular periods (usually yearly) and the municipality must apply by submitting several infrastructure projects, which are evaluated following some criteria which have been previously established (probably published in the call), but that are subject to the interpretation of the grantor. Therefore, the degree of political discretionarily of these grants should be qualified as high.

Elections and parties. Central elections use to be held at regular periods of four years, although they can be called before the end of the term-of-office. Municipal and regional elections are held regularly every four years and on the same day in twelve out of seventeen ACs. In the period analyzed, they have been called one year or two before the general election. In the other ACs, elections have been called before the end of the term and, therefore, are held on a different day.

In the elections to the central and regional legislative the electoral districts are the provinces, a different number of representatives is elected in each province depending on its population size, candidates are included in parties' closed lists, and the D'Hondt formula with a threshold is used to translate votes to representatives (Colomer, 1995). Therefore, the system is not entirely proportional and, in fact, it is much easier to win a representative in some provinces (the rural ones) than in others. The system allows a certain degree of plurality in the parliament, especially in the case of regional parties which concentrate the vote in a few districts. Due to the closed-list system, the parties are highly disciplined, both inside the legislatures and (to a minor extent) across layers of government. Since the party has a great influence on the future prospects of politicians (through the allocation of posts and places in the lists), they use to be loyal to the party rather than to the constituency.

In municipal elections there are also closed lists, the number of city's councillors depend on population size, and also the D'Hondt rule is used, but in this case there is a single district. As Colomer (1995) states: "these rules provide incentives for sincere voting and promote a high degree of pluralism in city councils". As a result of this, there is a high proportion of

[6] The remaining 18% correspond to other sources (e.g., the EU) or to unclassified grants.

coalition governments; for example, in the 1996-99 term 43.3% of the municipalities where governed by coalitions (Solé-Ollé, 2006). Most municipal candidates are aligned along national or regional party lines. The local political system is seen as a first step in the process of recruitment into the regional and national political elite (Magre, 1999). There are no specific elections to the assembly of the upper-tiers of local governments; the representatives of *Diputaciones* are elected as a product of the results of municipal elections. The votes for each party are aggregated across municipalities and are translated to representatives using again the D'Hondt formula. These upper-tiers of government have been criticized on the grounds of the reduced level of electoral accountability: with few clear responsibilities and no need to go to the polls, politicians controlling this layer of government can use grants to foster the parties' prospects at the next municipal election.

The traits of the Spanish electoral and party system described above mean that the elections held at each layer of government are not entirely independent of the national political situation. In fact, parties are really interested in the results of regional and municipal elections. Since these contests use to happen one year or two before the central elections, they provide an excellent occasion to test the real prospects of the party[7]. Therefore, although most efforts are regional or local, the parties do design a centralized strategy for these contests. This strategy includes statements regarding which regions and which municipalities deserve disproportionate campaign efforts[8], either because the perceived electoral margin is low or because the region or the city is seen as having special significance in the eyes of voters (e.g., big cities). In the Spanish context, it is therefore natural to believe that just before an election, the parties use the various posts they control at different layers of government to allocate grants to pursue its electoral objectives. The high degree of partisan control exercised both inside and across layers of government facilitates the use of resources coming from different posts for the fulfilment of parties' interests.

[7] This is due to the fact that national political shocks do affect the results of these lower tier elections (see, e.g., Solé-Ollé and Bosch, 2005, and Rodden *et al*., 2005, for evidence of this effect in Spain and other countries, respectively). In fact, local electoral results are seen as predictors of the parties' prospects for the next general election.

[8] One year before the future May 2007 municipal elections the newspaper *El País* published a report on the prospects for this contest with the title: "PSOE and PP open the battle town by town" which identified the regions and municipalities where each party will concentrate its efforts (source: El País, 23th April 2006, p. 26: "*PSOE y PP abren la batalla pueblo a pueblo"*).

3.2. *Econometric framework*

Our econometric framework is built upon the results of the theoretical section. Since the Spanish case described above provides us with three upper-tier grantor governments (*Central*: *C*, *Regional*: *R*, and *Upper-Local*: *U*) we can posit three equations, one for the grants allocated by each of these tiers:

$$g^{C}_{j,\ell,t} = \beta_1\ a^{C}_{j,t} + \beta_2\ \phi_{j,t} + \beta_3\ b_{j,t} + f_j\ + f^{C}_{\ell,t} + \varepsilon^{C}_{j,t} \tag{11a}$$

$$g^{R}_{j,\ell,t} = \beta_1\ a^{R}_{j,t} + \beta_2\ \phi_{j,t} + \beta_3\ b_{j,t} + f_j\ + f^{R}_{\ell,t} + \varepsilon^{R}_{j,t} \tag{11b}$$

$$g^{U}_{j,\ell,t} = \beta_1\ a^{U}_{j,t} + \beta_2 \phi_{j,t} + \beta_3 b_{j,t} + f_j\ + f^{U}_{\ell,t} + \varepsilon^{U}_{j,t} \tag{11c}$$

where $g^{C}_{j,\ell,t}$, $g^{R}_{j,\ell,t}$ and $g^{U}_{j,\ell,t}$ are per capita grants allocated by the *C*, *R* and *U* grantors, respectively, to the *j* municipality, located in the ℓ (national and regional) electoral district, and the municipal term-of-office *t*. The effects of alignment are picked up by the dummies $a^{C}_{j,t}$, $a^{R}_{j,t}$ and $a^{U}_{j,t}$, which are equal to one if municipality *j* is aligned with the *C*, *R* or *U* grantor during the term-of-office *t*. The terms $\phi_{j,t}$ and $b_{j,t}$ measure the effects of 'swing voters' (i.e., cut-point density) and needs-preferences (i.e., marginal utility of spending), respectively. We provide more details regarding how we measure these variables in the next section. In any case, since these effects will be difficult to measure, we should account for omitted political and economic influences through the inclusion of municipal effects, f_j. Moreover, we include electoral district × term-of-office effects, $f^{C}_{\ell,t}$, $f^{R}_{\ell,t}$ and $f^{U}_{\ell,t}$. These effects account for the different amounts of resources available to different grantors in different terms-of-office, and for potential omitted political variables that change from district to district and from one electoral contest to the other, but which are constant across municipalities of the same district[9]. Finally, $\varepsilon^{C}_{j,t}$, $\varepsilon^{R}_{j,t}$ and $\varepsilon^{U}_{j,t}$ are well-behaved error terms.

The database (to be explained below) allows us to exploit the cross-section and time-series variation across different upper-layers of grantor governments to deal with potential omitted-variable problems and identify the effects of alignment on grant allocation. To exemplify the advantages of our methodology, it is convenient to explain the four different procedures we use step by step, from the simpler to the most complex one. The first and third

[9] The votes obtained in one municipality may be more valuable if the municipality is located in an electoral district where less votes are needed to gain a representative (because of lack of proportionality) (see, e.g., Castells and Solé-Ollé, 2005, for evidence on this).

procedures are based on the proposition that says that a grantor will give more monies to aligned municipalities than to unaligned ones (expressions (6) and (8)). The second and fourth procedures are based on the proposition that says that a municipality will receive more monies from aligned grantors than from unaligned ones (expressions (9) and (10)). The first procedure, called *cross-section*, consists of using only the cross-section variation in the grants allocated by each grantor separately. Studies that do not have access to panel data or that do not have information regarding different grantor governments are forced to use this procedure. Let's assume, for example, that we only have information on the grants distributed by *R* during one term-of-office:

$$g^R_{j,\ell} = \beta_1\ a^R_j + \beta_2\ \phi_j + \beta_3\ b_j + f^R_\ell + \eta^R_j \qquad (12)$$

where $\eta^R_j = f_j + \varepsilon^R_j$.

If $cov(a^R_j, \varepsilon^R_j) = 0$, we can obtain an unbiased estimate of β_1 by controlling appropriately for ϕ_j and b_j and by including a full set of electoral district dummies, f^R_ℓ. Things are not that easy in practice. For example, would there only be one upper-layer government covering all the jurisdiction of the country (as often occurs in empirical analyses; e.g., Grossman, 1994), then a^R_j would not only measure alignment but also differences in party control among municipalities. And, as party control uses to be correlated with omitted socio-demographic variables (e.g., the left uses to control 'poor' municipalities, at least in Spain), the parameter β_1 will be biased unless the list of variables included in b_j is exhaustive (i.e., $cov(a^R_j, \varepsilon^R_j) \neq 0$). Similarly, a^R_j may be correlated with ϕ_j if, for example, left governments tend to win by thin margins while the electoral advantage of right ones is substantial (or vice versa). Thus, this procedure is far from perfect. Nevertheless, we will use it in our empirical exercise for two different reasons. First, to exemplify the differences between this procedure and the alternative ones (see below). Two, because in two of our upper-layer governments, the country is divided in several jurisdictions, and not all of them are controlled by the same party, attenuating the first of the problems mentioned above.

The second procedure, called *time differences-in-differences*, consists of collecting data on the grants allocated by one grantor government in successive terms-of-office, to be able to estimate the effects of changes in alignment on changes in grants received. With this information we will able to estimate equations (11a) to (11c) after taking first-differences. As an example, in the case of the *R* government, we have:

$$\Delta g^{R}_{j,t} = \beta_1 \Delta a^{R}_{j,t} + \beta_2 \Delta \phi_{j,t} + \beta_3 \Delta b_{j,t} + f^{R}_{\ell,t} + \Delta \varepsilon^{R}_{j,t} \quad (13)$$

where Δ indicates that the variable has been computed as the difference in the values from two consecutive terms-of-office and β_1 is now the *differences-in-differences* estimator[10]. The main advantage of this procedure is the attenuation of the omitted-variable problem, especially in the case of needs variables (b_j), since some of them could reasonably be considered fixed (e.g., land area and other physical traits). Some electoral traits (ϕ_j) might also be quite stable; however, others may change from one term-of-office to the other and this change might be correlated with changes in alignment status ($\Delta a^{R}_{j,t}$). Moreover, in some samples, the change in alignment may come only from a change in control at the municipal level; this may happen if control at the grantor level remains stable. In this case, the second procedure retains some of the problems of the first one.

The third procedure, called *grantor differences-in-differences*, consists of using data on grants allocated to local governments by different grantor upper-layer governments in a given term. Subtracting expression (12) for two grantor governments, *R* and *U*, we have:

$$g^{R}_{j,\ell} - g^{U}_{j,\ell} = \beta_1 (a^{R}_{j} - a^{U}_{j}) + f^{RU}_{\ell} + \eta^{RU}_{j} \quad (14)$$

where f^{RU}_{ℓ} is a full set of electoral district dummies and $\eta^{R}_{j} = (f^{R}_{j} - f^{U}_{j}) + (\varepsilon^{R}_{j} - \varepsilon^{U}_{j})$. The β_1 parameter is the *differences-in-differen*ces estimator, obtained by using as a control group the same local governments, but imagining that they are in a different situation (i.e., receiving grants from an upper-layer government controlled by a different party).

Since the *grantor differences-in-differences* estimator does not provide unbiased estimates of the alignment effect, we propose, therefore, a fourth procedure, called *triple-differences* estimator, which uses panel data on grant allocation to local government by different upper-layer governments in successive terms-of-office. The expression using the *R* and the *U* upper-layers of government is:

$$\Delta g^{R}_{j,\ell} - \Delta g^{U}_{j,\ell} = \beta_1 (\Delta a^{R}_{j} - \Delta a^{U}_{j}) + f^{RU}_{\ell} + \Delta \varepsilon^{RU}_{j} \quad (15)$$

[10] In the differences-in differences estimation, if there is severe serial correlation, the standard errors are inconsistent. Notice that it is not our case, since any of the three characteristics that the literature points out as the origin of this problem (fairly long time series, dependent variable highly positively correlated and few changes in the control variable (alignment)) are not present in our analysis; Bertrand *et al.* 2004). Thus, we will not make any correction on the standard errors obtained.

In this case, the alignment effect is identified by a regression which uses as the dependent variable the difference between the grant increase (in two consecutive terms-of-office) of two grantor governments and as explanatory variables the change in alignment status vis a vis one grantor minus the change in alignment vis a vis the other. This amounts to say that, if local government *j* switches from *l* to *r* after an election, the increase in grants received from *R* should be higher than the increase in grants received from *U*, after controlling for the possible change in the relative cut-point densities of the two grantors and in those needs criteria that are weighted differently at different. This estimation should be more robust than the previous ones due to the omission of political and economic variables in the equation. Nonetheless, the good properties of this estimator depend on the validity of the assumption of equality of coefficients across equations, implicit in equations (11a) to (11c). There are some reasons to suspect that this may not be the case. First, as suggested by expression (10), the additional grants that a municipality may receive from an aligned grantor depend on the amount of resources distributed, so the β_1 coefficients should be allowed to differ from one equation to the other. Second, different grantors may subsidize different types of projects, so a given variable included in b_j may be weighted differently by each of them. Third, since we have more than two parties, it may happen that the density at the cut-point ϕ_j is no longer the same for all the parties. To account for these possible sources of bias we include an additional set of controls in the estimation of equations (14) and (15). For example, the extended *grantor differences-in-differences* equation looks like:

$$g^R_{j,\ell} - g^U_{j,\ell} = \beta_1^R (a_j^R - a_j^U) + (\beta_1^R - \beta_1^U) a_j^U + \beta_2 (\phi_j^R - \phi_j^U) + (\beta_3^R - \beta_3^U) b_j + f_\ell^{RU} + \eta_j^{RU} \quad (16)$$

Note that the coefficient of $(a_j^R - a_j^U)$ informs us about the effect of alignment on grants received from the *R* grantor while the coefficient of a_j^U allows us to test the equality of the coefficients of the two grantors. The *triple-differences* estimator will be amended in a similar way with the inclusion of the same set of controls. After these modifications, the *triple-differences* estimator is expected to perform better than the other ones.

3.3. *Sample and data*

Selection of the sample. We will estimate the effects of alignment on grant allocation with data on Spanish municipalities. We use a rich database, which provides information on grants received by 869 local governments during the period 1993-2003 from three different upper-

tier governments (i.e., *Central, Regional* and *Upper-Local*). The data comes from a survey on budget outlays undertaken yearly by the Ministry of Economics and Finance. The starting number of municipalities is much bigger (2,799), but lack of data or the desired breakdown forced us to reduce the size of the sample. In the case of grants coming from the *U* government this number is further reduced to 755, due to the already commented fact that there are not *Diputaciones* in ACs with only one province.

We estimate the effects of alignment for the three terms-of-office mentioned above. However, we only use the last two years of the term to perform our analysis. So, we try to explain the effects of alignment on the overall amount of grants received the years 1994-95 for the term 1991-95, the years 1998-99 for the term 1996-99, and the years 2002-03 for the term 2000-03. There are three reasons that justify this decision. The first one is the fact that it is quite difficult to identify alignment between layers of government given the different timing of central and (some) regional elections. Thus, the alternative procedure of aggregating the grants over an entire local term-of-office would have encountered the problem of changing alignment in the middle of the period (since regional and central elections are held at some moment between two local elections). The second one is that by aggregating the grants' variable over two years, we reduce the volatility of this variable. The third one is that, as the political cycle literature has emphasized, the temptation to use public funds to buy votes increases as the new election approaches[11].

Measuring grants. Our grants variables are capital grants (chapter 7 of the budget) coming from each upper-layer of government (*C*, *R* and *U*). Grants are summed up for the last two years of the term and then divided by the population of the municipality at the beginning of this two-year period, data coming from the National Institute of Statistics (INE). Note that we have considered that grants received during the election year benefit the incumbent government and not the new one entered after the contest. We believe that this assumption is reasonable, given that municipal elections use to be held at the middle of the year (May or June) and that grantor governments use to exhaust early its yearly grants' budget just before a new election.

[11] See, e.g., Castells and Solé-Ollé (2005) for evidence indicating that pork-barrel politics in Spain intensifies as the new election approaches.

Measuring alignment. The concept of alignment is straightforward in the case of single-party governments. In this case, a municipality is said to be aligned with an upper layer grantor government if the party controlling the government at both layers is the same. However, in Spain a high share of governments (at all layers of government) are coalitions. Coalitions make the definition of alignment between layers more difficult. Note that a party at a given layer of government may play at least three different roles: i) Being the single party in the government, ii) Being the main partner or leader of a coalition, and iii) Being just a partner of the main party of the coalition. The combination of these roles by pairs defines nine different relationship types between a municipality and a higher layer of government, which are illustrated in Table 1.

(Insert Table 1)

The amount of grants transferred to municipalities belonging to each of these types depends on two different factors. First, as it has been explained in the theoretical section, it depends on the credit lost by the grantor government. If both layers are controlled by the same single party, there is not credit loss, but if this party is the leader of a municipal coalition, part of the credit will flow to its local partner/s. If this party is only a partner at the municipal level, the party leading the municipal coalition may get a high share of the credit. These considerations do not seem to depend on the status of the upper-layer, and, thus, grants' amount should decrease as we move from left to the right in Table 1. Second, it depends on the ability of the upper-layer of government to secure a large share of the funds available to be distributed. Of course, a single party government is able to use all the grants' budget at its will, without having to share it with other parties. But we need to rely on coalition theory to answer which of the other two types is more able to obtain funds. Some papers suggest that the coalition leader or *formateur* (i.e., the party charged with the task of forming the coalition) is able to secure a larger share of benefits than the other coalition members (Baron and Ferejohn, 1989). However, other papers suggest that the ability to obtain benefits for the party will be greater when it can pivot between alternative minimum winning coalitions (Schofield, 1976, Ansolabehere and Snyder, 2004; see Rodden and Wilkinson, 2004 for empirical evidence). This clearly means that strong coalition partners will receive more grants than the weak ones. Nevertheless, it is not clear at all, that these strong partners will be able to secure more funds than the coalition leader. Moreover, we have not been able to identify if coalition

partners are or not pivotal in all the cases, so our sample of *Partners* mix both pivotal parties and weaker ones. Therefore, we still expect that leaders are able to secure more funds than coalitions partners.

The use of such a high number of categories in the empirical analysis is not operative, since most of them are empty or have a very low share of municipalities. For this reason, we have decided to use only four groups (see Table 1), defined as follow: (*a*) *Single party*: the same party controls a single-party government at both layers; (*b*) *Leader*: the party which controls a single-party government at one layer is the leader of the coalition at the other layer; (*c*) *Municipal partner*: a party belonging to the upper-layer of government (being either the single party, the leader of a coalition or a simple partner) is just a partner in a municipal coalition; and (*d*) *Upper-layer partner*: the party which is a partner at the upper-layer is either the single party or the leader of a coalition at the municipal level. We expect to find the highest grants in (*a*) because here both the effect of the loss of credit and of the ability of securing funds go in the same direction. The lowest grants are expected in (*c*), meaning that the loss of credit effect dominates. As we have said before, we expect more grants in (*b*) than in (*d*) since, given the similar ability to retain credit, single parties and coalition's leaders will be able to secure more funds, unless very powerful pivotal parties predominate. In the empirical analysis we will provide results also for the (*a*+*b*) category, with the argument that this definition fits better with the concept of party alignment, since its computation only uses the identity of the main party of the government.

To compute these measures of alignment, we use a database provided by the Spanish Ministry of Public Administration, which gives information about the party of the mayor and the other parties in the municipal governments (in the case of coalitions) formed after the local elections of 1991, 1995 and 1999. This database also provides information regarding the party of the president and the composition of the assembly of the upper-tier of local government. Data on the party of the president of the AC and the other parties in the regional and national governments come from www.eleweb.com. In all the cases, minority governments have been considered as coalitions. The party of the president or the mayor has been considered the *Leader* and the other ones belonging to the coalition the *Partners*.

Our alignment measures have some properties that make them quite appropriate for the empirical analysis we wish to perform. First of all, for each of the upper-layer of government

and in each term-of-office, there is a high share of municipalities which are unaligned. This share goes from a minimum of 24.1% for the *Regional* government in the third term to a 57.0% for the *Central* government during the same term (2000-03). Aligned governments are concentrated in the (*a*) and (*b*) categories. Second, a high share of municipalities changed alignment status from one term-of-office to the following one. The share of municipalities which changed its alignment status with the *Central*, *Regional* and *Upper-Local* layers from 1994-95 to 1998-99, were 70.7%, 69% and 59.6%, respectively. These shares were around 45% in the three cases for the transition to the period 1998-99 to 2002-03.

Measuring 'cut-point' density. The theoretical model suggests that we should include in the equations a measure of the 'cut-point density', ϕ_j, or proportion of 'swing voters'. To make this variable operative we need to decide first which electoral data (*Central*, *Regional* or *Municipal*) will be used to compute it. We decided to use only vote data on the last municipal elections. There are several arguments that justify this decision. First, it is not advisable to include a separate measure for each of the elections, since the three would be highly correlated[12]. Second, one of the grantor governments (*Upper-Layer*) is directly interested in these elections since their representatives are elected indirectly using the municipal vote results (see section 3.1). Third, our grant's variable is an average of the grants received by the municipality two years before the municipal elections; at that moment the parties will be interested in winning the next elections, which are the municipal ones.

Most of the papers in the literature use the electoral margin of the party (i.e., vote share less 50% in absolute value) at the last election as a proxy of ϕ_j (Case, 2001, and Strömberg, 2001, Dasgupta *et al.* 2004, and Kehmani, 2003)[13]. However, the electoral margin may be a misleading measure in the case of more than two parties. When none of these parties wins a majority of the vote in the municipal election, taking or loosing office and reaping the best posts (i.e., the mayor and higher number of councilors) depends crucially on the probability of being the leader of *formateur* of the coalition. The party winning a higher share of votes uses to be able to do this job. This is true in our sample, since the most voted party hosts the mayor

[12] For example, the correlation coefficient between the vote-share of the socialist party (PSOE) at the *Central* and *Regional* elections (using the data of the *Regional* election previous to the *Central* one) at the provincial level is 0.92. The correlation between the *Central* and *Municipal* elections is 0.81 and the correlation between the *Regional* and *Municipal* elections is 0.83.

[13] Other papers use more sophisticated measures. For example, Johansson (2003) and Dahlberg and Johansson (2004) estimate a vote density function for each municipality and then compute the 'cut-point' density. The data requirements of this procedure make it not useful in our case.

in the vast majority of cases[14]. In this case, therefore, the relevant electoral margin should be computed as the difference (in absolute value) between the vote share of the party in the government and the vote share of the following party, either with more or with fewer votes (Jonston *et al.*, 1999). This is precisely the variable we include in the equation.

Control variables. We include some variables that measure the marginal valuation of spending b_j (see Table 2 for definitions, data sources and descriptive statistics). First, we control for the population size of the municipality. In Spain, current grants are clearly biased against small municipalities (Solé-Ollé and Bosch, 2005) and capital grants are biased against big municipalities. There are several explanations to this pattern. It may be that small municipalities find harder to finance infrastructure projects either with current savings or with access to the credit market. It may also be that the upper layers are paternalistic with small municipalities, allocating project grants that must be supervised by the grantor instead than unconditional current grants. We expect, thus, that per capita grants will decrease as population size increases. Second, we control for the land area of the municipality, to account for the increasing expenditure needs generated by urban sprawl. We expect this variable to have a positive effect on the amount of grants. The assessed value of the property is included to account for the fiscal capacity of the municipality, since in some cases the grantor allocates grantors take into account the fiscal effort made by the municipality when allocating grants. We expect that, once we control for tax capacity, grants should be higher in municipalities with higher tax rates. Finally, we include the ratio between the debt burden and current revenues. There may be two different effects here. On the one hand, grantors may want to give more money to more indebted municipalities, providing some sort of bail-out (Wildasin, 2004). But on the other hand, most of the grants allocated are project grants funded only partially by the grantor. Therefore, a municipality with a high level of debt will also find difficult to obtain the funds to pay for its share of the cost.

(Insert Table 2)

[14] Of course, we can find examples of Spanish municipalities where the mayor is taken by a pivotal party, or even where two parties with similar votes shares agree to alternate the mayor (the two first years of the term for one party and the last two for the other). However, these cases represent a rather small share and can be safely disregarded in the empirical analysis.

3.4 *Results*

***Single party + Leader* alignment.** Tables 3 and 4 present the results when using the *Single party + Leader* alignment dummy (categories *a* + *b*). Table 3 presents the results of the first two estimation procedures (i.e., (i) *Cross section* and (ii) *Time differences-in-differences*) while Table 4 presents the results of the last two procedures (i.e., (iii) *Grantor differences-in-differences* and (iv) *Triple differences*). In all the cases, a full set of provincial dummies (cross sectional methods (i) and (iii)) or term-provincial dummies (panel methods (ii) and (iv)) have been included; at the bottom of the table we include a test showing that they are significant. The explanatory performance of the equations is reasonable, with an adjusted R^2 between 0.3 and 0.4 in the cross-section cases and around 0.2 in the panel cases. In all the cases, the full set of variables is statistically significant.

(Insert Tables 3 and 4)

The results obtained suggest that partisan alignment between the municipality and the grantor government has a statistically significant impact on the grants allocated by this grantor to the municipality. This conclusion does not really depend on the increasing robustness checks which are imposed when going from method (i) to methods (ii), (iii) and (iv): alignment has a statistically significant effect at the 95% levels in all the cases, to the exception of the *Central* government case in methods (i) *Cross-section*, where the coefficient is not statistically significant, and (iii), *Grantor differences-in-differences*, where the coefficient is statistically significant at the 90% level when comparing the *Central* and the *Regional* governments. In method (ii), *Time differences-in-differences*, this coefficient is statistically significant at the 90% level for the *Regional* government.

There are the two regularities in the results that are worth mentioning. First of all, the alignment coefficient of the *Regional* government is higher than those of the other layers in all the cases. This result may be due to the fact that the amount of grants distributed by *Regional* governments is much higher than the one distributed by the *Central* of by the *Upper-Local* ones. Of course, it may also be due to a different ability in controlling for other influences in each of the three cases. However, note that this result also holds in cases (iii) and (iv) where we allow for a different alignment coefficient for each layer while controlling for municipality-specific shocks which are common to all the grantors. Recall that in these

two cases, the coefficient on the Δ*Single party + Leader* identifies the effect of alignment on the grants received from the first-named grantor (i.e., the *Central* government in the first column of Table 4) wile the coefficient on *Single party + Leader* identifies the difference between coefficients (i.e., in the first column of Table 4, the alignment effect vis a vis the *Central* government less the alignment effect vis a vis the *Regional* one). Note that this second coefficient is negative in three regressions (i.e., the *Regional* government gives 11 and 7 euro more per capita to aligned municipalities than the *Central* government, and 10 and 7 euro more than the *Upper-Local* one). Note that the *Central* and *Upper-Local* governments give the same amount of grants to aligned municipalities. This is expected, since the amount of resources of these two layers is not much different. These results suggest that it was necessary to augment methods (iii) and (iv) with the full set of controls. The results without including these controls are qualitatively similar (alignment coefficients are still positive and significant) but different in magnitude.

Second, the coefficients obtained with methods (i) and (iv) are lower than those obtained with methods (ii) and (iii). Putting aside the results obtained with method (i), which should be the less reliable, this means that the use of method (iv), *Triple differences,* has some influence on the estimated magnitude of the alignment effect. However, even using the estimates coming from this method, the alignment effect appears to be sizeable. The results say that a municipality aligned with the *Central, Regional* and *Upper-Local* grantors will receive an additional amount of grants of 5.1, 12 and 5.7 euro per capita, respectively. These amounts represent, respectively, the 31.9%, 24.9% and 25,02% of the average per capita grants distributed by these layers of government.

To conclude this section, we comment the results of the control variables. First, when using the methods (i) and (ii), the electoral margin variable has the expected negative sign but it is not statistically significant at conventional levels in the vast majority of cases. This variable is only statistically significant in the case of the *Central* government and when using method (i), *Cross-section*, which is the less reliable The point estimate implies that a 10% reduction in the electoral margin with respect to the next party implies an increase in grants of 3.66 euros (a 22.9% of the grants received from the *Central* government). The coefficient estimates for the other layers of government are lower, but are not commented here because the higher standard errors make them unreliable. The coefficient of the margin is zero when

using methods (iii) and (iv) meaning that 'cut-point' density has a similar effect on grants allocated by all the layers of government. The inability to obtain significant negative effects for the margin variable is a little bit disappointing, but is in accordance with the literature (see, e.g.; Kehmani, 2003; and Rodden and Wilkinson, 2004). It may be due to different reasons. First, the perceived margin may have shifted since the previous election. More sophisticated methods of calculation (see, e.g., Dahlberg and Johansson, 2004) might solve this problem. Second, the theoretical model posited here may not be the only possible and other theories may lead to different relationships between margin and grants. For instance, as Cox and McCubbins (1986) suggest, if politicians are risk averse, they would allocate more resources to safe than to marginal districts, and more funds to marginal than already lost districts. To account for this possibility, we re-estimate our equations by including interactions between the margin variable with a set of dummies identifying safe and marginal municipalities. We defined a 'safe' municipality as the one with a positive margin higher than 15% (sample average + one standard deviation), a 'marginal' municipality as the one with a margin (positive or negative) lower than 15% (in absolute value), and a 'already lost' municipality as the one with a negative margin lower than -15%. Admittedly, these thresholds are rather arbitrary, but they have been selected after some trials as the ones providing a better fit. The results (not reported but available upon request) confirm our expectations. For the *Regional* and *Upper-Local* governments, the margin has a negative slope only in the 'already lost' municipalities, the slope is zero in 'marginal' municipalities, and positive for 'safe' municipalities, although the coefficients are imprecisely estimated. Thus, the grants-margin function seems to be asymmetric, a lower margin increasing grants when negative and reducing them when positive. For the *Central* government, however, the grants-margin function has the traditional U-inverted shape. But the most important thing for our purposes is that this new way to specify the 'cut-point' density variable does not qualitatively change the results regarding the alignment status dummies.

Second, the results regarding the rest of the control variables are also consistent with the expectations. When using methods (i) and (ii), we obtain that more populated municipalities receive lower per capita grants. The population coefficient is negative and statistically significant for the three grantor governments, but the effect is lower in the case of the *Central* government. Grants also grow with the urban land area of the municipality, except in the case

of the *Central* government. The three upper-layer governments also allocate more grants to municipalities with low fiscal capacity (low assessed property values), although the coefficient of this variable is much lower in the case of the *Central* government. A higher fiscal effort (high property tax rate) also deserves more grants from the three grantor governments, but the effect is much higher in the case of *Upper-Local grants*. Finally, the effect of the fiscal burden is negative in all the cases, but it is statistically significant only in one case. Most of these variables are not statistically significant when using the (iii) and (iv) methods. Only in some cases, the coefficients identify significant differences in the weight given by the different grantors to each variable. For example, the results suggest that the *Upper-Local* grantor gives more weight to the fiscal capacity indicator than the *Regional* one, and that this one gives more weight to that variable than the *Central* grantor.

Full set of alignment categories. Tables 5 and 6 present the results using the full set of alignment categories (*a to d*). These tables are organized in the same way that the ones commented before. The only two differences are that four alignment dummies appear instead than one, and that the results regarding the control variables are not shown to save space. In the case of the *a* dummy (i.e. party alignment between two single-parties) the results are more or less the same than before; in this case, all the coefficients are statistically significant at the 95%, to the exception of the *Central* government case in method (i), *Cross-section*, where the coefficient is significant at the 90% level. The results are similar in the case of the *b* dummy (i.e. alignment when the party is the leader of a coalition in one or both of the layers). The coefficient is always statistically significant at the 95% when using grantor differences methods (iii) and (iv). The effects of the *c* dummy (i.e. alignment between an upper-layer single party or leader government and a municipal coalition partner) are always positive but only statistically significant at the 90% in two cases (*Central* and *Upper-layer* in method (ii)). In the case of the *d* dummy (i.e. party alignment between an upper-layer partner and a municipal single party or leader government), the coefficient is statistically significant (although sometimes at the 90% level) in most cases (the exception are the *Regional* case in method (ii) and the *Central* case in method (iii)).

(Insert Tables 5 and 6)

Therefore, we can conclude that there is strong evidence that upper layer-governments allocate more grants when the municipality is aligned, in the sense that both layers are

controlled by the same party and this party is either the single party in the government or the leader of the coalition. There is no evidence that partners at municipal coalitions receive more grants, with the (iv)' method clearly rejecting this proposition. There is evidence that partners at upper-layer coalitions are able to secure more grants for their municipalities. In this case, the coefficients obtained with the *Triple differences* method are statistically significant. Using these results, the coefficients can be expressed in % of the grants distributed by each grantor government. The results of this calculation state that in the case of *Single-party* alignment (*a*) the increase in grants due to alignment is 45.6%, 37.3% and 47.5% for the Central, Regional and *Upper-Local* governments. In the case of *Leader* alignment (*b*), these numbers are 26.2%, 25.39% and 24.7%, respectively. The results for the *Upper-Layer partner* case (*d*) show increases of grants of 34.0%, 31.0% and 33.1%. In any case, these results are in line with the expectations: the alignment effect is stronger in single-party governments but it is also present in the other cases, to the exception of *Municipal partner* alignment. *Upper-Layer partner* alignment effects are not stronger than *Single-party effects* but are at least as strong as *Leader* alignment effects. Recall that our *Upper-Layer* partners include both pivotal parties and weaker partners. This means, that our estimates should be considered a floor for the effect of pivotal parties, which may be even higher. In future work we will try to disentangle both categories to be able to obtain more precise estimates of the pivotal party effect.

4. Conclusion

In this paper we have tested the hypothesis that political alignment affects the distribution of grants among municipalities. We have developed a simple electoral competetion model between parties controlling different layers which suggest that: (i) a given grantor government gives more monies to the aligned municipalities, and (ii) a given municipality receives more monies from the grantor/s which with he is aligned. These two propositions form the basis of the empirical procedures we use to test the alignment hypothesis. Our database provides information on grants received by nearly 900 Spanish local governments during the period 1993-2003 from three upper-tier governments (i.e., *Central, Regional* and *Upper-Local*) and allows us to use several alternative estimation procedures. The first proposition is tested with a cross-section estimation for the average of the period. However, since three elections have been held at each tier during this period, we have enough within-municipality variation in partisan alignment to provide difference-in-

differences estimates of its effects on the amount of grants coming from each source, procedure that is used to test the second proposition. The availability of panel data allows us to use a triple-differences estimator, which consists of estimating the effects of changing alignment status on the change in grants coming from the aligned grantors relative to the change in grants coming from the unaligned ones.

The results suggest that partisan alignment has a sizeable effect on the amount of grants received by municipalities. The effect is much stronger when the aligned governments are single-party governments at both layers. There is also a significant effect when the party at one or both layers is the leader of a coalition, and when a single-party or a party leading a coalition at the municipal level is also partner of a coalition at the upper level. However, parties which are mere partners at the municipal level do not seem to get more grants from upper-tiers of governments controlled by the same party. The size of the alignment effect is also worth to mention, since in the single-party case aligned municipalities receive more than 40% more grants than the unaligned ones. Moreover, since it is possible for a municipality to become aligned/ unaligned with all the upper-layer grantors, there will be some municipalities that will receive an overall amount of grants 40% higher than others. In other cases, however, alignment with one layer will compensate for unalignment with the other.

These results open new questions for the researcher. For instance, if voters are rational, they may vote at the local election for the party in charge at the upper-layer, in order to avoid becoming unaligned and therefore to get more grants. So, a party gaining office at the central and regional elections (only when they are held previously than the municipal ones) will see its vote-share increasing at the municipal elections. The testing of this hypothesis will be part of our future work.

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Table 1:

A typology of alignment status

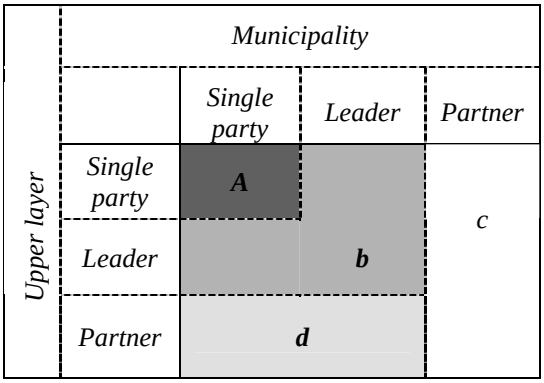

Table 2:

Definitions of the variables, Descriptive Statistics and Data sources

	Definition	*Mean* (*Stand. dev.*)	*Source*
Central grants	Capital grants from the central government per capita (item 7.2 of the revenue budget)	16.050 (35.933)	Ministry of Economics and Finance
Regional grants	Capital grants from the Regional government (AC) per capita (item 7.5 of the revenue budget)	48.792 (64.958)	
Upper-Local grants	Capital grants from Upper-Local governments per capita (item 7.6.1 of the revenue budget)	22.728 (34.969)	
Debt Burden	Debt service (capital, item 9 of the spending budget, + interests, item 3) as a share of current revenues	0.241 (0.844)	
Margin	Vote share of the party in government - vote share second party, in absolute value	0.089 (0.072)	Ministry of Interior & Ministry of Public Administration
Population	Population	28,834 (129,826)	National Institute of Statistics
Land area	Urban land area per capita, including both built up area and unbuilt land plots	333.765 (388.173)	Centro de Gestión Catastral y Cooperación Triburaria
Property value/pop.	Assessed property value per capita	17,975 (15,160)	
Property tax rate	Nominal property tax rate (IBI), % on assessed property value	0.585) (0.172)	

Table 3:

Effects of Single party + Leader alignment (*a+b*) *on grants allocated to municipalities.Cross section and Time differences-in-differences estimation.*

	(i) *Cross section*			(ii) *Time differences-in-differences*		
	Central	*Regional*	*Upper-Local*	*Central*	*Regional*	*Upper-Local*
Single party + Leader alignment (*a + b*)	4.430 (1.544)	13.937 (5.854)**	6.745 (3.982)**	6.418 (2.439)**	22.994 (1.977)*	7.898 (3.277)**
Margin	-0.366 (-4.358)**	-0.210 (-1.288)	-0.152 (-1.563)	-0.187 (-1.293)	-0.176 (-1.239)	-0.171 (-1.398)
Population (x 10^{-6})	-0.001 (-0.385)	-0.015 (-3.727)**	-0.017 (-7.237)**	-0.004 (-3.068)**	-0.008 (-8.670)**	-0.012 (-3.275)**
Land area/Pop.	-0.002 (-2.907)**	0.015 (6.847)**	0.089 (5.073)**	-0.001 (-1.250)	0.009 (5.351)**	0.017 (4.321)**
Property value./Pop. (x 10^{-3})	-0.049 (-1.786)*	-0.187 (-2.495)**	-0.293 (-6.382)**	-0.033 (-1.983)*	-0.245 (-6.207)**	-0.291 (-2298)**
Property tax rate (x 10^{-2})	0.091 (5.019)**	0.120 (3.673)**	0.183 (9.033)**	0.074 (3.961)**	0.115 (5.663)**	0.367 (5.567)**
Debt charges/Revenue	-0.050 (-0.765)	-0.126 (-1.104)	-0.117 (-1.694)*	-0.069 (-1.423)	-0.126 (-1.104)	-0.105 (-1.009)
Adj R^2	0.435	0.398	0.301	0.191	0.199	0.165
F-est. (*zero slopes*)	19.523**	16.333**	8.013**	4.472**	4.519**	4.120**
F-est. (ℓ *or* ℓ x *t dummies*)	12.156**	12.489**	7.190**	9.778**	10.001**	8.918**
No Obs.	869	869	755	1,738	1,738	1,540

Notes: (1) *t* statistics are shown in brackets; (2) *&**=significantly different from zero at the 90% and 95% levels; (3) Provincial dummies included in the Cross-section equations, and Time x provincial dummies included in Time-differences-in-differences equations; (4) Cross-section estimation uses the average of periods 1994-95, 1998-99 *and* 2002-03.

Table 4:

Effects of Single party + Leader alignment (*a+b*) *on grants allocated to municipalities.Grantor differences-in-differences and Triple differences estimation.*

	(iii) *Grantor differences-in-differences*			(iv) *Triple differences*		
	Central– Regional	*Regional– UpperLocal*	*UpperLocal – Central*	*Central– Regional*	*Regional– UpperLocal*	*UpperLocal – Central*
Δ*Single party + Leader alignment* (*a + b*)(5)	9.182 (1.823)*	18.247 (6.835)**	11.283 (5.159)**	5.095 (8.409)**	12.001 (7.287)**	5.668 (4.553)**
Single party + Leader alignment (*a + b*)(6)	-11.234 (-8.172)**	10.155 (3.769)**	2.939 (0.572)	-7.028 (2.060)**	-6.761 (4.311)**	1.346 (0.505)
Δ*Margin*	-0.098 (-0.181)	0.032 (0.119)	-0.055 (-0.219)	0.003 (0.129)	-0.120 (-0.091)	-0.021 (-0.108)
Population	0.003 (2.352)**	-0.001 (-0.794)	-0.031 (-4.242)**	-0.007 (-0.297)	-0.005 (-0.206)	-0.029 (-0.146)
Land area/Pop.	-0.004 (6.792)**	-0.009 (-1.789)*	0.003 (7.333)**	-0.007 (-0.395)	0.007 (0.399)	0.017 (0.226)
Property value./Pop.	0.158 (0.803)	0.044 (2.045)**	-0.060 (-4.828)**	0.207 (0.426)	0.221 (1.865)*	-0.015 (-0.421)
Property tax rate	-0.170 (-2.015)**	-0.172 (-1.895)*	0.135 (5.025)**	-0.161 (-0.515)	-0.171 (-1.832)*	0.100 (0.567)
Debt burden/Revenue	0.010 (0.283)	0.003 (0.623)	-0.041 (-1.812)*	0.027 (0.985)	0.030 (0.334)	0.017 (1.098)
Adj R^2	0.324	0.311	0.296	0.185	0.184	0.234
F-est. (*zero slopes*)	15.502**	14.619**	12.957**	3.688**	4.022**	4.338**
F-est. (ℓ *or* ℓ x *t dummies*)	7.912**	7.340**	8.654**	7.657**	8.762**	8.449**
No Obs.	1,738	1,540	1,540	1,738	1,738	1,738

Notes: (1) *t* statistics are shown in brackets; (2) *&**=significantly different from zero at the 90%, 95% and 99% levels; (3) Provincial dummies included in the Grantor differences-in-differences equations, and Time x provincial dummies included in the triple differences equations; (4) Grantor differences-in-differences estimation uses the average of periods 1994-95, 1998-99 *and* 2002-03. (5) Δ*Single party + Leader alignment* (*a + b*) identifies the effect of alignment on the granst received from the first-named grantor (i.e. *Central* government in the first column). (6) *Single party + Leader alignment* (*a + b*) identifies the differences between coefficients (i.e. in the first column, the alignment effect vis a vis the *Central* government less the alignment effect vis a vis the *Regional* one)

Table 5:
Effects of alignment (*a to d*) *on grants allocated to municipalities.*
Cross section and Time differences-in-differences estimation.

	(i) *Cross section*			(ii) *Time differences-in-differences*		
	Central	*Regional*	*Upper-Local*	*Central*	*Regional*	*Upper-Local*
Single party (*a*)	7.039 (1.878)*	16.773 (5.075)**	12.406 (6.007)**	8.476 (2.440)**	23.198 (2.548)**	12.274 (4.269)**
Leader (*b*)	2.489 (0.671)	15.177 (5.054)**	1.943 (0.904)	7.351 (2.343)**	13.100 (0.911)	7.351 (2.343)**
Municipal partner (*c*)	1.588 (0.800)	7.455 (0.684)	2.467 (0.508)	4.508 (1.917)*	13.473 (0.992)	4.786 (1.900)*
Upper-layer partner (*d*)	13.223 (2.342)**	35.646 (4.152)**	7.849 (1.872)*	4.554 (1.950)*	14.491 (1.127)	4.635 (1.948)*
Adj R^2	0.420	0.399	0.310	0.192	0.199	0.169
F-est. (*zero slopes*)	18.663**	14.455**	8.038**	4.413**	4.455**	4.141**
F-est. (ℓ *or* ℓ x *t dummies*)	11.781**	10.219**	7.549**	9.975**	10.219**	9.093**
No Obs.	869	869	755	1,738	1,738	1,540

Notes: (1) See Table 3; (2) Same controls as in Table 3.

Table 6:
Grantor differences-in-differences and Triple differences estimation.

	(iii) *Grantor differences-in-differences*			(iv) *Triple differences*		
	Central– Regional	*Regional– UpperLocal*	*UpperLocal – Central*	*Central– Regional*	*Regional– UpperLocal*	*UpperLocal – Central*
Δ*Single party* (*a*)	13.851 (7.597)**	24.671 (4.909)**	14.638 (5.238)**	7.314 (6.300)**	18.314 (8.321)**	10.661 (4.487)**
Δ*Leader* (*b*)	6.177 (2.786)**	17.139 (4.835)**	7.148 (2.998)**	4.211 (7.423)**	12.445 (7.211)**	5.510 (2.684)**
Δ*Municipal partner* (*c*)	1.219 (0.654)	3..896 (1.217)	1.610 (0.877)	2.334 (1.356)	4.566 (0.899)	2.251 (1.161)
Δ*Upper-layer partner* (*d*)	11.678 (1.511)	13.782 (3.151)**	16.517 (3.274)**	5.443 (1.822)*	15.191 (3.944)**	7.393 (3.131)**
Adj R^2	0.339	0.322	0.281	0.199	0.201	0.242
F-est. (*zero slopes*)	14.832	14.026**	12.308**	3.877**	3.877**	3.380**
F-est. (ℓ *or* ℓ x *t dummies*)	9.278	9.718**	8.765**	9.352**	9.933**	8.468**
No Obs.	1,738	1,540	1,540	1,738	1,540	1,540

Notes: (1) See Table 4; (2) Same controls as in Table 4.