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 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 were held at each tier during this period, we have enough within-municipality variation in partisan alignment to provide differences-in-differences estimates of the effects of alignment on the amount of grants coming from each source. Moreover, the fact that a municipality may simultaneously receive 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. For example, with majority governments at the two layers, aligned municipalities receive over 40% more grants than unaligned ones.
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1. Introduction

The traditional literature on fiscal federalism justifies the use of intergovernmental transfers on the grounds of efficiency and equity (Musgrave, 1959; Oates, 1972). According to this view, grants should be used to foster spending in spillover-generating services, to reduce the use of inefficient local taxes (Dahlby and Wilson, 1994) or to guarantee

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similar access to essential public services across the country (Buchanan, 1950). However, many scholars have recognised that what grantor governments 'ought to do' does not help much when 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 states with a high proportion of voters who are not specifically attached to any of the parties (the so-called 'swing voters'). The papers by Case (2001), Strömberg (2002), Johansson (2003) and Dahlberg and Johansson (2002) 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 posits that, if politicians are risk averse, funds will be allocated to states where voters are clearly attached to the incumbent party (the 'core supporters'). The results in Dahlberg and Johansson (2002), and Castells and Solé-Ollé (2005) suggest that the evidence in favour 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 have an interest 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 are generally 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 the financial backer of the program is). Nonetheless, the crucial point here is that, even if the grantee can claim some small proportion of the credit gained from the grant, the grantor will still find it less profitable to allocate funds to unaligned than to aligned governments (Dasgupta et al., 2004). This suggests that local governments that are aligned with upper-tier grantor governments will receive more grants than those that are unaligned.

Several papers have tested this hypothesis: Grossman (1994) and Levitt and Snyder (1995) for the USA, Worthington and Dollery (1998) for Australia, Dasgupta et al. (2004) and Khemani (2003) for India, and Díaz-Cayeros et al. (2007) for Mexico. Most of them confirmed that aligned states receive more funds. A common problem that 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. This characteristic entails some doubts on the validity of the results. For example, Grossman (1994) uses the variables percentage of votes for a democrat governor in the last election and percentage of seats held by democrats in the state legislature; since the federal legislature was controlled by the democrats during all the years of the sample, the author interprets these variables as indicative of alignment. But without change in control at the federal level, the democratic control at the state level can be picking up other factors influencing the allocation of grants (e.g., more needs in poor states controlled by the democrats); this problem is even more striking in that paper, since the analysis was performed with cross-sectional data. A similar problem affects the results by Levitt and Snyder (1995) or Díaz-Cayeros et al. (2007), which also use a cross-section, or the ones by the other papers, which use panel data but for time periods of unchanged partisan control at the national level (e.g., Khemani, 2003).

In this paper we test the alignment 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. Firstly, in our database, there is cross-section variation in the partisan control in two of the upper-layer governments (Regional and Upper-local). Secondly, since three elections were held at each tier during this period, we have enough within-municipality variation in partisan alignment (due to changes in partisan control at all layers of government) to provide reliable differences-in-differences estimates of the effect of alignment on the amount of grants coming from each source. The fact that a municipality may simultaneously receive 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 aligned grantors relative to the change in grants coming from unaligned ones. This estimator is more 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.

The paper is organized as follows. In Section 2 we provide a simple electoral competition model that accounts for the different incentives that grantors have regarding aligned and unaligned local governments. The Section 3 performs the empirical analysis. In this section we explain the different estimation procedures that we have been able to implement, the features of our database and the way we measure grants and alignment. This section ends with the presentation of the results. The Section 4 sets out our conclusions.

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 setup of the model: the 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 both the objective of the upper layers of government (in terms of parties) and the results of the electoral game in terms of grants allocated to each local government.

2.1. Basic setup

In our model we have two upper-tier governments, each 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-wing party (l) and the R government by the right-wing 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[1]. Although each party controls a different government tier, and different elections are held at each tier, we analyse a game in which they are competing in the same electoral race, without specifying which specific election we are talking about. We are, in fact, assuming that the politicians at all levels have an interest not only in winning the elections held at their levels, but also in advancing the prospects of the party in general. This may happen if campaigns are highly centralised, if the electoral results of a party in a given election and jurisdiction are influenced by the results obtained in other contests, or if winning elections helps the party in rewarding its supporters through the allocation of posts.

2.2. Voting behaviour

Voters cast their 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 favour of l; and $\Phi_j(X)$ 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 voting behaviour which is a popularity shock, δ_j, in favour or against the party in the R and U governments. We assume that voter i votes for party r if the condition $u_j(g_j^R) - u_j(g_j^U) + \delta_j \geq X_i$ holds[2].

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

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[1] Technically, the model is really close to Lindbeck and Weibull (1987) and Dixit and Londregan (1998). However, note that in our case the parties do not compete by promising transfer allocations as in these models, but by distributing real funds. Note that this is what happens in models explaining the allocation of campaign efforts among districts (see, e.g., Snyder, 1989; Strömberg, 2002).

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

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,

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

That is, expression (2a) says that if a 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:

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

or,

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

2.3. Party behaviour

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 behaviour) and subject to a fixed budget constraint. For example, in the case of party r, this can be expressed as:

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

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

2.4. Solution

The FOCs for the party r upper layer of government R are:

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

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

The FOCs for the party l upper layer of government U are:

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

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

where λ^R and λ^U are the associated Lagrange multipliers.

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 $\theta > 0.5$ (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. Firstly, if parties were not merely office-motivated but also pursuing efficiency and/or equity objectives, the marginal benefit of grants in (5a) (5b) (5c) (5d) would include an additional term, making the corner solution more difficult (see, e.g., Dasgupta et al., 2004). Secondly, there must be an upper bound on the utility derived from grants that spills over to any opposition party. We assume that $\theta < 0.5$, meaning that although the grantee may obtain substantial utility from projects funded by the grantor, the grantee never obtains more utility than the grantor.

2.5. Effect of alignment on grant allocation

The analysis of the FOCs allows us to make two different predictions about the effects of alignment status on the amount of grants allocated. The first prediction states that a grantor government allocates more funds to aligned municipalities than to 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):

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

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; thus, the ratio between the two densities is equal to one. In this scenario, given that $\theta < 0.5$, the denominator of the LHS of Eq. (6) is multiplied by a factor, $(1-2\theta)$, 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 governing R 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[3], so a further increase of g_j^R (decrease of g_k^R) is needed to rebalance expression (6), reinforcing the previous result. In contrast, when the party governing R receives a positive popularity shock, then the density at the cut-point is higher for the unaligned municipality. But in this case, the second effect could offset the former one, precluding any clear conclusion about the effect of alignment on grants. However, the magnitude of this second effect depends on the curvature of the density function: specifically, 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 a 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 could. Assuming that the vote-distribution functions for j and k are uniform on the intervals $[-1/2\psi_j, 1/2\psi_j]$ and $[-1/2\psi_k, 1/2\psi_k]$, respectively, this result can be illustrated by 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, with the latter measuring the concavity of the utility function; and b_j is a parameter indicating that spending is more valuable to voters in some places. Substituting this function in Eqs. (5a) and (5b), we obtain:

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

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[3] 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.

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

The second prediction says that a municipality receives more funds from an aligned grantor than from an unaligned one. This hypothesis is obtained by comparing the FOCs for the same municipality (j or k). Look, for example, at the ratio between Eqs. (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 $\theta < 0.5$, the denominator of the LHS of Eq. (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 as above. Substituting this function in Eqs. (5a) and (5c), and 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 $(G^R)^\alpha > (G^U(1 - 2\theta))^\alpha$, then 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

3.1.1. Layers of government

Spain is a fiscally decentralized country with three layers of government: *Central*, *Regional*, and *Local*. There are seventeen regional governments, called Autonomous Communities (AC), which have quite important spending responsibilities, for example, in the provision of health care, education and welfare. Each AC is composed of one or more provinces. In the ACs with more than one province, there also 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 main players in the local public sector. One of its pertinent tasks is allocating grants for capital infrastructure to the municipalities[4].

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 their own revenues (approximately 2/3) and unconditional grants (approximately 1/3), which are allocated according to a formula that hinders their use for pork-barrel politics. However, the funding of capital spending depends heavily on grants: in 2003, capital grants represented 13% of non-financial revenues and 44% of capital spending. These grants come from the three aforementioned upper layers of government: *Central* (15%), *Regional* (45%) and *Upper-local* (21%)[5]. Most of

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[4] In ACs with only one province (there are six ACs of this kind), there is no *Diputación*, and its responsibilities are assumed by the regional government.

[5] The remaining 18% corresponds to other sources (e.g., the EU) or to unspecified grants.

the grants take the form of 'project grants': there is an open call at regular intervals (usually yearly) and a municipality must apply by submitting several infrastructure projects, which are evaluated against criteria that have been previously established (probably published in the call) but are subject to the interpretation of the grantor. Therefore, the degree to which these grants are politically discretionary should be qualified as high.

3.1.2. Elections and parties

General elections are regularly held at four-year intervals, although they can be called before a term of office expires. 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 were called one or two years before general elections. In the other ACs, elections were called before an end of term and, therefore, were held on a different day.

In the elections to central and regional legislative bodies, the provinces constitute the electoral districts, a differing number of representatives are elected in each province depending on its population, candidates appear on the parties' closed lists, and the d'Hondt formula, with threshold, is used to translate votes into representatives (Colomer, 1995). Therefore, the system is not entirely proportional and, in fact, it is much easier to win a seat in some provinces (the rural ones) than in others. The system allows a certain degree of plurality in parliament, especially in the case of regional parties whose vote is concentrated in a few districts. Because of the closed-list system, 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 of places in the lists), politicians are at least as loyal to the party as they are to their constituency.

In municipal elections there are also closed lists, the number of city councillors depends on population, and the d'Hondt rule is again 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, there is a high proportion of coalition governments. For example, in the 1996–99 term, 43.3% of 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 into representatives, again using the d'Hondt formula. These upper-tiers of government have been criticized on the grounds of reduced electoral accountability. With few clear-cut responsibilities and no need to go to the polls, politicians controlling this layer of government can use grants to foster party prospects at the next election.

The features 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 have a strong vested interest in the results of regional and municipal elections. Since these contests generally happen one or two years before general elections, they provide an excellent opportunity to test the real prospects of the party[6]. Therefore, although most campaign efforts are regional or local in scope, the parties do design a centralized strategy for these contests. This strategy includes statements regarding which regions and municipalities deserve disproportionate campaign efforts[7], either because the perceived electoral margin is narrow or because the region or 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 expect that just before an election, a party will use the various posts it controls at different layers of government to allocate grants to pursue its electoral objectives. The high degree of partisan control exercised both within and across layers of government facilitates the use of resources coming from different posts for the fulfilment of party interests.

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

[7] One year before the May 2007 municipal elections, the newspaper El País published a report on the prospects for this contest under 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 from 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[8]:

$$g_{j,\ell,t}^{C} = \beta_1 a_{j,t}^{C} + \beta_2 \phi_{j,t} + \beta_3 b_{j,t} + f_j^{C} + f_{\ell,t}^{C} + \varepsilon_{j,t}^{C} \tag{11a}$$

$$g_{j,\ell,t}^{R} = \beta_1 a_{j,t}^{R} + \beta_2 \phi_{j,t} + \beta_3 b_{j,t} + f_j^{R} + f_{\ell,t}^{R} + \varepsilon_{j,t}^{R} \tag{11b}$$

$$g_{j,\ell,t}^{U} = \beta_1 a_{j,t}^{U} + \beta_2 \phi_{j,t} + \beta_3 b_{j,t} + f_j^{U} + f_{\ell,t}^{U} + \varepsilon_{j,t}^{U} \tag{11c}$$

where $g_{j,\ell,t}^{C}$, $g_{j,\ell,t}^{R}$ and $g_{j,\ell,t}^{U}$ are per capita grants allocated by *C*, *R* and *U* grantors, respectively, to municipality *j*, located in (national and regional) the electoral district λ, for the municipal term of office *t*. The effects of alignment are picked up by the dummies $a_{j,t}^{C}$, $a_{j,t}^{R}$ and $a_{j,t}^{U}$ which are equal to one if municipality *j* is aligned with the *C*, *R* or *U* grantor for 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^{C}, f_j^{R} and f_j^{U}. Moreover, we include electoral district × term-of-office effects, $f_{\ell,t}^{C}$, $f_{\ell,t}^{R}$ and $f_{\ell,t}^{U}$. 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 next, but which are constant across municipalities of the same district[9]. Finally, $\varepsilon_{j,t}^{C}$, $\varepsilon_{j,t}^{R}$ and $\varepsilon_{j,t}^{U}$ are well-behaved error terms.

The database (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 illustrate the advantages of our methodology, it is convenient to explain the four different procedures we use, step by step, from simplest to most complex. The first and third procedures are based on the proposition 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 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 do not have information regarding different grantor governments must resort to this procedure. Let's assume, for example, that we only have information on the grants distributed by *R* during one term of office:

$$g_{j,\ell}^{R} = \beta_1 a_j^{R} + \beta_2 \phi_j + \beta_3 b_j + f_{\ell}^{R} + \eta_j^{R} \tag{12}$$

where $\eta_j^{R} = f_j + \varepsilon_j^{R}$.

If $\text{cov}(a_j^{R}, \varepsilon_j^{R}) = 0$, 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_{ℓ}^{R}. In practice, however, it is not so straightforward. For example, if there is only one upper-layer government covering all the jurisdiction of the country (as often occurs in empirical analyses, e.g., Grossman, 1994), then a_j^{R} will not only measure alignment but also differences in party control among municipalities. And, since party control is usually correlated with omitted socio-demographic variables (e.g., the left generally controls '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., $\text{cov}(a_j^{R}, \eta_j^{R}) \neq 0$). Similarly, a_j^{R} may be correlated with ϕ_j if, for example, left

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[8] Eqs. (6) and (8) suggest a multiplicative effect among all the variables: For instance, the alignment effect should be higher when electoral productivity is higher, but also when the marginal utility of grants is higher. Nonetheless, note that Eq. (11a) (11b) (11c) are equivalent to the one derived by taking logs to Eq. (6), being the only difference that in those equations the variables are not expressed in logs. We have also estimated the log-linear specification, but the linear specification fits better the data. Moreover, we are unable to measure properly the swing voter variable and the results about its influence are unclear, as it is commented in the result section. Therefore, the interactions could include much noise in the estimations. For all these reasons we have decided not to include interactions among the variables.

[9] The votes obtained in a 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).

governments tend to win by slim margins while the electoral advantage of right governments is substantial (or vice versa). Thus, this procedure is far from perfect. Nevertheless, we use it in our empirical exercise for two different reasons: firstly, to demonstrate the differences between this procedure and alternative ones (see below); and secondly, because in two of our upper-layer governments, the country is divided into 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 be able to estimate Eqs. (11a) (11b) (11c) after taking first differences. As an example, in the case of the R government, we have:

$$\Delta g_{j,t}^R = \beta_1 \Delta a_{j,t}^R + \beta_2 \Delta \phi_{j,t} + \beta_3 \Delta b_{j,t} + f_{\ell,t}^R + \Delta \varepsilon_{j,t}^R \tag{13}$$

where Δ indicates that the variable has been computed as the difference in the values between 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 characteristics). Some electoral features (ϕ_j) might also be quite stable; however, others may change from one term of office to the next, and this change might be correlated with changes in alignment status ($\Delta a_{j,t}^R$). Moreover, in some samples, the change in alignment may stem solely from a change in control at the municipal level. This may happen if control at the grantor level remains stable. In such 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 upper-layer grantor governments in a given term. Subtracting expression (12) for two grantor governments, R and U, we have:

$$g_{j,\ell}^R - g_{j,\ell}^U = \beta_1 (a_j^R - a_j^U) + f_\ell^{RU} + \eta_j^{RU} \tag{14}$$

where f_ℓ^{RU} is a full set of electoral district dummies and $\eta_j^{RU} = (f_j^R - f_j^U) + (\varepsilon_j^R - \varepsilon_j^U)$. The β_1 parameter is the *differences-in-differences* estimator, obtained by using the same local governments as a control group, but supposing 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 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:

$$\Delta g_{j,\ell}^R - \Delta g_{j,\ell}^U = \beta_1 (\Delta a_j^R - \Delta a_j^U) + f_\ell^{RU} + \Delta \varepsilon_j^{RU}. \tag{15}$$

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-à-vis one grantor minus the change in alignment vis-à-vis the other. That is, 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. 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 Eqs. (11a) (11b) (11c). There are some reasons to believe that this may not be the case. Firstly, as suggested by expression (10), the additional grants

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[10] Some authors suggest (Bertrand et al., 2004) that the standard errors of differences-in-differences estimates are inconsistent if some of the following conditions hold: a fairly long time series, a dependent variable that is highly positively correlated, and few changes in the control variable (alignment). This does not occur in our case, since our time series are short (three periods), capital transfers do not suffer from incrementalism (they are project grants that are distributed from scratch every period) and therefore are not serially correlated, and there are a lot of changes in the alignment status of our municipalities (around 50% of them changed status from one period to the other). Thus we consider that, at least in our case, it is not necessary to cluster the errors by municipality.

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 between equations. Secondly, different grantors may subsidise different types of projects, so a given variable included in b_j may be weighted differently by each of them. Thirdly, 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 Eqs. (14) and (15). For example, the extended *grantor differences-in-differences* equation looks like:

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

The coefficient of $(a_j^R - a_j^U)$ expresses 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 is 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

3.3.1. Selecting the sample

We 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 conducted yearly by the Ministry of Economics and Finance. The starting number of municipalities was much bigger (2799), but we could not use the municipalities with population lower 1000 inhabitants due to lack of socio-economic data, and we also lose some municipalities due to unavailability of data on transfers by grantor. In the case of grants coming from the U government this number is further reduced to 755, due to the already mentioned fact that there are no *Diputaciones* in ACs with only one province. We believe that, even after this reduction in the number of observations, the sample is still representative of all Spanish municipalities bigger than 1000 inhabitants[11].

We estimate the effects of alignment for the three terms of office mentioned above. However, we use only the last two years of each term to perform our analysis. Thus, we set out to explain the effects of alignment on the overall amount of grants received in 1994–95 for the term 1991–95, in 1998–99 for the term 1996–99, and in 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 general and (some) regional elections. Thus, the alternative procedure of aggregating 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 general elections are held at some time between two local elections). The second reason is that by aggregating the grants variable over two years, we reduce the volatility of this variable. The third reason is that, as the political cycle literature has emphasised, the temptation to use public funds to buy votes increases as the next election approaches[12].

3.3.2. 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 added up for the last two years of each term then divided by the population of the municipality at the beginning of these two-year periods, using data from the National Institute of Statistics (INE). We have considered that grants received during the election year benefit the incumbent government and not the incoming one. We believe that this assumption is reasonable, given that municipal elections are generally held in the middle of the year (May or June) and that grantor governments usually exhaust their yearly grants budgets early, just before the next election.

3.3.3. 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

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[11] The municipalities lost because unavailable transfer breakdown are distributed proportionally according to the population size and the alignment status.

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

same. However, in Spain a large share of governments (at all layers) are coalitions. Coalitions make the definition of alignment between layers more difficult. A party at a given layer of government may play at least three different roles: i) the single party in government, ii) the main partner or leader of a coalition, and iii) a mere partner of the leading party in a coalition. Paired combinations of these roles between a municipality and a higher layer of government define nine different relationship types, which are illustrated in Table 1.

The amount of grants transferred to municipalities belonging to each of these types depends on two different factors. Firstly, 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 no 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 large share of the credit. These considerations do not seem to depend on the status of the upper layer, so grant levels should decrease as we move from left to right in Table 1. Secondly, 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 the entire grants budget as it wishes, 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 a 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 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 (Ansolabehere and Snyder, 2004; Rodden and Wilkinson, 2004 for empirical evidence). This clearly means that strong coalition partners will receive more grants than weak ones. Nevertheless, it is not at all clear that strong partners will be able to control more funds than a coalition leader. Moreover, we have not been able to identify whether coalition partners are pivotal or not in all the cases, so our sample of *Partners* mixes both pivotal parties and weaker ones. Therefore, we still expect that coalition leaders are able to control more funds than coalition 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 small 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*: a party which controls a single-party government at one layer and leads a coalition at the other layer; (*c*) *Municipal partner*: a party belonging to the upper layer of government (either the single party, the leader of a coalition or a mere partner) and is merely a partner in a municipal coalition; and (*d*) *Upper-layer partner*: a party which is a partner at the upper layer and either the single party or the leader of a coalition at the municipal level. We expect to find the highest grants in (*a*) because the effects of the loss of credit and of the capacity to secure 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 a similar ability to gain credit, single parties and coalition leaders will be able to secure more funds, unless very powerful pivotal parties predominate. In the empirical analysis we also provide results 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 mayoralty and (in the case of coalitions) the other parties in the municipal governments, following the local elections of 1991, 1995 and 1999. For the upper-tier of local government, this database provides information regarding the party of the president and the composition of the assembly. Data on the party of the president of the AC and the other parties in the regional and national governments

Table 1
A typology of alignment status

		Municipality		
		Single party	Leader	Partner
Upper layer	Single party	a		c
	Leader		b	
	Partner		d	

come from www.eleweb.com. In all cases, minority governments have been considered as coalitions. The party of the president or the mayor has been considered the *Leader* and the other parties 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 layers of government and in each term of office, a large share of municipalities are unaligned. This share goes from a minimum of 24.1% for the *Regional* government in the third term to 57.0% for the *Central* government during the same term (2000–03). Aligned governments are concentrated in the (*a*) and (*b*) categories. Secondly, a large share of municipalities changed alignment status from one term of office to the next. The share of municipalities which changed their 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 all three cases for the transition from 1998–99 to 2002–03.

3.3.4. Measuring 'cut-point' density

The theoretical model suggests that the equations should include 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*) are to be used to compute it. We decided to use only voting data from the last municipal elections. There are several arguments that justify this decision. Firstly, it is not advisable to include a separate measure for each of the elections, since the three would be highly correlated[13]. Secondly, one of the grantor governments (*Upper-local*) has a vested interest in these elections since its representatives are elected indirectly using the municipal voting results (see Section 3.1). Thirdly, our grants variable is an average of the grants received by a municipality two years prior to municipal elections, when the vested interest of the parties will be to win the coming elections.

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 for ϕ_j (Case, 2001; Strömberg, 2001; Dasgupta et al., 2004; Khemani, 2003)[14]. 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 votes in the municipal election, winning or losing office and taking the best posts (i.e., the mayoralty and the greatest number of councillors) depend crucially on the probability of being the leader, or *formateur*, of the coalition. The party winning a larger share of votes is generally able to carry out this task. This is true in our sample, since the most voted party holds the mayoralty in the vast majority of cases[15]. 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 government and the vote share of the next party, having either more or fewer votes (Johnston et al., 1999). This is precisely the variable we include in the equation.

3.3.5. 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). Firstly, 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 for this pattern. It may be that small municipalities find it harder to finance infrastructure projects either with current savings or through access to the credit market. It may also be that the upper layers are paternalistic toward small municipalities, allocating project grants that must be supervised by the grantor, instead of unconditional current grants. We expect, therefore, that per capita grants will decrease as population size increases. Secondly, 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. Assessed property values are included to account for the fiscal capacity of the municipality since, in some cases, the grantor use equalization criteria when allocating grants. The property tax rate is included because sometimes the grantor gives more monies to the municipalities which make a higher fiscal effort. 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 debt burden and current

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

[14] Other papers use more sophisticated measures. For example, Johansson (2003) and Dahlberg and Johansson (2002) 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.

[15] Of course, we can find examples of Spanish municipalities where the mayoralty is taken by a pivotal party, or even where two parties with similar vote shares agree to alternate the mayoralty (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.

Table 2
Definitions of the variables, descriptive statistics and data sources

	Definition	Mean (SD)	Source
Central grants	Capital grants from the Central government per capita (item 7.2 of the revenue budget)	16.050 (35.933)	
Regional grants	Capital grants from the Regional government (AC) per capita (item 7.5 of the revenue budget)	48.792 (64.958)	Ministry of Economics and Finance
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, + interest, 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 (*INE*)
Land area	Urban land area per capita, including both built-up area and unbuilt land plots	333.765 (388.173)	Central Land Management Registry (*Centro de Gestión Catastral y Cooperación Tributaria*)
Property value/pop.	Assessed property value per capita	17,975 (15,160)	
Property tax rate	Nominal property tax rate (IBI), % of assessed property value	0.585 (0.172)	

revenues. There may be two different factors at work here. On the one hand, grantors may want to give more money to more indebted municipalities, providing some sort of bailout (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 may also find it difficult to obtain funds to pay for its share of the cost.

3.4. Results

3.4.1. 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 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 cases, the full set of variables is statistically significant.

The results obtained suggest that partisan alignment between a municipality and a grantor government has a statistically significant impact on the grants allocated by the grantor to the municipality. This conclusion does not actually 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% level in all cases, with 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 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 cases. This result may be due to the fact that total grants distributed by *Regional* governments are much higher than those distributed by *Central* or *Upper-local* ones. Of course, it may also be due to a differing ability to control for other influences in each of the three cases. However, this result also holds in methods (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. In these two cases, the coefficient on 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), while the coefficient on *Single party + Leader* identifies the difference between coefficients (i.e., in the first column of Table 4, the alignment effect vis-à-vis the

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)**
Land area/Population	−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/ Population $(\times 10^{-3})$	−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 $(\times 10^{-2})$	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. (λ or $\lambda \times t$ dummies)	12.156**	12.489**	7.190**	9.778**	10.001**	8.918**
No obs.	896	896	755	1738	1738	1540

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 × 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.

Central government less the alignment effect vis-à-vis the *Regional* one). This second coefficient is negative in three regressions (i.e., the *Regional* government gives 11 and 7 euros more per capita to aligned municipalities than the *Central* government, and 10 and 7 euros more than the *Upper-local* one). The *Central* and *Upper-local* governments give the same amount of grants to aligned municipalities. This is to be expected, since the amount of resources at these two layers differs little. These results suggest that it is necessary to augment methods (iii) and (iv) using the full set of controls. The results without these controls are qualitatively similar (alignment coefficients are still positive and significant) but different in magnitude.

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–Upper-local	Upper-local–Central	Central–Regional	Regional–Upper-Local	Upper-local–Central
ΔSingle party + Leader alignment $(a+b)$	9.182 (1.823)*	18.247 (6.835)**	11.283 (5.159)**	5.095 (8.409)**	12.001 (7.287)**	5.668 (4.553)**
ΔMargin	−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/Population	−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/Population	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 $orl \times t$ dummies)	7.912**	7.340**	8.654**	7.657**	8.762**	8.449**
No obs.	896	896	755	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 × 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) ΔSingle party + Leader alignment $(a + b)$ identifies the effect of alignment on the grants 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-à-vis the Central government less the alignment effect vis-à-vis the Regional one).

Note that this procedure provides two sets of estimates of the effects of alignment. The first (and fourth) column of Table 4 (*Central–Regional*) provides estimates of β_1^C and β_1^R, the second (and fifth) column (*Regional–Upper Local*) provides estimates of β_1^R and β_1^U, and the third (and sixth) column (*Upper Local–Central*) provides estimates of β_1^R and β_1^C. It is interesting to note that the two estimates obtained for each grantor are fairly similar. For example, in the Grantor differences-in-differences case the two estimates of β_1^C are 9.182 and 8.344, those for β_1^R are 18.247 and 20.416, and those for β_1^U are 11.283 and 8.092. This similarity suggests that the approach of comparing grants coming from different upper levels governments seems reasonable.

Secondly, 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 least reliable, this means that the use of method (iv) *Triple differences* has some influence on the estimated magnitude of the alignment effect. However, even when using the estimates coming from this method, the alignment effect appears to be sizeable. The results show that a municipality aligned with *Central*, *Regional* and *Upper-local* grantors will receive additional grants of 5.1, 12 and 5.7 euros per capita, respectively. These amounts represent 31.9%, 24.9% and 25.02%, respectively, of the average per capita grants distributed by these layers of government.

To conclude this section, we comment on the results for the control variables. Firstly, when using 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 statistically significant only in the case of the *Central* government and when using method (i) *Cross-section*, which is the least 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 (22.9% of the average grants received from the *Central* government). The coefficient estimates for the other layers of government are lower, but are not discussed 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 layers of government. The inability to obtain significant negative effects for the margin variable is a little disappointing, but it is in accordance with the literature (see, e.g.; Khemani, 2003; Rodden and Wilkinson, 2004). There may be various reasons for this. Firstly, the perceived margin may have shifted since the previous election; more sophisticated methods of calculation (see, e.g., Dahlberg and Johansson, 2002) might solve this problem. Secondly, the theoretical model posited here may not be the only one 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 will allocate more resources to safe districts than to marginal ones, and more funds to marginal districts than to already lost ones. To account for this possibility, we reestimate our equations by including interactions between the margin variable with a set of dummies identifying safe and marginal municipalities. We define a 'safe' municipality as one with a positive margin greater than 15% (sample average+one standard deviation), a 'marginal' municipality as one with a margin (positive or negative) lower than 15% (in absolute value), and an 'already lost' municipality as 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 the best fit. The results (not reported but available upon request) confirm our expectations. For *Regional* and *Upper-local* governments, the margin has a negative slope only for 'already lost' municipalities, the slope is zero for 'marginal' municipalities, and it is positive for 'safe' municipalities, although the coefficients are imprecisely estimated. Thus, the grants-margin function seems to be asymmetric, with 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 aspect 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.

In addition, the results regarding the remaining control variables are also consistent with expectations. When using methods (i) and (ii), we find 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 a 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 obtains 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 debt 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. These coefficients identify the differences in the weight given by different grantors to each variable. For example, the results suggest that an *Upper-local* grantor gives more weight to

the fiscal capacity indicator than a *Regional* one, and that a *Regional* grantor gives more weight to that variable than a *Central* grantor.

3.4.2. 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 as those discussed before. The only two differences are that four alignment dummies appear instead of one, and that the results regarding the control variables are not shown so as 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 as before. In this case, all the coefficients are statistically significant at 95%, with 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 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 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 exceptions are the *Regional* case in method (ii) and the *Central* case in method (iii)).

Therefore, we can conclude that there is strong evidence that upper-layer governments allocate more grants when a municipality is aligned, in the sense that both layers are controlled by the same party and that this party is either the single party in government or the leader of a 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 in 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 as a percentage of the grants distributed by each grantor government. The results of this calculation show 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, respectively. 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 in grants of 34.0%, 31.0% and 33.1%. In any case, these results are in line with expectations: the alignment effect is stronger in single-party governments but it is also present in the other cases, with 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. Recalling that our *Upper-layer* partners include both pivotal parties and weaker partners, our estimates should be taken as 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.

We admit that, at first sight, these estimates of the alignment effect could seem very high. Note, however, that some of the papers which use a definition of alignment similar to ours (i.e., simultaneous control of the executive) also obtain sizeable results: Khemani (2003) obtains that transfers to Indian states can be 30% higher in the case of alignment, and Díaz-Cayeros et al. (2007) found that the PRI punished states controlled by opposition parties by giving them 42% less

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
ΔSingle 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)**
ΔLeader (*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)**
ΔMunicipal 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)*
ΔUpper-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*×*t* dummies)	11.781**	10.219**	7.549**	9.975**	10.219**	9.093**
No obs.	896	896	755	1,738	1,738	1,540

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

Table 6
Effects of alignment (*a* to *d*) on grants allocated to municipalities
Grantor differences-in-differences and Triple-differences estimation

	(iii) Grantor differences-in-differences			(iv) Triple differences		
	Central–Regional	Regional–Upper-Local	Upper-local–Central	Central–Regional	Regional–Upper-local	Upper-local–Central
ΔSingle 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)**
ΔLeader (*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)**
ΔMunicipal 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)
ΔUpper-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*×*t* dummies)	9.278	9.718**	8.765**	9.352**	9.933**	8.468**
No obs.	896	896	755	1738	1540	1540

Notes: (1) See Table 4; (2) same controls as in Table 3.

money[16]. Moreover, the consequences of this alignment effect are not always so extreme in Spain, since during the period analyzed, not all the municipalities were aligned/unaligned at the same time with all of the upper layers of government. So, if a municipality is aligned with the *Upper-layer* of local government but not with the *Regional* government, it will receive 40% more grants from the first but 40% less grants from the other and, at the end, it will receive a similar amount of resources from both layers together. This is a situation which is very different from that of India or Mexico, where the States only receive money from the federal government.

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 competition model between parties controlling different layers, which suggests that: (i) a given grantor government gives more monies to aligned municipalities, and (ii) a given municipality receives more monies from the grantor(s) with which it is aligned. These two propositions form the basis of the empirical procedures we have used to test the alignment hypothesis. Our database has provided 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 allowed us to use several alternative estimation procedures. The first proposition has been tested with a cross-section estimation for the average of the period. However, since three elections were held at each tier during this period, we have enough within-municipality variation in partisan alignment to provide differences-in-differences estimates of the effects of alignment on the amount of grants coming from each source; this is the procedure used to test the second proposition. In addition the availability of panel data has allowed us to use a triple-differences estimator, which consists of estimating the effects of changing alignment status on the change in grants coming from aligned grantors relative to the change in grants coming from 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 notable; in the single-party case, aligned municipalities receive over 40% more grants than 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 receive an overall amount of grants 40% higher than others. In other cases, however, alignment with one layer will offset unalignment with the other. Thus, we provide evidence that there are some political forces in the distribution of transfers among governments. These forces are related not only to electoral politics, but also to the politics of forming and sustaining a government.

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[16] It is difficult to compare the magnitude of the results for the other papers which found a positive effect of alignment, because they use different definitions of alignment (e.g., % of sub-national legislative seats controlled by the party holding office at the federal government).

These results pose new questions for the researcher. For instance, if voters are rational, they may choose at local elections to vote for the party in charge at the upper layer in order to avoid becoming unaligned, thus protecting grant monies. In this scenario, a party winning office at the general and regional elections (only when they are held prior to municipal ones) would see its vote share increase at the municipal elections. The testing of this hypothesis will form part of our future work.

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