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PARTISAN TARGETING OF INTER-GOVERNMENTAL TRANSFERS & STATE INTERFERENCE IN LOCAL ELECTIONS: EVIDENCE FROM SPAIN [*]

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ABSTRACT: We examine whether state-level incumbents discriminate in the allocation of transfers in favour of local governments controlled by co-partisans, and whether the electoral prospects of local incumbents improve when they are aligned with the state incumbent. Using a new database covering around 3,000 Spanish municipalities during the period 2000-07 and a Regression Discontinuity design, we document a very strong and robust effect: in close races, municipalities aligned with the regional government obtain on average 83% more per capita transfers and their incumbents gain 10% more votes at the local elections. We also show that the effect of alignment is stronger: (i) when regional and local elections are held on the same day, (ii) in regions with less competitive regional elections, and (ii) in regions with more budget resources.

JEL Codes: C2, D72

Keywords: Political parties, inter-governmental transfers, pork barrel politics

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1. Introduction

In recent decades, a number of countries have decentralized their provision of public services (see, e.g., Shah and Thompson, 2004). Such measures are recommended by scholars and international organizations alike as part of reform packages that can improve the efficiency and effectiveness of public service delivery (e.g, Brosio and Ahmad, 2009). A better matching of preferences (e.g., Oates, 1972) and increased accountability (e.g., Seabright, 1996) are the arguments often used to support this policy. Decentralization is typically recommended if these benefits can compensate for any inefficiency generated by spillovers and/or the limitations of economies of scale. However, whether decentralization can actually deliver these benefits is more controversial, with failure often being attributed to measures that are only 'partial' in nature, a term coined to refer to situations where the devolution of fiscal power is limited (e.g., Brueckner, 2009, and Devajaran *et al*., 2009). For instance, some authors claim that debt-related moral hazard problems can arise as a result of an excessive reliance on transfers (e.g., Rodden, 2002, and Weingast, 2009). Similarly, corruption is also said to be more prevalent with transfer-dependent sub-national governments, because of the diminished interest of voters in holding politicians accountable (e.g., Weingast, 2009, and Brollo *et al*., 2012). Moreover, according to Khemani (2010a and 2010b), 'partial' decentralization might reduce citizen's awareness of sub-national responsibilities thus fostering clientelism and rent-seeking.

Various authors also point to the problems created by higher layer partisan incumbents that discriminate between aligned and unaligned local governments when allocating transfers, to the point that they are even able to influence the results of sub-national elections (Diaz-Cayeros *et al*., 2006, and Scheiner, 2005). This interference in the workings of local elections can ultimately undermine one of the very benefits of decentralization, namely the improvement in politicians' accountability[1]. It is this specific issue that we focus our attention on in this paper. We examine whether the control of a higher layer of government by one party is beneficial for its co-partisans holding power at a lower layer. Specifically, our main goal is to determine whether Spanish regional governments (the so-called Autonomous Communities) allocate more transfers to aligned local governments – i.e., to municipalities in which the mayor is affiliated to the same party as that of the regional president. We focus on

[1] Some authors go further and suggest that the overall level of political competition in the country can be reduced if holding mayoralties helps the higher layer incumbent to become entrenched (see Scheiner, 2005). Other authors claim that the mere structure of local government might be endogenous to these practices, since incumbents might be reluctant to push for full decentralization if this fosters competition (see Khemani 2010b).

earmarked capital transfers, which are deemed to be the most discretionary of the transfers made in Spain. Additionally, we analyze whether partisan alignment has an effect on the votes obtained by a mayor at the local elections, and whether this effect is related to the larger amount of transfers allocated to aligned mayors. Finally, to shed some light on the mechanisms explaining these results, we study how these effects differs across municipalities depending on whether regional and local elections are held on the same day or not, the competitiveness of the regional election, or the amount of regional budgetary resources.

Our analysis is motivated by plenty of anecdotal evidence that suggests that the parties controlling higher layers of government allocate more resources to local governments run by co-partisans, and that inter-governmental transfers are an important means of achieving this goal. At least in Spain, our case of study, voters and politicians alike seem to believe this to be the case. A recent post in a Spanish blog is illustrative of this:

> "The other problem [with transfers] is the 'old-boy network' and the 'partisanship' of grantors. Nobody dares to meddle with this issue, for fear of being added to the black list, and so risk receiving less than is usually received, but the reality is that having a 'friend in the right place' and being a 'member of the party' weigh much more heavily than they should in the awarding of transfers." (http://blocs.mesvilaweb.cat/sbaulida)

Other informal evidence suggests that being aligned with a party controlling the higher layer might help a candidate to win more votes at the local elections, and that this might also be due to the higher amount of resources channelled to that municipality. Here is an example of how parties campaigned for votes at the last local elections held in Spain in 2011:

> "People should understand (when deciding their vote) that it is the PP (Partido Popular, the main right-wing party) who will be in control of the resources of the government of the Autonomous Community." (http://comarcalia.info/).

But can these examples be generalized or are they just a Spanish anomaly, anecdotes that emerge in the middle of a keenly contested electoral campaign? We argue that they are not merely anecdotal, and to demonstrate this we undertake a more systematic analysis, drawing on a new database of regional transfers to local governments and of voting patterns at local elections for around 3,000 Spanish municipalities for the period 2000 to 2007. Likewise, we do not believe this issue to be limited to Spain, and so our results should be informative for other countries. For instance, Scheiner (2005) describes cases of both developing (e.g. India, Brazil and Mexico) and developed countries (e.g. Japan, Austria and Italy) in which transfers

to local governments are politically manipulated in favour of co-partisans. However, only a few papers provide quantitative, empirical evidence of this effect. Using US data, Grossman (1994) finds that states aligned with the federal government do, in fact, receive more funds. Arulampalam *et al*. (2009) find that the effect of alignment in India is to increase transfers from central to state governments by up to 16%. Diaz-Cayeros *et al*. (2006), focusing on the Mexican case, find that under the PRI, the state governments controlled by this party received up to 40% more transfers than those controlled by the opposition. Solé-Ollé and Sorribas-Navarro (2008), and Brollo and Nannicini (2012), the only papers to examine grants to local governments, find an 'alignment effect' of between 30 and 40% for the cases of Brazil and Spain, respectively. A number of papers also examine the impact of alignment between layers of government on electoral outcomes[2]. There is evidence, for example, of the effects of the US presidential vote on state legislative elections (see, e.g. Campbell, 1986). Similar interactions are found for Argentina by Gélineau and Remmer (2006). In a comparative study of Argentina, Canada, Germany and the US, Rodden and Wibbels (2011) show that the interaction between federal and state or provincial elections becomes more apparent the more centralized the parties are. Bottom-up effects, from gubernatorial to national elections, are found by Samuels (2000) for Brazil.

Our paper contributes to these two lines of literature in several ways. First, our focus on regional-local interactions provides greater plausibility to the main line of reasoning used in explaining the alignment effect, i.e. the difficulties in assigning political credit to the different government layers. Note, for instance, that the spending responsibilities of these two layers of government tend to overlap to a greater extent than those of federal and state governments. Indeed, quite often the provision of basic infrastructure (the specific target of the transfers we study) is a joint task, shared by state and local governments. Second, by focusing on local elections we are able to present evidence not only of existing discrimination in transfer allocation but also of the influence of higher layer incumbents on the results of elections at lower layers. It is worth noting that no previous attempts have been made in the literature to analyze 'incumbency spillover' effects between regional and local elections. Third, the use of data from several regions allows us to exploit institutional and political differences across these areas, which might shed some light on the particular

[2]Most of the papers dealing with 'incumbency spillover' effects examine interactions between different elections at the same level of government. There is evidence of US Presidential and Gubernatorial effects on the elections for the federal and state legislatures, respectively (e.g. Campbell and Summers, 1990; Folke and Snyder, 2012). Similar effects are found in Europe by Hainmueller and Kern (2008) and Ade and Freier (2011).

mechanism at work. In this sense, we are able to examine whether the effect of alignment on transfers and votes depends on the availability of budget resources in the region, the timing of regional and local elections, and the competitiveness of regional elections.

Fourth, we are aware that alignment status might well be correlated with party popularity and so we use a Regression Discontinuity Design (RDD) in our analyses, thus focusing on candidates that barely won or lost a majority of seats at the local elections. Several recent papers in the 'incumbency advantage' literature use RDD as their main identification strategy (e.g., Lee, 2008; Lee *et al.*, 2004; Hainmueller and Kern, 2008; Brockman, 2009; Folke, 2010; Folke and Snyder, 2012; Trounstine, 2011, and Ade and Freier, 2011). More closely in line with our concerns, Brollo and Nannicini (2012) use this procedure to study the effect of alignment on transfers in Brazil. However, the use of the traditional 'close elections' RDD, where the threshold is located at 50% of the vote, is problematic in our case, for two reasons. Firstly, local councils in Spain are elected using a proportional electoral rule, the d'Hondt rule, which generates many possible thresholds at which an additional vote can result in a party gaining one more seat, and none of these thresholds is necessarily located at 50% of the vote. To deal with this problem, we use as our forcing variable the share of votes that the regional incumbent's bloc has to lose (win) in the local elections in order to lose (gain) the majority of seats on the local council. Secondly, in a large proportion of municipalities, no party has more than 50% of the seats, which means that in many cases the mayor is elected on the formation of a coalition of parties. In this paper, we document that usually these coalitions are formed along ideological lines. This means that the discontinuity in the treatment probability is lower than one, and, as such, requires the use of a 'fuzzy' RDD (Van der Klauw, 2002; Lee and Lemieux, 2010). This method consists basically in instrumenting the alignment status with a dummy equal to one if, at the local elections, the ideological bloc of the incumbent grantor obtains more seats than those won by the opposition bloc. This also constitutes a contribution of this paper to the RDD literature. Earlier papers have developed an RDD for proportional elections (see Folke, 2010, and Ade and Freier, 2011), and we use these as a benchmark for our study.

Using the aforementioned 'fuzzy' RDD, we find a highly marked effect of partisan alignment between regional and local governments on the allocation of regional transfers to local governments. Local governments controlled by the same party as the regional government receive 83% more funds for earmarked capital transfers than is the case of similar unaligned municipalities. This effect is more than twice that estimated by OLS or 'difference-in-differences'. Moreover, mayors belonging to the same party as the regional

president receive around 10% more votes at the local elections. These effects are more marked when regional and local elections are held on the same day. We also find that these effects are stronger in regions with less competitive regional elections, and with more budget resources. This last finding suggests that the effect of alignment on votes works, at least partly, through the allocation of transfers.

The paper is organized as follows. The next section reviews the theoretical arguments that explain why alignment between incumbents at different layers of government might have an effect on the allocation of transfers. Section three provides the background information on Spain (i.e. local governments, transfers, and local politics) needed to set the stage for the subsequent analysis. Section four describes the econometrics and the data. Section five presents the results. The last section concludes.

2. Theoretical discussion

In this section, we review the main theories that predict an alignment effect (i.e., that municipalities controlled by the same party as that to which the regional president belongs will receive larger transfers from this layer of government). We briefly summarize the main theories of targeted public spending, then discuss how predictions may vary in the case of inter-governmental transfers (as opposed to the incumbent's direct spending), and consider whether the outcomes in local vs. regional elections matter to the higher layer incumbent, and whether the timing of the two elections is also important.

Swing voters, core voters, and *pivotal districts.* Extant models of distributive politics offer several explanations as to the ways in which public spending policies might target different groups of voters. First, higher layer incumbents might seek to enhance their probabilities of being re-elected by allocating more resources to constituencies with many *swing voters* (Lindbeck and Weibull, 1987; Dixit and Londregan, 1996), on the understanding that their low party allegiance might make it easier to buy their votes. Secondly, politicians may choose to allocate transfers to places in which their parties' *core voters* concentrate. There are several rationales that might account for this behavior. Risk-averse incumbents, for example, might prefer the lower degree of vote variability among core voters to the only potentially higher average vote return in swing districts (Cox and McCubbins, 1986). Additionally, the vote returns of a core-voter strategy might be higher if incumbents have a better understanding of the specific needs of their core supporters (Cox, 2009) or if transfers to these places are effective in boosting turnout (Ansolabehere and

Snyder, 2006)[3]. Thirdly, when there are many electoral districts and the purpose is to secure a majority of seats, the strategy might be to allocate more resources to *pivotal districts*, i.e., those in which the incumbent won/lost by a narrow margin (Snyder, 1989; Case, 2001)[4].

Transfers and alignment. However, none of the above approaches is able to capture one of the fundamental traits of intergovernmental transfers. Contrary to other targeted spending programs, which are implemented directly by the incumbent, intergovernmental transfers are decided by the higher layer grantor government but executed by the sub-national recipient government. This is especially true in the case of earmarked capital transfers, which are the focus of this paper. In this case, the grantor selects the projects based on its own priorities and partly funds them, but it is the local government that must propose specific projects for funding and who has to contribute local funds to them and take responsibility for their execution. This overlapping of responsibilities means that the grantor cannot expect to reap all the political benefits from the tactical allocation of these transfers, since some share in the benefits must seep back to the local government. This should not represent an impediment for the higher layer grantor if the local government is controlled by the same party as the upper layer grantor (i.e., both layers are *aligned*). However, if the local government is controlled by the opposition, such transfers might not be that effective in improving the electoral prospects of the higher layer incumbent.

At least two different explanations might be invoked to explain this seepage of electoral benefits across layers of government. Firstly, voters might split the political credit derived from the provision of the infrastructure between layers of government (Arulampalam *et al*., 2009). When credit is attributed to the grantor government, the party in control at this layer can reap all the electoral benefits. If credit is divided equally between all layers, no one party can obtain an advantage from the additional transfers allocated to a municipality. When the strategy of the incumbent is to target swing voters, the division of political credit between layers means that a larger proportion of transfers will be allocated to aligned governments with larger numbers of swing voters (Arulampalam *et al.,* 2009; Solé-Ollé and Sorribas-Navarro, 2008). The bold and dotted lines in Panels (a) and (b) in Figure 1 plot a hypothetical (and over-simplified) linear relationship between the electoral vote margin of the higher layer

[3]To date the empirical evidence is not conclusive as to which of these two hypotheses is most pertinent, some papers supporting the *swing voter* hypothesis (Case, 2001; Johansson, 2003; Dhalberg and Johansson, 2002) and others the *core-voter* one (Ansolabehere and Snyder, 2006).

[4] The empirical counterparts of the *pivotal district* and of the *swing voter* hypotheses are similar, since the proportion of swing voters is often proxied by the incumbent's vote margin (Johansson, 2003; Case, 2001).

incumbent and the transfers allocated to the municipalities under this hypothesis. The graph implicitly assumes that there are more swing voters in municipalities with a narrow margin of victory[5]. If the municipality is aligned with the higher layer incumbent (a situation that occurs when the vote margin of the regional incumbent is positive) and voters split credit between the two layers, the amount of transfers received will be higher, as indicated by the jump or discontinuity in the relationship between transfers and vote margin. This jump vanishes when voters are able to assign all the credit to the higher layer of government.

Secondly, it is conceivable that partisan alignment between layers of government might also confer some benefit on the higher layer incumbent enabling him to reach his core supporters. The mayor might be particularly adept at identifying who the party's core supporters are at the local level and what their specific needs are. Thus, controlling the mayoralty would ensure that the initial goals of the projects funded by the higher layer of government do not become distorted. Such a scenario suggests that the alignment effect might also interact with the core voter strategy. The bold and dashed lines in Panel (a) of Figure 1 show the shape of a hypothetical relationship between the incumbent's vote margin and transfers under this hypothesis. In this case, we assume that transfers grow with votes at both sides of the zero-margin threshold. As in the swing-voter case, alignment makes the amount of transfers jump at the threshold. Of course, the alignment effect vanishes if the grantor is able to monitor the use of transfers fully without the help of the mayor.

[Figure 1]

Regional vs local elections. These two justifications of the interaction between the alignment status and the incumbent's vote margin at the higher layer rely implicitly on the assumption that incumbents aim to maximize their probability of being re-elected at the next higher-level elections. Arulampalam *et al*. (2009) explicitly acknowledge this fact. The only paper that suggests that the incumbent's strategy might, in fact, be focused on winning local elections is Brollo and Nannicini's (2012). This paper argues that in Brazil the best strategy for the federal president prior to the local elections is to aim to win as many mayoralties as he can, since mayors are influential opinion leaders in their communities and by engaging in campaigning and rent-seeking activities on the president's behalf can help win more votes for the president at the higher layer elections.

[5] As discussed by Johansson (2003), this will be true if the distribution of ideological preferences in support of the incumbent (and, hence, against the opposition) is symmetric and single-peaked. Dahlberg and Johansson (2002) present results that suggest that the departure from these assumptions is not dramatic in practice.

In line with this hypothesis, to use the resources at his disposal efficiently, the higher layer incumbent should focus his attention on aligned *pivotal municipalities*, i.e., those in which the mayoralties were won by the narrowest margins. This strategy would target more funds for these municipalities (compared to aligned municipalities won by a larger margin) and punish unaligned pivotal municipalities, which would receive less money than aligned ones with a similar vote margin as well as less money than unaligned municipalities that the higher layer incumbent lost by a greater margin. The dashed and bold lines in Panel (b) of Figure 1 illustrate this idea. Brollo and Nannicini (2012) find mixed evidence in favor of this tactic, which they refer to as 'tying your enemy's hands in close races'.

Concurrent vs. alternating elections. Brollo and Nannicini (2012) focus on the case of Brazil, where local elections are held in the middle of the federal term-of-office. As we explain below, in Spain regional and local elections are concurrent in some regions and alternating in others. This distinction allows us to compare the strength of the alignment effect in both cases. The simultaneous occurrence of the elections may either reduce or increase the alignment effect. On the one hand, it might shift the attention of voters towards the issues that are most relevant at the regional level, thus limiting the tactical use of transfers to localities. Likewise, if the alignment effect only occurs when the strategy focuses on capturing mayoralties, then the urgency of winning the next regional election (typical of concurrent elections) might attenuate the alignment effect. Before regional elections, the regional incumbent might choose to focus on his core voters and if he is able to monitor the use of resources without the help of mayors, this will generate a core-voter type profile but without any discrimination in favor of the aligned mayors. On the other hand, the simultaneous holding of regional and local elections may increase the salience of local issues during the campaign for the regional elections. For example, in concurrent elections, regional candidates may well be obliged to speak about local infrastructure during campaign visits to municipalities. Similarly, even if transfers do not matter directly for regional elections, they might matter indirectly though their effect on the local elections, and the simultaneous occurrence of both elections could thus generate a 'bandwagon effect', with the impact on the vote of the local incumbent being transferred to some extent to the vote of the aligned regional incumbent. Finally, note that even in concurrent elections, the strategy of capturing mayoralties might make sense if the regional elections are not competitive. Intuitively, if the regional incumbent feels safe, there would be less need to try to increase the total number of votes. Instead, it might be worthwhile pursuing a longer-term strategy, i.e., winning

additional mayoralties. This would allow more perks to be distributed to party supporters and might prove helpful at future regional elections.

3. Background information on Spain

3.1 Spanish municipalities

Spanish government comprises three layers: central, regional, and local tiers. There are seventeen regional governments, the so-called Autonomous Communities (ACs), which have fairly wide-ranging spending responsibilities including, for example, the provision of health care, education and welfare. Spain's local layer consists of over eight thousand municipalities, most of which are relatively small. These municipalities are multipurpose 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 the responsibility of the regional government. Current spending is financed out of the municipalities' own revenues (approximately two thirds) and unconditional grants (approximately a third). The latter are allocated according to a formula, which hinders their use for pork-barrel politics. However, the funding of capital spending is heavily dependent on grants: in 2008, capital grants, on average, represented 38% of capital spending. Most Spanish municipalities do not have the capacity to fund necessary investments from other sources: their tax bases are quite limited, extraordinary resources from asset sales are not always available, and some municipalities may even have problems to access credit.

Capital grants are transferred primarily from the regional layer (64%) and take the form of 'project grants'[6]: there is an open call at regular intervals (usually yearly) and a municipality can apply by submitting its infrastructure projects (e.g., street and road paving, sewage systems and water pipes, parks and recreations, educational and sports facilities, etc.). These are evaluated according to previously established criteria (typically published in the call), which are subject to the interpretation of the grantor. Provisions are usually made for funding emergency situations or projects considered a priority concern by the regional government. The call often does not specify clearly the weight attached to each of the criteria or it fails to specify the link between the score assigned to each criterion and an objective variable, leaving this very much at the discretion of the grantor.

3.2 Local politics in Spain

[6] A 19% comes from upper-local governments and the rest from the central government or the European Union.

Local elections are held every four years on the same day throughout all the Spanish municipalities. Voters choose between several closed party lists. The electoral system is a proportional one, votes being allocated to seats using the d'Hondt rule with a threshold. The mayor is subsequently elected by a majority of the council (see Colomer, 1995). The council operates as a small representative democracy, and has to reach a majority vote to pass the initiatives and regulations proposed by the mayor, who acts as the agenda-setter. The discipline enforced by Spain's political parties means that the chances of amending the mayor's proposals are quite low when the mayor's party or coalition controls a majority of the seats. The proportion of coalition governments is high (around 30% during the terms we analyze), and most are formed along ideological lines. There are, however, exceptions to this rule due, for example, to the fact that the platforms of many local parties are based solely on local issues and so they are under less compulsion to reach an agreement on ideological grounds or because of pressure form higher party ranks. Nevertheless, the influence of the party on the behaviour of local politicians is substantial, the local political system being seen as a first step to subsequent promotion at the regional and national levels.

Elections to the regional parliament are also held every four years and on the same day than the local elections in thirteen out of the seventeen regions. We refer to these polls as *Concurrent* elections. In the remaining four regions (i.e., Galicia, Catalonia, Basque Country, and Andalusia), regional elections are held mid-term in relation the local governments' term of office. We refer to these polls as *Alternating* elections. Voters also choose between several party lists, and the electoral system is also based on the d'Hondt rule with a threshold. Representatives elect the regional president who, in turn, decides the composition of the Cabinet. Here, also, around a third of the administrations are coalition or minority governments.

4. Empirical design

4.1. The 'fuzzy' RDD

Papers using observational approaches to estimate the effect of party ideology on votes and policy outcomes may suffer from an omitted variables problem: party control can be correlated with the incumbent's popularity and this, in turn, might have an impact on the outcome variable. To deal with this problem some papers have recently adopted the 'close-race' Regression Discontinuity Design (RDD) framework (see Lee, 2008; Lee *et al*., 2004; Pettersson-Lidbom, 2008; Ferreira and Gyourko, 2009; Albouy, 2010, Folke, 2010, Trounstine, 2011, and Gerber and Hopkins, 2011). The reasoning behind this method is that

elections won by a narrow margin are in practice very similar events to elections lost by a similar narrow margin. Thus, by focusing on close races, the RDD generates quasi-experimental estimates of the effects of interest (see Hahn *et al*, 2001). In a recent survey, Green *et al.* (2009) show that RDDs are comparable in accuracy to experimental studies.

As mentioned, Brollo and Nannicini (2012) use this approach to estimate the effect of partisan alignment on the allocation of federal transfers to local governments in Brazil. In this case, the treatment variable is defined as a dummy indicating whether the party of the federal President (or the coalition that supports him) won the local election. The authors restrict the analysis to two- and three-candidate races so as to avoid problems generated by the fact that Brazil is a highly fragmented, multi-party system without any stable party coalitions. In any case, the plurality rule used in Brazilian elections allows the authors to apply the traditional 'close-elections' RDD. This is not an option in our case, since local councils are elected in Spain using a proportional electoral rule. This rule generates many thresholds at which an additional vote brings one more seat to a party, and these are not necessarily located at the 50% vote threshold. To deal with this problem, we proceed in two steps. First, we compute our forcing variable as the share of votes that the ideological bloc (i.e., left or right) of the regional incumbent has to lose (win) to lose (gain) the majority of seats in the local council (and, thus, change its alignment status), henceforth referred to as the vote margin. The calculation of this vote margin is not trivial and has required the development of a specific procedure based on the d'Hondt rule. We provide more details on this method in section 4.4 and in Annex A.

Second, we show that if the ideological bloc of the regional incumbent has a majority of seats in the local council it is more probable (although not certain) that this bloc also holds the mayoralty, which means that the two layers of government are aligned. This reflects the fact, discussed above, that, more often than not, coalitions are formed along ideological lines. This means a 'fuzzy' RDD has to be used (Van der Klauw, 2002; Lee and Lemieux, 2010), since this allows the treatment (i.e., alignment) to be determined only partly by whether the assignment variable (i.e. the vote margin) crosses a cut-off point (from negative to positive). While in the 'sharp' RDD the probability of treatment jumps from 0 to 1 when the assignment variable crosses a threshold, the 'fuzzy' RDD involves a smaller jump in this probability. Since the probability of treatment jumps by less than one at the threshold, the discontinuity in the outcome variable (that is, votes or transfers) at this point can no longer be interpreted as an average treatment effect. However, the treatment effect can be recovered either by dividing the jump in the outcome variable by the jump in the probability of

treatment or by estimating the effect of alignment on the outcome by 2SLS, using the threshold dummy as an instrument for alignment.

4.2. Equation specification

In our case, we use the following three-equation model:

$$t_i = \alpha\, a_i + g(m_i) + \varepsilon_i \quad (1)$$

$$v_i = \beta\, a_i + f(m_i) + u_i \quad (2)$$

$$a_i = \gamma\, d_i + h(m_i) + \upsilon_i \quad (3)$$

where t_i=per capita transfers received by the local government before the local election; a_i=1 if there is alignment between the regional and the local government and zero otherwise; m_i= regional incumbent's vote margin at the previous local elections; v_i= vote share of the local incumbent at the local elections; d_i=1 if the regional incumbent's vote margin is positive (i.e. d_i=1 if m_i>0); the terms $f(m_i)$, $g(m_i)$ and $h(m_i)$, include polynomial terms of orders one or higher, fitted separately at either side of the threshold (see Lee et al., 2004; Lee, 2008, and Lee and Lemieux, 2010). The first equation is used to estimate the effect of alignment on transfers. The second estimates the effect of partisan alignment on the local incumbent's vote. The third describes the discontinuity in alignment that we then use to identify the effects of interest. Substituting (3) into (1) and (2) we obtain the reduced form equations:

$$t_i = \varphi_1\, d_i + k(m_i) + \omega_i \quad (4)$$

$$v_i = \phi_1\, d_i + j(m_i) + \nu_i \quad (5)$$

where $\varphi=\alpha\gamma$ and $\phi=\beta\gamma$ are the 'intent-to-treat' estimates, which are equal to the product of the effects of alignment on votes and on the discontinuity. The estimation of equations (3), (4) and (5) allows us to recover the effect of alignment on votes and transfers as $\hat{\alpha} = \hat{\varphi} / \hat{\gamma}$ and $\hat{\beta} = \hat{\phi} / \hat{\gamma}$. We could also estimate (1) and (2) by 2SLS, using d_i as an instrument for a_i. Both procedures should deliver the same estimate as long as the order of the polynomials $h(m_i)$ and $j(m_i)$ or $k(m_i)$ is the same. The estimates obtained can be interpreted as a weighted Local Average Treatment Effect (LATE), where the weights reflect the ex-ante likelihood of being near the threshold (see Lee and Lemieux, 2010). The specification in (2) and (3) can easily be modified to analyze possible heterogeneous effects. Being z a dummy variable defining two non-overlapping groups of municipalities, we have:

$$t_i = \eta_1\, d_i + \eta_2 d_i \times z_i + \eta_3 z_i + k(m_i) + p(m_i \times z_i) + \varsigma_i \quad (6)$$

$$v_i = \lambda_1 d_i + \lambda_2 d_i \times z_i + \lambda_3 \times z_i + j(m_i) + l(m_i \times z_i) + \varpi_i \quad (7)$$

To deal with the possible correlation of this dummy with other traits that differ across subsamples we introduce the interactions between alignment and several of the variables that can affect differ across municipalities and the discontinuity dummy and the polynomial at the same time. Thus, the interpretation of the differential effect of alignment across subsamples relies on an identification strategy based on controlling for observables. Furthermore, in order to shed further light on the possible mechanisms behind the alignment effect we can examine the shape of the polynomial at either side of the threshold, comparing these results with the predictions derived from the different theories surveyed in section two. We are, however, also well aware that the shape of the polynomial has no causal interpretation in an RDD. To attenuate this problem, we discuss the shape of the polynomial only after the inclusion of a set of controls. The graphs used for this purpose plot the residual of the dependent variable (either transfers or vote share) against the forcing variable. This means that in this case too our identification strategy relies on our controlling for observables and that the conclusions reached are not as reliable as those derived from the main RDD estimates.

4.3. Econometrics

In implementing the RDD we have taken various methodological decisions. First, as shown above, our main estimation method uses all the observations while controlling for a flexible polynomial. Following Lee and Lemieux (2010), we explicitly test for the optimal order of the polynomial with the Akaike information criteria. This procedure allows us to retain the entire sample when estimating the heterogeneous effects. A possible drawback of this method is that our results might be sensitive to outcome values for observations far away from the threshold (see Imbens and Lemieux, 2008). To cope with this problem we also provide additional results obtained by restricting the bandwidths to 25% and 12.5%. The reason for this choice is that the optimal bandwidth size (Imbens and Kalyanaraman, 2009), is very close to 25% both for transfers (26.3%) and for votes (23.8%). Thus, in line with Lee and Lemieux (2010), we present our results with optimal and half optimal bandwidths.

Second, in order to show the need for using a 'fuzzy' RDD, we verify the discontinuity in the treatment probability. To verify that there is a substantial discontinuity is tantamount to having a strong first-stage relationship in an IV design. Third, we also check the continuity of the forcing variable around the threshold by inspecting the histogram and using a more formal test (see McCrary, 2008). The continuity test provides a means for discarding the

manipulation of the forcing variable, an issue raised in various papers (see, e.g., Caughey and Sekon, 2011). For this same purpose, we also test for the continuity of some pre-determined covariates. Finally, we also provide some results using a set of control variables (see next section), in order to provide an additional validation check for our estimates (coefficients should not change greatly) and to improve the precision of our estimates. Furthermore, the use of covariates helps in the interpretation of the shape of the polynomials, since, as already mentioned, they have no causal interpretation in an RDD analysis.

4.4 Sample and data.

Sample. We estimate the effects of partisan alignment between local and regional governments on transfers from the regional to the local level and on the votes cast for the local incumbent using data on Spanish municipalities. We use two cross-sections of data, for the terms 2000-03 and 2004-07, with around 3,000 municipalities in each. The sample is determined by data on transfers taken from a survey on budget outlays conducted yearly by the Spanish Ministry of Economics. This database includes all the municipalities with more than 5,000 residents and a representative sample of the smaller ones[7].

Transfers. The main results we report are for the estimation of the alignment effects on capital transfers allocated to local governments in the two years preceding the next local election. As explained in section two, given the characteristics of these transfers, we expect them to matter more in the period running up to local elections. This distinction, however, is irrelevant for twelve out of the fifteen regions (i.e., those with *Concurrent* elections), as regional and local elections are held on the same day. It is true, however, than even if local elections matter most, the effect of alignment might differ in those regions with *Alternating* regional and local elections (see section two for a discussion) and this is why we also present our results for each of the samples. Although not included here for motives of space, we will also discuss the results obtained when analyzing the effects of alignment on transfers two year before the regional elections (in the case of *Alternating elections*) and during the first half of the term (in the case of *Concurrent elections*).

In any of these cases, the two-year aggregation helps in reducing the volatility of the variable and the use of yearly information will not provide any statistical advantage, since the alignment status does not change between years within these two year periods. As we

[7] Due to problems in accessing the data, the analysis is restricted to fifteen regions, excluding the Basque Country and Navarre. These are quite small regions and their exclusion should not represent a big problem.

explained above, we focus on capital grants originating from the regional government because of a presumably higher discretionarity in their allocation. However, to confirm this intuition we also present results for the effect of alignment on current grants and on grants originating from other layers of government (Central and Upper-Local).

Votes. The second outcome variable we analyze is the mayor's vote share in the 2003 and 2007 local elections. Our results using the coalition's vote share and the probability of mayoral re-election are similar and not reported here for the sake of brevity. Votes by party at the local elections of 1999 and 2003 are used to construct the forcing variable and the discontinuity instrument. See Table A.1 in Annex A for the source of the vote results.

Alignment. As explained above, alignment is measured as a dummy equal to one when the mayor and the regional president belong to the same party, regardless of whether the government at both layers is a single party or a coalition[8]. See Table A.1 for the sources of these variables. As robustness checks, we have also checked whether the results are affected by the use of more comprehensive alignment definitions: situations where one party, even if it is not the main one, is present at both layers, and situations where the mayor and the regional president simply belong to the same ideological bloc and not only to the same party.

Forcing variable. As explained above, our main forcing variable is the *Regional incumbent's bloc vote margin*, computed as the votes needed for the ideological bloc of the regional incumbent to gain/lose the majority of seats in the local council, expressed as a percentage of total votes cast at the local elections. To define ideological blocs we classify all the parties standing at the local elections in three groups: *left*, *right* and *local parties* (see Table A.1 for more details). When the regional party is a left/right political party, all the categories except left/right are included in the regional opposition's bloc. As a robustness check, we also provide results after excluding those municipalities with representation of *local parties* from the analysis. The results obtained do not depend on the specific treatment of these parties.

To compute the votes needed to bring about a change in the majority of seats from one bloc to another, we use a very similar method to that developed by Folke (2010). He provides an algebraic formulation for this distance under the Saint-League system, the one in operation in Sweden (his country of study). With this formulation he is able to compute the number of votes that each party needs to win (or lose) an additional seat. We develop a similar algebraic formulation for the d'Hondt system used in Spanish local elections. What

[8] The concrete definition of alignment used determines the size of the sample, since we exclude the observations not included on the treatment or the control group.

we compute is the number of votes that the ideological bloc to which the regional president belongs must lose (gain) to lose (win) a majority of seats at the local elections. In order to do this, we make a number of assumptions regarding vote migration. We consider that the marginal votes lost (won): i) go (come) to (from) the abstention, or ii) partly to (from) the abstention and the other ideological bloc. We also assume that these votes are distributed among the parties of the bloc in line with their initial vote share in the bloc. The main results of the paper use the vote margin computed under assumption i)[9]. Intuitively, in this case, our formulation works as if we were subtracting small numbers of votes from the mayor's bloc, distributing them among the parties according to their vote share within the bloc, while keeping the number of votes for the parties of the other bloc constant. As we subtract votes, seats shift from one bloc to the other. The procedure stops when we observe a shift in the seat majority from one bloc to the other. The number of votes needed to reach this point divided by the total number of votes initially cast at the election is our measure of vote margin. See Box A.1 in Annex A for the algebraic formulation used to compute the vote margin[10].

Control variables. In order to provide a further check on the reliability of the RDD results and to improve the efficiency of our estimates, we also present results when controlling for several covariates. In the case of the transfer equation, we control for log(population), land area per capita, property tax rate, assessed value of the property, debt burden, and Regional dummies × term effects (see also Solé-Ollé and Sorribas-Navarro, 2008). In the vote share equation, we control for party of the mayor × term effects, Regional dummies × term effects, incumbent's historical vote share, historical turnout at local elections, local coalition dummy, local first-term dummy, and population size dummies.

5. Results

5.1. Exploring the discontinuity

Panel (a) in Figure 2 plots the seat margin of the regional incumbent's bloc at the local elections against its alignment status which is given a value of one if the mayor and the regional president belong to the same party. The graph shows a considerable jump when the ideological bloc of the regional incumbent moves from -1 seat to +1 seat (i.e., when it requires one additional seat to gain/lose a majority of seats).

[9] As a robustness check we have also examined whether the computation of the vote margin under assumption (ii) does change the results.

[10] In Annex B (not for publication) we also provide a numerical example which illustrates how this method works in practice.

Although it might seem appropriate to perform the analysis by comparing the average value of transfers or votes for the municipalities located at the -1 and +1 values of the seats margin, this would not be correct, since this is quite a large group with considerable internal variability in the popularity of the regional incumbent. For this reason, we use the vote margin as the forcing variable, computed as the percentage of votes needed for the regional incumbent's bloc to win/lose a majority of seats in the city council. Panel (b) in Figure 2 shows the plot between this forcing variable and the alignment status. The dots represent averages of the alignment dummy over 5% bins. The size of the bin has been selected using the 'bin test' proposed by Lee and Lemieux (2010). The black line is the flexible polynomial fitted separately on both sides of the threshold. From the figure it is evident that there is a sizeable jump in the probability of alignment when moving from -1 to +1 seats.

[Figure 2]

Table 1 shows the results obtained when estimating the discontinuity with different bandwidths: 100% with polynomials of orders 1 to 3, and 25% and 12.5% with a *local linear regression*. In the full sample case, the Akaike information criterion suggests that it is optimal to fit a 2nd order polynomial. In this case, the estimated value of the discontinuity is 85%. The results do not change much when other polynomial orders are used or when the bandwidth is restricted.

[Table 1]

A possible concern with the RDD is the possibility that the forcing variable might be manipulated. This could occur, for example, if the electoral results have been manipulated or, in the case of multi-party governments, if the vote of the last representative needed to form a winning coalition has been bought. We deal with this last problem by using local votes for the ideological bloc of the regional incumbent as opposed to votes obtained by the actual coalition that supports the mayor. A way of verifying that the forcing variable has not been manipulated is to examine its histogram or, more formally, to test for the continuity of this variable at the cut-off by running local linear regressions of the log of the density separately on both sides of zero (see McCrary, 2008). We have performed both checks, and we have not found any evidence of manipulation. Another validity check consists on testing for the presence of a discontinuity in the pre-determined covariates. The results of this exercise also suggest that none of these variables is discontinuous around the threshold[11].

[11] All these results are reported in Annex B (not for publication), Table B.1 and Figures B.1 and B.2..

5.2. Partisan alignment and transfers

Figure 3 shows the plots between the forcing variable and both the amount of capital transfers and of residual transfers (i.e., the residual of a regression between transfers and control variables). The graphs suggest that there is a clear discontinuity: municipalities marginally on the right of the cut-off (those which are very likely to be aligned) do receive much greater sums in transfers than those marginally on the left (those which are very likely to be unaligned). The result is a little bit clearer in the when using residual transfers. This shape suggests that the strategy used by regional governments revolves around trying to influence close local races in places where the mayor is a co-partisan.

[Table 2 & Figure 3]

Table 2 presents the RDD estimates. Panel (a) shows the *Reduced form* estimates while Panel (b) reports the 2SLS results. Columns (i) to (iii) show the results with the full sample and with polynomials of orders 1 to 3. The polynomial of order 2 is the optimal one (according to the AIC criterion). Column (iv) repeats the results using the optimal polynomial but introducing the control variables in the equation. Columns (v) to (viii) present the results with the 25% and 12.5% bandwidths, using a *local linear regression* and without (v and vii) and with control variables (vi and viii). The estimates are quite robust to the choice of bandwidth and polynomial order and to the introduction of covariates. The *reduced form* coefficients are around 80 euro and those of the 2SLS are around 92 euro. This amount has to be compared with the transfers received by unaligned municipalities just at the left of the cut-off, which are around 107 euro. With these numbers, an aligned municipality would receive 83% more per capita transfers than a similar unaligned one.

5.3. Partisan alignment and votes

Figure 4 shows the plot between the forcing variable and the mayor's share of the vote. The graph suggests that there is a discontinuity in the vote share: local incumbents marginally to the right of the cut-off do receive more votes than those marginally to the left. The shape of the plot is as expected: to the right of the cut-off the local incumbent's vote share is positively correlated with that of the regional incumbent's ideological vote share; to the left of the cut-off, both variables are negatively correlated.

[Table 3 & Figure 4]

Table 3 presents the RDD estimates. Here, also, the results are quite stable across specifications. The reduced form coefficients are statistically significant at the 99% level in all cases and identify a discontinuity between 3.8% and 4.4%. The 2SLS results suggest that

the average treatment effect is higher, between 4.3% and 5.8%. These are sizeable effects, especially if we take into account that a mayor's vote share at the left of the cut-off is just 42.7%, meaning that an aligned mayor will receive 10.07% (=4.3% over 42.7%) more votes than a similar unaligned mayor. Additional results (not shown here) suggest that the effects on the votes for the whole coalition are a little lower, implying that the mayor's party is the one that benefits most from alignment with the regional government.

5.4. OLS and 'difference-in-differences'

The estimated effect of alignment on capital transfers (83%) is twice as great as the effect estimated by Solé-Ollé and Sorribas-Navarro (2008) using 'difference-in-differences'. This differential is striking, given that both studies draw on very similar data. Comparison of the respective results, however, is difficult, since the samples and periods are different. To determine the causes of this discrepancy, we have also estimated the alignment effect on transfers by OLS and 'difference-in-differences' (i.e., including municipality fixed effects) in our sample, controlling in both cases for the full set of control variables. The results, shown in Table 4, imply that aligned municipalities receive 52% more grants than unaligned municipalities. This is higher than the 40% reported by Solé-Ollé and Sorribas-Navarro (2008), but still much lower than our RDD estimates.

5.5. Other transfers.

We have also estimated the effect of being aligned with other layers of government (Upper-local government, and Central government) on the amount of capital transfers allocated by these layers to municipalities. The reason we do not focus on these transfers from the outset is the smaller quantities involved. The results are shown in Table 5 and suggest that municipalities aligned with Upper-local governments receive around 60% more transfers than those unaligned. The effect on capital transfers allocated by the central government is much lower, around a 27% increase, and is not statistically significant. A possible explanation for this result might be the fact that it is quite difficult for central government to discriminate in its allocation of resources given the high number of Spanish municipalities (around 8,000) and the consequent lack of specific knowledge about the local political situation of each. Thus, it might be the task of intermediate governments (regional and upper-local) to help channel the monies of central government to the most politically sensitive places (see also Castells and Solé-Ollé, 2005, and Solé-Ollé, 2012).

We have also estimated the alignment effects on the current transfers allocated by each of the three upper layers of government. In each case the alignment effect is not statistically significant. This is as expected, since most current transfers to Spanish municipalities are formula-based and, as such, are much more difficult to manipulate than earmarked transfers for capital projects. Overall, our results identify the instruments and governments that are most prone to being affected by political tactics in Spain: capital transfers and intermediate governments, mainly regions and, to a lesser extent, also Upper-local governments.

5.6. Robustness checks.

The results are robust to many changes in some key aspects of the methodology. We briefly discuss the main conclusions of this analysis[12]. First, the results are very similar when using two other (more comprehensive) measures of alignment: (i) including all the cases in which the main party at one layer (the one holding the mayoralty or the regional presidency) is a mere partner in the coalition at the other layer, and (ii) including includes cases in which the two layers are considered to be aligned if the mayor's party belongs to the same ideological bloc than the party of the regional president, but it is not necessarily the same party. Second, the results are also robust to the exclusion of the municipalities in which local parties are represented in local councils, and to using only the municipalities in which the two main parties obtain more than 80% of the vote. Finally, the results are more or less the same when using an alternative measure of vote margin, computed on the assumption that votes are transferred not solely from abstention but also from the opposition bloc.

5.7. Heterogeneous effects

Concurrent vs. Alternating elections. Table 6 shows the RDD results (*reduced form*) obtained when including interactions of the discontinuity dummy and the polynomial terms with the election timing dummies. The results suggest that the effect is much higher (nearly twice as high) in the case of *Concurrent* elections than in the case of *Alternating* elections.

[Tables 6 & 7]

To shed some light on the mechanism that can derive these results, we interact discontinuity dummy and the polynomial terms, not only with the election timing dummies, but also with the other potentially disturbing variables. We consider, for example, that the alignment effect might also be affected by whether: (i) regional elections are competitive or

[12] The tables showing the complete results are included in Annex B (no for publication), Table B.2..

not, (ii) the region has a large amount of budget resources, meaning it can allocate more generous capital transfers and that the differences between aligned and unaligned municipalities might be more marked, (iii) the municipality has greater needs or is in a poorer financial situation. The competitiveness of regional elections has been proxied by a dummy (*Competitive*) which is equal to one if the regional vote share of the regional incumbent in the previous regional election is lower than the sample median. The availability of budget resources has been measured by a dummy which indicates whether the region has more resources than the median (*High resources*)[13]. Municipal needs and the municipal financial situation are proxied by three dummies: *Small*, indicating whether the municipality has less than 5,000 residents, *Debt*, indicating whether the debt burden per capita lies above or below the median, and *High fiscal capacity*, indicating whether the per capita assessed value of the property lies above or below the median. We find that *Concurrent* is quite strongly correlated with *Competitive* (correlation coefficient equal to -0.52) and with *High resources* (correlation coefficient equal to 0.18) but not with the other variables (correlation coefficients around 0.05-0.07, in absolute value).

In Table 6, column (iv) shows the results when introducing the interaction with the three variables at the same time. The previous results still hold; the effect in *Concurrent* elections being more marked than that in *Alternating* elections, despite the relevance of the other interactions. However, the difference between *Concurrent* and *Alternating* elections is now much smaller, probably as a result of the aforementioned correlation between election type and the degree of competitiveness of the regional elections. In results not shown in Table 7 (but available upon request), we find that all the financial needs and financial situation variables have a positive impact on the alignment effect, but these interactions are not statistically significant and their inclusion does not modify our conclusion regarding the difference between *Concurrent* and *Alternating* elections. In Table 7 we repeat the analysis but now for the local vote share. Once again, the alignment effect in *Concurrent* elections is stronger than that in *Alternating* elections even when we control for the other interactions.

[Figure 5]

The top panel in Figure 5 shows the plot between *residual transfers* and the *vote margin* for *Concurrent* and *Alternating* elections. The discontinuity is clearly larger in the first case. The shape of the two plots is similar, but in the case of *Alternating* elections the

[13]This variable is equal to one (zero) if per capita standardized resources (transfers + standardized tax revenues) is higher (lower) than the sample median. Regional-level data to compute this variable comes from BADESPE (Institute for Fiscal Studies, Ministry of Economics).

slope at the right of the threshold is more clearly negative. We will return to this when interpreting the results in the next section.

Finally, the availability of data for the *Alternating* elections sample allows us to look at the effect of transfers two years before regional elections (as opposed to two years before the municipal ones). Our results (not reported here for motives of space) show that in this case partisan alignment has no effect on the amount of capital transfers allocated. It seems therefore that these transfers matter mostly for local elections[14].

Competitiveness and Budget resources. Columns (ii) and (iii) in Table 6 present the results for the interactions with the *Competitiveness* and *Budget resources* dummies, and column (iv) shows the effect of these interactions when they are introduced at the same time and simultaneously with the election type interactions. The results of this last column show that the alignment effect is also stronger in *Non-competitive elections* and in regions with *High budget resources.* Since there are just three regions with *Alternating elections*, and given the correlation between election type and *Competitiveness* and *Budgetary resources*, we repeated the analysis considering only the subsample of municipalities in regions with *Concurrent* elections. The results are shown in columns (v) to (vii) in Table 6 and suggest that the differences persist: the effect of alignment on capital transfers is higher in municipalities belonging to regions with *Non-competitive elections* and in regions with *High budget resources*. The differences are statistically significant and meaningful, especially for the *Competitiveness* interaction.

The bottom panel in Figure 5 shows the plot between *Residual transfers* and the *vote margin* for *Non-competitive* and *Competitive Concurrent* elections. The discontinuity is larger when regional elections are non-competitive and the slope of the polynomial is clearly negative only in this case. We will return to this result below.

5.8. Interpretation of the results.

Our results can be interpreted as follows. First, the greater alignment effect reported here for *Concurrent* than for *Alternating* elections might be due to a modification in voter behavior (and, hence, in politicians' incentives) occurring in this latter case due to the

[14] Additionally, we have used the sample of *Concurrent* elections to look at the effect of alignment during the first two years of the (regional and local) term-of-office. In this case (results also available upon request) we find an effect of alignment on transfers which is approximately half the magnitude of the effect found for the second half of the term.

simultaneous occurrence of local and regional elections. In *Concurrent* elections, voters cast their votes for local and regional candidates at the same time. In this case, if capital transfers confer some sort of advantage to the local incumbent, this advantage might automatically be transferred to the candidate from the same party at the regional level. This 'bandwagon effect' between candidates from the same party standing at simultaneously held elections has been documented in the literature (see, e.g., Ade and Freier, 2011). Similarly, in *Concurrent* elections, the local and regional campaigns might be more closely connected, with regional candidates having to speak about local issues during visits to municipalities due to the greater salience of such questions in the local campaign. This means that even if the infrastructure funded by capital transfers from regional governments plays a small role in party platforms at the regional level, it might have an indirect effect on voters' decisions at that level. The absence of an alignment effect on local votes in the *Alternating* case can be similarly explained.

Second, the fact that, in *Alternating* elections, alignment only seems to matter before municipal elections, but not before the regional ones suggests that regional incumbents care most about these local contests. In this case (and also in the case of *Non-competitive Concurrent* elections), the shape of the polynomial also points in the same direction, suggesting that regional incumbents aim at capturing as many mayoralties as they can. Figure 3 clearly shows that transfers decrease before the threshold and increase after, which is the pattern identified in section two for this type of electoral strategy (recall Figure 1). Although the effect estimated through RDD cannot be extrapolated to observations far from the threshold, the shape of the polynomial can be informative about the strategies used by the regional incumbents. Among the aligned municipalities, the regional government would rather target pivotal municipalities than loyal ones, while pivotal unaligned municipalities might be specially punished. Figure 5 shows that this strategy is most apparent when elections are *Alternating.* However, Figure 5 also shows that in the *Concurrent* elections, regions with *Non-competitive* regional elections also adhere to this pattern. Moreover, the polynomial in regions with *Competitive* elections is quite flat, and the slope is even positive to the right-hand side of the zero-margin threshold. Similarly, the size of the discontinuity is much lower in this case. This suggests that an electoral strategy centered on pivotal municipalities might underlie the results of the *Concurren*t elections sample, at least for regions with *Non-competitive* elections. For the remaining regions in this sample, this strategy might be attenuated by a strategy that focuses on locations of core voters, with the

aim of improving the chances of winning a highly competitive regional election by trying to mobilize the electorate.

7. Conclusion

In this paper we have used a 'fuzzy' RDD to estimate the effect of partisan alignment between regional and local governments both amount of transfers received and on the vote for the local incumbent at the local elections. We have provided very strong evidence that voters give more support to local incumbents belonging to the party that controls the regional government. Our results suggest that aligned municipalities obtain 83% more per capita transfers than unaligned municipalities. Aligned incumbents also win 10% more votes than unaligned incumbents. These estimates are much higher than previous estimates for Spain using 'difference-in-differences' techniques and much higher than results reported for other countries, including those using an RDD.

We have also documented that the effect of partisan alignment is stronger: (i) when regional and local elections are held on the same day, (ii) when regional elections are less competitive, and (iii) when the regional government has more budget resources to fund these discretionary transfers. This interaction with the amount of budget resources suggests that the effect of alignment on transfers ultimately has consequences in terms of votes. Some secondary evidence suggests that the alignment effect might arise as a result of a regional electoral strategy centered on the transfer of resources to pivotal and aligned municipalities with the aim of winning as many mayoralties as possible. This strategy seems more evident in *Alternating* elections and in *Non-competitive Concurrent* elections. It seems, therefore, at least in some cases, that the regional incumbent pursues a deliberate strategy of interfering in the outcome of local elections. As discussed in the introduction, such practices might erode accountability at the local level and, thus, undermine the very benefits of decentralization.

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Tables and Figures

Table 1: *Discontinuity in the probability of alignment.*

	(i)	(ii)	(iii)	(iv)	(v)
d	0.879 (89.13)***	0.853 (55.02)***	0.848 (39.90)***	0.897 (102.78)***	0.865 (59.64)***
R^2	0.860	0.860	0.860	0.805	0.771
AIC	-2368.86	-2380.02	-2376.29	--.--	
Bandwidth	100%	100%	100%	25%	12.5%
Polynomial order	1	2	3	1	1
Obs.	4344	4344	4344	2243	1150

Notes: (1) 2000-03 and 2004-07 terms. (2) Dependent variable is Alignment, *a* = 1 if mayor and the regional president belong to the same party. (3) Explanatory variables: discontinuity dummy d and polynomial on the *Regional incumbent's bloc vote margin*; polynomial fitted separately on either side of the zero threshold; *d* is one if vote margin is positive and zero if vote margin is negative. (4) Bandwidth = 100% indicates that all the observations have been used in the estimation; 25% of vote indicates a bandwidth of -25% to 25%, 25% being (approximately) the optimal bandwidth of both the transfers and incumbent's vote share used in Tables 2 and 3 (see below). (5) *t*-statistic in parentheses, robust standard errors used; ***, ** & * = statistically significant at the 99%, 95% and 90% levels. (6) AIC = Akaike information criterion.

Table 2: *Effect of alignment on capital transfers.* RD *results.*

	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)
	a) *Reduced form*							
d	63.86 (6.12)***	78.55 (5.07)***	79.84 (4.05)***	80.56 (5.95)***	75.11 (4.39)***	78.15 (4.86)***	75.58 (5.68)***	80.00 (6.02)***
R^2	0.081	0.082	0.082	0.282	0.073	0.229	0.104	0.234
AIC	58434.10	58429.23	58433.09	--.--	--.--	--.--	--.--	--.--
	b) 2SLS							
a	75.65 (5.31)***	89.36 (5.08)***	92.97 (4.54)***	91.65 (4.97)***	83.73 (4.88)***	87.12 (4.97)***	87.37 (5.13)***	90.39 (5.76)***
Bandwidth	100%	100%	100%	100%	25%	25%	12.5%	12.5%
Pol. order	1	2	3	2	1	1	1	1
Controls	NO	NO	NO	YES	NO	YES	NO	YES
Obs.	4344	4344	4344	4344	2243	2243	1150	1150

Notes: (1) See Table 1. (2) *Reduced form* = OLS regression of capital transfers against *d*, which is one if vote margin is positive and zero if vote margin is negative, controlling for a two-sided polynomial of the vote margin; 2SLS = 2SLS estimation of capital transfers against the alignment dummy, *a*, using *d* as the instrument, and controlling for the same polynomials. (3) Control variables included: log(population), land area per capita, property tax rate, assessed value of the property, debt level and Regional × term effects . See Table A.1 in Annex A for definitions and data sources. (4) Optimal polynomial order used in column (iv). (5) Local linear regression with optimal bandwidth used in columns (v) and (vi); ½ of optimal bandwidth used in columns (vii) and (viii).

Table 3: *Effect of alignment on local vote share.* RD *results.*

	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)
	a) *Reduced form*							
d	0.066 (9.16)***	0.048 (5.00)***	0.047 (4.01)***	0.044 (3.64)***	0.053 (5.59)***	0.044 (2.56)***	0.036 (2.38)***	0.038 (2.67)*
R^2	0.096	0.103	0.100	0.554	0.065	0.571	0.140	0.644
AIC	-4931.17	-4957.77	-4949.28	--.--	--.--	--.--	--.--	--.--
	b) 2SLS							
a	0.075 (6.44)***	0.053 (5.06)***	0.049 (4.78)***	0.058 (4.86)***	0.059 (5.71)***	0.051 (2.56)***	0.038 (3.10)***	0.043 (2.81)***
Bandwidth	100%	100%	100%	100%	25%	25%	12.5%	12.5%
Pol. order	1	2	3	2	1	1	1	1
Controls	NO	NO	NO	YES	NO	YES	NO	YES
Obs.	4344	4344	4344	4344	2243	2243	1150	1150

Notes: (1) See Table 2. (2) Dependent variable: % vote share for the mayor. (3) Control variables: party of the mayor × term effects, Regional dummies × term effects, incumbent's historical vote share, historical turnout at the local and regional elections, local coalition dummy, local first-term dummy, and population size dummies (see Table A.1).

Table 4: *Effect of alignment on transfers & local vote share.* OLS & *Difference-in Differences*

	(i)	(ii)	(iii)	(iv)	(v)	(vi)
	a) *Capital transfers*			*b*) *Vote share*		
a	61.65 (10.34)***	60.45 (5.07)***	63.90 (5.11)***	0.092 (21.23)***	0.031 (7.17)***	0.042 (5.08)***
R^2	0.102	0.214	0.328	0.103	0.243	0.554
Controls	NO	YES	YES	NO	YES	YES
Municipality fixed effects	NO	NO	YES	NO	NO	YES
Obs.	4344	4344	4344	4344	4344	4344

Notes: (1) See Tables 2 and 3. (2) Standard errors clustered at the municipality level in eq. (iii) & (vi).

Table 5: *Effect of alignment on other types of transfers.* RD *results.*

	(i)	(ii)	(iii)	(iv)	(v)
	Capital transfers:		*Current transfers:*		
	Provincial	*Central*	*Regional*	*Provincial*	*Central*
	a) *Reduced form*				
d	22.44 (3.34)***	9.33 (1.23)	8.92 (0.78)	3.44 (0.45)	4.56 (0.27)
	b) 2SLS				
a	27.65 (3.45)***	8.54 (1.10)	12.34 (0.66)	5.09 (0.37)	8.98 (0.12)
% Increase	62.43	27.13	10.75	12.67	9.76
Obs.	3982	4344	4344	3982	4344

Notes: (1) See Table 2. (2) % *Increase* = 2SLS coefficient over capital transfers evaluated at left limit of the threshold.

Table 6: *Effect of alignment on capital transfers. Electoral margin and fiscal capacity.*

	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)
	All elections				*Concurrent*		
d × *Concurrent*	91.28 (4.90)***	--.--	--.--	67.00 (3.77)***	--.--	--.--	--.--
d × *Alternating*	51.06 (2.96)***	--.--	--.--	43.15 (2.20)**	--.--	--.--	--.--
d × *Competitive*	--.--	50.02 (3.29)***	--.--	--.--	53.59 (7.07)***	--.--	47.75 (3.78)***
d × *Non-competitive*	--.--	111.28 (6.73)***	--.--	32.06 (4.22)***	121.57 (8.00)***	--.--	115.64 (8.23)***
d × *High resources*	--.--	--.--	108.85 (4.19)***	16.06 (1.58)	--.--	106.89 (5.29)***	18.23 (2.23)**
d × *Low resources*	--.--	--.--	90.48 (5.15)***	--.--	--.--	86.14 (9.64)***	--.--
Difference [F-test p-value]	46.91 [0.000]	25.36 [0.000]	18.39 [0.121]	30.85 [0.002]	67.98 [0.012]	20.67 [0.048]	67.89 [0.000]

Notes: (1) See Table 3. (2) Reduced form RD results. (3) Competitive/Non-competitive = vote share for the regional incumbent >(<) lower than the median. (4) High/Low resources = per capita resources (transfers + standarized tax revenues) >(<) than the median. (5) All equations have been estimated using the full sample, a two-sided second order polynomial for each of the interacted variables, and the full set of control variables. (6) Difference = difference between the coefficients of the two mutually exclusive categories (e.g., in column (iv) concurrent vs. alternating, and in column (viii) High margin vs. Low margin). (7) Standard errors clustered at the regional level.

Table 7: *Effect of alignment on local vote share. Electoral margin and fiscal capacity.*

	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)
	All elections				*Concurrent*		
d × *Concurrent*	0.048 (4.01)***	--.--	--.--	0.038 (2.82)***	--.--	--.--	--.--
d × *Alternating*	0.012 (1.29)	--.--	--.--	0.010 (1.39)	--.--	--.--	--.--
d × *Competitive*	--.--	0.037 (2.65)**	--.--	--.--	0.029 (4.53)**	--.--	0.006 (0.42)
d × *Non-competitive*	--.--	0.047 (6.96)***	--.--	0.012 (1.78)*	0.048 (4.02)***	--.--	0.030 (3.28)**
d × *High resources*	--.--	--.--	0.064 (5.86)***	0.027 (2.15)**	--.--	0.061 (3.13)***	0.045 (2.38)**
d × *Low resources*	--.--	--.--	0.028 (1.78)*	--.--	--.--	0.038 (4.40)***	--.--
Difference [F-test p-value]	0.028 [0.049]	0.010 [0.565]	0.026 [0.015]	0.018 [0.047]	0.019 [0.035]	0.023 [0.040]	0.024 [0.042]

Notes: (1) See Tables 2 and 4. (2) Reduced form RD results.

Figure 1: *Transfers vs. vote margin in Swing voter, Core voter & Pivotal municipalities.*

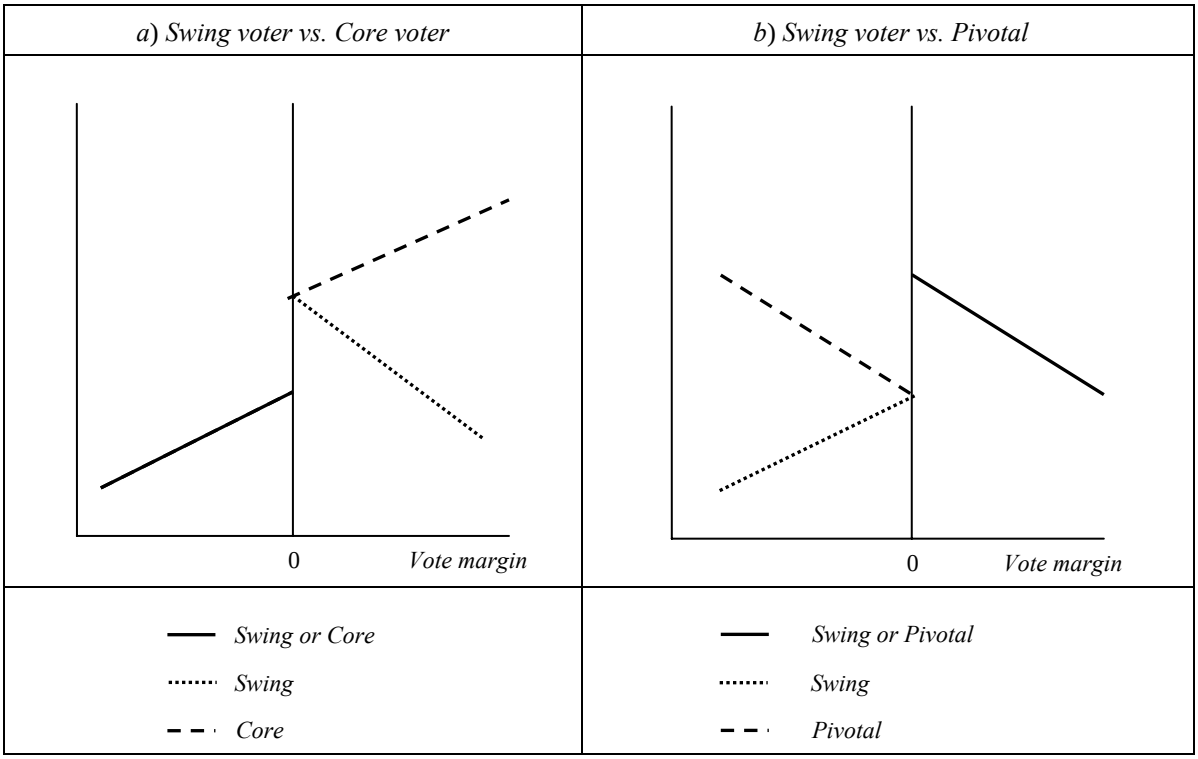
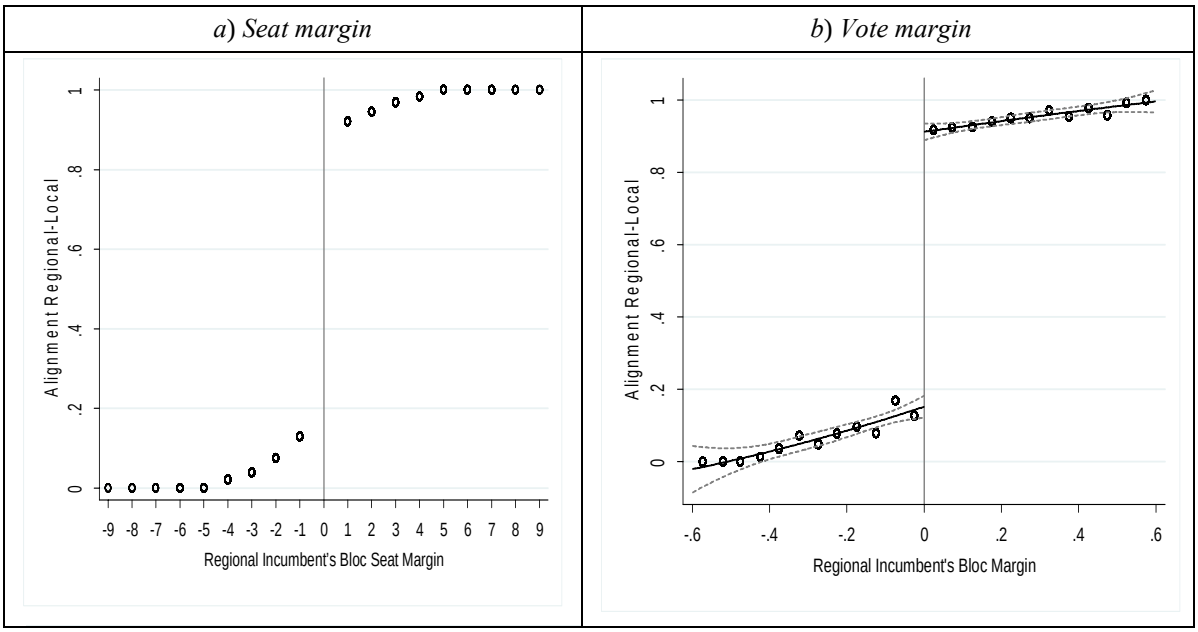
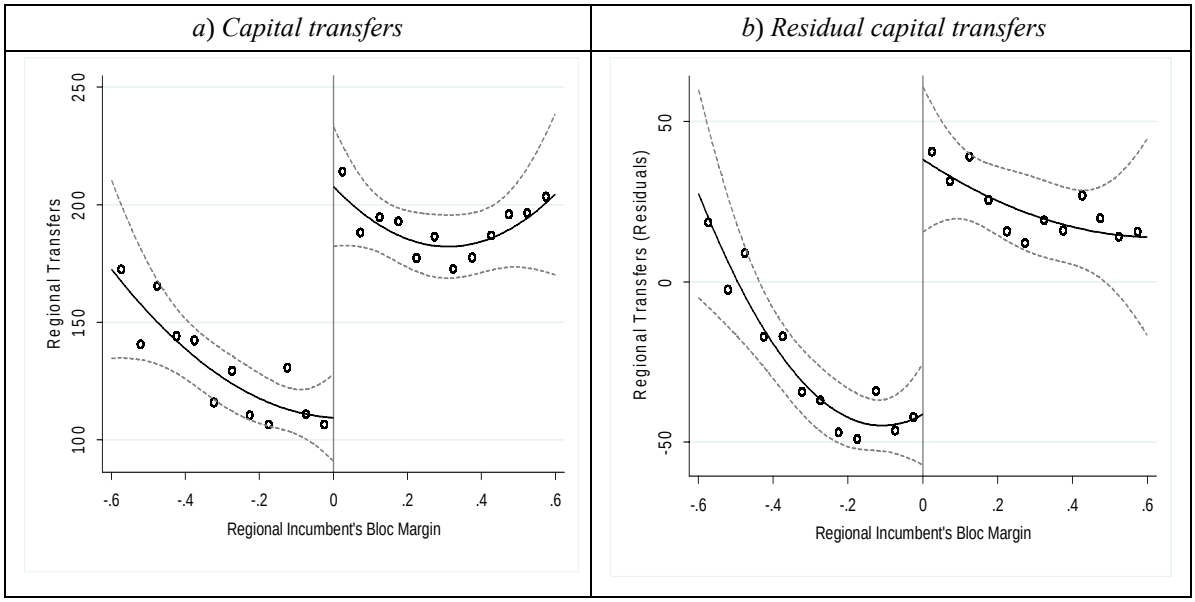


Figure 2: *Alignment vs margin*



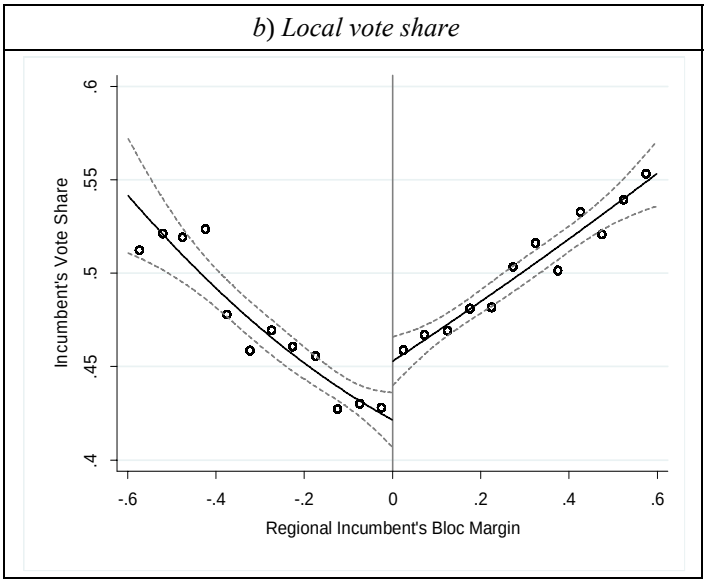
Notes: (1) 2000-03 and 2004-07 terms. (2) Alignment Regional-Local = 1 if the mayor and the regional president belong to the same party. (3) *Regional incumbent's bloc seat margin* = distance in seats to a change in ideological bloc's seat majority; seats as obtained at the 1999 and 2003 local elections. (4) *Regional incumbent's bloc vote margin* = distance in percentage of votes to a change in ideological bloc's seat majority; vote shares as obtained at the 1999 and 2003 local elections (see Box A.1 in Annex A). (5) Dots = Bin averages; Bin size = 0.05 (40 bins); optimal bin size selected using a standard F-test for nested models (Lee and Lemieux, 2010). (6) Black line = 2nd order polynomial, fitted separately on either side of the zero threshold, using the full bandwidth. (7) Dashed lines = 95% confidence interval. (8) See Table A.1 in Annex A for variable definitions and data sources.

Figure 3: *Capital transfers vs vote margin.*



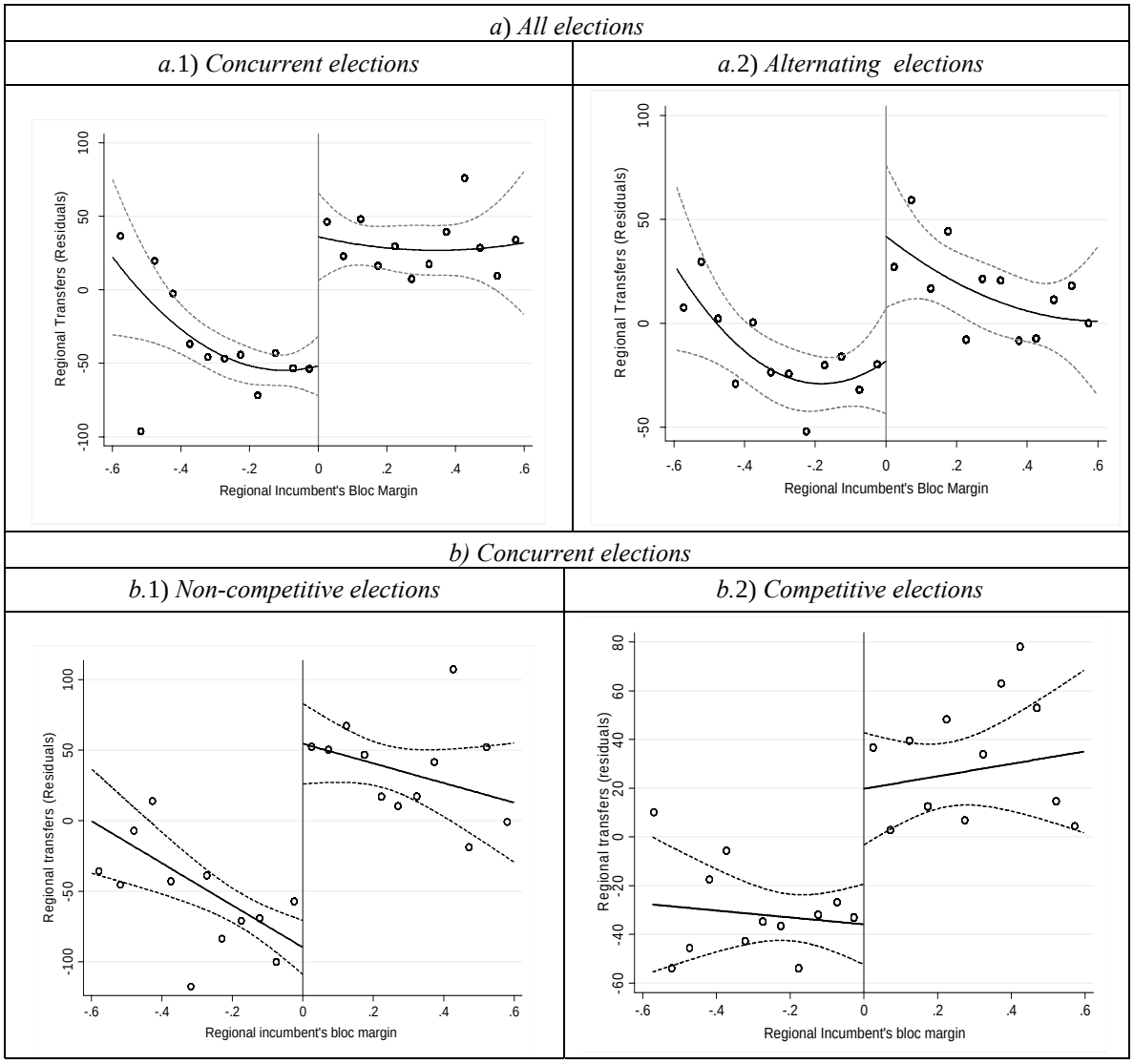
Notes: (1) Regional transfers = Capital transfers from the Regional to the Local government during the last two years of the 2000-03 and 2004-07 municipal terms. (2) Residual transfers = residuals from a regression between capital transfers and controls. (3) Black line = 2nd order polynomial, fitted separately on either side of the zero threshold, using the full bandwidth. (4) See Figure 2.

Figure 4: *Local vote share vs vote margin.*



Notes: (1) Local vote share = % vote share of the local incumbent party at the 2003 and 2007 elections. 3) Black line = 2nd order polynomial, fitted separately on either side of the zero threshold, using the full bandwidth.

Figure 5: *Residual capital transfers vs. vote margin. Election timing & competitiveness.*



Notes: (1) See Figure 2. (2) Residual transfers = residuals from a regression between capital transfers and controls.

Annex A: Data and variables.

Table A.1: *Definitions of variables and data sources*

	Definition	*Source*
Capital transfers: *- from the Regional gov.* *- from the Central gov.* *- from the Upper-Local gov.*	Capital transfers from the Regional, Central, or Upper-Local governments per capita (items 7.5, 7.2 & 7.6.1 of the revenue budget)	Survey of local finances undertaken yearly by the Spanish Ministry of Economics (years 2000-2007)
Current transfers: *- from the Regional gov.* *- from the Central gov.* *- from the Upper-Local gov.*	Current transfers from the Regional, Central, or Upper-Local governments per capita (items 4.5, 4.2 & 4.6.1 of the revenue budget)	
Vote share: *- Mayor* *- Coalition*	Votes for the party of the mayor and for the coalition supporting him at the local elections, in % of votes cast	Local election statistics (votes and seats for all the parties) and partisan identity of the mayor, provided by the Spanish Ministry of Interior & Ministry of Public Administration. (2003 and 2007 local elections)
Alignment (*a*)*:* *- Regional-Local* *- Central-Local* *- Upper-Local-Local*	Dummy equal to one if the party of the mayor is the same as that of the president of the Autonomous Community, the Central government or the Upper-Local government	
Incumbent's bloc seat majority (*d*): *- Regional-Local* *- Central-Local* *- Upper-Local-Local*	Dummy equal to one if the ideological bloc of the party of the president of the Autonomous Community, the Central government or the Upper-Local government has more seats in the local council than the other ideological bloc	
Incumbent's bloc vote margin (*m*): *- Regional* *- Central* *- Upper-Local*	% of votes cast at the local elections that have to be added to (subtracted from) the ideological bloc of the Regional, Central or Upper-Local incumbent to win (lose) a majority of seats in the local council.	Vote margin computed with the same data using an algorithm developed for this purposes that replicates the workings of the d'Hondt rule (see Table A.2 in Annex A)
Income per capita	Residents' income level, as estimated from objective indicators (e.g., cars, bank deposits, etc.)	Anuario Económico de España, La Caixa (years 2000-2007)
Debt burden	Debt service (capital, item 9 of the spending budget, + interests, item 3) as a share of current revenues	Ministry of Economics (years 2000-2007)
Land area per capita	Urban land area per capita, including both built on area and un-built land plots	Centro de Gestión Catastral y Cooperación Triburaria, Spanish Ministry of Economics (years 2000-2007)
Property tax rate	Nominal property tax rate (IBI), % on assessed property value	
Property value	Assessed property value per capita	
Population	Resident population	Padrón de Habitantes, National Institute of Statistics (years 2000-2007)
% Old	% resident population older than 65 years	
% Young	% resident population younger than 18 years	
% Immigrant	% resident population non-EU immigrant	
% Unemployed	% resident population unemployed	
Left mayor	Mayor belongs to a left-wing bloc party	Local election statistics (votes and seats for all the parties) and partisan identity of the mayor, provided by the Spanish Ministry of Interior & Ministry of Public Administration. (all local elections since 1979)
Coalition	Mayor governs in coalition with other parties	
Local party	Party of the mayor cannot be classified as left or right wing	
Historical turnout	% of voting age residents voting at the local elections held since 1979	
Historical vote share	% vote share for the ideological bloc of the mayor at the local elections held since 1979	

Table A.2: *Computing the vote margin.*

Explanation:

The forcing variable for our RDD is the *Regional incumbent's bloc vote margin*, computed as the ratio between the minimum number of votes needed for the ideological bloc of the regional incumbent to gain/lose the majority of seats in the local council and the total votes cast at the local elections.The computation of this measure is not straightforward and requires a consideration of the specific allocation system used to assign votes to seats, in this case the d'Hondt rule. Under this rule the votes for each party are divided by 1, 2, 3, 4, …, N, where N is the number of seats to be assigned. The resulting quotas or comparison numbers are ranked and N seats are allocated using this ranking.

We have developed an algebraic procedure to compute the *vote margin* for each of the municipalities in the sample[1]. Our procedure works by subtracting votes from the regional president's ideological bloc if it holds a majority at the local level, or adding votes if it does not. We make some initial assumptions regarding the migration of these votes. First, we assume that these votes either i) go to (come from) the abstention or ii) go to (come from) both the abstention and the parties in the opposition bloc. The formulation we present here is for the first approach i) and the formula used in the second approach and the Stata code are available upon request. Second, we assume that the votes lost by (added to) the regional incumbent's bloc are allocated between the parties belonging to this bloc proportional to their initial vote share in the bloc. Below we present the formulation used for the close election cases[2] –i.e., cases where the seat margin is –1 or +1.

Notation and definitions:

v_I^i & v_O^k : votes for parties *i* and *k*., from the regional incumbent's (*I*) and opposition's (*O*) blocs, respectively.
α_I^i & α_O^k : votes for parties *i* and k as a proportion of the votes for the bloc they belong to.
s_I^i & s_O^k : seats for parties *i* and *k*.
$c_I^i(s_I^i) = v_I^i / s_I^i$: comparison number for the last seat won by party *i*.
$c_I^i(s_I^i + 1) = v_I^i / (s_I^i + 1)$: comparison number for the next seat to be gained by party *i*.
$c_I^{\min}(s_I) = \min_i(c_I^i(s_I^i))$: smallest comparison number for the last seat gained by a party in *I.*
$c_I^{\max}(s_I + 1) = \max_I(c_I^i(s_I^i + 1))$: largest comparison number for the next seat to be gained by a party in *I*.
$c_O^k(s_O^k)$, $c_O^k(s_O^k + 1)$, $c_O^{\min}(s_O)$ and $c_O^{\max}(s_O + 1)$: comparison numbers for the opposition's bloc.

Formulation:

If the regional incumbents's bloc holds a majority in the local council and, so, a party from the opposition bloc has to gain a seat, its comparison number for the next seat to be gained, $c_O^{\max}(s_O + 1)$, must be larger than the comparison number for the last seat distributed to a party in the regional incumbent's bloc, once υ votes are subtracted from that bloc. The condition for party *z* in the opposition gaining a seat is:

$$c_I^{\min*}(s_I) < c_O^{\max}(s_O + 1) \qquad [A.1]$$

where $c_I^{\min*}(s_I)$ is the smallest comparison number for the last seat originally gained by a party, say party *x*, among the parties from the regional incumbent's bloc once υ votes have been subtracted. *z* is the party that has the highest comparison number for the next seat to be gained among all the parties of the opposition bloc. Expression [A.1] can be rewritten as $(v_I^x - \upsilon^x)/s_I^x < v_O^z/(s_O^z + 1)$, where υ^x are the votes subtracted from party *x.*[3] Under the assumption that all the parties from the regional incumbent's bloc lose votes according to the votes originally cast, expression [A.1] determines that the total amount of votes that the regional incumbent's bloc has to lose to lose one seat is equal to:

$$\upsilon = (\upsilon^x / \alpha_I^x) + 1 \qquad \text{where} \quad \upsilon^x = (c_I^{\min}(s_I) - c_O^{\max}(s_O + 1))s_I^x \qquad [A.2]$$

If the regional incumbent's ideological bloc is in a minority in the local council, the votes to be added to the opposition bloc for a party, say part *y,* in this bloc to gain a seat are such that:

$$c_O^{\min}(s_O) < c_I^{\max*}(s_I + 1) \qquad [A.3]$$

where $c_I^{\max*}(s_I + 1)$ is the largest comparison number for the next seat to be gained by party *y* from the regional incumbent's bloc, once δ votes are added to the opposition bloc. Party *y* is the one that originally has the highest comparison number for the next seat to be gained. Expression [A.3] can be re-written as:

$$\delta = (\delta^y / \alpha_I^y) + 1 \qquad \text{where} \quad \delta^y = (c_O^{\min}(s_O) - c_I^{\max}(s_I + 1))(s_I^y + 1) \qquad [A.4]$$

Notes: (1) A numerical example illustrating the workings of this algebraic procedure has been included in Annex B (not for publication). (2) Whenever the seat margin is larger that one, the procedure we now explain is simply iterated until there is a switch in the bloc holding the majority. Then, the final measure of the "vote margin" is an aggregation of votes needed to lose (win) all these seats. (2) Party *x* is such that equation [A.1] and $\min_M(v^i_M - v^i)/s^i_M$ hold. Party *x* will typically be the party that gained the last seat. If there is another party that gained a seat (but not the last one) and which accrues a greater share of votes, this party could be the one that has to be considered in order to guarantee that the opposition bloc gains just one seat.

2010

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