Political alignment and intergovernmental transfers in parliamentary systems: Evidence from Germany

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Abstract

We study partisan favoritism in the allocation of intergovernmental transfers. Our dataset combines local council election data with fiscal data on grant allocations in the German state of Hesse. Our identification strategy is a regression discontinuity design that relies on a perturbation procedure to classify close elections. We find that left-wing state governments favored aligned municipalities while right-wing state governments favored unaligned ones. One plausible explanation for this difference in the behavior of left- and right-wing governments is that only few local councils had absolute right-wing majorities during the tenure of the right-wing state governments. Therefore, right-wing state governments had to use transfers to "buy off" unaligned municipalities, while left-wing state governments could use transfers to enhance their electoral prospects.

Keywords: Intergovernmental transfers, political alignment, partisan behavior, state and local governments

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1 Introduction

In most federal countries, municipalities receive two types of transfers from the central government. *Rule-based transfers* are allocated according to legally codified criteria such as municipalities' population sizes or tax bases. The underlying objective is to equalize municipal fiscal capacities and to guarantee that citizens have access to a minimum level of public goods irrespective of where they live. *Discretionary transfers* are distributed according to unspecified and often ad hoc criteria. Here, the professed objective is to enable the central government to respond to asymmetric shocks or to address specific funding needs in selected municipalities.

Yet, central governments may also use discretionary transfers to pursue political rather than economic goals.[1] This observation has resulted in a literature on the political economy of intergovernmental transfers (Dixit and Londregan, 1998). A prominent question explored by this literature is whether political alignment influences the central government's transfer policy. A reasonable prediction is that municipalities ruled by the same parties as the center receive relatively more transfers, while municipalities ruled by competing parties receive fewer transfers. In this way, the central government can "tie the hands of its enemies" (Brollo and Nannicini, 2012) and at the same time increase the electoral prospects of aligned municipal governments which are enabled to lower local taxes, provide more public goods, and improve municipal services. Parties forming the central government have an incentive to help their local party branches because co-partisan leaders at the municipal level that manage to stay in office can be important allies for the next central election campaign.

If, however, municipalities are responsible for implementing a large fraction of state-level legislation, a positive alignment bias may not be the only reasonable prediction with respect to transfer allocations. An argument that has the opposite implication – that central governments grant higher transfers to non-aligned municipalities – is that municipalities ruled by opposing parties have to be "bought off". That is, in several coun-

[1] Litschig (2012) shows that even rule-based transfers might be subject to political manipulations.

tries municipalities implement many of the policies decided by the central government. Those municipalities governed by opposition parties may credibly threaten to obstruct the central government's policy agenda if they are not "compensated" with higher transfers. Aligned municipalities, on the other hand, are less likely to obstruct the central government, either because they agree with the central government's policies in the first place or because the leaders of the local party branches are subject to informal party discipline.

We hence study the question of whether aligned municipalities receive higher or lower transfers from the central government while taking into account the political situation that prevails at the local level. The transfers we investigate are so called budget support transfers (*Zuweisungen und Zuschüsse für laufende Zwecke*) paid by the state government of Hesse – a federal state in Germany – to its municipalities over the period 1989-2010.[2] These transfers are paid discretionarily, without any conditions, and their aggregate volume is small. As a consequence, this transfer program is of little political salience. Yet, payments to individual municipalities can be large. Given these characteristics of the budget support transfers, it is plausible that they are subject to persistent political manipulations.

The existing literature on partisan behavior in transfer allocations can be classified according to the empirical design that is employed. Studies such as Dahlberg and Johansson (2002) and Johansson (2003) for Sweden, Arulampalam et al. (2009) for India, and Levitt and Snyder (1995) for the US rely on selection on observables approaches.[3] Brollo and Nannicini (2012) are the first to use an arguably more credible regression discontinuity design (RDD) to study manipulation of discretionary transfers paid by the

[2]Hesse has 426 municipalities, but five of those have a special status. They assume both the tasks of county governments and municipal governments. As this special status entails more fiscal autonomy, they are not comparable to the remaining municipalities and we drop them from the sample.

[3]A related literature studies the electoral consequences of intergovernmental transfers, e. g. Levitt and Snyder (1997), Solé-Ollé and Sorribas-Navarro (2008), Litschig and Morrison (2009), and Baskaran (2013b). A different literature studies non-ideological determinants of transfers and/or development outcomes, such as the gender of a mayor (Brollo and Troiano, 2013) or the religious affiliation of a legislator (Bhalotra et al., 2014). Analyses of the political determinants of transfers, albeit with a different focus than ideology and alignment, are offered in Knight (2004), Sorribas-Navarro (2011), and Brollo et al. (2013).

Brazilian federal government to its municipalities. They find that the federal government gives more investment transfers to barely aligned municipalities in the two years preceding a municipal election.

Our paper contributes to the emerging quasi-experimental literature on the political economy of intergovernmental transfers in several ways. First, it offers insights regarding the external validity of of the previous quasi-experimental findings by Brollo and Nannicini (2012). In contrast to Brazil, Germany is both a mature democracy and a developed economy. The German federal state of Hesse, therefore, offers an interesting setting to evaluate whether political manipulations of transfers only take place in developing and emerging countries or whether they happen in the developed world as well.

Our second contribution is that we are one of the first to extend the quasi-experimental literature to a novel political regime. Brazil uses a model of local government that centers around the mayor (a "presidential" system), and Brollo and Nannicini (2012) define the political alignment of a municipality accordingly. Many other countries, however, use a "parliamentary" system for local politics, i. e. a system where the local council rather than the mayor's office is the crucial political institution. A large literature shows that presidential and parliamentary systems lead to different fiscal outcomes (Persson and Tabellini, 2004a,b, 2006; Voigt, 2011). In line with this literature, we hypothesize that the importance of political alignment for transfer allocations differs depending on the political system employed at the local level.

To causally identify transfer manipulations in our parliamentary setting, we adapt RDD strategies employed in quasi-presidential settings. That is, for two-candidate mayoral races the margin of victory can serve as a straightforward running variable. In settings where the political system is quasi-parliamentary and a proportional electoral rule gives rise to a multi-party system, no such obvious running variable exists. However, recent contributions have extended the RD design to parliamentary settings and define "close" alignment based on perturbations of the original distribution of votes (Fiva et al., 2013; Folke, 2014; Freier and Odendahl, 2012). Following these contributions, we run a large

number of simulations where the original party vote vector is randomly perturbed by successively larger amounts. In each simulation, we calculate how seat allocations change and record the number of times the seat majority flips. The value of the forcing variable for a municipality in a given legislative period is the size of the perturbation where the seat majority flips for the first time in at least half of the simulations. Curto-Grau et al. (2012) is the only previous study of which we are aware that uses a similar methodology to study alignment effects in transfer allocations for a setting where local governments follow the parliamentary model. These authors find that in Spain, co-partisan local governments receive higher transfers from their respective regional governments.

Our third contribution is as follows. Existing studies do not account for the possibility that the incentives of the central government might differ according to the political environment that prevails at the local level. That is, the central government might want to pursue different goals with its transfer policies, depending on the degree of local support it has from co-partisans, i. e. whether there are many municipalities governed by co-partisan council majorities. We thus explore heterogeneity in transfer policies between different Hessian state governments along this dimension. This is feasible because in our setting, there is both variation in the ideology of local governments and in the ideology of the state government during the sample period. Exploiting both sources of variation, we establish how state governments of different ideological persuasions respond to varying degrees of local political support.

In contrast to Brollo and Nannicini (2012) and Curto-Grau et al. (2012), who find that co-partisans always receive higher transfers, our results suggest that left-wing and right-wing state governments implemented different transfer policies during their tenure. The left-wing state governments, which ruled between 1989-98, allocated higher transfers to aligned municipalities while the right-wing state governments, which ruled between 1999-2010, allocated on average lower transfers to their local allies. Further analysis provides evidence that one plausible explanation for the differences in the behavior of left- and right-wing state governments is that the overall political environment faced by the two

types of state governments differed: right-wing state governments had to focus on buying off unaligned municipalities because few municipalities had a clear right-wing majority during their tenure. Left-wing state governments, in contrast, could focus on improving its electoral prospects by supporting aligned municipalities, because during their tenure, many municipalities were dominated by the left-wing party bloc.

2 Institutional details

2.1 Politics

2.1.1 Local government

The state of Hesse encompasses 426 municipalities, 421 of which are organized into counties, while five have a "county-free" status and assume both municipality and county tasks. Voters in municipalities elect a municipal council, which is the most important municipal political institution in Hesse. The council decides autonomously on all policy areas assigned by the federal and state constitutions to the municipal tier, in particular on municipal taxes, user fees, and individual building projects.

The other important political office in a municipality is the mayor. As of the early-nineties, Hessian mayors are directly elected. However, the mayor has only limited political power (Hessami, 2014). While she represents her municipality vis-a-vis other municipalities and the state government, she has neither a seat in the council nor a veto over council decisions. In essence, therefore, Hesse employs a parliamentary political system at the local level.

As in most parliamentary systems, parties play an important role. During the entire sample period, political parties received seats in the local council according to a proportional rule, more specifically according to the Hare-Niemeyer procedure. Since several parties can therefore enter the council, parties have to form coalitions to reach a council

majority. Even if there are no explicit institutionalized coalitions, the parties represented in the council must coordinate to reach council decisions.

Despite the continuity of the seat allocation formula, the Hessian laws regarding local elections were changed decisively in 2001 (Baskaran and da Fonseca, 2013). Three changes stand out. First, voters had one vote which they could cast for their preferred party list prior to 2001. After 2001, voters have as many votes as there are seats available in their council.[4] Voters can split their votes between party lists and, in addition, give single candidates multiple votes. Second, a 5% legal electoral threshold was abolished. That is, parties had to have at least five percent of the votes before they would be given any seats in the council, even if their vote share would entitle them to some seats. After the reform, parties were only required to have enough votes for one seat to enter the council. Third, the local legislative period was extended from four to five years. We account for these changes of the electoral law in our empirical design.

2.1.2 Local parties

The first set of parties that contest local elections in Hesse are the four major national parties. Two of these belong to the left-wing camp: the SPD and the Green Party. Important constituencies for the SPD and the Green Party are workers and public servants, respectively. The SPD typically receives about 30 to 40 percent of the votes, while the Green Party typically receives around 0 to 10 percent. The SPD focuses on economic issues, while the Green Party is primarily associated with environmental and social goals. During the sample period, the Green Party was the preferred coalition partner of the SPD at the state and federal level whenever the SPD does not have an absolute majority in the respective legislature.

The other two major parties belong to the right-wing camp: the CDU and the FDP. These two parties have similar voter bases. The CDU is mainly supported by small business owners, mid-level professionals, and certain types of civil servants. The constituency

[4]The size of the council varies with the number of inhabitants of a municipality.

of the FDP is primarily comprised of professionals and entrepreneurs. The CDU is more conservative than the FDP with respect to social issues, but there is a significant overlap regarding economic issues: both tend to be in favor of market-based policies, even though the CDU also shares some social democratic positions.

The second group of parties also has a national outlook even though these parties are typically on the fringes of the political spectrum, both in terms of political positions and electoral success. Several far-right and far-left parties contest local elections and sometimes win a few mandates, but their success is generally limited. There are also a number of national parties which hold mainstream positions, but they, too, are typically unsuccessful.

The third group of parties are municipality-specific voter initiatives. That is, groups of voters may nominate candidates for the local elections who are not, at least officially, affiliated with any of the major parties. These groups are called voter initiatives. The voter initiatives tend to be fairly successful, sometimes winning up to all available seats in a council. Several different voter initiatives can participate within a single municipality.

According to Figure 1, most municipalities had a clear left-wing seat majority during the 1989-1992 period. Thereafter, the dominance of the left-wing bloc slowly waned. By the local elections of 2006, the number of municipalities with a left-wing and a right-wing majority was almost equal.

It is often claimed that party politics is unimportant at the local level in Germany, and that council members focus on practical day-to-day issues rather than engaging in ideological battles. But for Hesse, it is not clear to what extent this assertion is true. Anecdotal evidence suggests that at least in some instances, left-wing legislators, as a block, vote differently than right-wing legislators. The university town of Marburg, for example, passed in 2008 a statute requiring all new houses to be outfitted with solar panels (*Solarsatzung*). All left-wing parties supported this statute while the right-wing parties opposed it, revealing clear ideological divisions between council members from different political camps. Press releases and statements of council members also suggest

ideological biases. Council members and local officials that share the ideology of the state government rarely criticize the state government's policies. In contrast, council members belonging to the opposite political camp tend to be vocal in their criticism.

That divisions along party lines are important at the local level is also likely given the deep ideological cleavages at the state level in Hesse during the sample period. That is, Hesse was ruled by two types of state governments between 1989 and 2010. From 1989-1998, the state government was comprised of a coalition between the SPD and Green Party. During the 1999-2003 period, the state government was formed by a CDU-FDP coalition. The state government was formed by the CDU alone during 2004-2008. After a brief hung parliament following the election of 2008, new elections produced once again a CDU-FDP coalition. Thus, there was no attempt to form a state government that comprised both a left- and a right-wing party.

2.1.3 State government

The political system at the state level is a parliamentary democracy. Voters elect the state parliament in regular elections that are held at the same day throughout the state but which are not synchronized with the municipal council elections. Voters have two votes at the state level: a "first vote" with which they elect a candidate in an individual constituency and a "second vote" with which they vote for a closed party list. However, the electoral rule is essentially proportionality because the total number of seats a party receives is constrained to be equal to its share of "second votes" (this electoral system is called "personalized proportionality").[5] That the electoral rule is essentially proportionality implies that the state government has, in general, few incentives to manipulate transfers to individual constituencies – e. g. swing constituencies – to gain voters for state elections. Geographical targeting of transfers is arguably more important in view of municipal elections where the state government can help the aligned party bloc to gain seats

[5]A party might receive slightly more seats than it would be entitled to according to its share of "second votes" if it wins a large number of constituencies – i. e. has the largest "first vote" share in many constituencies. However, such divergences are typically small. See Baskaran (2013a) for more details on the personalized proportional electoral system.

in the council. As we will discuss below, having a municipal council that is dominated by co-partisans is in the interest of the state government because aligned councils can be valuable allies for the next state election campaign.

2.2 State transfers

The Hessian state government provides several types of transfers to its municipalities. A useful classification distinguishes between transfers that are granted according to predetermined rules and transfers that are granted discretionarily. The rule-based transfers are important, but hard to manipulate for political reasons given that they rely on a formula that disregards ideological differences between municipalities (Baskaran, 2012). Discretionary transfers, on the other hand, are an attractive means for the state government to pursue political goals.

One notable discretionary transfer program are budget support transfers (*Zuweisungen und Zuschüsse für laufende Zwecke*). While municipalities have to apply for these transfers, and thus have to exert some effort, the state government decides discretionarily whether to grant them. The aggregate volume of this transfer program is noticeably smaller than e. g. the investment transfer program. But its relative unimportance implies that it can be more easily and persistently manipulated by the state government, and more freely used by the receiving municipalities. Other discretionary transfer programs, in particular investment transfers, have to be used for specific projects. Moreover, their volume makes them a salient issue for local politicians and the media, implying that persistent political manipulation will be costly and difficult for the state government.

Budget support transfers are paid for no specific reasons. In theory, they are supposed to be used to provide (additional) funding to schools, kindergartens, hospitals, theaters, and other public goods, but since they accrue to the general budget, municipalities are effectively free to use them as they please. Figure 2 shows the development of the mean, median, and maximum values of budget support transfers per capita over time. Average and median transfers receipts are 10 and 5 Euro per capita, respectively. In the final

legislative period considered in this paper (the one lasting from 2006 to 2010), this transfer program was expanded somewhat, but its overall size continues to be fairly small. Average transfers receipts were about 23 Euro in the last legislative period, while the investment transfer program resulted in average transfer receipts of about 60 Euros per capita throughout the sample period.

While the aggregate size of the budget support transfer program is small, transfers paid to individual municipalities can be substantial. The maximum for the transfer series in Figure 2 attests to this. The maximum transfers per capita during the entire sample period is 218 Euro, and in each year of the sample period, too, maximum transfers are noticeably larger than the average and median values. Putting the maximum values in relation to average tax revenues per capita of Hessian municipalities, which were around 800 Euros during the sample period, or to average current revenues, about 1250 Euro, shows that budget support transfers can be sufficiently large to sway voters and municipal officials.

3 A model of transfer manipulations

To fix ideas, we first develop a simple model that adapts the framework of Brollo and Nannicini (2012) to our setting. In particular, we assume that the state government, which can be either left- or right-wing, has two aims. First, it wants to help the parties that share its ideology (the aligned party bloc) to gain a seat majority in a given municipality. The state government cares about having many aligned municipalities either because aligned municipalities can be important allies in the next state election or because state-level politicians are likely to lose support within their parties if the local branches are doing poorly.

Our innovation is to introduce the possibility that the state government pursues a second aim with its transfers. The second aim of the state government is to ensure that its policies are implemented by as many municipalities and as comprehensively as possible.

That is, the state government has a preference for uniformity of policy. For example, in the German federal system child daycare is provided by the municipalities. If, for example, the state government decides that fees should be lowered, it presumably wants all municipalities to lower them equally. But municipalities may refuse to implement the policies of the state government. In practice, the state government has few legal means to enforce its policies. First, municipalities can ignore the directions of the state governments in policy areas that are according to the state or federal constitutions municipal domains. Second, even if the state government is allowed to give directions in a certain policy domain, municipalities can mount legal challenges, thereby prolonging the time required to implement a policy, perhaps even indefinitely. Finally, municipalities have informal means to counteract the state government's policies. To come back to the above child daycare example, municipalities might, while lowering the daycare fee, raise prices for meals or for other non-standard services.

Thus, we assume that the state government can, on the one hand, increase the probability that the aligned party bloc has a seat majority in the next election by giving currently aligned municipalities higher transfers. On the other hand, the state government can also persuade municipalities to implement its preferred policies. The state government's objective function is hence:

$$W = \sum_{i \in N} P(A_{i,t})R + V\left(\sum_{i \in A_t} s(\tau_i + \delta_A) + \sum_{i \in U_t} s(\tau_i + \delta_U)\right) - \sum_{i \in N} c(\tau_i) \qquad (1)$$

where R denotes the political rent that the state government receives from a municipality if the aligned party bloc has a seat majority in the next local elections, $P(A_t)$ is the probability that the aligned party bloc has a seat majority in period t. V is the utility the state government receives if a given municipality fully implements the policies pursued by the state government. s is the share of state policies implemented by municipality i.

Municipalities can either belong to the aligned (A_t) or the unaligned (U_t) group in year t. The share of the state policies implemented by a municipality i depends on the amount

of transfers τ_i received and a parameter $\delta_i, i = A, U$ that captures the intrinsic willingness or ability of a municipality to implement the state government's policies (or conversely the inability/unwillingness to refuse to implement them). As aligned municipalities are presumably more willing to comply with the state government's policy agenda, we assume that $\delta_A > \delta_U$. We also assume that transfers have a positive and declining effect on the share of policies implemented, i. e. $s' > 0$ and $s'' < 0$. Transfers have opportunity costs $c(\tau_i)$ for the state government, with $c' > 0$ and $c'' > 0$ (costs increase as a convex function).

The probability that a municipality will be aligned after the next state election is given by:

$$P(A_{i,t+1}) = P\left(SEAT_{i,t+1} > \frac{1}{2}\right).$$

We assume that the seat share in the election held in $t + 1$ is given by:

$$SEAT_{i,t+1} = \rho SEAT_{i,t} + \epsilon_{i,t+1} + I_{i,t} f(\tau_i) + (1 - I_{i,t}) g(\tau_i),$$

where $I_{i,t}$ is an indicator variable that is 1 if the aligned party bloc has a seat majority in period t.

The seat share of the aligned parties in the last election persist to the next election according to a parameter ρ. Second, the state government can affect the probability of alignment by providing the budget support transfers. Transfers paid to currently aligned municipalities affect the probability of alignment after the next election according to the function $f(\tau_i)$, with $f' > 0$ and $f'' < 0$. Transfers paid to currently unaligned municipalities reduce the probability of alignment according to $g(\tau_i)$, with $g' < 0$ and $g'' < 0$. Finally, a random shock $\epsilon_{i,t+1}$ also affects the seat share.

We assume that the random shock is normally distributed with standard error σ and expected value $\mu = 0$. Therefore, the probability that the aligned party bloc will have a seat majority in municipality i is given by:

$$P(A_{i,t+1}) = \Phi\left(\frac{\rho SEAT_{i,t} + I_{i,t}f(\tau_i) + (1 - I_{i,t})g(\tau_i) - \frac{1}{2}}{\sigma}\right).$$

The first order condition for equilibrium transfers paid to aligned municipalities is then:

$$R\phi\frac{f'(\tau_i)}{\sigma} + Vs'(\tau_i + \delta_A) - c'(\tau_i) = 0,$$

and to unaligned municipalities

$$R\phi\frac{g'(\tau_i)}{\sigma} + Vs'(\tau_i + \delta_U) - c'(\tau_i) = 0.$$

In equilibrium, the state government equalizes the marginal increase (if the municipality is currently aligned) or decrease (if the municipality is currently unaligned) in the probability of electoral victory of the aligned parties in the next local election and the increase in the share of state policies implemented by the municipalities through its transfers.

The separate first order conditions for aligned and unaligned municipalities suggest a sharp discontinuity at $SEAT_{i,t} = 1/2$. To the left of this threshold, transfers have a negative effect on the electoral prospects of the aligned party bloc, and thus the state government would like to grant as few transfer as possible. On the other hand, the willingness to implement the state government's policies δ decreases discontinuously when the municipality is currently unaligned, thereby incentivizing the state governments to increase transfers in order to "buy" the support of a municipality. Which effect outweighs the other at $SEAT_{i,t} = 1/2$ is ex-ante ambiguous, and hence it is unclear whether barely aligned or barely unaligned municipalities will receive more transfers.

However, it is possible to derive the following proposition based on the first order condition:

Proposition 1. *Everything else equal, equilibrium transfers to barely unaligned municipalities (i. e. around the 50% threshold) decrease in δ_U.*

Proof: *See appendix.*

The intuition for this proposition is as follows. If an unaligned municipality is intrinsically more obstinate, the state government will provide higher transfers in equilibrium because the marginal benefit of incentivizing the municipality to implement the state government's policies outweigh the electoral costs. Therefore, the likelihood that an unaligned municipality receives higher transfers than an aligned one increases in the ability of an unaligned municipality to refuse implementing the central government policies.

Overall, the implications of this model deviate from that of Brollo and Nannicini (2012). While their model derives that barely aligned municipalities always receive higher transfers, the results here imply that the effect of alignment on relative transfers receipts depends on the model parameters. Consequently, whether aligned or unaligned municipalities receive higher transfers is an empirical question, and depends in particular on the value of δ_U, the intrinsic propensity of an unaligned municipality to be obstinate. We discuss further below what factors might determine the value of δ_U.

4 Empirical design

4.1 Methodological issues

To estimate the causal effect of alignment of transfer receipts, we rely on RDD estimations. This approach requires a running variable that determines whether some unit is exposed to a treatment. The idea is to define all units with values of the running variable above some threshold as treated and all other units as untreated. Since units with values of the running variable (barely) below the threshold should be ex-ante identical to units (barely) above the threshold, the RDD ensures, under relatively weak conditions, local randomization and can thereby retrieve unbiased estimates of the treatment effect.

In our application, the treatment is whether a municipality is ruled by the party bloc that is also in power at the state level. Since Hesse employs (essentially) a parliamentary system at the local level, a party bloc must have an absolute majority in the municipal council to rule effectively. Consequently, the seat share of the party bloc that is aligned with the central government might be considered an appropriate running variable.

However, seat shares are problematic running variables because they change discretely. While discrete running variables do in principle not preclude a valid RD design (Lee and Card, 2008), the problem here is that these changes are not comparable across municipalities. If a party gains an additional seat, the jump in its seat share is larger if the municipality has a small council. Therefore, the same difference in seat shares between two parties may imply in a municipality A that the election outcome was close, while in some other municipality B that some party bloc easily won. In other words, it is difficult to define close elections on the basis of seat shares. One consequence of this problem is that municipalities with large legislatures will tend to be closer to the 50% seat share threshold, leading to a sample selection bias. More generally, council size may vary systematically with seat shares in close elections (Fiva et al., 2013).

Since seat shares are problematic running variables, we may consider party vote shares as a feasible alternative. Unfortunately, vote shares also lead to problems if used as running variables in settings with a proportional electoral rule. The number of seats a party gains depends not only on its vote share but also on the configuration of the vote shares of all other parties. Consequently, whether a party bloc receives an absolute seat majority depends on the – possibly otherwise irrelevant – distribution of votes among the other parties. Whether a party bloc has more or less than 50% of the votes may have no decisive effect on political alignment. In other words, the RDD threshold at which the treatment sets in is not well defined when vote shares are used as running variables. This problem is complicated if electoral thresholds exists (e. g. a five percent "hurdle"). Such thresholds typically lead to a divergence between vote and seat majorities: an aggregate vote share of over 50% for the right-wing parties may imply a seat share of less than 50%

for that bloc because a small right-wing parties does not manage to get a vote share that is higher than required by the electoral threshold and is thus precluded from receiving any seats in the council.

In view of such problems with seat and vote shares as running variables, Fiva et al. (2013) propose an alternative strategy for RDD designs in parliamentary settings. The idea is to check whether the alignment of a municipality would change if the distribution of votes that the different parties received in the election was slightly different. For example, assume that the state government is left-wing. Assume furthermore that the left-wing party bloc received more than 50% of the seats in some municipality in the last municipal election. Now if the seat share of the left-wing bloc in that municipality was to drop below 50% if we perturbed the vector of votes of all parties slightly – such that the parties in the left-wing bloc lose and the other parties gain some votes – then we may consider this election outcome as a close left-wing victory. If the perturbation has to be large before the left-wing seat share were to drop below 50%, then we might consider the election as a clear left-wing victory. Similarly, assume that the left-wing party bloc has less then 50% of the seats. If we perturbed the vote vector slightly such that the left-wing parties gain some votes at the expense of the other parties, and the left-wing party would as a consequence gain a seat majority, we might consider the original election outcome as a close loss for the left-wing bloc.

An approach to define the running variable based on the perturbation of the original vote vector has a number of advantages over approaches using seat or vote shares. First, the running variable is rendered independent of legislature size and thus comparable across municipalities. Second, the treatment status of a municipality is well defined since it relies on changes in the seat share along the 50% threshold after a particular perturbation.

For the reasons outlined above, we use a perturbation procedure. We describe here only the essential aspects of our procedure, but provide a more detailed discussion in the appendix. In very general terms, the procedure works as follows. First, we identify the

municipalities where after an election the party bloc aligned with the state government has more than 50% of the seats. Then we decrease the number of votes of the aligned party bloc and increase the total number of votes of all non-aligned parties by some number n (see the appendix for the specific value of n). Since both the left-wing and the right-wing party bloc each consist of two parties, we divide the reduction in n between the two aligned parties randomly. Similarly, we divide the overall increase of n in the number of votes for the non-aligned bloc randomly among the individual parties based on a uniform distribution.

We then run 100 simulations where the increases and reduction in votes, respectively, are distributed differently between the two party blocs. After each run, we calculate the seat distribution – based on the prevailing electoral laws (see the appendix for details) – and record whether the left-wing bloc loses its seat majority given the perturbed vote vector. If the left-wing party bloc loses its majority in more than 50% of the simulations, we stop and record n divided by the total number of votes as the value of the running variable. Thus the smaller the ratio *n/total number of votes*, the closer the electoral victory of the left-wing party bloc. If the left-wing party bloc does not loose its seat majority in half of the simulations, we increase n by a fixed number and re-run the simulations. We follow this procedure until we reach a n where the aligned party bloc loses 50% of the time.

We take a similar approach to identify close electoral defeats of the aligned party bloc. That is, we first identify all municipalities where the aligned party bloc has less than 50% of the seats. Then we increase the number of votes of the aligned party bloc and reduce the number of votes of the non-aligned parties, respectively, by n. The increase and reduction, respectively, by n we allocate among the parties in each bloc randomly. We then run 100 simulations and record whether the seat share of the aligned party bloc crosses the 50% threshold after the perturbation. Once the seat share crosses the 50% threshold for more than half of the simulations, we stop and record n multiplied by -1,

i. e. the negative value of the corresponding aggregate perturbation, divided by the total number of votes as the value of the running variable.

This procedure ensures that every municipality receives a value for the running variable in each legislative period. This value is negative if the aligned party bloc does not have a seat majority and positive if it has such a majority. Since the vote perturbations $+/-n$ are scaled by the total number of votes, the running variable is comparable across municipalities. This procedure also ensures by construction a sharp RD design as positive values deterministically imply a positive treatment status (alignment with the state government) and negative values imply a negative treatment status.

One disadvantage of this approach are the heavy data requirements. In particular, we need disaggregated vote data for all parties that participated in the local elections to implement this procedure. Unfortunately, in some municipalities several voter initiatives take part in the election, but the state statistical office only provides an aggregated figure for these. In addition, sometimes very small parties take part in an election and for those, the state government also provides only aggregated figures, too.

When we attempted to validate our perturbation procedure with the original vote vector, we found that the seat allocations to the parties according to Hare-Niemeyer differed slightly for some municipalities in some of the legislative periods from the correct seat distribution. The reason was that the remainders in the Hare-Niemeyer procedure where wrong for these municipalities because votes/seats for the voter initiatives and very small parties were only available as aggregates. In order to be conservative, we drop in each legislative period those municipalities from the sample for which the original seat vector different from our simulated one using the original vote vector.

In summary, the running variable we employ in the RDD is the smallest value for the vote share that has to be taken away from or additionally given to the aligned party bloc such that (i) a given seat majority of the aligned party bloc turns into a minority in at least 50% of the simulations or (ii) a given seat majority turns into a minority in at least 50% of the simulations.

4.2 Econometric model

We implement the following parametric RD design as a baseline model:

$$\begin{aligned} \text{Transfers}_{it} =& \beta D_{it} + g(\text{PV}) + D_{it} \times g(\text{PV}) \\ &+ \alpha_i + \gamma_t + \epsilon_{it}, \end{aligned} \tag{2}$$

where $Transfers_{it}$ represents the log of budget support transfers per capita that municipality i receives in year t. D_{it} is a dummy variable that is 1 if the party bloc aligned with the state government has an absolute majority in the council and 0 else. $g(\text{PV})$ is a flexible polynomial of the running variable PV. We use up to cubic polynomials. The running variable is also allowed to have a different slope to the left- and right of the threshold through an interaction effect with the treatment dummy. α_i and γ_t are municipality and year fixed effects, respectively.

As the previous discussion suggests, left-wing and right-wing governments might behave differently in how they allocate transfers. Thus, we estimate Equation 2 separately for the pre-1999 (left-wing state government) and post-1999 (right-wing state government) periods.

We do not use all available observations when estimating Equation 2, even though the specification corresponds to a parametric RDD. The running variable may in principle assume values that are either very large or very small, respectively, in cases where the aligned party bloc has either won or lost the election decisively. But only few observations are located at such extreme values, which implies that the control function will have to adjust to accommodate a small number outliers. As this may lead to bias even with a fairly flexible cubic polynomial, we restrict the bandwidth for the running variable to the "optimal" bandwidths as determined by the procedure proposed by Imbens and Kalyanaraman (2011). We calculate separate optimal bandwidths for the pre-1999 and

post-1999 periods. The I&K optimal bandwidth for the pre-1999 period is 0.28 and for the post-1999 period 0.33.

Standard errors are robust to heteroscedasticity and clustered at the level of the municipalities. While not necessary for valid identification, we also include in all estimated parametric models municipality and year fixed effects. Cross-section fixed effects can decrease bias and improve efficiency in finite samples (Hoxby, 2000).[6] The results are qualitatively similar when municipality fixed effects are omitted.[7]

A conceptual question regarding the models specified by Equation 2 is whether the alignment of a municipality changes so decisively at the 50% seat share threshold (which continues to determine the alignment status of a municipality in our perturbation procedure) as to affect transfer allocations. In two candidate mayoral races, a barely positive margin of victory typically entails obvious and significant differences in alignment status. However, the 50% threshold might be less important in parliamentary settings, especially when several parties are represented in the local council. That is, the aligned party bloc might find it easy to form a coalition with independent council members (for example from the voter initiatives) if it has no absolute seat majority as long as its seat share is sufficiently large.

On the other hand, there are reasons why the state government might want to tailor its transfer policies based on whether the aligned party bloc has a clear (i. e. absolute) majority. If the state government primarily wants to improve the electoral prospects of the aligned municipalities, then the state government can be relatively certain that a municipality where the aligned party bloc has an absolute seat majority will use transfers to enhance the electoral prospects of the aligned parties. In all other cases, even if the seat share of the aligned party bloc is large, there is an inherent uncertainty about whether the aligned party bloc will be able to form a sufficiently large coalition, and whether the nonaligned members of this coalition will agree to use the transfers to enhance the

[6]The year fixed effects also implicitly account for the effect of inflation on transfers.

[7]The difference is that the estimates are somewhat dependent on the polynomial choice. Results are available from the authors.

electoral chances of the aligned party bloc. If, in contrast, the main aim of the state government is to "buy off" unaligned municipalities, then an absolute seat majority of the aligned party bloc implies that the municipal government cannot credibly claim that it will only comply with the state government's policy agenda if it receives higher transfers.

In any case, it is an empirical question whether the 50% seat share threshold is sufficiently decisive to induce differences in transfer allocations. However, given that a high seat share of the aligned party bloc might be already enough for the state government to adjust its transfer policy for political reasons, we will, if at all, tend to underestimate the effect of political alignment on transfer receipts by focusing on the 50% seat share threshold.

5 Results

5.1 Graphical evidence

As a precursor to the RDD regressions, Figure 3 collects discontinuity plots of budget support transfers per capita against the running variable. Subfigure (a) relates log transfer per capita to the perturbation variable during the pre-1999 period and subfigure (b) during the post-1999 period. Data points are averaged within bins of width 0.03. The polynomial smooths are based on the original data points, using the optimal bandwidths as determined by Imbens and Kalyanaraman (2011) (as mentioned above, 0.28 in the pre-1999 and 0.33 in the post-1999 periods), a quadratic degree, and a triangular kernel.

Subfigure (a) indicates that during the pre-1999 period, a municipality aligned with the central government received higher transfers, about 22% more. Both the smooth and the bin averages show a positive discontinuity. Subfigure (b) suggests, on the other hand, that during the post-1999 period, alignment entailed lower transfers, about 27% less. Overall, the sizes of the discontinuities are sufficiently large to suspect significant differences in the transfer policies of the left- and right-wing governments. The following

sections explore whether the graphical findings are confirmed by a more formal regression analysis.

5.2 Baseline regression results

Table 1 presents the baseline regression results. The coefficient estimate for the alignment dummy is consistently positive for the pre-1999 period, i. e. when a left-wing state government was in power. It is consistently negative when in the post-1999 period, i. e. when a right-wing government was in power. Transfers to aligned municipalities were, according to these regressions, by about 25% higher under the left-wing state government and, depending on the polynomial, between 20% to 40% lower when a right-wing state government was in power. The coefficient for the pre-1999 regressions is significant for the linear and quadratic polynomial at conventional values. For the post-1999 period, the coefficient is significant for a quadratic polynomial.

These results constitute the baseline findings: left-wing state governments seem to favor aligned municipalities while right-wing state governments seem to favor unaligned ones. The findings for the right-wing state government are somewhat less robust as the size of the estimated coefficient varies with the polynomial and is only significant once. Still, even acknowledging this variability in the results, it seems clear that there are significant differences in how the left- and the right-wing state governments treat aligned municipalities.

6 Robustness and validity

6.1 Non-parametric RDD

A concern with the parametric RDD is that identification relies on functional form assumptions. While we include up to a cubic polynomial and restrict the bandwidth, it is still possible that misspecification of the control functions leads to biased estimates. To

account for such problems, we report in Table 2 non-parametric RDD estimates using local linear regression according to the model specified in Equation 2.

We report results for the optimal bandwidth according to Imbens and Kalyanaraman (2011), and for one-half and twice that bandwidth. The results in Table 2 mostly confirm the parametric results. For all bandwidths, the estimate for the alignment coefficient in the pre-1999 is positive and of similar magnitude as in the baseline regressions. The coefficient is also significant or displays a fairly large z-statistic in all regressions.

For the post-1999 period, the estimate is consistently negative. However, it is only significant and of the same order of magnitude as in the baseline regressions for a relatively narrow bandwidth. For larger bandwidths, the coefficient is smaller in size and insignificant. Overall, the evidence in the non-parametric regressions for the notion that right-wing state governments allocate fewer transfers to aligned municipalities is weaker than in the baseline parametric ones. Still, these results suggest once more that there are significant differences in how left-wing and right-wing state governments behave.

6.2 Seat shares as forcing variable

A further robustness test is to use the seat shares rather than the perturbation vector as forcing variable. While seat shares are problematic for the reasons outlined above, they should in principle suggest the same conclusions as the perturbation vector, since the share of seats of the party blocs and the change in vote shares required to flip the alignment of a particular municipality are related. Hence, an RDD using seat shares can be perceived as a test of the validity of the perturbation procedure.

Table 3 hence presents replications of the baseline models using seat shares rather than the perturbation variable as running variable. The results are consistent with the baseline estimates. The estimate for the alignment effect when a left-wing state government was in power is consistently positive, significant, and of the same order of magnitude as the baseline regressions. The estimate for the alignment effect is consistently negative in the post-1999 period. While the size of the coefficients depends on the order of the

polynomial, these results suggest once more that right-wing state governments, at the very least, do not favor co-partisans, and presumably even allocate fewer transfers to them.

6.3 Pre-treatment characteristics

One important requirement for a valid RDD is that except for the control function, no other pre-treatment variables should exhibit a discontinuity at the threshold. If there were such a discontinuity, it would be unclear whether any treatment effects were due to the change in alignment status or due to some other underlying variable.

It is possible to explicitly check the assumption that there are no other confounding discontinuities at the threshold by estimating Equation 2 after replacing the dependent variable with various pre-treatment characteristics. We report in Table 4 results for five fiscal variables: total expenditures per capita, current revenues per capita, the business tax multiplier, and the property tax A and B multiplier. All variables are in logs and lagged by five years. We lag all variables by five years to ensure that we relate current alignment status of a municipality to it fiscal variables in the last legislative period.[8] The business tax rate is levied on firm profits, the property tax rate A is levied on agricultural properties, and the property tax rate B on non-agricultural proprieties. In terms of revenues, the business tax and the property tax B are much more important than the property tax A. The tax "multipliers" are scaling factors that deterministically set the effective tax rates on the different tax bases.[9]

The estimated coefficients in Table 4 are, with one exception, statistically insignificant and numerically small. Overall, therefore, we do not observe significant discontinuities in pre-treatment characteristics.

[8]Note that legislative periods in the pre-1999 period were only four years. For simplicity and consistency with the regressions for the post-1999 period, we use the fifth lag for the pre-1999 period.

[9]We do not report results relating lagged transfers per capita to current alignment status since in our panel data context, over-time correlation between alignment status is potentially a problem, rendering the results difficult to interpret and possibly meaningless. In our regressions, we found positive relationships between lagged transfers and alignment status for *both* the pre- and post-1999 periods. These results are available from the authors.

6.4 Discontinuity in density

One further assumption for a valid RDD is that there should be no selective manipulation of the running variable in close neighborhoods of the threshold. If some agents were able to selectively manipulate the running variable in close neighborhoods of the threshold, it would not be possible to identify the causal effect of the treatment from the effect of those characteristics that allow agents to manipulate close elections. In particular, it might be possible that the party bloc aligned with the state government would be able to systematically tilt close elections in its favor, using either legal or illegal methods.

Manipulation is not a severe concern in our setting given that seat allocations depend in a complicated way on the vote shares of all parties. Given the inherent uncertainty involved in the mapping of votes to seats and the ensuing difficulties in identifying close elections, agents would not know where to invest scarce resources to manipulate the election results. Second, outright manipulation is also implausible given the strong democratic traditions in Germany and the fact that the election is administered by an independent bureaucrat.

Nevertheless, it is important to explicitly check this assumption. Figure 4 hence collects McCrary plots to validate the no-manipulation assumption explicitly (McCrary, 2008). The idea underlying these plots is that if the empirical distribution of the perturbation index displays a positive discontinuity at the threshold, then close victories of the aligned party bloc are more common than close defeats, suggesting that the allocation of alignment status at the threshold is not quasi-random. Subfigure (a) thus reports the McCrary plot for the pre-1999 periods while Subfigure (b) reports the corresponding plots for the post-1999 periods. Both plots are based on the default bin sizes and bandwidths according to McCrary (2008).[10] In the pre-1999, the plot displays a small negative discontinuity. However, the shape of the polynomial to the left and the right of the threshold is similar, suggesting that the discontinuity may be spurious. Moreover, it

[10]More specifically, we use the default bin sizes and bandwidths calculated by the Stata ado-file provided by McCrary (2008). We use the default bin size and the optimal bandwidth according to Imbens and Kalyanaraman (2011) to construct these plots.

seems unlikely that if there were manipulation, the aligned party bloc would be less likely to win close elections. For the post-1999 plot, there is no discontinuity at the threshold. Overall, there is little statistical evidence in favor of manipulation. Given that there are also a number of theoretical arguments suggesting that manipulation is difficult, the assumption of no-manipulation in all likelihood holds.

6.4.1 Placebo tests

Another way to validate the baseline estimates is to see whether we find a significant discontinuity in transfers per capita at values of the perturbation variable where the alignment of a municipality does not change. The idea is that if there is a discontinuity in transfers when there is no change in alignment, we cannot be certain that the effect found at the actual threshold is causal.

We implement the following placebo test: we set fake thresholds in the intervals -0.15 to -0.05 and 0.05 to 0,15 in increments of 0.001 and rerun the baseline regressions. The fake thresholds are chosen such that there is a reasonable number of observations both to the left and the right of the thresholds when using the optimal bandwidth. We do not use fake thresholds in the interval [-0.05,0.05] given that these values are close to the actual threshold.

We estimate, as in the baseline regressions, for each fake threshold three coefficients, i. e. one for each a linear, quadratic, and cubic polynomial. These placebo regressions result in 200 placebo coefficient estimates for each polynomial, both for the pre- and post-1999 periods. In the spirit of DellaVigna and La Ferrara (2010), Figure 5 plots the cumulative distribution of the z-statistics from the placebo regressions for each polynomial, both for both the pre- and post-1999 periods. Each point indicates the value of the z-statistic of a placebo coefficient and its percentile in the cumulative distribution. If the coefficient is insignificant at the 10%, we plot it as a dot. If it is significant, we plot it as a triangle.

The z-statistics form the placebo regressions for the pre-1999 period are collected in the upper panel of Figure 5. Subfigure (a) presents the placebo results for a linear

polynomial. We find that only very few observations are significantly positive. Note that some positive coefficients are expected, first simply due to chance, but also because the placebo regressions use observations from both sides of the real threshold. Thus, some effects of the discontinuity at the real thresholds will be picked up by the placebo estimates. In subfigure (b), we plot the placebo coefficients obtained with a quadratic polynomial. We find that about 10% of the coefficients are significantly positive. While this number is higher than what we would expect by pure chance, it is still relatively small considering that the placebo estimates pick up some of the true treatment effect. In subfigure (c), we finally plot the placebo results with a cubic polynomial. We observe a few significantly negative coefficient estimate, but no significantly positive estimates.

In the lower panel of Figure 5, we present the placebo results for the post-1999 period. As for the pre-1999 regressions, we find that very few coefficients are significant, irrespective of the polynomial chosen. Overall, the placebo thresholds cannot replicate the results found in the baseline regressions, suggesting that the latter are robust.

7 Explaining the reduced form results

We observe that left-wing state governments distort their transfer policy in favor of aligned municipalities while right-wing state governments favor unaligned municipalities. Why do left- and right-wing state governments behave differently?

One obvious explanation is that left-wing and right-government governments are simply different. An alternative explanation, however, is that the political environment faced by the two state governments differed. It might be easier for unaligned municipalities to refuse to implement the state government's policy agenda if there are already many fellow unaligned municipalities. In the context of the model developed in Section 3, δ_U could increase for each unaligned municipality with the total number of unaligned municipalities. Alternatively, the state government might be less willing to use transfers to bribe municipalities if there are many aligned municipalities.

A straightforward way to test which explanation explains the observed reduced-form patterns better would be to explore whether the transfer policy of the state government changes as the degree of its local support changes. If there are innate differences between state governments of different ideological persuasions, changing patters of local support should not affect how the state government allocates its transfers. In contrast, if transfers are allocated, in part, in order to buy the support of unaligned municipalities, we should observe different transfer allocation patterns in different legislative periods.

The share of aligned municipalities under the left-wing state government is largest in the 1989-1992 legislative period (see Figure 1). In the subsequent 1993-1996 legislative periods, however, the share declined. In the 1997-2000 legislative period, the left-wing share rose again, even if it did not catch up with the 1989-1992 values. If the explanation that the effects of political alignment depend on the political environment faced by the state government is correct, the positive effect of alignment under the left-wing government should be strongest in the first legislative period, then decline, and then pick up again during 1997-1998 period, the last two years with a left-wing state government. The negative effect of alignment under a right-wing state government, on the other hand, should be largest in the first legislative period, where the share of right-wing majorities was the smallest, and then increase slightly, but remain still negative as only few municipalities had a clear right-wing majority even in the last legislative period.

Table 5 reports results for models that extend the baseline specifications with interactions between the alignment dummy and the legislative period. The alignment dummy is only significantly positive in the 1989-1992 legislative period. In the 1993-1997 legislative period, the estimate for the alignment dummy, while still positive, is noticeably smaller and statistically insignificant. During the last two years of the left-wing state government's tenure, the effect is still negative; however, it is slightly larger than in the 1993-1997 legislative period.

For the right-wing state government, the estimates for the alignment coefficient are consistently negative. The estimated coefficient is (in absolute terms) the largest in the

first legislative period the right-wing state government was in power. The coefficient declines in the second legislative period, but increases again in the third. The direction of the change from the second to the third legislative period is not consistent with the expected effects, yet given that only few municipalities were aligned with the right-wing state government in the second and third legislative periods, this pattern might be due to random variation rather than due to systematic responses of the right-wing state governments. Also, note that according to Figure 2 the importance of the budget support transfers increases in 2006 (see the values for the mean and median). Thus, relative differences from the second to the third period might increase simply because unaligned municipalities receive more transfers in absolute terms.

Another way to establish whether state governments trade off electoral gains against the ability to buy off unaligned municipalities is to explore whether the importance of political alignment changes between pre- and post-election years. If electoral considerations are important for the state government, then the discontinuity in transfers paid to aligned municipalities should be particularly large shortly before elections. Brollo and Nannicini (2012), for example, detect significant alignment effects only in the two years before an election year. If, on the other hand, the observed patterns in the baseline regressions are due to innate differences between left-wing and right-wing governments, then there should not be any significant differences between pre- and post-election years.

We therefore estimate Equation 2 with samples restricted to the two years before an election (1991-1992, 1995-1996 for the pre-1999 period, 1999-2000, 2004-2005, 2009-2010 for the post-1999 period) and all other years (1989-1990, 1993-1994, 1997-1998, 2001-2003, 2006-2008). The results are collected in Table 6. The upper panel presents the results for the sample restricted to the two years before an election. In these regressions, the effect of alignment under a left-wing state government (pre-1999) is more than twice as large as in the baseline regressions. The lower panel presents the corresponding results for all other (post-election) periods. Here, the coefficient is much smaller. Consequently,

it appears that the incentives to support aligned municipalities are particularly strong for left-wing governments shortly before an election.

For the right-wing government, however, the estimated coefficients for pre-election years are of the same order of magnitude as in the baseline regressions. There are also no major differences between pre- and post-election years. It appears that compared to left-wing state governments, the electoral motive is less pronounced for right-wing governments. One explanation why this might be the case is again that few municipalities were clearly aligned with the right-wing state governments during their tenure, causing them to disregard electoral incentives even shortly before an election.

While the above explanation for the observed patterns in the baseline regressions is only circumstantial, the most obvious alternative explanations are less plausible. In particular, it is unlikely that there are innate differences between left- and right-wing governments regarding whether to favor aligned municipalities. If innate differences were the explanation, the estimation results for left-wing governments would not vary between different legislative periods or between pre- and post-election years. Moreover, even if right-wing governments do not want to advantage aligned municipalities, it seems improbable that they would actively discriminate against co-partisans for some inherent reason. It hence seems likely that it is the overall political climate – the fact that many municipalities needed to be bought off during their tenure – that is responsible for the observed patterns.

8 Conclusion

This paper studies whether state governments of the German federal state of Hesse manipulate discretionary transfers for political reasons. We consider budget support transfers since they are provided discretionarily and unconditionally, and have relatively little political salience. Our results suggest that left-wing state governments favor aligned municipalities, while right-wing governments favor unaligned municipalities. We show that the most plausible explanation for the different transfer policies of left- and right-wing

governments is that they faced different political environments during their tenure. When the left-wing state governments ruled, most municipalities were dominated by left-wing parties. The left-wing state government could thus focus on maintaining its political lead by supporting aligned municipalities. The right-wing government, in contrast, faced an opposing bloc of municipalities and thus had to focus on buying off municipalities.

Our results suggest a number of conclusions for the literature on the political economy of intergovernmental transfers. First, governments appear to use discretionary transfers to achieve several goals at the same time. Which goals they prioritize depends on the political environment they face. Second, political manipulations of transfer policies happen not only in countries with a presidential system at the local level, but also in countries where local politics follows a parliamentary model. Third, transfer manipulations are not restricted to developing and emerging countries, but take place in the developed world as well. One avenue for future research is to expand on the observation that the same transfer program can be used to pursue many goals simultaneously. This issue could be analyzed both theoretically and empirically.

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Table 1: Political alignment of the local council and transfers under different state governments, Parametric RDD

	Left-wing state government (before 1999)			Right-wing state government (after 1999)		
	(I)	(II)	(III)	(IV)	(V)	(VI)
Aligned majority	0.246*	0.281*	0.251	-0.190	-0.394**	-0.351
	(0.131)	(0.169)	(0.208)	(0.139)	(0.193)	(0.275)
N	2430	2430	2430	3023	3023	3023
Polynomial	Linear	Quadratic	Cubic	Linear	Quadratic	Cubic

Notes: a) Dependent variable: log real budget support transfers per capita. The running variable is the smallest value of the perturbation function where political alignment changes at least 50% of the time in the simulations. b) Estimates for transfer receipts of aligned municipalities derived from a parametric RDD polynomial regression using different degrees (linear to cubic) of the running variable. Aligned municipalities are defined as those where the party block aligned with the state government received more than 50% of the seats. The sample is restricted to all observations with the running variable within the optimal bandwidth according to Imbens and Kalyanaraman (2011): 0.28 for the pre-1999 period and 0.33 for the post-1999 period. The state government was left-wing in the 1989-1998 period (SPD and Green Party coalition) and right-wing in the 1999-2010 period (CDU and FDP coalition and sole CDU government). c) Standard errors are robust to heteroscedasticity and clustered at the level of the municipality. d) Stars indicate significance levels at 10%(*), 5%(**) and 1%(***).

Table 2: Political alignment of council and transfers under different state governments, Nonparametric RDD

	Left-wing state government (before 1999)			Right-wing state government (after 1999)		
	(I)	(II)	(III)	(IV)	(V)	(VI)
Aligned majority	0.244	0.305**	0.297**	-0.307*	-0.087	-0.069
SE	(0.165)	(0.115)	(0.086)	(0.173)	(0.133)	(0.109)
Bandwidth	1/2 (I&K)	(I&K)	2 (I&K)	1/2 (I&K)	(I&K)	2 (I&K)

Notes: a) Dependent variable: log budget support transfers per capita. b) Estimates for transfer receipts of aligned municipalities derived from nonparametric RDD local linear regression. Results are reported for bandwidths that are 50%, 100%, and 200% of the respective optimal bandwidth according to Imbens and Kalyanaraman (2011) (I&K pre-1999: 0.28, I&K post-1999: 0.33), using a triangular kernel. Aligned municipalities are defined as those where the party block aligned with the state government received more than 50% of the seats. The state government was left-wing in the 1989-1998 period (SPD and Green Party coalition) and right-wing in the 1999-2010 period (CDU and FDP coalition and sole CDU government). c) Stars indicate significance levels at 10%(*), 5%(**) and 1%(***).

Table 3: Political alignment of council and transfers under different state governments, Parametric RDD, Seat shares as indicators of close elections

	Left-wing state government (before 1999)			Right-wing state government (after 1999)		
	(I)	(II)	(III)	(IV)	(V)	(VI)
Aligned majority	0.234***	0.164*	0.251**	-0.137	-0.324**	-0.624***
	(0.073)	(0.094)	(0.113)	(0.097)	(0.152)	(0.191)
N	3986	3986	3986	4928	4928	4928
Polynomial	Linear	Quadratic	Cubic	Linear	Quadratic	Cubic

Notes: a) Dependent variable: log real budget support transfers per capita. The running variable is the aggregated seat share of the parties aligned with the state government. b) Estimates for transfer receipts of aligned municipalities derived from a parametric RDD polynomial regression using different degrees (linear to cubic) of the running variable. Aligned municipalities are defined as those where the party block aligned with the state government received more than 50% of the seats. All observations with the running variable within the interval [-0.5, 0.5] are used in the regressions (i. e. the seat share variable is normalized). The state government was left-wing in the 1989-1998 period (SPD and Green Party coalition) and right-wing in the 1999-2010 period (CDU and FDP coalition and sole CDU government). c) Standard errors are robust to heteroscedasticity and clustered at the level of the municipality. d) Stars indicate significance levels at 10%(*), 5%(**) and 1%(***).

Table 4: Political alignment of the local council and transfers under different state governments, Parametric RDD

	Left-wing state government (before 1999)			Right-wing state government (after 1999)		
	(I)	(II)	(III)	(IV)	(V)	(VI)
Expenditures per capita						
Aligned majority	-0.007	0.008	-0.054	-0.003	-0.035	-0.019
	(0.019)	(0.026)	(0.035)	(0.023)	(0.027)	(0.033)
N	2426	2426	2426	3017	3017	3017
Revenues per capita						
Aligned majority	0.011	0.028*	-0.023	0.003	-0.011	-0.007
	(0.012)	(0.016)	(0.022)	(0.018)	(0.023)	(0.029)
N	2426	2426	2426	3017	3017	3017
Business tax rate						
Aligned majority	-0.001	-0.004	0.001	-0.008	0.001	-0.010
	(0.004)	(0.005)	(0.007)	(0.006)	(0.007)	(0.008)
N	2426	2426	2426	3017	3017	3017
Property tax rate A						
Aligned majority	0.004	-0.005	-0.006	-0.003	-0.008	-0.019
	(0.005)	(0.007)	(0.009)	(0.010)	(0.012)	(0.016)
N	2426	2426	2426	2998	2998	2998
Property tax rate B						
Aligned majority	-0.002	-0.014	-0.003	-0.007	-0.014	-0.016
	(0.008)	(0.010)	(0.012)	(0.014)	(0.016)	(0.018)
N	2426	2426	2426	3017	3017	3017
Polynomial	Linear	Quadratic	Cubic	Linear	Quadratic	Cubic

Notes: a) Dependent variable is the fifth lag of: log real total expenditures per capita, log real current revenues per capita, log business tax multiplier, log property tax A multiplier, log business tax B multiplier. The running variable is the smallest value of the perturbation function where political alignment changes at least 50% of the time in the simulations. b) Estimates for transfer receipts of aligned municipalities derived from a parametric RDD polynomial regression using different degrees (linear to cubic) of the running variable. Aligned municipalities are defined as those where the party block aligned with the state government received more than 50% of the seats. The sample is restricted to all observations with the running variable within the optimal bandwidth according to Imbens and Kalyanaraman (2011): 0.28 for the pre-1999 period and 0.33 for the post-1999 period. The state government was left-wing in the 1989-1998 period (SPD and Green Party coalition) and right-wing in the 1999-2010 period (CDU and FDP coalition and sole CDU government). c) Standard errors are robust to heteroscedasticity and clustered at the level of the municipality. d) Stars indicate significance levels at 10%(*), 5%(**) and 1%(***).

Table 5: Political alignment of the local council and transfers under different state governments, Parametric RDD

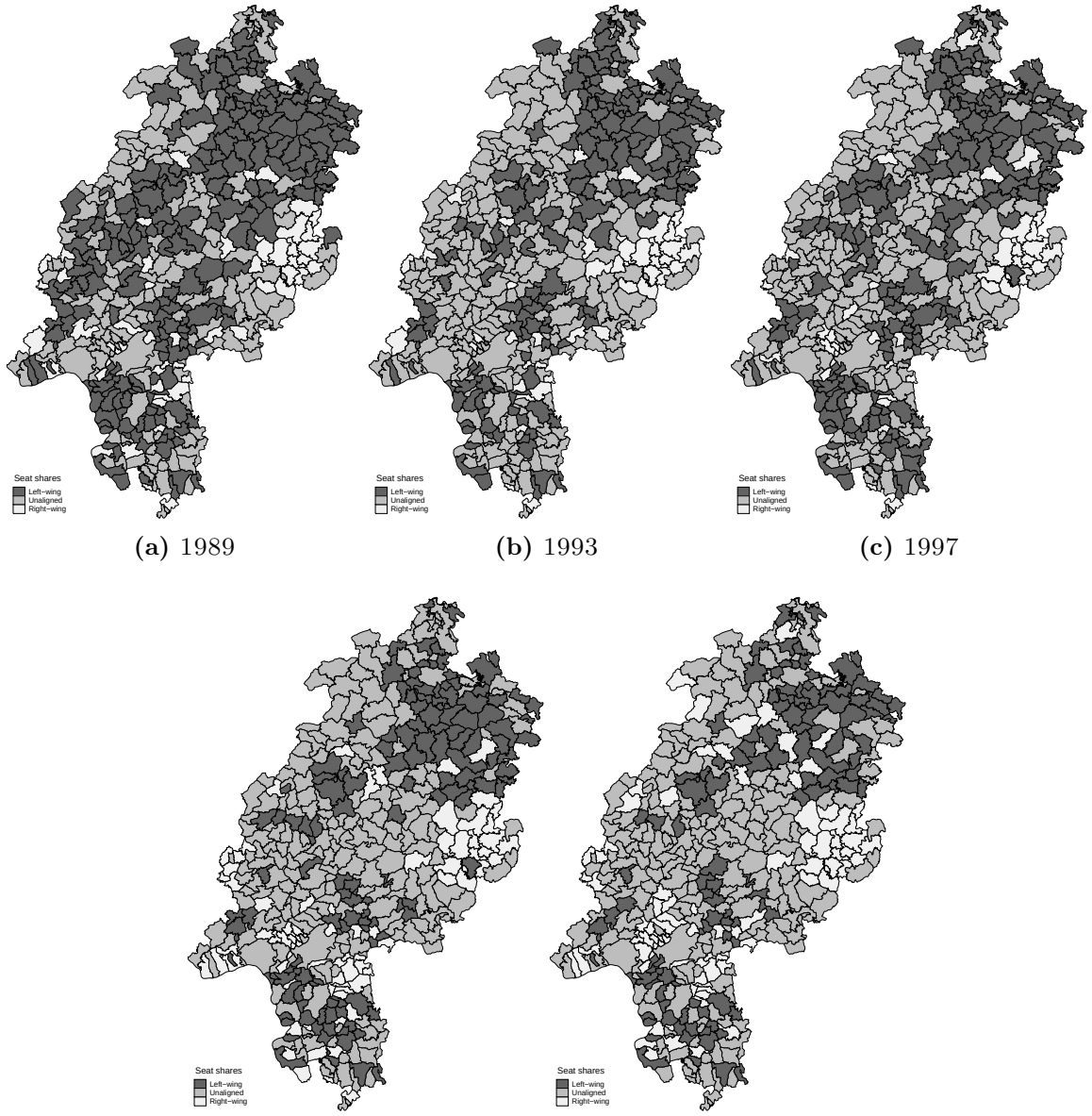
	Left-wing state government (before 1999)		
	(I)	(II)	(III)
Left-wing state government (1989-1998)			
Aligned majority, 1989-1992	0.265*	0.257*	0.224
	(0.148)	(0.154)	(0.166)
Aligned majority, 1993-1996	0.114	0.102	0.076
	(0.100)	(0.110)	(0.118)
Aligned majority, 1998-1999	0.141	0.130	0.100
	(0.125)	(0.138)	(0.141)
N	2430	2430	2430
Right-wing state government (1989-1999)			
Aligned majority, 1999-2000	-0.311	-0.386**	-0.314
	(0.189)	(0.194)	(0.202)
Aligned majority, 2001-2005	-0.116	-0.199	-0.139
	(0.134)	(0.152)	(0.165)
Aligned majority, 2006-2010	-0.194*	-0.266**	-0.206*
	(0.114)	(0.116)	(0.124)
N	3023	3023	3023
Polynomial	Linear	Quadratic	Cubic

Notes: a) These regressions replicate the baseline models in Table 1 with interactions between the political alignment of municipalities and dummies for legislative periods. b) Dependent variable: log real budget support transfers per capita. The running variable is the smallest value of the perturbation function where political alignment changes at least 50% of the time in the simulations. c) Estimates for transfer receipts of aligned municipalities derived from a parametric RDD polynomial regression using different degrees (linear to quartic) of the running variable. Aligned municipalities are defined as those where the party block aligned with the state government received more than 50% of the seats. The sample is restricted to all observations with the running variable within the optimal bandwidth according to Imbens and Kalyanaraman (2011): 0.28 for the pre-1999 period and 0.33 for the post-1999 period. The state government was left-wing in the 1989-1998 period (SPD and Green Party coalition) and right-wing in the 1999-2010 period (CDU and FDP coalition and sole CDU government). d) Standard errors are robust to heteroscedasticity and clustered at the level of the municipality. e) Stars indicate significance levels at 10%(*), 5%(**) and 1%(***).

Table 6: Political alignment of the local council and transfers under different state governments, Parametric RDD

	Left-wing state government (before 1999)			Right-wing state government (after 1999)		
	(I)	(II)	(III)	(IV)	(V)	(VI)
Before election						
Aligned majority	0.635**	0.780**	0.731*	-0.151	-0.426	-0.276
	(0.248)	(0.303)	(0.402)	(0.180)	(0.267)	(0.368)
N	1010	1010	1010	1432	1432	1432
After election						
Aligned majority	0.127	0.034	0.065	-0.186	-0.353	-0.444
	(0.147)	(0.209)	(0.255)	(0.218)	(0.277)	(0.408)
N	1412	1412	1412	1591	1591	1591
Polynomial	Linear	Quadratic	Cubic	Linear	Quadratic	Cubic

Notes: a) Dependent variable: log real budget support transfers per capita. The running variable is the smallest value of the perturbation function where political alignment changes at least 50% of the time in the simulations. b) The samples are restricted in the upper panel to the two years before a local election (1991-1992, 1995-1996, 1999-2000, 2004-2005, 2009-2010). In the lower panel, the sample is restricted to all other years (1989-1990, 1993-1994, 1997-1998, 2001-2003, 2006-2008). c) Estimates for transfer receipts of aligned municipalities derived from a parametric RDD polynomial regression using different degrees (linear to cubic) of the running variable. Aligned municipalities are defined as those where the party block aligned with the state government received more than 50% of the seats. The sample is restricted to all observations with the running variable within the optimal bandwidth according to Imbens and Kalyanaraman (2011): 0.28 for the pre-1999 period and 0.33 for the post-1999 period for the full samples. The state government was left-wing in the 1989-1998 period (SPD and Green Party coalition) and right-wing in the 1999-2010 period (CDU and FDP coalition and sole CDU government). d) Standard errors are robust to heteroscedasticity and clustered at the level of the municipality. e) Stars indicate significance levels at 10%(*), 5%(**) and 1%(***).



(a) 1989 **(b)** 1993 **(c)** 1997

(d) 2001 **(e)** 2006

Figure 1: Left-wing and right-wing absolute majorities in Hessian local elections

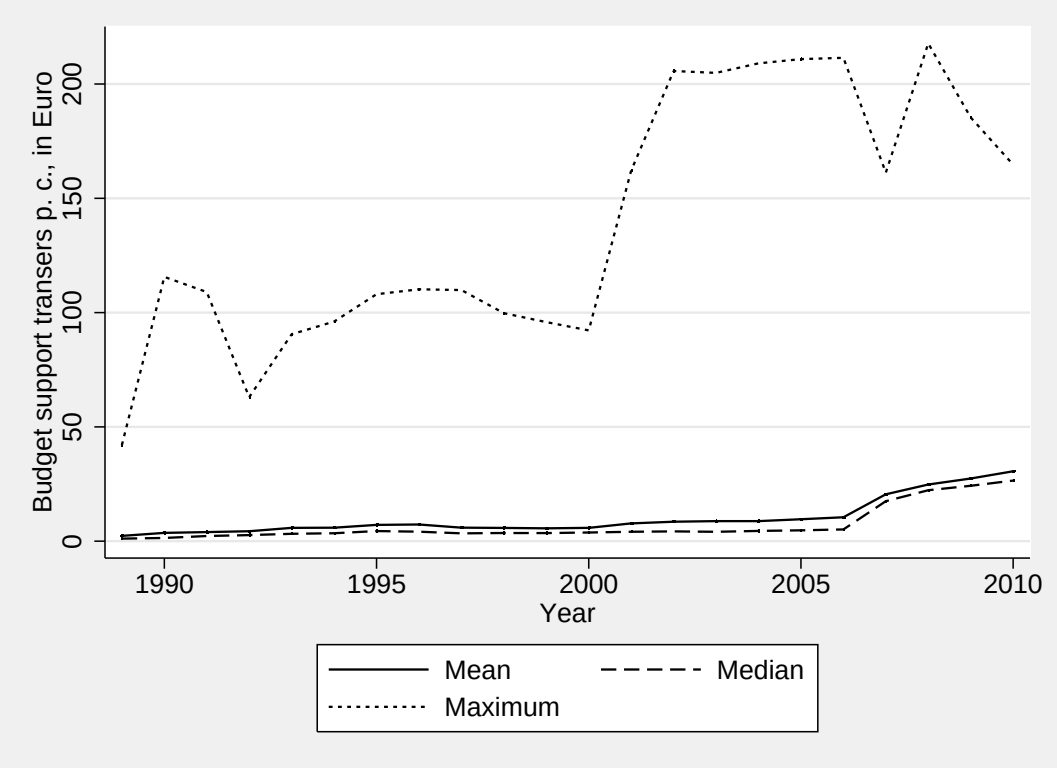
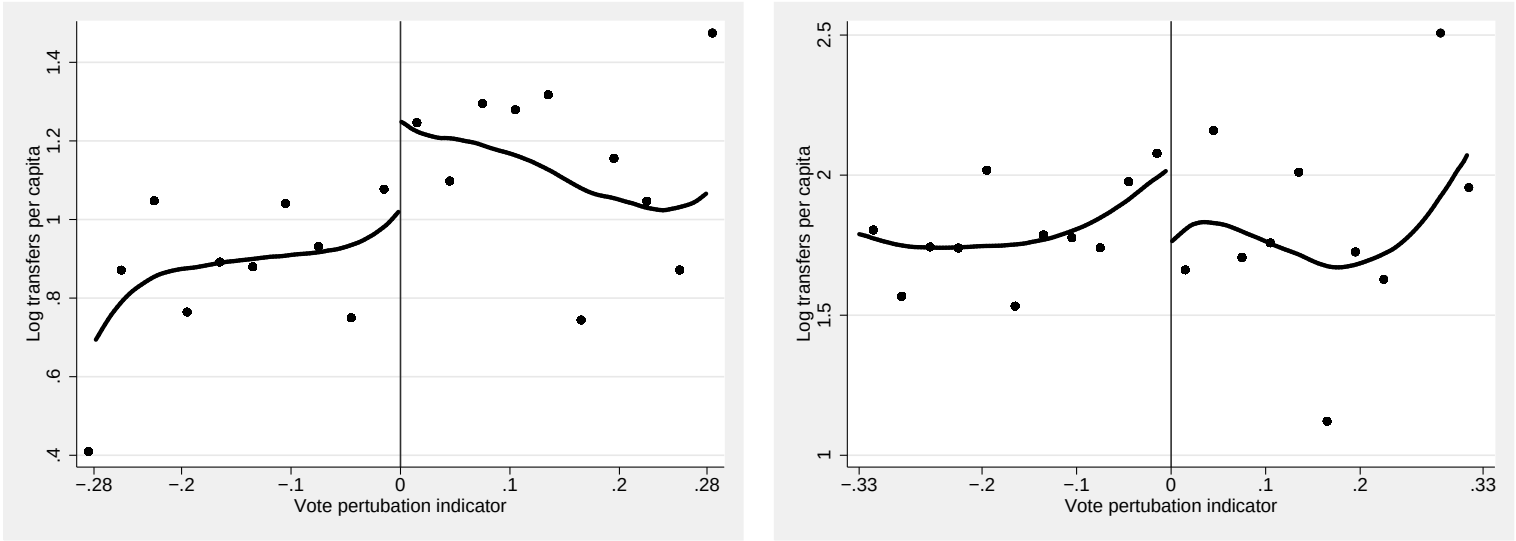
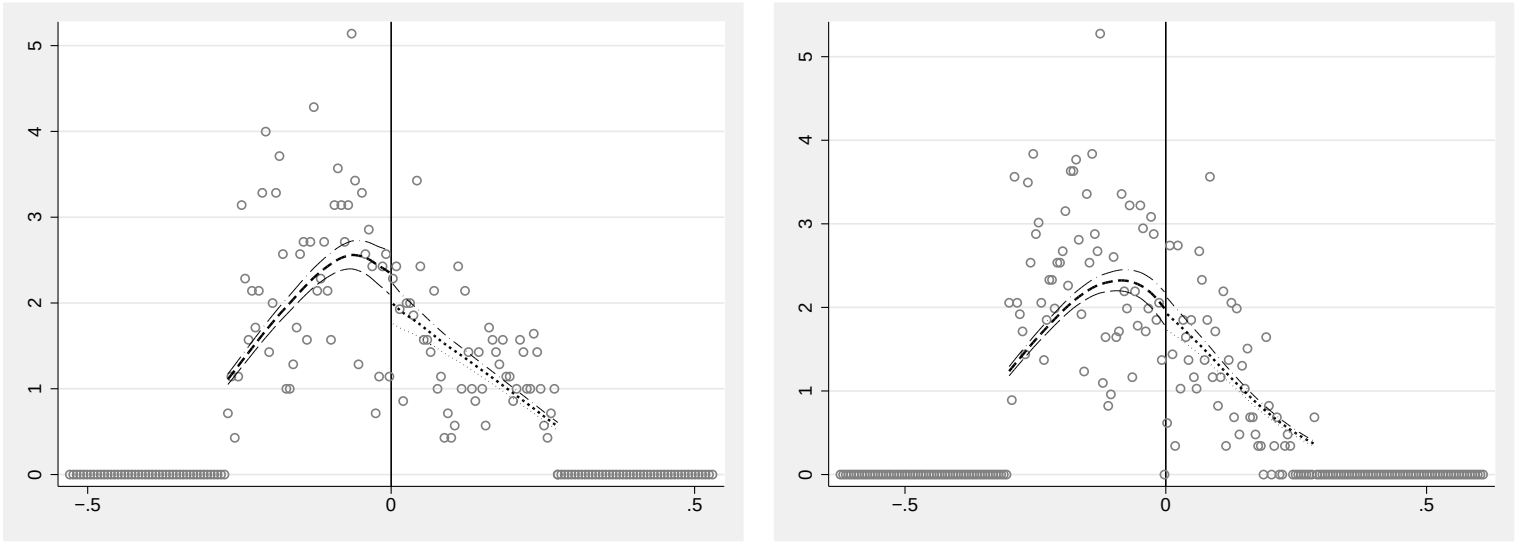


Figure 2: Budget support transfers over time.



(a) Left-wing state government (before 1999) **(b)** Right-wing state government (after 1999)

Figure 3: Political alignment and discretionary transfers This figure presents RDD plots for whether municipalities aligned (i. e. where the aligned party block has an absolute majority in the council) with the state government receive discontinuously different transfers. The dots represent bin averages of log transfers per capita. Bins have width 0.03. The polynomial smooth is based on the non-averaged data, using a bandwidth 0.28 in the pre-1999 and 0.33 in the post-1999 period, a quadratic degree, and a triangular kernel.

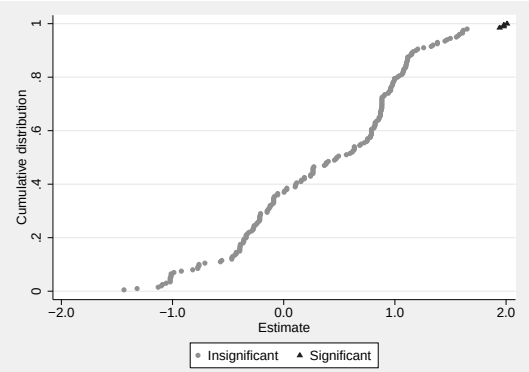


(a) Before 1999 **(b)** After 1999

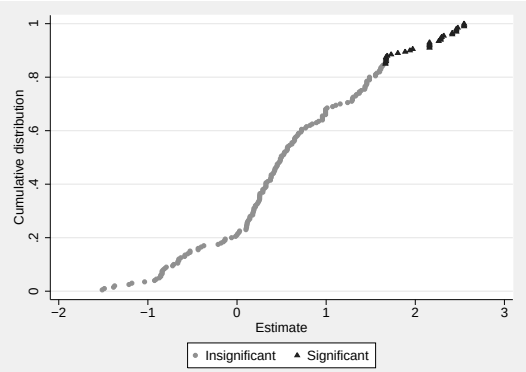
Figure 4: McCrary plots for the indicator of close elections These plots tests whether there is a discontinuity in the running variable – the indicator of close elections – at the threshold to check for selective manipulation. Separate plots for the pre-1999 and post-1999 periods are presented. The plots are based on the default bin sizes and bandwidths.

Pre-1999 period

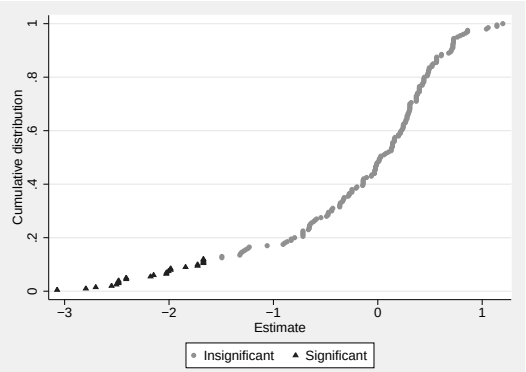
(a) Linear polynomial



(b) Quadratic polynomial

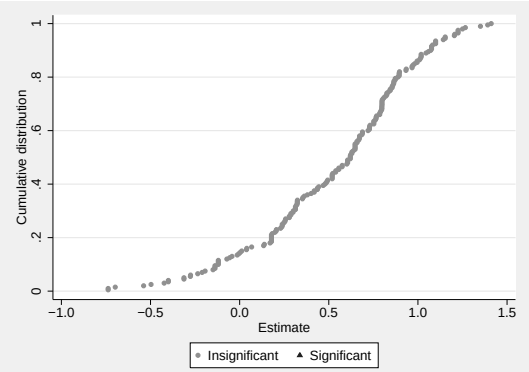


(c) Cubic polynomial

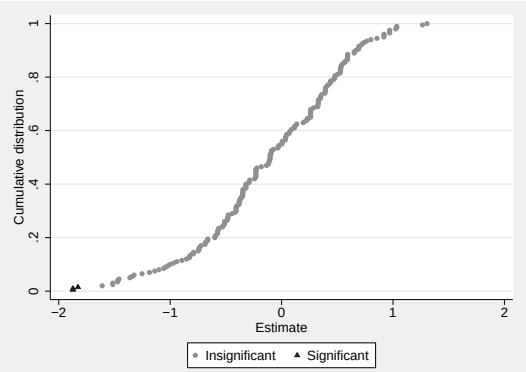


Post-1999 period

(d) Linear polynomial



(e) Quadratic polynomial



(f) Cubic polynomial

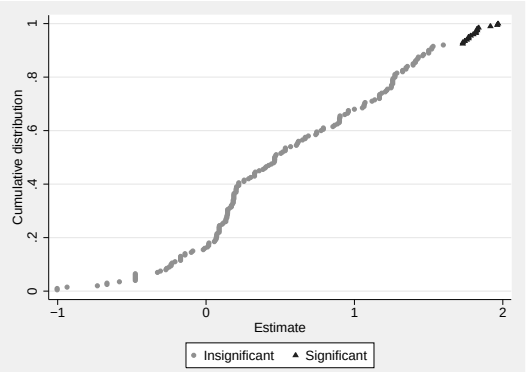


Figure 5: Placebo tests for the pre- and post-1999 periods This figure shows the cumulative distribution of z-statistics of the placebo estimates for the pre- and post-1999 period obtained for fake thresholds in the intervals (-0.15, -0.05) and (0.05, 0.15) in steps of 0.001, using linear to cubic polynomials. Each point indicates the percentile of a particular z-statistic. Significant coefficients are additionally marked with a black triangle.

Appendix A: Proof of proposition 1.

The proof of proposition 1 is a simple application of the implicit function theorem. Implicitly differentiating the first order condition for unaligned municipalities gives

$$\frac{\phi'(g')^2 R}{\sigma}\frac{d\tau_i}{d\delta_U} + \frac{g'' R\phi}{\sigma}\frac{d\tau_i}{d\delta_U} + Vs''\left(\frac{d\tau_i}{d\delta_U} + 1\right) - c''\frac{d\tau_i}{d\delta_u} = 0 \tag{A.1}$$

At $SEAT_{i,t} = 0,5$, the standard normal distribution has its maximum, hence $\phi' = 0$. Therefore, Equation A.1 can be simplified and rearranged as follows:

$$\frac{d\tau_i}{d\delta_U} = \frac{-Vs''}{\frac{g''R}{\sigma} + Vs'' - c''} < 0. \quad \blacksquare \tag{A.2}$$

Appendix B: Details on perturbation procedure

The main text describes the perturbation procedure in general terms. In this appendix, we provide additional details. The most important aspect of the procedure is to map the perturbed vote vector into a vector of seats for all parties. This is non-trivial as the Hessian local electoral law is fairly detailed and, moreover, was changed decisively in 2001. We first describe the most important features of the electoral law prior to 2001. Thereafter, we describe the changes of the 2001 reform.

According to the pre-2001 electoral law, every citizen of a municipality had one vote which she would cast for her preferred party list. Party lists were closed. Typically, all four major national parties, a number of additional national and state-specific parties, and several municipality-specific voter initiatives would field lists. Seats were allocated to a party based on its vote share according to the Hare-Niemeyer (largest remainder) procedure. However, every municipality had a 5% electoral threshold.

The Hare-Niemeyer procedure in the pre-2001 period would hence work as follows. Call the aggregate number of votes of all parties that had surpassed the 5% threshold x. Second, call the total number of seats in the council s. Then the "price" in terms of votes for a seat in the council is $p = x/s$. The total number of sets are determined based on

this price in (typically) two rounds. The initial number of seats a party receives is then given by $s_{i,r=1} = int(x_i/p)$, where $s_{i,r}$ denotes the seats of a party i after round r. $int(\cdot)$ denotes the integer part of the ratio x_i/p. Typically, some seats remain unallocated after the first round. The remaining seats are allocated according to the largest remainder. That is, parties are ranked according to their remainders after the first round. If one seat had remained unallocated after the first round, it is given to the top ranked party. If two seats had remained, the two top ranked parties would each receive a seat, etc.

The 2001 reform changed the electoral law considerably. First, voters were given as many votes as there were seats available. Each voter could split his votes between different party lists and/or give an individual candidate up to three votes. Second, party lists were also made open. In particular, voters were allowed to delete individual candidates from a particular party list. Third, the 5% electoral threshold was abolished. However, the seat allocations procedure still took place according to Hare-Niemeyer. That is, all votes were aggregated and divided by the total number of seats. The difference relative to the pre-2001 period was (i) that there are many more votes to be aggregated and (ii) that the votes of all parties rather than only those with vote shares above 5% were aggregated.

As stated in the main text, we increase the total number of votes n that is added (subtracted) to the votes received by the aligned parties and subtracted (added) to the votes received by all other parties by "some" number if the political alignment of a municipality does not change in a particular simulation. We did not specify the number because it varies between the pre- and post-2001 period. In the pre-2001 period, we increase n after each unsuccessful simulation by 10 votes. In the post-2001 period, we increase the number of votes by 100 since voters can cast several votes after the reform and hence the total number of votes is larger.

Appendix C: Data sources and summary statistics.

Table C.1: Definition of Variables

Label	Description	Source
Transfers per capita	Log budget support transfers(*Zuweisungen und Zuschüsse für laufende Zwecke*).	Hessian State Statistical Office
Perturbation variable	Indicator for close elections. See main text for details.	Own construction based on data from Hessian State Statistical Office
Left-wing seat share	Seat share of the left-wing party bloc (SPD and Green Party)	Own construction based on data from Hessian State Statistical Office
Right-wing seat share	Seat share of the right-wing party bloc (CDU and FDP)	Own construction based on data from Hessian State Statistical Office
Expenditures per capita	Total expenditures per capita.	Hessian State Statistical Office
Revenues per capita	Current revenues per capita.	Hessian State Statistical Office
Business tax multiplier	Business tax multiplier (*Gewerbesteuerhebesatz*) which determines the effective business tax rate in a municipality.	Hessian State Statistical Office
Property tax rate A multiplier	Property tax multiplier (*Grundsteuer A Hebesatz*) which determines the effective property tax rate on agricultural properties in a municipality.	Hessian State Statistical Office
Property tax rate B multiplier	Property tax multiplier (*Grundsteuer B Hebesatz*) which determines the effective property tax rate on non-agricultural properties in a municipality.	Hessian State Statistical Office

Table C.2: Summary statistics

Variable		Mean	Std. Dev.	Min.	Max.	N
Pre-1999						
Log transfers per capita	overall	0.924	1.350	-6.393	4.750	4009
	between		0.937	-1.589	4.504	421
	within		0.976	-5.044	4.530	9.523
Perturbation variable	overall	0.018	0.345	-0.988	3.861	3986
	between		0.330	-0.979	2.551	420
	within		0.126	-2.602	1.328	9.490
Left-wing seat share	overall	48.296	14.080	0.000	81.081	4204
	between		13.413	0.000	78.378	421
	within		4.317	31.388	70.518	9.986
Right-wing seat share	overall	33.813	12.673	0.000	70.968	4204
	between		12.165	0.000	64.516	421
	within		3.575	11.591	51.591	9.986
Log expenditures per capita	overall	7.119	0.263	6.389	8.885	4006
	between		0.179	6.741	7.881	421
	within		0.191	6.505	8.406	9.515
Log current revenues per capita	overall	6.749	0.252	6.003	8.128	4006
	between		0.188	6.253	7.542	421
	within		0.167	6.185	7.775	9.515
Log business tax multiplier	overall	5.719	0.088	5.394	6.064	4006
	between		0.085	5.413	6.029	421
	within		0.024	5.436	5.885	9.515
Log property tax A multiplier	overall	5.524	0.172	5.011	6.109	4006
	between		0.170	5.048	6.109	421
	within		0.024	5.278	5.736	9.515
Log property tax B multiplier	overall	5.381	0.205	4.605	5.814	4006
	between		0.200	4.785	5.799	421
	within		0.043	5.179	5.866	9.515
Post-1999						
Log transfers per capita	overall	1.787	1.535	-5.103	5.383	5044
	between		0.946	-0.561	4.641	421
	within		1.210	-4.540	5.659	11.981
Perturbation variable	overall	-0.247	0.481	-13.208	6.684	4653
	between		0.298	-3.011	1.236	419
	within		0.374	-10.443	5.201	11.105
Left-wing seat share	overall	43.993	13.583	0.000	80.000	5044
	between		13.035	0.000	78.889	421
	within		3.860	22.978	76.601	11.981
Right-wing seat share	overall	37.815	13.523	0.000	74.194	5044
	between		12.887	0.000	67.222	421
	within		4.120	11.366	59.192	11.981
Log expenditures per capita	overall	7.386	0.234	5.979	9.822	5034
	between		0.190	6.958	8.572	421
	within		0.137	6.235	8.636	11.957
Log current revenues per capita	overall	7.098	0.227	6.003	9.276	5034
	between		0.190	6.662	8.305	421
	within		0.123	6.186	8.070	11.957
Log business tax multiplier	overall	5.762	0.086	5.298	6.064	5034
	between		0.083	5.521	6.064	421
	within		0.025	5.396	5.920	11.957
Log property tax A multiplier	overall	5.560	0.163	5.050	6.109	5016
	between		0.158	5.136	6.109	421
	within		0.040	5.240	5.932	11.915
Log property tax B multiplier	overall	5.483	0.156	4.828	5.940	5034
	between		0.142	5.120	5.871	421
	within		0.064	5.036	5.876	11.957

This table presents separate summary statistics for the pre- and post-1999 periods.