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**Article**

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# Strategic spending in federal governments: theory and evidence from the US

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## ABSTRACT

Past research on the allocation of federal resources to localities has failed to account for the interaction between federal and state governments. Here a sequential-move game of such interaction is developed, where state governments behave like political surrogates for the federal government when they are politically aligned, while they engage in political competition when not. The model predicts that aligned states increase the funding of aligned localities, while the federal government increases the funding of aligned localities only within nonaligned states. Using data from the Census of Governments 1982–2002 and a difference-in-difference strategy reveals that such predictions are upheld by the data. My findings find a limit to the benefits of decentralization. Although the standard view is that it removes political power from the center, I find that decentralization could concentrate such power more at local level, which may give the President political advantages within unaligned states through aligned localities.

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## 1. Introduction

Incumbent politicians have several reasons to deviate from pure welfare maximization when deciding the distribution of resources. Electoral competition may induce incumbents to allocate more resources to localities with a high proportion of swing voters – voters who are not specifically attached to any of the parties.<sup>1</sup> By contrast, if politicians are risk averse, they might see a safer investment in targeting partisan localities – localities with many voters loyal to the incumbent's party.<sup>2</sup> Apart from their own policy objectives, incumbents may also want to help other politicians from their party: for example, influencing the composition of Congress can help to enact a greater portion of the executive's legislative agenda when a large number of co-partisans reside within Congress.<sup>3</sup>

Studies on the political allocation of resources tend to treat democracies as if they were unitary systems with only one level of government actively involved in the distribution of resources. In reality, however, multiple levels of government each pursue their own political goals. For example, apart from the US federal government, states

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<sup>1</sup>Lindbeck and Weibull (1987, 1993), Case (2001), Strömberg (2008) and Arulampalam, Dasgupta and Dhillon (2009).

<sup>2</sup>Cox and McCubbins (1986), Ansolabehere and Snyder (20062) and Larcinese et al. (2006).

<sup>3</sup>Coleman (1999) and Howell, Adler, Cameron and Riemann (2000).

also allocate resources to localities.<sup>4</sup> In such a system, governments will have an incentive to act strategically. For example, the central government should consider whether to allocate resources to state governments or to localities taking into account that state governments will also target specific localities. In this paper, I model this type of strategic interaction between different levels of government, and test the model using data on the distribution of federal and state transfers to localities in the US.

Government preferences regarding resource allocation are determined to a large extent by party politics. State and federal governments may be aligned (when they are controlled by politicians from the same party) or nonaligned (when they are controlled by different parties). Because aligned state governments are likely to behave like political surrogates for the federal government, the former may want to target spending toward the preferred localities of the latter, apart from targeting their own preferred localities.<sup>5</sup> Nonaligned state governments, by contrast, are likely to have different spending priorities since they tend to behave like political competitors of the federal government. A strategic federal government should take this into account. Considering federal-to-local transfers, it should spend more on its preferred localities in nonaligned states, where these localities are likely to be at a disadvantage, than in aligned states, where the preferred localities are likely to receive state funds as well. Federal-to-state transfers should be greater in the case of aligned states, which behave like political surrogates of the federal government, than in the case of nonaligned states, which act like political competitors.

I formalize this idea by setting up a sequential move game with perfect information in which the federal government is the leader and the states are the followers. States can be aligned or nonaligned with the federal government, and each player chooses the intergovernmental transfers made to lower level governments (federal-to-state, federal-to-local and state-to-local). I show that, in equilibrium, the federal government will not transfer funds to localities that are also the political target of state spending. Doing so would simply crowd out similar spending by the state. In aligned states, the optimal federal strategy is to target spending toward the state government. By contrast, the federal government does transfer directly to localities in nonaligned states, since these state governments have different spending priorities. The prediction therefore is that we should observe more federal transfer to politically preferred localities within nonaligned states than within aligned ones.

I estimate the predictions of the model using data on the allocation of US federal and state government transfers to counties. I follow a difference-in-difference strategy to test whether the federal government transfers more resources to politically aligned counties within nonaligned states than within aligned ones.<sup>6</sup> Consistent with the model, I find that the federal government increases transfers to politically aligned counties by around 7 percentage points -or roughly \$11.50 per capita – when the state government changes from being aligned with the federal government to being nonaligned, while the state

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<sup>4</sup>Studies on the political determinants of state–county transfers include Frederickson and Cho (1974), Ansolabehere et al. (2002) and Ansolabehere and Snyder (2006).

<sup>5</sup>State government representatives may have several reasons to help pursuing the political goals of the aligned federal government, for example, trying to build up reputation within the party. Alternatively or additionally, federal and state governments may have similar political preferences regarding resource allocation when they are aligned, while different political preferences when they are not aligned. The main finding of the paper is not sensitive to the assumption adopted. I will explain this in more detail in [Section 2](#).

<sup>6</sup>[Appendix A](#) contains a detailed discussion on the construction of these measures of political alignment.

government decreases transfers to those counties in a similar magnitude (in absolute value). By contrast, there is no evidence for such changes for nonaligned counties. This demonstrates the importance of controlling for the three-way political alignment between local, state and federal government when studying the determinants of inter-governmental spending.

My study has three broad implications. First, my results suggest that previous findings on the political determinants of federal transfers to localities may contain biased estimates. For example, some previous studies estimate the effect of local–federal political alignment on the allocation of federal transfers without controlling for state–federal alignment (Berry, Burden, & Howell, 2010; Levitt & Snyder, 1995, 1997). If local–federal and state–federal alignments are positively correlated, my findings imply that the effect of local–federal alignment will be underestimated since it represents a weighted average of nonaligned states, where I find strong effects, and aligned states, where I find none.

Second, I show that – once the strategic interaction between governments is taken into account – the data show evidence of political opportunism in the allocation of US federal transfers. The federal government appears to take advantage of the multilayered system of government in bringing federal dollars to its constituencies. While some previous studies highlight the political incentives present in a federal system (Bugarin & Marciniuk, 2017; Dixit & Londregan, 1998; Volden, 2005), to my knowledge this is the first paper to test this empirically using a novel identification strategy that allows also for the inclusion of state transfers to counties.

Third, my results have general implications for normative studies of decentralization. Other scholars have studied the efficiency gains from decentralization (Besley & Coate, 2003; Lockwood, 2002; Oates, 1972). However, these studies compare public good provision in a pure central system to pure regional or local provision. My results suggest that a federal system with both central and multiple lower governments behaves differently from these extremes. In this type of decentralized system, the federal government might engage in a sort of competition with nonaligned states for mobilizing voters, while cooperating with states that are politically aligned with it.

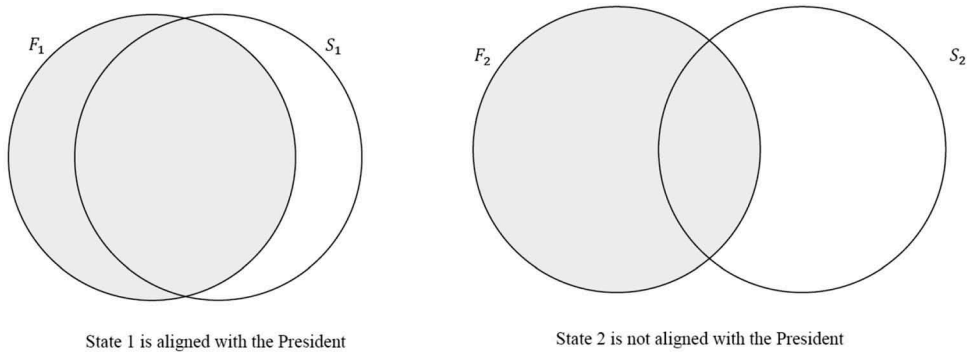
The rest of the paper is organized as follows. The next section presents the model. In Section 3, I present the data and econometric specification used to test the theoretical predictions. Section 4 contains the main empirical results and Section 5 the extensions. Finally, Section 6 concludes.

## 2. Theoretical framework

I model the political allocation of discretionary government expenditures by two levels of government: federal and state.<sup>7</sup> Both governments can spend directly at the local level (by spending funds in specific districts or counties). In addition, the federal government can make intergovernmental transfers to states, giving them discretion in how these funds are ultimately spent.

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<sup>7</sup>The model focuses on discretionary spending only, leaving out the analysis formula-based spending. Under this scenario, while a locality will always receive funds from the federal and/or state governments, the model can predict (discretionary) transfers equal to zero.



$F_i$ : set of counties preferred by the President.

$S_i$ : set of counties preferred by the State  $i$ .

$(F_i \cap S_i)$ : set of counties preferred by both the President and State  $i$ .

**Figure 1.** Graphic representation of counties preferred by the President and the states.

Consider two states,  $i = 1, 2$ , and assume that the party that controls State 1 is aligned with the party that controls the federal government (i.e., the President's party) and the party that controls State 2 is not.<sup>8</sup> Counties in both states can be politically preferred by the President (represented by the set  $F_i$ ) and/or politically preferred by the State  $i$  (represented by the set  $S_i$ ). Following the literature discussed in Section 1 and in Appendix A, a county may be politically preferred if it has many loyal voters, if it is a swing county, or because it is represented by an aligned representative with the President.<sup>9</sup> The source of political preference will not matter for the theory, but I will consider each of these possibilities separately in the empirical analysis below. Assume that the amount of counties in each set is the same and equal to  $n$  (i.e.,  $|F_i| = n$  and  $|S_i| = n$ ).<sup>10</sup> Assume that a fraction  $\alpha_i \in (0, 1)$  of those counties is the target of both the President and the State  $i$  governments' spending (i.e.,  $|F_i \cap S_i| = \alpha_i n$ ). It is not unrealistic to assume that the number of counties that are preferred by both the President and the state government is higher in State 1 than in State 2 ( $\alpha_1 > \alpha_2$ ) since the former is aligned with the President and behaves like a political surrogate. This is illustrated in Figure 1.<sup>11</sup>

<sup>8</sup>In Appendix A, I explain why I use the President's party as the party that controls the federal budget. I also explain how the state control of the budget is defined.

<sup>9</sup>Presidents may have various reasons to help members of their own party. For example, he can avoid the potential overturn of a future veto, and thereby keep control of the budget, by ensuring that a certain number of co-partisans are elected into office. For a full discussion, see Appendix A.

<sup>10</sup>This assumption could easily be changed by relying on the following set of new assumptions:  $|F_i \cap S_i| = m_i$ ;  $|F_i \setminus (F_i \cap S_i)| = n_i$ ;  $|S_i \setminus (F_i \cap S_i)| = r_i$  for  $i = 1, 2$ , and  $m_1 > m_2$ ;  $n_2 > n_1$  and  $r_2 > r_1$ . The prediction of the model does not change under this set of assumptions, with the exception of federal-state transfers, in which case further assumptions have to be placed in order to reproduce the desired result (e.g., the function  $H(x)$  adopts the particular form  $\ln(x)$ ).

<sup>11</sup>This model is a generalization of a specific case in which  $\alpha_1 = 1$ . This specific case indicates that all the counties preferred by the federal government are also preferred by the aligned state government, which seems to be a better representation of the surrogate state. Since the main prediction of the model does not change if the specific case is used instead of the general case, I decided to use the latter.

The President decides in the first stage of the game how much to transfer to each state ( $T_1^S$  and  $T_2^S$ ) and how much to transfer directly to each county  $j$  within each state ( $T_{j1}^C$  and  $T_{j2}^C$ ). In the second stage of the game, both States 1 and 2 decide how much to transfer to each county ( $t_{ij}^C$  and  $t_{2j}^C$  respectively). I will assume that the government's budget is exogenous in order to avoid dealing with another source of political opportunism that is raising or lowering taxes. The federal government's budget is  $\tilde{B}^F$  and states' budgets are  $\tilde{B}^1$  and  $\tilde{B}^2$ , respectively.

Assuming that all individuals have the same utility function and the same personal income, the representative individual's utility function of locality  $j$  in State  $i \in (1, 2)$  is  $U^{ij} = H(x^{ij})$ , where  $H'(x) > 0$ ,  $H''(x) < 0$ , and  $x^{ij}$  is the total public spending in the county. Public spending could be financed by either the State  $i$  only, State  $i$  and the President or by the President only. Following Oates (1999), I assume that higher level governments are less efficient at spending at the local level than lower level governments that are "closer" to the target of spending.<sup>12</sup> Specifically, I let total public spending be  $x^{ij} = \theta T_{ij}^C + t_{ij}^C$ , where  $\theta \in (0, 1)$  represents the relative inefficiency or leakage of President provision compared with the state provision.

The President's payoff is

$$\sum_{i=1}^2 \left( \sum_{j \in (F_i \cap S_i)} H(\theta T_{ij}^C + t_{ij}^C) + \sum_{j \in (F_i \setminus (F_i \cap S_i))} H(\theta T_{ij}^C) \right).$$

The President faces the following budget constraint:

$$\tilde{B}^F = \sum_{i=1}^2 \left( \sum_{j \in F_i} T_{ij}^C + T_i^S \right).$$

State  $i$ 's payoff is<sup>13</sup>

$$\sum_{j \in (F_i \cap S_i)} H(\theta T_{ij}^C + t_{ij}^C) + \sum_{j \in (S_i \setminus (F_i \cap S_i))} H(t_{ij}^C),$$

and it faces the budget constraint

$$\tilde{B}^i + T_i^S = \sum_{j \in S_i} t_{ij}^C.$$

Note that, because each government only cares about counties that are preferred by it,  $t_{ij}^C = 0$  for  $j \in (F_i \setminus (F_i \cap S_i))$  and  $T_{ij}^C = 0$  for  $j \in (S_i \setminus (F_i \cap S_i))$ .<sup>14</sup> It is important to

<sup>12</sup>Oates (1999) argued that lower level governments should be more efficient in providing local public goods because they are "closer to the people", possessing knowledge of both local preferences and cost conditions that a central agency is unlikely to have. Such local knowledge could also make the political allocation of resources more effective when lower levels of government take the lead.

<sup>13</sup>Note that since the objective function is quasi-concave and the budget restriction is linear, the solution will be interior, i.e., positive state-county transfers. Then, there is no need of adding non-negativity restrictions in the Lagrangian. See Appendix B for details.

<sup>14</sup>The model assumes that all preferred counties have the same weight, although the weights should differ since there should be different degrees of preferences based on, among other things, county sizes, income per capita, ethnic fractionalization, percentage of elderly population, percentage of young population, rural counties. Empirically, all these characteristics are controlled for with time-varying controls and fixed-effects.

note that, without loss of generality, this assumption could easily be relaxed. As long as the President and the states attach a higher weight to preferred counties, allowing non-preferred counties to also have a positive weight would not affect the main implications of the model. This is important to note since political negotiation, coalition governments and local strength of parties (among others non-observable political characteristics) may make some non-preferred counties nonignorable.<sup>15</sup>

Solving the model using Backward Induction yields the following:

**Proposition 1.** *In a Subgame Perfect Nash Equilibrium, (1) the President transfers to counties that are politically preferred by him only ( $T_{ij}^C \equiv T_a^C$  for  $i = 1, 2, j \in (F_i \setminus (F_i \cap S_i))$ ) and (2) federal transfers to counties that are preferred by both the President and the state will be equal to zero ( $T_{ij}^C = 0$  for  $i = 1, 2, j \in (F_i \cap S_i)$ ).*

Proof. See Appendix B.

Part (1) of Proposition 1 follows simply from the fact that the President cares about the counties that are preferred by him. Part (2) is more surprising because it indicates that the President will not transfer funds to counties that are also politically preferred by the state. To interpret this result, consider the states' reaction function from solving their maximization problem in the second stage of the game:

$$t_{ij}^{C*} = \frac{1}{n} \left[ B^i + T_i^S + \theta \sum_{l \in (F_i \cap S_i)} T_{il}^C \right] - \theta T_{ij}^C, \text{ for } i = 1, 2 \text{ and } j \in (F_i \cap S_i) \quad (1)$$

$$t_{ij}^{C*} = \frac{1}{n} \left[ B^i + T_i^S + \theta \sum_{l \in (F_i \cap S_i)} T_{il}^C \right], \text{ for } i = 1, 2 \text{ and } j \in S_i \setminus (F_i \cap S_i) \quad (2)$$

Consider the President's choice between transferring an extra dollar to county  $j \in (F_i \cap S_i)$  or to State  $i$ . In the first case, county  $j$  would receive a fraction  $\theta < 1$  of that dollar. Moreover, given (1), State  $i$  would decrease the transfer to that county  $j$  by the amount  $\Delta t_{ij}^{C*} = (\frac{1}{n} - 1)\theta$  and given (2), it would increase the transfers to all the other counties in the group  $S_i - \{j \in (F_i \cap S_i)\}$  by the amount  $\Delta t_{ij}^{C*} = (\frac{1}{n})\theta$  to keep the total public spending in each county that belongs to the state  $i$ 's preferred group  $S_i$  equal. Instead, if the President gave the 1 dollar to State  $i$ , then the State would increase the transfers to each county in the group  $S_i$  by the same amount  $\Delta t_{ij}^{C*} = \frac{1}{n}$ . Comparing the two strategies, the President can target "indirectly" each of his preferred counties in the group  $F_i \cap S_i$  with an extra amount of  $(\frac{1}{n})(1 - \theta)$  dollars if he transfers one extra dollar to states and not directly to the counties in that group. Then, transferring to his preferred counties in the group  $F_i \cap S_i$  is dominated by transferring to the state. This property of the equilibrium comes from the fact that the President is comparatively inefficient at allocating political resources, combined with the fact that he knows that

<sup>15</sup>I thank an anonymous referee for encouraging and advising me on how to add a brief discussion in support of this strong assumption.



each State  $i$  can undo anything he does in the first stage, to meet State  $i$ 's goals in terms of political allocation.

By contrast, the President does transfer to counties that only he prefers ( $j \in F_i \setminus (F_i \cap S_i)$ ), because State  $i$  is not allocating any funds to them. Hence, in equilibrium, the President will allocate resources to his own preferred counties only.

Since the number of counties within each of the three groups ( $F_i \cap S_i$ ,  $F_i \setminus (F_i \cap S_i)$  and  $S_i \setminus (F_i \cap S_i)$ ) differs between States 1 and 2, we observe, on average, different federal transfers to the President's preferred counties within the nonaligned State 2 and within the aligned State 1. Formally stated, we have:

**Corollary 1.** *Average federal transfers to the President's preferred counties are greater in the nonaligned State 2 than in the aligned State 1. Formally,  $((1 - \alpha_2) - (1 - \alpha_1))T_a^C > 0$ .*

Proof. See Appendix B.

Corollary 1 is the main result of the theoretical model. On average, we observe greater federal transfers to preferred counties within nonaligned states because (1) there are more counties preferred by the President only, and (2) as stated in Proposition 1, those counties are the ones that the President targets.

The model also has implications regarding federal-to-state transfers. As stated in Proposition 1, transferring federal funds to the President's preferred counties in the group  $F_i \cap S_i$  is dominated by the strategy of transferring to the State  $i$ . Since the number of counties preferred by both the President and the State is greater for the aligned State 1, that state will receive more federal transfers than the nonaligned State 2. Essentially, the President is more willing to delegate the allocation of funds to State 1 with whom he has more in common.<sup>16</sup> This is formalized in the following corollary<sup>17</sup>:

**Corollary 2.** *Federal transfers to State 1 are greater than to State 2 ( $T_1^S > T_2^S$ ) if the endowments of both states are equal ( $B^1 = B^2$ ).*

Proof. See Appendix B.

How the states distribute funds to the localities remains to be shown, which is necessary to understand the logic behind the surrogate state. Given Corollary 2, since the aligned State 1 receives more transfers from the federal government, and knowing that the share of counties preferred by both the President and the State 1 is higher than

<sup>16</sup>This result is consistent with the findings of Larcinese et al. (2006) in which federal government transfers more funds to aligned states.

<sup>17</sup>Although the President has a preference toward transferring more resources to the aligned State 1 since there are more preferred counties in common (which can be called the "preference effect"), it is also true that State 2 has preferred counties to the President as well that he/she may want to be targeted. If the State 2 has way less own resources than State 1 (i.e.,  $B^1 \gg B^2$ ), then – what can be called – the "income effect" may force the President to transfer to State 2 even more than to State 1. In another words, the income effect operates in the opposite direction to the preference effect when  $B^1 > B^2$ ; therefore, the result may be ambiguous. Of course, in the opposite situation, i.e.,  $B^2 > B^1$ , both the preference and the income effects operate in the same direction, in which case the predicted result still holds, i.e.,  $T_1^S > T_2^S$ . There is no income effect when  $B^1 = B^2$ ; therefore, transfers are determined by the preference effect only. For further details, see Appendix C.

of the State 2 ( $\alpha_1 > \alpha_2$ ), preferred counties by the President should receive on average more funds from State 1 than from State 2. Formally:

**Corollary 3.** *Given that  $T_1^S > T_2^S$  when the endowments of both states are equal ( $B^1 = B^2 = B$ ), (1) state transfers to any of its preferred counties are greater in the State 1 than in the State 2  $t_{1j}^c \equiv t_{1a}^c > t_{2l}^c \equiv t_{2a}^c$  for  $j \in S_1$  and  $l \in S_2$ . (2) Moreover, given that  $\alpha_1 > \alpha_2$ , the average state transfers to the preferred counties by the President are greater in the State 1 as well ( $\alpha_1 t_{1a}^c > \alpha_2 t_{2a}^c$ ).*

Proof. See Appendix B.

Part (1) of Corollary 3 follows simply from the fact that State 1 has more resources than State 2 since the former receives more transfers from the President than the latter. Part (2) of Corollary 3 shows the surrogate effect. Namely, the state transfers on average more resources to the preferred counties by the President when it becomes aligned with him ( $\alpha_1 t_{1a}^c - \alpha_2 t_{2a}^c > 0$ ).

### 3. Data and econometric specification

#### 3.1. Data

The Census of Governments provides reliable and comparable data on the distribution of federal and state expenditures. It collects data on government spending at 5-year intervals throughout the US. I use the years 1982, 1987, 1992, 1997 and 2002, providing county-level data for around 3100 counties. The dependent variable for my analysis is the sum of federal transfers to all local governments inside the county, as a percentage of county personal income (from the Census Bureau).<sup>18</sup> Importantly, the data allow me to identify whether federal funds go directly to any local governments inside the county (federal to county transfers) or indirectly through the state (federal to state transfers).<sup>19</sup>

To what extent are transfers to county discretionary, as opposed to strictly formula based? In Appendix D, I study this question in detail. I first present there the case study of Hunt County, inside the 4th's Congressional District of Texas, where transfers vary according to measures of political alignment. Second, using techniques from Levitt and Snyder (1995, 1997) and Berry et al. (2010) to measure the extent of discretion, I show that the variable I use displays more variance than even the highly discretionary programs from Consolidated Federal Fund Report. In that Appendix, I also propose an alternative, more stringent test for measuring the

<sup>18</sup>Least densely populated counties may receive transfers from the federal government as part of inter-county federal-state infrastructure projects. This can create enormous federal/state transfers as a percentage of local income in those counties, elevating standard errors and potentially making estimators insignificant. For that reason, the highest 2% values of the dependent variable were considered outliers and dropped from the sample. Results are invariant if only the highest 1% values are dropped instead. These are not shown but available upon request.

<sup>19</sup>Some previous studies have used data from the Consolidated Federal Fund Report. These data detail the federal transfers by programs and recipients every year, but one cannot identify whether those funds go directly to a locality through federal agencies or indirectly through state agencies. This distinction is crucial for my study.

variability of federal programs and show that the variable I use appears highly discretionary based on this test as well.

Other data used in my study include controls that are standard in the public finance literature (see [Appendix E](#) for detailed sources). I use the demographic and economic controls (i.e., natural log of real income per capita, black population, population under 18 years old, population over 65 years old, total population), and presidential elections statistics, all from the Census Bureau. The information about Congressional districts was collected from the Atlas of Congressional Districts, taking into account the changing district boundaries. I also use data about Governors, state legislatures and US House Representatives from multiple sources described in [Appendix E](#).

### 3.2. Econometric specification

Based on Corollary 1, I estimate the difference in federal transfers to counties in aligned vs. nonaligned states depending on whether the county is preferred by the President. I follow two approaches to test which counties are likely to be preferred. In the first one, I test Corollary 1 assuming that counties represented by a House Representative from the President's party ("aligned counties") are preferred. In the second one, I test Corollary 1 assuming that counties with a high proportion of independent or loyal voters are preferred ("swing counties" or "partisan counties", respectively).<sup>20</sup> Note that both aligned and swing/partisan counties could be simultaneously preferred. In another words, they do not have to be mutually exclusive events. I control for both counties' characteristics in the same regression but test separately the two hypotheses.<sup>21</sup> At the same time, based on Corollary 3, I test for the surrogate effect. Namely, the state government takes the lead in the distribution of political resources on behalf of the President when they become politically aligned. To test these hypotheses, I estimate the following system of two equations:

$$\begin{aligned} T_{jlit}^C = & \alpha + \eta \cdot t_{jlit}^C + FS_{it} \cdot \beta_{FS} + FC_{jlit} \cdot \beta_{FC} + FS_{it} \cdot FC_{jlit} \cdot \beta_{FS \cdot FC} \\ & + margin_{jlit} \cdot \beta_m + FS_{it} \cdot margin_{jlit} \cdot \beta_{FS \cdot m} + close_{jlit} \cdot \beta_{close} + FS_{it} \cdot close_{jlit} \cdot \beta_{FS \cdot close} \\ & + \mathbf{X}'_{jlit} \cdot \mathbf{b} + \mathbf{D}_t + \mathbf{u}_j + e_{jlit} \end{aligned} \quad (3)$$

$$\begin{aligned} t_{jlit}^C = & a + \phi \left( \frac{1}{R^l - 1} \sum_{k \neq j}^{R^l} t_{klit}^C \right) + FS_{it} \cdot \delta_{FS} + FC_{jlit} \cdot \delta_{FC} \\ & + FS_{it} \cdot FC_{jlit} \cdot \delta_{FS \cdot FC} + margin_{jlit} \cdot \delta_m + FS_{it} \cdot margin_{jlit} \cdot \delta_{FS \cdot m} \\ & + close_{jlit} \cdot \delta_{close} + FS_{it} \cdot close_{jlit} \cdot \delta_{FS \cdot close} + \mathbf{X}'_{jlit} \cdot \mathbf{c} + \mathbf{D}_t + \mathbf{u}_j + \epsilon_{jlit} \end{aligned} \quad (4)$$

where in Equation (3),  $T_{jlit}^C$  is federal transfer to county  $j$ , which lies within congressional district  $l$ , in State  $i$  during year  $t$ ,  $t_{jlit}^C$  is state transfer to county  $j$  that is used to

<sup>20</sup> I use the last presidential election vote margin to construct proxies of swing and partisan counties. I explain the details in [Section 3.2](#).

<sup>21</sup> Not controlling for both counties' characteristics in the same regression may lead to biased estimates because of the potential correlation between alignment categories and electoral vote margin.

control for the relation between federal–county and state–county transfers described and modeled in Section 2. Given the reverse causality problem between these two variables, on Equation (3) I instrument state transfers to county  $j$  ( $t_{jlit}^C$ ) with the average transfer inside the congressional district where county  $j$  lies, but without county  $j$  ( $\left(\frac{1}{R^l-1} \sum_{k \neq j}^R t_{k\text{lit}}^C\right)$ ) because it is less likely that  $e_{jlit}$  is correlated with  $\left(\frac{1}{R^l-1} \sum_{k \neq j}^R t_{k\text{lit}}^C\right)$  than with  $t_{jlit}^C$ . In Appendix F, I provide further details on the – potential – validity of the instrument.<sup>22,23</sup>  $\mathbf{X}'_{jlit}$  are various time varying controls (natural log of real income per capita, percentage of blacks, percentage of people under 18 years old, percentage of people over 65 years old and natural log of population) and  $FC$  and  $FS$  are political alignment dummy variables. Namely,  $FS$  is an indicator that represents federal–state political alignment for the current and the previous 2 years.<sup>24</sup> Based on the discussion in Appendix A, this variable takes a value of 1 if the party that controls the state budget is the same as the President’s party. Similarly,  $FC$  is an indicator that represents federal–county alignment for the current and the previous 2 years. It takes a value of 1 if the congressional district in which county  $j$  lies has a US House Representative from the same party as the President.  $margin$  is the last presidential election vote margin used to test if loyal counties are politically preferred by the President.<sup>25</sup> Additionally, a dummy for *close race* (dummy that takes value of 1 if  $margin$  lies within the interval  $\pm 0.03$ ) is added to test if swing counties are preferred instead of loyal ones. The specification also includes fixed effects: time fixed effects ( $\mathbf{D}_t$ ) are used to control for country-wide effects, such as the political and economic environment at the federal level, and county fixed effects ( $\mathbf{u}_j$ ) control for time-invariant unobserved heterogeneity at the county level, such as the number of local government units within each county, or urban vs. rural areas where the President might have different political incentives. Note that Equation (4) is the first stage of a just identified system of equations, where all the independent variables listed under Equation (3) are the included instruments, while  $\left(\frac{1}{R^l-1} \sum_{k \neq j}^R t_{k\text{lit}}^C\right)$  defined above is the excluded instrument.

Based on the prediction of the model, as stated in Corollary 1, I expect the difference-in-difference estimator  $\beta_{FS \times FC}$  in Equation (3) to be equal to  $-((1 - \alpha_2) - (1 - \alpha_1))T_a^C < 0$ , while I expect from Equation (4), as stated in Corollary 3,  $\delta_{FS \times FC}$  to be equal to  $\alpha_1 t_{a1}^c - \alpha_2 t_{a2}^c > 0$ . Altogether, these indicate that the decrease in federal-to-county transfers when the state becomes aligned with the President (changing the party that controls the state budget) has to be greater in absolute value, on average, for aligned counties than for

<sup>22</sup>This instrument can only be constructed when the Congressional District contains more than one county. Unfortunately, this forces me to exclude from the sample the counties that are divided into many congressional districts, which are the most populous counties. Since this might potentially create a sample selection bias, as a robustness check, I also estimate Equation (3) using OLS without controlling for state–county transfers, which allows me to include those most populous counties in the sample as well. For this OLS estimation, if the county is divided into many congressional districts, as it happens with highly populated counties, I categorize the county as being aligned with the President if at least 70% of its House Representatives are from the President’s party.

<sup>23</sup>For a similar instrumental variable approach, see Levitt and Snyder (1997).

<sup>24</sup>More than 1 year alignment is used since it usually takes more than a fiscal year to change the distribution of resources for political gains. My results below are virtually unchanged if I use the previous 2 years (ignoring the current year).

<sup>25</sup>Margin is a continuous variable and takes values between  $[-1, 1]$ . For example, if the President is a Democrat and 55% of the electorate in county  $j$  voted for Democrats and 45% for Republicans, the margin will be 0.10. However, if the President was Republican, the margin would have been  $-0.10$ .

nonaligned ones (i.e.,  $\beta_{FS \times FC} = E(T^C | FC = 1, FS = 1) - E(T^C | FC = 1, FS = 0) - (E(T^C | FC = 0, FS = 1) - E(T^C | FC = 0, FS = 0)) < 0$ ) since the state will increase transfers more to those counties aligned with the President in comparison to the nonaligned ones (i.e.,  $\delta_{FS \times FC} = E(t^C | FC = 1, FS = 1) - E(t^C | FC = 1, FS = 0) - (E(t^C | FC = 0, FS = 1) - E(t^C | FC = 0, FS = 0)) > 0$ ).

On the other side, if loyal counties are preferred, we expect  $\beta_m > 0$ ,  $\beta_m + \beta_{FS \times m} = 0$  from Equation (3), and  $\delta_m < 0$  and  $\delta_m + \delta_{FS \times m} = 0$  from Equation (4). These mean that federal-to-county transfers increase as the last presidential electoral margin increases (represented by  $\beta_m > 0$ , which is consistent with targeting partisan localities) but only within nonaligned states (represented by  $\beta_m + \beta_{FS \times m} = 0$ ). Regarding the state governments, the nonaligned state “punishes” loyal counties to the President (represented by  $\delta_m < 0$ ) while the aligned state rewards them on behalf of him (represented by  $\delta_m + \delta_{FS \times m} = 0$ ). Note that the difference-in-difference estimator  $\beta_{FS \times m}$  has to be negative and  $\delta_{FS \times m}$  positive, indicating that federal transfers to counties decrease as the electoral margin increases when the state becomes aligned with the federal government (i.e.,  $\beta_{FS \times m} = E\left(\frac{\partial T^C}{\partial \text{margin}} | FS = 1\right) - E\left(\frac{\partial T^C}{\partial \text{margin}} | FS = 0\right) < 0$ ), while state transfers to those counties increase (i.e.,  $\delta_{FS \times m} = E\left(\frac{\partial t^C}{\partial \text{margin}} | FS = 1\right) - E\left(\frac{\partial t^C}{\partial \text{margin}} | FS = 0\right) > 0$ ). Analogously, if swing counties are preferred instead of loyal ones, we expect  $\beta_{close} > 0$ ,  $\beta_{close} + \beta_{FS \times close} = 0$  and  $\beta_{FS \times close} < 0$  from Equation (3), and  $\delta_{close} < 0$ ,  $\delta_{close} + \delta_{FS \times close} = 0$  and  $\delta_{FS \times close} > 0$  from Equation (4).

Overall, the interpretation of these three groups of tests is the same one: when a state is not aligned with the President, he bypasses the state by transferring directly to his preferred (i.e., aligned and/or partisan/swing) counties, but when the state becomes aligned, it behaves like a political surrogate targeting those preferred counties on behalf of the President, crowding out federal spending.

#### 4. Main results

In this section, I present the main empirical findings of the paper. In Table 1, I estimate the system of equations shown in the previous section. In Column (1), the regression results of Equation (3) are shown, where federal-to-county transfer is regressed on state-to-county transfer, federal-state and federal-county alignments, last presidential electoral margin, a dummy variable for close race, and the time-varying covariates listed under Equation (3). In Column (2), the regression results of Equation (4) are shown, where state to county transfer is regressed on the excluded instrument explained above, and on the same explanatory variables included in the right hand side of Equation (3).

Consistent with the model, in Column (1), I find that the President targets spending toward counties represented by an aligned Representative more within nonaligned states. The coefficient estimate  $\hat{\beta}_{FS}$  is not statistically significant and relatively close to zero, which means that transfers to a nonaligned county do not change if the State changes from nonaligned to aligned with the President (i.e.,  $\hat{\beta}_{FS} \approx (E(T^C | FC = 0, FS = 1) - E(T^C | FC = 0, FS = 0)) = 0$ ). Instead, when this difference is conditional on aligned counties, federal-county transfers decrease by

**Table 1.** Federal–County transfers conditional on State and County alignments, estimation of Equations (3) and (4).

Estimation method Dependent variable	(1)	(2)	(3)
	IV		OLS
	2nd Stage	1st Stage	Federal–county transfers
Panel A: Estimation results			
Estimators: 2nd {1st} Stage; (definition)			
$\{\hat{\phi}\}$ ; (excluded instrument)		0.481*** [0.021]	
$\hat{\eta}$ ; (state–county transfers, instrumented)	0.017** [0.009]		
$\hat{\beta}_{FS} \{\hat{\delta}_{FS}\}$ ; (federal–state alignment)	0.015 [0.018]	0.047 [0.038]	0.012 [0.014]
$\hat{\beta}_{FC} \{\hat{\delta}_{FC}\}$ ; (federal–county alignment)	0.018** [0.009]	–0.048* [0.027]	0.022*** [0.007]
$\hat{\beta}_{FS \times FC} \{\hat{\delta}_{FS \times FC}\}$ ; (federal–state alignment $\times$ federal–county alignment)	–0.082*** [0.026]	0.036 [0.056]	–0.082*** [0.024]
$\hat{\beta}_m \{\hat{\delta}_m\}$ ; (last presidential electoral margin)	–0.023 [0.015]	0.037 [0.050]	–0.027* [0.015]
$\hat{\beta}_{close} \{\hat{\delta}_{close}\}$ ; (dummy closed race)	–0.005 [0.009]	0.004 [0.024]	–0.006 [0.007]
$\hat{\beta}_{FS \times m} \{\hat{\delta}_{FS \times m}\}$ ; (federal–state alignment $\times$ last presidential electoral margin)	0.004 [0.054]	–0.161 [0.141]	0.022 [0.051]
$\hat{\beta}_{FS \times close} \{\hat{\delta}_{FS \times close}\}$ ; (federal–state alignment $\times$ dummy closed race)	–0.003 [0.035]	0.048 [0.077]	–0.002 [0.022]
Observations	13,133	13,133	15,054
F-test		156.1	
R <sup>2</sup> within		0.375	0.180
Number of counties	2899	2899	3071
(1) $\hat{\beta}_{FS} + \hat{\beta}_{FS \times FC} \{\hat{\delta}_{FS} + \hat{\delta}_{FS \times FC}\}$	–0.068*** [0.024]	0.086 [0.057]	–0.070*** [0.022]
(2) $\hat{\beta}_m + \hat{\beta}_{FS \times m} \{\hat{\delta}_m + \hat{\delta}_{FS \times m}\}$	–0.019 [0.052]	–0.124 [0.135]	–0.005 [0.050]

All regressions include county and year fixed effects, as well as the natural log of income per capita, natural log of population, % of blacks, % of inhabitants younger than 19 and % of inhabitants older than 65. The highest 2% values of the dependent variable were considered outliers and dropped from the sample. Robust standard errors clustered at the county level are reported in parenthesis. \*\*\*, \*\*, \* and denote 10%, 5% and 1% level of significance, respectively. On Panel B, linear combination (1) is  $E(y|FS = 1, FC = 1) - E(y|FS = 0, FC = 1)$ , i.e., the change in transfers to counties when a state becomes aligned with the President, conditional on aligned counties. Linear combination (2) is  $E\left(\frac{\partial y}{\partial m} | FS = 1\right)$ , i.e., the change in transfers to counties as electoral margin increases, conditional on aligned states.

6.8 percentage points (p.p.), as it is shown by the linear combination  $\hat{\beta}_{FS} + \hat{\beta}_{FS \times FC}$  on panel B (i.e.,  $\hat{\beta}_{FS} + \hat{\beta}_{FS \times FC} \approx E(T^C | FC = 1, FS = 1) - E(T^C | FC = 1, FS = 0) < 0$ ). The difference of these two differences is negative and statistically significant at 1%, i.e.,  $\hat{\beta}_{FS \times FC} = -0.082$ , as predicted by the model above. On the other hand, in Column (2), we observe negative correlations between federal–county and state–county transfers indicating the existence of crowding out effects, predicted in the model of Section 2 as well. For example, although not statistically significant, the linear combination  $\hat{\delta}_{FS} + \hat{\delta}_{FS \times FC}$  is positive and similar in magnitude to  $\hat{\beta}_{FS} + \hat{\beta}_{FS \times FC}$ , indicating that when the state becomes aligned it takes the lead in the distribution of political resources to aligned counties. The difference-in-difference estimator,  $\hat{\delta}_{FS \times FC}$ , is positive, as expected, although relatively small and not statistically significant.<sup>26</sup> Overall, these findings are explained by Corollaries 1 and 3. There is no incentive to spend in aligned counties within aligned states, since that would simply crowd out similar spending by the State. There is, however, an incentive to spend in aligned counties within nonaligned states.

On the other hand, there is no evidence that the President and the states target either partisan or swing counties. More precisely, the regressor  $\hat{\beta}_m$  is not significant and counter-intuitively negative in Column (1). I will provide alternative estimation results in the next section to uncover determinants of this unexpected result.

The instrument I have designed to estimate Equations (3) and (4) above is only valid as long as congressional districts contain more than one county. This implies that counties that are divided into two or more congressional districts are excluded from the sample. Since those multi-district counties are the most populous, the results in Column (1) and (2) above may contain a sample selection bias. For this reason, in Column (3) I estimate Equation (3) under Ordinary Least Squares (OLS) without controlling for state–county transfers, which allows me to include those populous countries as well (around 170 counties). Comparing with the results of the second stage in Column (1), results in Column (3) are almost equal indicating that there is not a selection bias issue when those most populous countries are excluded from the sample due to identification restrictions in the instrumental variable specification.<sup>27</sup>

<sup>26</sup>This occurs because aligned states may have their own political spending agenda besides of acting on behalf of the President, which may also include distributing the increased resources to counties that are not aligned with the President. This is shown by the estimator  $\hat{\delta}_{FS}$ , where state–county transfers to nonaligned counties increase by around 4.7 p.p. when the state becomes aligned with the President. Meanwhile the same difference conditional on aligned counties,  $\hat{\delta}_{FS} + \hat{\delta}_{FS \times FC}$ , is almost as twice as large of  $\hat{\delta}_{FS}$ , it is not enough to produce a significant difference-in-difference estimator. This is not surprising since the model of Section 2 already considers the possibility of aligned states distributing resources to nonaligned counties: There is a subset of counties that is the target of both the President and the State government spending (share  $a_i$ ), being this group of counties higher in the case of the aligned state. However, states have a group of counties that is only the target of the states' spending (share  $1 - a_i$ ), which represents the states' own political goals, even in the case of the aligned state.

<sup>27</sup>For this OLS estimation, if the county is divided into many congressional districts, as it happens with highly populated counties, I categorize the county as being aligned with the President if at least 70% of its House Representatives are from the President's party.



## 5. Extension: the effect of upcoming presidential elections

In the previous section, I find that aligned counties (i.e., the congressional district in which the county lies has a US House Representative from the same party as the President) are politically preferred by the President, while partisan and swing counties seem not to be preferred. Transferring more resources to partisan or swing counties is one of the tools used by politicians to “buy turnout”, and that strategy may become more beneficial for the President as presidential elections approach. For example, a risk-averse incumbent may prefer to target partisan rather than swing localities before elections in order to mobilize supporters (Holbrook & McClurg, 2005). To test this hypothesis, I interact the dummy variable  $ELE$  (it takes value of 1 if during the current or next year a presidential election takes place) with the variables used to test the hypothesis that partisan or swing counties are preferred. Namely, I include in the regression the interacted terms  $ELE_t \times margin_{jlit}$ ,  $ELE_t \times FS_{it} \times margin_{jlit}$ ,  $ELE_t \times close_{jlit}$  and  $ELE_t \times FS_{it} \times close_{jlit}$ .

Results are shown in Columns (1) and (2) of Table 2.<sup>28</sup> Although  $\hat{\beta}_m$  is negative and significant in Column (1),<sup>29</sup>  $\hat{\beta}_{ELE \times m}$  is positive and more than twice as large as  $\hat{\beta}_m$  in absolute value indicating that the preference toward partisan counties increases as presidential elections approach, which is consistent with a risk-averse incumbent trying to mobilize supporters for an upcoming presidential election. Moreover,  $\hat{\beta}_{FS \times ELE \times m}$  is negative and significant, and the linear combination in panel B  $\hat{\beta}_{ELE \times m} + \hat{\beta}_{FS \times ELE \times m}$  is not significantly different from zero, as predicted by the model of Section 2 and explained in Section 3.2. Regarding state–county transfers, we observe a clear crowding out effect when the states are not aligned. Namely, while the President “rewards” loyalty at county level, the nonaligned state “punishes” it (i.e.,  $\hat{\beta}_{ELE \times m}$  is positive and significant and  $\hat{\delta}_{ELE \times m}$  is negative and significant). Instead, when the state becomes aligned with the President, the former takes the lead in the process or rewarding loyal counties crowding out federal spending (i.e.,  $\hat{\beta}_{FS \times ELE \times m}$  is negative and significant and  $\hat{\delta}_{FS \times ELE \times m}$  positive and significant). These results are altogether predicted by the theory, as I have explained in Section 3.2.

As I have done in the previous section, in Column (3) of the same table, we observe that the results of estimating Equation (3) under OLS are virtually unchanged in comparison with the ones under IV in Column (1), which indicates that there is no bias after eliminating from the sample the most populous counties due to identification restriction of the IV estimation strategy.

On Appendix G, I estimate Equation (3) controlling for various additional sources of unobserved heterogeneity, and explore the robustness of the above results by estimating it on different subsamples, and by changing how the dependent and independent variables are measured. I use OLS with the full sample in that appendix since the

<sup>28</sup>  $ELE_t \times close_{jlit}$  and  $ELE_t \times FS_{it} \times close_{jlit}$  are not shown since they are also here close to zero and insignificant.

<sup>29</sup> Reallocating political resources from partisan to aligned localities during non-presidential election years may be the reason why  $\hat{\beta}_m$  is negative. During those years, helping aligned members of Congress by transferring more resources to their districts may have a higher political return than rewarding partisan localities. For example, the President may focus on trying to increase the number of co-partisans in Congress during midterm elections, and to mobilize supporters during presidential elections. This is a question that I do not intend to address in this paper, but seems to be a promising idea to explore in the future.



**Table 2.** Federal–County transfers conditional on State and County alignment and effect around presidential elections.

Dependent variables	(1)	(2)	(3)
	IV		OLS
	2nd Stage	1st Stage	
	Federal– county transfers	State–county transfers	Federal– county transfers
Panel A: Estimation results			
Estimators 2nd {1st} Stage; (definition)			
$\{\hat{\phi}\}$ ; (excluded instrument)		0.479*** [0.021]	
$\hat{\eta}_i$ ; (state–county transfers instrumented)	0.019** [0.009]		
$\hat{\beta}_{FS}$ $\{\hat{\delta}_{FS}\}$ ; (federal–state alignment)	0.027 [0.018]	0.027 [0.039]	0.024* [0.014]
$\hat{\beta}_{FC}$ $\{\hat{\delta}_{FC}\}$ ; (federal–county alignment)	0.012 [0.009]	–0.029 [0.026]	0.014* [0.007]
$\hat{\beta}_{FS \times FC}$ $\{\hat{\beta}_{FS \times FC}\}$ ; (federal–state alignment $\times$ federal–county alignment)	–0.078*** [0.026]	0.023 [0.055]	–0.077*** [0.024]
$\hat{\beta}_m$ $\{\hat{\delta}_m\}$ ; (last presidential electoral margin)	–0.054*** [0.017]	0.128** [0.058]	–0.063*** [0.016]
$\hat{\beta}_{FS \times m}$ $\{\hat{\beta}_{FS \times m}\}$ ; (federal–state alignment $\times$ last presidential electoral margin)	0.072 [0.081]	–0.326* [0.184]	0.118 [0.078]
$\hat{\beta}_{ELE \times m}$ $\{\hat{\delta}_{ELE \times m}\}$ ; (dummy for presidential elections $\times$ last presidential electoral margin)	0.137*** [0.030]	–0.420*** [0.121]	0.144*** [0.029]
$\hat{\beta}_{FS \times ELE \times m}$ $\{\hat{\delta}_{FS \times ELE \times m}\}$ ; (federal–state alignment $\times$ dummy for presidential elections $\times$ last presidential electoral margin)	–0.186** [0.090]	0.466** [0.233]	–0.230** [0.090]
Observations	13,133	13,133	15,054
F-test		128.3	
$R^2$ within		0.376	0.183
Number of counties	2899	2899	3071
Panel B: Linear combination of estimators			
(1) $\hat{\beta}_{FS} + \hat{\beta}_{FS \times FC}$ $\{\hat{\delta}_{FS} + \hat{\delta}_{FS \times FC}\}$	–0.051** [0.024]	0.050 [0.055]	–0.053*** [0.021]
(2) $\hat{\beta}_m + \hat{\beta}_{FS \times m}$ $\{\hat{\delta}_m + \hat{\delta}_{FS \times m}\}$	0.018 [0.077]	–0.198 [0.168]	0.055 [0.075]
(3) $\hat{\beta}_{ELE \times m} + \hat{\beta}_{FS \times ELE \times m}$ $\{\hat{\delta}_{ELE \times m} + \hat{\delta}_{FS \times ELE \times m}\}$	–0.050 [0.091]	0.046 [0.249]	–0.086 [0.090]
(4) $\hat{\beta}_m + \hat{\beta}_{ELE \times m}$ $\{\hat{\delta}_m + \hat{\delta}_{ELE \times m}\}$	0.083*** [0.029]	–0.292*** [0.111]	0.081*** [0.026]
(5) $\hat{\beta}_{FS \times m} + \hat{\beta}_{FS \times ELE \times m}$ $\{\hat{\delta}_{FS \times m} + \hat{\delta}_{FS \times ELE \times m}\}$	–0.110* [0.061]	0.140 [0.174]	–0.112* [0.059]

All regressions include county and year fixed effects, as well as the natural log of income per capita, natural log of population, % of blacks, % of inhabitants younger than 19 and % of inhabitants older than 65. The highest 2% values of the dependent variable were considered outliers and dropped from the sample. Robust standard errors clustered at the county level are reported in parenthesis. \*, \*\* and \*\*\* denote 10%, 5% and 1% level of significance, respectively. On Panel B, linear combination (1) is  $E(y|FS = 1, FC = 1) - E(y|FS = 0, FC = 1)$ , i.e., the change in transfers to counties when a state becomes aligned with the President, conditional on aligned counties. Linear combination (2) is  $E\left(\frac{\partial y}{\partial m} | FS = 1\right)$ , i.e., the change in transfers to counties as electoral margin increases, conditional on aligned states. Linear combination (3) is  $E\left(\frac{\partial y}{\partial m} | FS = 1, ELE = 1\right) - E\left(\frac{\partial y}{\partial m} | FS = 1, ELE = 0\right)$ , i.e., the difference between electoral and non-electoral episodes of the change in transfers to counties as electoral margin increases, conditional on aligned states. Linear combination (4) is  $E\left(\frac{\partial y}{\partial m} | FS = 0, ELE = 1\right)$ , i.e., the change in transfers to counties as electoral margin increases, conditional on electoral episodes and nonaligned states. Linear combination (5) is  $E\left(\frac{\partial y}{\partial m} | FS = 1, ELE = 1\right) - E\left(\frac{\partial y}{\partial m} | FS = 0, ELE = 1\right)$ , i.e., the difference between aligned and nonaligned states of the change in transfers to counties as electoral margin increases, conditional on electoral episodes.

results are virtually unchanged when IV is used instead. My results, in general, survive the long list of robustness checks.

## 6. Conclusions

To this point, scholars have been studying the political allocation of federal resources without considering the involvement of state governments. Because state governments allocate resources based on some of the same considerations, a strategic federal government should take this into account. Controlling for this fact using party alignment between these two layers of governments, I have found that the President skews the distribution of funds toward counties whose House Representatives are from the President's party, but only within nonaligned states. Specifically, federal transfers to such counties decrease by around 7 percentage points when the party that controls the state becomes aligned with the President, while state transfers to those counties increase by a similar magnitude. Consistent with my model, no effect has been found for counties whose House Representatives are not from the President's party. In a similar way, federal transfers to partisan counties (counties with many voters loyal to the incumbent's party) increase as presidential elections approach, but only within nonaligned states. This demonstrates the importance of controlling for the three-way political alignment between county, state and federal government when studying the determinants of intergovernmental spending. The finding that these interaction terms matter survives a long list of robustness checks, as shown in Appendix G.

This paper has important implications for normative studies of decentralization. My results suggest that in a highly decentralized federal system such as the US, the federal government might engage in a sort of competition with nonaligned states for mobilizing voters, while cooperating with states that are politically aligned with it. Understanding the welfare impact of the strategic interaction between different layers of governments is outside the scope of this paper, but my findings do imply that taking this interaction into account is important for welfare analysis.

The standard view of decentralization is that it removes political power from the center. The findings in this paper indicate the presence of an offsetting effect. After decentralization, a strategic central government may be able to rely on some local governments to further his political goals, and could concentrate more direct spending on those areas where his power has declined. The ultimate impact on the central government's de facto power may be ambiguous.

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## Disclosure statement

No potential conflict of interest was reported by the author.

## Notes on contributor

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## References

- Albouy, D. (2013). Partisan representation in congress and the geographic distribution of federal funds. *Review of Economics and Statistics*, 95(1), 127–141.
- Ansolabehere, S., Gerber, A., & Snyder, J. (2002). Equal votes, equal money: Court-ordered redistricting and public expenditures in the American states. *American Political Science Review*, 96(4), 767–777.
- Ansolabehere, S., & Snyder, J. M., Jr. (2006). Party control of state government and the distribution of public expenditures. *Scandinavian Journal of Economics*, 108(4), 547–569.
- Arulampalam, W., Dasgupta, S., & Dhillon, A. (2009). Electoral goals and center-state transfers: A theoretical model and empirical evidence from India. *Journal of Development Economics*, 88(1), 103–119.
- Berry, C. R., Burden, B. C., & Howell, W. G. (2010). The president and the distribution of federal spending. *American Political Science Review*, 104(4), 783–799.
- Besley, T., & Coate, S. (2003). Centralized versus decentralized provision of local public goods: A political economy approach. *Journal of Public Economics*, 87(12), 2611–2637.
- Bugarin, M., & Marciniuk, F. (2017). Strategic partisan transfers in a fiscal federation: Evidence from a new Brazilian database. *Journal of Applied Economics*, 20(2), 211–239.
- Case, A. (2001). Election goals and income redistribution: Recent evidence from Albania. *European Economic Review*, 45(3), 405–423.
- Coleman, J., . J. (1999). Unified government, divided government, and party responsiveness. *American Political Science Review*, 93(4), 299–309.
- Cox, G., & McCubbins, M. (1986). Electoral politics as a redistributive game. *The Journal of Politics*, 48(2), 370–389.
- Dixit, A., & Londregan, J. (1998). Fiscal federalism and redistributive politics. *Journal of Public Economics*, 68(2), 153–180.
- Frederickson, G., & Cho, Y. (1974). Legislative reapportionment and fiscal policy in the American states. *Western Political Quarterly*, 27(1), 5–37.
- Grossman, P. (1994). A political theory of intergovernmental grants. *Public Choice*, 78(3–4), 295–303.
- Holbrook, T., . M., & McClurg, S., . D. (2005). The mobilization of core supporters: Campaigns, turnout, and electoral composition in United States Presidential elections. *American Journal of Political Science*, 49(4), 689–703.
- Howell, W., Adler, S., Cameron, C., & Riemann, C. (2000). Divided government and the legislative productivity of Congress, 1945–1994. *Legislative Studies Quarterly*, 25, 285–312.
- Howell, W., & Lewis, D. (2002). Agencies by presidential design. *The Journal of Politics*, 64(4), 1095–1114.
- Larcinese, V., Rizzo, L., & Testa, C. (2006). Allocating the U.S. Federal budget to the states: The impact of the President. *The Journal of Politics*, 68(2), 447–456.
- Levitt, S. D., & Snyder, J. M., Jr. (1995). Political parties and the distribution of Federal outlays. *The American Journal of Political Science*, 39(4), 958–980.

- Levitt, S. D., & Snyder, J. M., Jr. (1997). The impact of federal spending on house election outcomes. *Journal of Political Economy*, 105(1), 30–52.
- Lindbeck, A., & Weibull, J. W. (1987). Balanced-budget redistribution as the outcome of political competition. *Public Choice*, 52(3), 273–297.
- Lindbeck, A., & Weibull, J. W. (1993). A model of political equilibrium in a representative democracy. *Journal of Public Economics*, 51(2), 195–209.
- Lockwood, B. (2002). Distributive politics and the costs of centralization. *Review of Economic Studies*, 69(2), 313–337.
- McCarty, N. (2000). Presidential pork: Executive veto power and distributive politics. *American Political Science Review*, 94(1), 117–129.
- Oates, W. E. (1972). *Fiscal Federalism*. New York, NY: Harcourt Brace Jovanovich.
- Oates, W. E. (1999). An essay on fiscal federalism. *Journal of Economic Literature*, 37(3), 1120–1149.
- Strömberg, D. (2008). How the electoral college influences campaigns and policy: The probability of being Florida. *American Economic Review*, 98(3), 769–807.
- Ujhelyi, G. (2014). Civil service rules and policy choices: Evidence from US state governments. *American Economic Journal: Economic Policy*, 6(2), 338–380.
- Volden, C. (2005). Intergovernmental political competition in American Federalism. *American Journal of Political Science*, 49(2), 327–342.

## Appendix A. Literature review and presidential control of the budget

### A.1. Literature Review

There are three types of studies in the literature on the political allocation of governmental resources: some study the allocation of federal resources to state governments, others the allocation of state resources to localities, and still others the distribution of federal resources to localities. The interaction between federal and state governments has seldom been explored in the third group of studies. In this sense, my study brings together these previous papers by including all three effects.

In the first group of papers, on federal transfers to state governments, Grossman (1994) estimates that federal grants increase when the number of public employees and union membership per capita increase. He also finds that federal grants to states increase when the percentage of seats held by Democrats in the House of Representatives increases. Larcinese, Rizzo and Testa (2006) show that federal outlays to states are affected mainly by the President. Contrary to the common belief, the Senate and the House of Representatives have much smaller impact on federal outlays. In particular, the authors find that federal transfers are affected mainly by the alignment between the President and the state Governor and by the alignment between the former and the majority of the state delegates in the House. By contrast, the Governor's alignment with either the House or the Senate has no effect.

In the second group of papers studying the relationship between states and localities, Ansolabehere and Snyder (2006) examine the effect of party control of the state on the allocation of the state budget. They find that the party that controls the state (which is not necessarily the party of the Governor) skews the distribution of funds toward partisan localities. By contrast, they find weak evidence that swing voters are being targeted.

In the third group of papers, on the allocation of the federal budget to localities, Levitt and Snyder (1995) estimate that, over a period of Democratic control of Congress, federal programs with higher variability across districts were biased toward districts with more Democrats. Berry et al. (2010) follow Larcinese et al. (2006) but use federal outlays to localities instead of states. They also find that the President has ample opportunities to influence the allocation of high-variability funds to localities, both before and after congressional approval of the budget. Specifically, federal spending to counties increases if the county's House Representative is aligned with the President. In contrast, they do not find evidence that congressional committee assignments influence federal spending.

Bringing these results together, if the federal government transfers more funds to aligned states, and states allocate more resources to aligned localities, then federal-to-state transfers might reflect the ultimate objective of targeting localities aligned with the federal government. At the same time, this also implies that the federal government will have more incentive to directly transfer funds to aligned localities within nonaligned states. This is the starting point of my analysis. My findings imply that studies such as Levitt and Snyder (1995) and Berry et al. (2010), which do not control for federal–state alignment, are likely to underestimate the effect of political alignment on federal-to-local transfers.

I know of only two theoretical and one empirical studies that consider strategic interaction between different levels of government. Regarding the former, Dixit and Londregan (1998) study a model of political platform competition and compare a centralized government with two levels of political competition, central and state. They predict that the central policy implemented is going to be a function of the policy implemented at the state level, since state politicians compete during the second stage of the game. In Volden’s (2005) model, state and federal governments may compete in the provision of public goods, leading to over-taxation and over-provision because both seek credit via public spending and they do not want to be blamed for taxing. My contribution relative to these studies is to focus on the role of political alignment in the strategic interaction between governments, and to provide empirical evidence consistent with my model. Regarding empirical studies, Bugarin and Marciniuk (2017) use novel data from Brazil to test what they call “the strategic partisan transfer hypothesis”, i.e., mayors from the same party as the President receive more discretionary transfers as long as the Governor is from the opposite party. The logic behind this hypothesis is similar to mine explained above. Their study has the advantage of using detailed annual data on federal transfers, while in my study the data from the US Census Bureau is only available at 5-year intervals. However, since state transfers to counties are also available in the US Census Bureau database, the advantage of my study is that I am able to fully test “the strategic partisan transfer hypothesis” by using both federal and state transfer to counties in combination with an IV identification strategy that controls for the simultaneity between these transfers.

## **A.2. Presidential control of the budget**

This section of the appendix discusses the concept of political alignment between governments based on which actor is most likely to have control over the allocation of the budget.

At the federal level,

both in the construction of budgets and in their implementation, presidents have ample opportunities to affect the geographic distribution of federal outlays ... Since the enactment of the Budget and Accounting Act of 1921, the president has been responsible for composing a complete budget, which is supposed to be submitted to Congress in February of each year, and which initiates the actual authorization and appropriations processes ... Substantial efforts are made to ensure that the president’s budget reflects his or her policy priorities. Rather than submitting requests directly to Congress, agencies seeking federal funding must submit detailed reports to the Office of Management and Budget (OMB). Working at the behest of the president, OMB then clears each of these reports to ensure that it reflects the chief’s executive’s policy priorities ... The end product, then, is a proposed budget that closely adheres to the president’s policy agenda. (Berry et al., 2010: 785)

This ability of the President to target funds toward desired areas does not imply that the members of Congress cannot make amendments. However, the threat of a presidential veto gives members of Congress an incentive to keep the budget proposal close to the initial form proposed by the President (McCarty, 2000).<sup>30</sup> The President also has substantial influence over the

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<sup>30</sup>This threat does not apply when a super-majority in Congress would be likely to overturn a presidential veto. In such a case, we may expect the budget to be less representative of the President’s priorities. During my period of analysis

allocation of federal funds once the budget has been approved. For instance, administrative agencies can be created through executive action; in such a case, they are significantly less isolated from presidential control than are agencies created through legislation (Howell & Lewis, 2002). In addition, “Presidents can reprogram funds within certain budgetary accounts; and with Congress’s approval, they can transfer funds between accounts” (Berry et al., 2010: 786). In light of these facts, the President’s party is taken in this paper as the party that controls the federal budget. As discussed in the first section of this appendix, this is consistent with the empirical findings of Larcinese et al. (2006) and Berry et al. (2010), among others.

Regarding state governments, there is a variety of ways to define party control of the state. One option is to use the Governor’s party, analogously to the federal level. However, it is important to note that, in contrast with Congress, during my period of study (from 1982 to 2002) there were several instances of a party having a super-majority in both chambers of the state legislature without holding the Governor’s seat. In such cases, overturning a Governor’s veto would have been likely, and this has to be taken into account in order to define the state control of the budget accurately. In the main analysis, I use the measure used by Ansolabehere and Snyder (20062), which accounts for this type of divided government.<sup>31</sup> Based on this measure, the state is under, say, Democratic control if (1) Democrats have a majority in both legislative chambers and the Governor is a Democrat or (2) Democrats hold at least two-thirds of the seats in both legislative chambers. Republican control is defined analogously. Ansolabehere and Snyder show that, under this definition of party control of the state, state funds are targeted toward localities where the fraction of political supporters is the highest.

## Appendix B. Proof of propositions of Section 2

I solve the model using Backward Induction. In the second stage, each State  $i = 1, 2$  maximizes the following Lagrangian:

$$L_i = \sum_{j \in (F_i \cap S_i)} H(\theta T_{ij}^C + t_{ij}^C) + \sum_{j \in (S_i \setminus (F_i \cap S_i))} H(t_{ij}^C) + \mu_i(\tilde{B}^i + T_i^S - \sum_{j \in S_i} t_{ij}^C), \text{ for } i = 1, 2$$

The first-order conditions are:

$$H'(\theta T_{ij}^C + t_{ij}^C) = \mu_i, \text{ for all } j \in (F_i \cap S_i) \quad (\text{B1})$$

$$H'(t_{ij}^C) = \mu_i, \text{ for all } j \in (S_i \setminus (F_i \cap S_i)) \quad (\text{B2})$$

$$\tilde{B}^i + T_i^S = \sum_{j \in S_i} t_{ij}^C \quad (\text{B3})$$

working with (B1), (B2) and (B3) yields state  $i$ ’s reaction functions:

$$t_{ij}^{C*} = \frac{1}{n} \left[ \tilde{B}^i + T_i^S + \theta \sum_{l \in (F_i \cap S_i)} T_{il}^C \right] - \theta T_{ij}^C, \text{ for all } i = 1, 2 \text{ and } j \in (F_i \cap S_i) \quad (\text{B4})$$

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(1982–2002), there was never a super-majority against the President’s party; therefore, overturning his veto would have been highly unlikely.

<sup>31</sup>The robustness of my findings using alternative measures is discussed in Appendix G.

$$t_{ij}^{C*} = \frac{1}{n} \left[ \widetilde{B}^i + T_i^S + \theta \sum_{l \in (F_i \cap S_i)} T_{il}^C \right], \text{ for all } i = 1, 2 \text{ and } j \in S_i \setminus (F_i \cap S_i) \quad (\text{B5})$$

Given this, the Lagrangian for the President's maximization problem in the first stage is given by

$$\begin{aligned} L^P = & \sum_{i=1}^2 \left( \sum_{j \in (F_i \cap S_i)} H(\theta T_{ij}^C + t_{ij}^{C*}) + \sum_{j \in (F_i \setminus (F_i \cap S_i))} H(\theta T_{ij}^C) \right) \\ & + \sum_{i=1}^2 \left( \sum_{j \in F_i} v_{ij} T_{ij}^C + v_i T_i^S \right) + \lambda \left( \widetilde{B}^F - \sum_{i=1}^2 \left( \sum_{j \in F_i} T_{ij}^C + T_i^S \right) \right). \end{aligned}$$

The first-order conditions for maximization are

$$\begin{aligned} L_{T_{ij}^C}^P = 0 : & H'(\theta T_{ij}^C + t_{ij}^{C*}) \frac{\theta}{n} + \sum_{l \in ((F_i \cap S_i)), l \neq j} H'(\theta T_{il}^C + t_{il}^{C*}) \frac{\theta}{n} - \lambda + v_{ij} = 0, \text{ for all } i = 1, 2 \text{ and } j \\ & \in (F_i \cap S_i) \end{aligned} \quad (\text{B6})$$

$$L_{T_{ij}^C}^P = 0 : \theta H'(\theta T_{ij}^C) - \lambda + v_{ij} = 0, \text{ for all } i = 1, 2 \text{ and } j \in (F_i \setminus (F_i \cap S_i)) \quad (\text{B7})$$

$$L_{T_i^S}^P = 0 : \sum_{l \in (F_i \cap S_i)} H'(\theta T_{il}^C + t_{il}^{C*}) \frac{1}{n} - \lambda + v_i = 0, \text{ for } i = 1, 2 \quad (\text{B8})$$

$$L_{\lambda}^P = 0 : \widetilde{B}^F - \sum_{i=1}^2 \left( \sum_{j \in F_i} T_{ij}^C + T_i^S \right) = 0, \text{ for } i = 1, 2 \quad (\text{B9})$$

**Lemma 1:**  $T_{ij}^C = 0$  for all  $j \in (F_i \cap S_i)$ ,  $T_{ij}^C > 0$  for all  $j \in (F_i \setminus (F_i \cap S_i))$ ,  $T_i^S > 0$  for all  $i = 1, 2$  is an equilibrium.

Rewriting conditions (B4)–(B9) by imposing the restrictions in Lemma 1 shows that the first-order conditions hold, we therefore have an equilibrium.

Using Lemma 1 to rearrange condition (B7) yields the following,

$$T_{ij}^C \equiv T_a^C \text{ for all } i = 1, 2 \text{ and } j \in ((F_i \setminus (F_i \cap S_i))) \quad (\text{B10})$$

Lemma 1 combined with condition (B10) verifies Proposition 1 and Corollary 1.

**Lemma 2:**  $T_{il}^C > 0$  for any  $l \in (F_i \cap S_i)$ , or  $T_{il}^C = 0$  for any  $l \in F_i \setminus (F_i \cap S_i)$  cannot be an equilibrium.

One can easily verify that rewriting conditions (B4)–(B9) based on the restrictions imposed in Lemma 2 will lead to a contradiction. Thus, Lemma 2 shows the uniqueness of the equilibrium stated in Proposition 1.

From conditions (B4) and (B8), based on conditions of Lemma 1 we get

$$(\tilde{B}^1 + T_1^S) \frac{H'^{-1}(\alpha_1)}{H'^{-1}(\alpha_2)} - \tilde{B}^2 = T_2^S \quad (B11)$$

$T_1^S > T_2^S$  for  $\tilde{B}^1 = \tilde{B}^2 = \tilde{B}$ , since  $\alpha_1 > \alpha_2$ . This proves Corollary 2.

Now, given (B4), (B5), Lemma 1 and Corollary 2 gives:

$t_{lj}^c = \frac{1}{n} [\tilde{B} + T_1^S] > t_{2l}^c = \frac{1}{n} [\tilde{B} + T_2^S]$  for all  $j \in S_1$  and  $l \in S_2$ , which proves Corollary 3.

## Appendix C. Further explorations of the model of Section 2

In this section, I explore the model in more detail.

From Lemma 1 on the Appendix B we know:

$$T_{ij}^C = 0 \text{ for all } i = 1, 2 \text{ and } j \in (F_i \cap S_i) \quad (C1)$$

$$T_{ij}^C = T_a^C \text{ for all } i = 1, 2 \text{ and } j \in F_i \setminus (F_i \cap S_i). \quad (C2)$$

Given (C1), (B4) and (B5) become:

$$t_{1j}^{C*} = \frac{1}{n} [B^1 + T_1^S] \text{ for all } j \in S_1 \quad (C3)$$

and

$$t_{2j}^{C*} = \frac{1}{n} [B^2 + T_2^S] \text{ for all } j \in S_2 \quad (C4)$$

Now given (C2), (B7) becomes  $\theta H'(\theta T_a^C) = \lambda$ , while (B8), given (C1), (C3) and (C4), becomes  $\alpha_i H'(\frac{1}{n} [B^i + T_i^S]) = \lambda$  for  $i = 1, 2$ . Combining them both for State 1, throws the following result:

$$T_a^C = \frac{H'^{-1}(\alpha_1)}{H'^{-1}(\theta)} \frac{(B^1 + T_1^S)}{n\theta} \quad (C7)$$

Note that (B11) and (C7) are functions of Federal-State 1 transfers.

Now working with Equation (B9) leads to:

$$B^F = T_1^S + T_2^S + (1 - \alpha_1)nT_a^C + (1 - \alpha_2)nT_a^C \quad (C8)$$

Now, plugging (B11) and (C7) into (C8) leads to the federal-State 1 transfers solution:

$$T_1^S = \frac{B^F + B^2 - B^1 A_1}{1 + A_1} \quad (C9)$$

where  $A_1 = \frac{H'^{-1}(\alpha_1)}{H'^{-1}(\alpha_2)} + (2 - \alpha_1 - \alpha_2) \frac{1}{\theta} \frac{H'^{-1}(\alpha_1)}{H'^{-1}(\theta)}$ .

Analogously,

$$T_2^S = \frac{B^F + B^1 - B^2 A_2}{1 + A_2} \quad (C10)$$

where  $A_2 = \frac{H'^{-1}(\alpha_2)}{H'^{-1}(\alpha_1)} + (2 - \alpha_1 - \alpha_2) \frac{1}{\theta} \frac{H'^{-1}(\alpha_2)}{H'^{-1}(\theta)}$ .

Note that  $\frac{\partial A_i}{\partial \alpha_i} < 0$  for  $i = 1, 2$ . Therefore  $\frac{\partial T_1^S}{\partial \alpha_1} > 0$  and  $\frac{\partial T_2^S}{\partial \alpha_2} > 0$ .

This indicates that the more counties in common between the President and the State, the more it will be transferred to the state government for delegation (and therefore less directly to preferred counties on average). Note that this happens even for the nonaligned State 2.



This clearly shows that the surrogate effect increases as localities in common between the President and the State increase. Note that, without the assumption of equal budget between the states, i.e.,  $B^1 = B^2$ , it is uncertain whether the aligned State 1 receives more federal funds than the nonaligned State 2 if  $B^1 > B^2$ . Following the intuition (apart from the formal analysis above), although the President has a preference toward transferring more resources to the aligned State 1 since there are more preferred counties in common (“preference effect”), it is also true that State 2 has preferred counties in common to the President that he/she may want to be targeted (and remember that can only be targeted through State transfers). If the State 2 has way less own resources than State 1 (i.e.,  $B^1 \gg B^2$ ), then the “income effect” forces the President to transfer to State 2 more than to State 1. In another words, the income effect operates in the opposite direction to the preference effect, so the result is ambiguous. Of course, in the opposite situation, i.e.,  $B^2 \gg B^1$ , both the preference and the income effects operate in the same direction, in which case the predicted results still hold, i.e.,  $T_1^S > T_2^S$ . There is no income effect when  $B^1 = B^2$ ; therefore, transfers are determined by the preference effect only.

Now, plugging (C9) into (C7) leads to

$$T_a^C = \frac{H'^{-1}(\alpha_1)}{H'^{-1}(\theta)n\theta} \left[ \frac{B^1 + B^2 + B^F}{1 + A_1} \right] \quad (\text{C11})$$

From this solution, we observe that the higher the national budget ( $B^1 + B^2 + B^F$ ), the higher the transfers to the President’s only preferred counties.

Finally, plugging (C9) into (C3) and (C10) into (C4) leads to, respectively:

$$t_{1j}^{C*} = \frac{1}{n} \left[ \frac{B^1 + B^2 + B^F}{1 + A_1} \right] \text{ for } j \in S_1 \quad (\text{C12})$$

and

$$t_{2j}^{C*} = \frac{1}{n} \left[ \frac{B^1 + B^2 + B^F}{1 + A_2} \right] \text{ for } j \in S_2. \quad (\text{C13})$$

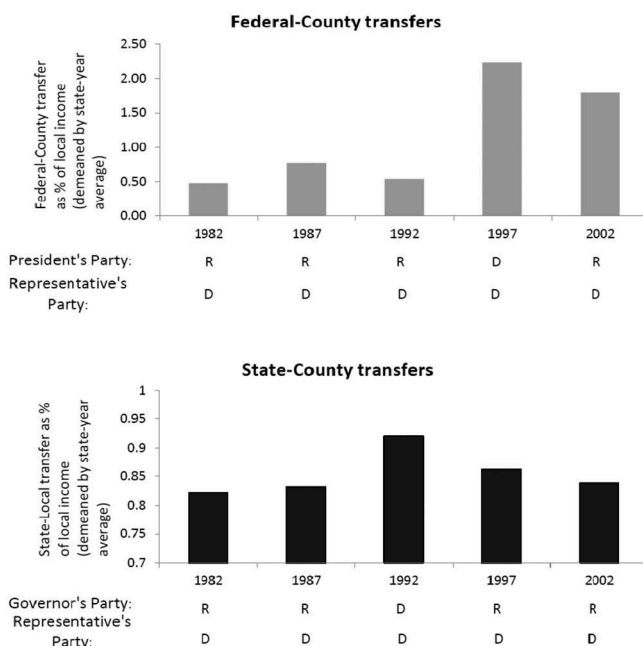
where we observe that  $\frac{\partial t_{1j}^{C*}}{\partial \alpha_1} > 0$  and  $\frac{\partial t_{2j}^{C*}}{\partial \alpha_2} > 0$  since states will receive more transfers from the federal government as the share of counties in common increases.

## Appendix D. The discretionary nature of federal transfers to counties

To what extent are transfers to county discretionary, as opposed to strictly formula based? To answer this question, I first present the case study of Hunt County, inside the 4th’s Congressional District of Texas and represented by the at-the-time Democrat Congressman Ralph Hall. He had been representing the district since 1981 when, amid Republican control of both federal and state governments, in 2004 switched to the Republican Party arguing that being Democrat had been an obstacle to bring appropriations for his district.<sup>32</sup> This indicates that federal and state intergovernmental transfers are in part driven by political opportunism. To ascertain whether this story is upheld by the data, in Figure D1 for the period 1982–2002 at 5-year intervals, I show federal and state transfers to Hunt County as a percentage of local personal income, divided by their state-year averages.<sup>33</sup> On the upper panel of that figure, we observe during the years 1982, 1987 and 1992 that federal–county transfers were way below the state-year average 1 (0.48, 0.77 and 0.54, respectively). Note that this coincides with the systematic political misalignment

<sup>32</sup><http://www.washingtontimes.com/news/2004/jan/2/20040102-112745-2961r/>.

<sup>33</sup>Normalizing these variables in such a manner indirectly controls for state-year unobserved characteristics, and produces state-year averages equal to 1.



**Figure D1.** Federal–county and state–county transfers. The case of Hunt County TX.

Notes: The upper (bottom) panel shows for the years 1982, 1987, 1992, 1997 and 2002 federal–county (state–county) transfers as a percentage of personal income normalized by the state–year average. By construction, the state–year average of both variables is equal to 1 indicating that values above 1 are above the state–year average. D stands for Democrat and R for Republican.

between the presidents and the Hunt County’s representative during those years. By contrast, during Bill Clinton’s administration in the year 1997, federal–county transfers were more than twice of the state–year average (2.23). In 2002, under the new Republican government, federal–county transfers were still above the state–year average but below the level of 1997.<sup>34</sup> This evidence altogether suggests that federal–county transfers are highly discretionary because it responds to changes of political alignment. On the other hand, at the bottom panel of the same figure, we observe state–county transfers. Although they are below the state–year average 1 throughout the entire period, they were comparatively higher during the year 1992, when the Governor of Texas was Democrat. Comparing both panels, we observe a clear negative correlation between federal–county and state–county transfers between the years 1992 and 1997: federal–county transfers increase as the President becomes aligned with the Representative, while state–county transfers decrease as the Governor becomes unaligned with the Representative. Overall, this evidence shows that both federal–county and state–county transfers react to changes in alignment measures, suggesting that those reactions are driven by discretionary spending.

Apart from the case study shown, I also use statistical techniques from the literature as well as a more stringent test to measure the extent of discretion of federal–county transfers. Berry et al. (2010), among others, used data from Consolidated Federal Fund Reports (CFRR). To separate broad-based entitlement programs from federal programs that represent discretionary spending, Levitt and Snyder (1995, 1997) and Berry et al. (2010) calculate coefficients of variation for each program and they separate them into two categories: low and high-variability programs (using as threshold a coefficient of variation of 3/4), because

<sup>34</sup>George W. Bush took office on January 2002, less than 6 months before the end of the current fiscal year. While it takes at least a year for incumbents to completely readdress political resources.

**Table D1.** The discretionary nature of federal transfers to counties and comparison with other transfers and programs.

variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Mean	Max	Variance of total	Coefficient of variation	Variance of residual	$\frac{Var\ of\ resid}{Var\ of\ total}$	Source	Used in previous studies by:	
Federal–County transfers as % PI	0.37	2.25	0.14	1.00	0.07	0.54	Census of Governments	None	
State–County transfers as % PI	4.41	11.01	3.66	0.43	0.58	0.16	Census of Governments	Frederickson and Cho (1974); Ansolabehere, Gerber and Snyder (2002); Ansolabehere and Snyder (20062)	
Federal–State transfers as % PI	3.33	7.28	1.43	0.36	0.13	0.09	Census of Governments	Grossman (1994); Ujhelyi (2014)	
Federal funds on health as % PI	4%	5.41	23.84	34.9	1.09	0.17	CFRR		
Federal funds on education as % PI	19%	0.39	3.5	0.22	1.21	0.34	CFRR		
Federal funds on highway as % PI (Dept. of transportation)	3%	0.46	5.85	0.67	1.77	0.81	CFRR	Albouy (2013); Berry et al. (2010)	
Federal funds on housing and community development as % PI	49%	0.77	5.41	0.68	1.08	0.49	CFRR		

Column (1) shows the composition of federal–county transfers as % of personal income (PI) by program. Columns (2), (3), (4) and (5) show simple means, maximum values, variances and coefficient of variation, respectively. Column (6) presents the estimated variance of the residual that comes from regressing Equation (D1) using clustered errors at State level. Column (7) shows the ratio between variance of the residual and variance of the total as a measure of variability of the federal program (close to 1 is high variability, close to 0 is considered low variability). Column (8) shows the sources where the federal funds come from. Column (9) presents authors who used the mentioned variables in previous studies. For calculating Columns (2)–(7), the highest 2% values of the dependent variable were dropped from the sample because of being considered outliers.

they assume that high variability represents discretionary spending. Unfortunately, I cannot follow the same methodology since the data from the Census do not allow me to identify each source of spending individually at county level. However, I can compare the data from the Census of Governments with high-variability programs from CFFR to show that the former is highly discretionary as well.

In Column (5) of [Table D1](#), we can see that the coefficient of variation associated with federal to county transfers is 1.00, higher than the threshold 0.75 proposed by Levitt and Snyder (1995). As I have mentioned before, although the data I am using from the Census of Government do not allow me to identify each source of spending individually at county level, each source can be observed aggregated at state level, which is used to show the composition of federal to county transfers in Column (1). There, we can see that almost half of it, on average, is composed by Housing and Community Development, a highly discretionary set of programs based on the coefficient of variation that comes from using the data of CFFR. Education is the second highest component of federal transfers to counties at 19%, also fairly discretionary based on that same data source. Health and Highways are the third and fourth, with 4% and 3%, respectively, and these are unlikely to exert much influence overall.<sup>35</sup>

A high coefficient of variation may not be due to discretion, but instead to large demographic or economic changes in a county during a period of time. If this were the case, the coefficient of variation would mistakenly indicate that the program is highly discretionary when it is not. In order to address this potential issue, I will compare the variance of the residual that comes from a regression of each program against all the observable demographic and economic characteristics with the variance of the program itself. To compute the former, I estimate

$$y_{jit} = \alpha + \mathbf{X}'_{jit}\beta + \mathbf{D}_t + \mathbf{u}_j + e_{jit}, \quad (\text{D1})$$

where  $y_{jit}$  is a given federal outlay in county  $j$  within State  $i$  in year  $t$  as a percentage of personal income;  $\mathbf{X}'_{jit}$  is a matrix of demographic and economic county level time-varying controls (natural log of real income per capita, % of blacks, % under 18 years old, % over 65 years old and natural log of population);  $\mathbf{D}_t$  captures country-wide year fixed effects;  $\mathbf{u}_j$  is a county fixed effect that captures unobserved fixed heterogeneity; and  $e_{jit}$  is the residual.

If the ratio  $\hat{\text{var}}(\hat{e}_{jit})/\hat{\text{var}}(y_{jit})$  (i.e., variance of the residual/variance of the total) is close to one, it means that the model did not absorb much variation of  $y_{jit}$ , in which case demographic and economic changes did not explain the variability, hence the program could be considered as highly discretionary. The opposite is concluded if that ratio is close to zero. The results can be seen in Column (7) of [Table D1](#), where federal to county transfers are not less discretionary than the variables used in previous studies, detailed in Column (9).

## Appendix E. Data sources

All the data come from the *Census Bureau - USA Counties*, unless indicated.

<http://www.census.gov/support/USACdataDownloads.html#INC>

Intergovernmental transfers from Federal government to Counties. *U.S. Census Bureau - USA Counties, Census of Governments* (1982, 1987, 1992, 1997, 2002).

<sup>35</sup>State-county transfers are not highly discretionary (coefficient of variation is 0.53). This seems not to be an issue for the following reasons: (1) state-county transfers are higher than federal-county transfers, which may contribute to mask the discretionary component within the former, and since I rely on a difference-in-difference strategy in my analysis below, formula-based components will be canceled out in the regression analysis. (2) In Column (8) of [Table D1](#), we observe that state-county transfers were already used in many other studies in which the political environment was a determinant of those transfers, which indicates the existence of discretionary components.

Intergovernmental transfers from State government to Counties. *U.S. Census Bureau - USA Counties, Census of Governments* (1982, 1987, 1992, 1997, 2002).

Regional Consumer Price Index for all urban consumers, not seasonally adjusted. Yearly value obtained by averaging across months. *U.S. Department of Labor: Bureau of Labor Statistics*.

Personal income. *Bureau of Economic Analysis - USA Counties*.

Percentage of Blacks. *Race Data, U.S. Census Bureau - USA Counties*.

Percentage of people under 18. Age, *U.S. Census Bureau - USA Counties*.

Percentage of people over 65. Age, *U.S. Census Bureau - USA Counties*.

Population. *U.S. Census Bureau - USA Counties*.

Presidential election outcomes, Democrat and Republican vote share. *CQ Press - USA Counties*.

Matched counties with congressional district and redistricting. *Congressional District Atlas: 95th to 109th Congress*.

President, Governors, and United States House Representatives' Parties. *Library of Congress Web Archive; OurCampaigns.com*.

State legislative seats held by each party. *Burnham, W Dean, "Partisan Division of American State Governments, 1834–1985". ICPSR Study No. 00013; Council of State Governments, Book of the States*.

Elected council-executive counties. *National Association of Counties (NACO)*.

## Appendix F. Validity of the instrument

I use an instrumental variable approach inspired on Levitt and Snyder (1997). They developed a novel IV identification strategy to deal with unobserved politicians characteristics that otherwise lead to bias estimates of the effect of politics on the allocation of federal resources to local districts. My instrument attempts to provide an exogenous variation of the state–county transfers by instrumenting state–county  $i$  transfers with the average state–county transfers within the district but outside county  $i$ . State–county transfers are in part determined by the state district legislators, where their characteristics are usually not observed (let's call it  $\eta$ , with  $E(\eta) = 0$  and  $V(\eta) = \sigma_\eta^2$ ). On the other hand, county representatives (e.g., among others, local bureaucrats, mayors, county executives) are also determinant in the budget allocation to their constituencies. Also in this case, their characteristics are usually not observed (let's call it  $Z$ , with  $E(Z) = 0$  and  $V(Z) = \sigma_z^2$ ). Finally, at the federal level, transfers to districts are in part determined by the US House Representatives, where his/her characteristics are usually not observed either (let's call it  $\zeta$ , with  $E(\zeta) = 0$  and  $V(\zeta) = \sigma_\zeta^2$ ). Therefore, I assume that state–county ( $t^C$ ) and federal–county ( $T^C$ ) transfers follow the simplified statistical processes:

$$t_{jlit}^C = Z_{jlit} \times \gamma_1 + \eta_{lit} + \mu_{jlit} \quad (F1)$$

$$T_{jlit}^C = t_{jlit}^C \times \alpha_1 + Z_{jlit} \times \tau_1 + \zeta_{lit} + \epsilon_{jlit} \quad (F2)$$

Note that estimating Equation (F2) under OLS will lead to biased estimates. Then, there is the need of identifying Equation (F2) by following a valid IV strategy.

County representatives' unobserved characteristics ( $Z$ ) are assumed to be uncorrelated between counties within the same district, formally stated:

$$E(Z_{jlit}Z_{klt}) = 0 \text{ for } j \neq k \text{ in any given } l. \quad (F3)$$

Also, I assume that unobserved characteristics of state legislators and county executives are not correlated, formally stated:

$$E(Z_{jlit}\eta_{lit}) = 0 \text{ for all } j \text{ in any given } l. \quad (F4)$$

Given assumptions (F3) and (F4), it follows that

$$E(t_{jlit}^C t_{kkit}^C) = \sigma_\eta^2 \quad (F5)$$

which indicates that federal–county transfers within the same district are positively correlated (through the unobserved shock at district level  $\eta_{lit}$ ). On the other hand, at the federal level in Equation (F2),  $\zeta$  is US House of Representative's unobserved characteristics at district level that is common across all counties within district  $l$ . Here I assume that

$$E(\zeta_{lit} \eta_{lit}) = 0 \text{ for any given } l \quad (F6)$$

since the state legislature/representatives' characteristics are not likely to be correlated with the federal legislature/representatives' unobserved characteristics. And

$$E(Z_{jlit} \zeta_{lit}) = 0 \text{ for all } j \text{ in any given } l \quad (F7)$$

since also here county representatives' characteristics are not likely to be correlated to US House of Representatives', note that by construction:

$$E(t_{jlit}^C Z_{jlit}) \neq 0, E(t_{kkit}^C Z_{jlit}) = 0. \quad (F8)$$

Given (F3), (F4) and (F5), any  $t_{kkit}^C$  within the district  $l$  is a valid instrument for  $t_{jlit}^C$ , since they are correlated through  $\eta_{lit}$  and since the former is not correlated with the composed error term of Equation (F2) (i.e.,  $E((t_{kkit}^C)(\tau_1 \times Z_{jlit} + \zeta_{lit} + \varepsilon_{jlit})) = 0$ ). Since any  $t_{kkit}^C$  for all  $k \neq j$  are valid instruments of  $t_{jlit}^C$ , any linear combination of the  $t_{kkit}^C$ s will be valid as well but with higher power. For example, the average outside county  $j$  but inside district  $l$  (i.e.,  $\frac{1}{R-1} \sum_{k \neq j} t_{kkit}^C$ ). Of course, the validity of the instrument could still be debatable, and obviously there is no proper test for testing the identifying assumptions (with the exception of (F5) that was already tested in Tables 1 and 2 Column (2), first estimator). But since IV results do not differ from OLS, I feel there is no major reasons to raise concerns on the validity of such instrument.

## Appendix G. Robustness checks

In this appendix, I estimate Equation (3) controlling for various additional sources of unobserved heterogeneity, and explore the robustness of the above results by estimating it on different subsamples, and by changing how the dependent and independent variables are measured. I will use OLS with the full sample for this section since the results are virtually unchanged when IV is used instead.

### G.1. Redefining the dependent variable: federal transfers in per capita terms

The dependent variable throughout this study is federal–county transfers as a percentage of county personal income. If income can also fluctuate due to political cycles, the dependent variable might have an unclear interpretation because every time the federal government changes transfers due to political alignment, both the numerator and the denominator will be moving in the same direction. As a robustness check, I use real federal transfers (prices of 2000) in per capita terms as the dependent variable.<sup>36</sup> The results can be seen in Column (2) of Table G1, where the main results do not change in comparison with the ones in Column (1) of the same table – reposted results from Table 2 Column (3).

### G.2. Alternative party control of the state definition

The party in control of the state can be defined in alternative ways (see Appendix A). Throughout the paper, I have used the measure proposed by Ansolabehere and Snyder (20062). In this section, I change that definition slightly to show that the main results are not sensitive to changes in the way of defining party control of the state. A Governor's veto power is an important element of

<sup>36</sup>The drawback of this variable compared to income is that people can move due to public good provision as in the Tiebout sorting model.

**Table G1.** Extensions and robustness checks and different subsamples and specifications, estimation of Equation (3).

	(1)	(2)	(3)	(4)	(5)
	OLS				
Estimation method					
Dependent variable	Federal–county transfers				
Panel A: Estimation results					
$\hat{\beta}_{FSi}$ ; (federal–state alignment)	0.024*	4.348*	0.021**	0.031*	0.012
	[0.014]	[2.594]	[0.008]	[0.017]	[0.014]
$\hat{\beta}_{FCi}$ ; (federal–county alignment)	0.014*	2.376*	0.013*	0.012	0.016**
	[0.007]	[1.388]	[0.007]	[0.008]	[0.008]
$\hat{\beta}_{FS \times FCi}$ ; (federal–state alignment $\times$ last presidential electoral margin)	−0.077***	−15.339***	−0.044***	−0.090***	−0.058**
	[0.024]	[4.458]	[0.017]	[0.029]	[0.024]
$\hat{\beta}_m$ ; (last presidential electoral margin)	−0.063***	−11.028***	−0.069***	−0.063***	−0.079***
	[0.016]	[3.014]	[0.017]	[0.018]	[0.017]
$\hat{\beta}_{FS \times m}$ ; (federal–state alignment $\times$ last presidential electoral margin)	0.118	29.375**	0.091	0.184	0.131*
	[0.078]	[13.313]	[0.077]	[0.120]	[0.079]
$\hat{\beta}_{ELE \times m}$ ; (dummy for presidential elections $\times$ last presidential electoral margin)	0.144***	19.802***	0.156***	0.150***	0.162***
	[0.029]	[4.994]	[0.029]	[0.031]	[0.029]
$\hat{\beta}_{FS \times ELE \times m}$ ; (federal–state alignment $\times$ dummy for presidential elections $\times$ last presidential electoral margin)	−0.230**	−48.033***	−0.230***	−0.300**	−0.297***
	[0.090]	[15.845]	[0.088]	[0.124]	[0.089]
Observations	15,054	15,066	15,054	13,218	14,260
$R^2$	0.182	0.111	0.182	0.169	0.184
Number of counties	3071	3077	3071	2699	2976
Panel B: Linear combination of estimators					
(1) $\hat{\beta}_{FS} + \hat{\beta}_{FS \times FC}$	−0.053***	−10.990***	−0.024	−0.059***	−0.047**
	[0.021]	[4.004]	[0.015]	[0.024]	[0.021]
(2) $\hat{\beta}_m + \hat{\beta}_{FS \times m}$	0.055	18.350	0.022	0.122	0.051
	[0.075]	[12.610]	[0.074]	[0.118]	[0.076]
(3) $\hat{\beta}_{ELE \times m} + \hat{\beta}_{FS \times ELE \times m}$	−0.086	−28.230*	−0.074	−0.149	−0.135
	[0.090]	[16.060]	[0.089]	[0.126]	[0.089]
(4) $\hat{\beta}_m + \hat{\beta}_{ELE \times m}$	0.081***	8.774*	0.087***	0.088***	0.083***
	[0.026]	[4.870]	[0.026]	[0.028]	[0.026]
(5) $\hat{\beta}_{FS \times m} + \hat{\beta}_{FS \times ELE \times m}$	−0.112*	−18.660*	−0.139***	−0.115*	−0.167***
	[0.059]	[11.140]	[0.052]	[0.062]	[0.058]

All regressions include county and year fixed effects, as well as the natural log of income per capita, natural log of population, % of blacks, % of inhabitants younger than 19 and % of inhabitants older than 65. The highest 2% values of the dependent variable were considered outliers and dropped from the sample. Robust standard errors clustered at county level are reported in parenthesis. \*, \*\* and \*\*\* denote 10%, 5% and 1% level of significance, respectively. On Panel B, linear combination (1) is  $E(y|FS = 1, FC = 1) - E(y|FS = 0, FC = 1)$ , i.e., the change in transfers to counties when a state becomes aligned with the President, conditional on aligned counties. Linear combination (2) is  $E\left(\frac{\partial y}{\partial m} | FS = 1\right)$ , i.e., the change in transfers to counties as electoral margin increases, conditional on aligned states.

Linear combination (3) is  $E\left(\frac{\partial y}{\partial m} | FS = 1, ELE = 1\right) - E\left(\frac{\partial y}{\partial m} | FS = 1, ELE = 0\right)$ , i.e., the difference between electoral and non-electoral episodes of the change in transfers to counties as electoral margin increases, conditional on aligned states. Linear combination (4) is  $E\left(\frac{\partial y}{\partial m} | FS = 0, ELE = 1\right)$ , i.e., the change in transfers to counties as electoral margin increases, conditional on electoral episodes and nonaligned states. Linear combination (5) is  $E\left(\frac{\partial y}{\partial m} | FS = 1, ELE = 1\right) - E\left(\frac{\partial y}{\partial m} | FS = 0, ELE = 1\right)$ , i.e., the difference between aligned and nonaligned states of the change in transfers to counties as electoral margin increases, conditional on electoral episodes.

control over the state budget. However, a veto can in some cases be overturned by two-thirds of the legislators. The greater the share of co-partisan legislators, the smaller the probability of overturning a Governor's veto, and the more likely that the Governor's preferences will determine

the budget. To capture this, I use the following definition of party control: if the Governor's party has a simple majority in one of the legislative chambers and holds at least one-third of the seats in the other chamber, then the state is controlled by the Governor's party. Intuitively, a veto overturn is unlikely in this case since the legislature needs more than two-thirds in both chambers for overturning a Governor's veto. I use this new definition to construct the federal-state alignment variable, and reestimate Equation (3). The results can be seen in Column (3) of Table G1, where they change little, with the difference-in-difference  $\hat{\beta}_{FS \times FC}$  decreasing somewhat in absolute value for this new definition of party control of the state. The results regarding targeting partisan counties when elections approach do not change in comparison with the results shown in Column (1). Namely,  $\hat{\beta}_{ELE \times m}$  and  $\hat{\beta}_m + \hat{\beta}_{ELE \times m}$  are positive and significant, and  $\hat{\beta}_{FS \times ELE \times m}$  and  $\hat{\beta}_{FS \times m} + \hat{\beta}_{FS \times ELE \times m}$  are negative and significant. These results are consistent with the theoretical prediction.

### G.3. Elected council-executive counties

There are three basic forms of county government: Commission, Administrator and Council-Executive. The last one differs from the others in that the executive is independently elected by county voters instead of being appointed by a council or commission board. The county board remains the legislative body, but in this case the executive can veto ordinances enacted by the commission. The county executive has as much power as a mayor-council in a strong municipality or city. For counties with such a strong executive, the President might care about the party of the executive more than about the party of the House Representative.

I am not aware of any dataset that would contain the party affiliation of the county executives or the date this form of governments was first introduced in each county. However, the National Association of Counties identifies which counties currently have this form of government. In Column (4) of Table G1, I drop these 400 counties and reestimate the model. The estimator  $\hat{\beta}_{FS \times FC}$  is still negative and significant, so does the linear combination  $\hat{\beta}_{FS} + \hat{\beta}_{FS \times FC}$ , just like in Column (1). Also,  $\hat{\beta}_{ELE \times m}$  and  $\hat{\beta}_m + \hat{\beta}_{ELE \times m}$  are positive and significant, and  $\hat{\beta}_{FS \times ELE \times m}$  and  $\hat{\beta}_{FS \times m} + \hat{\beta}_{FS \times ELE \times m}$  are negative and significant, just like in Column (1) as well. These results reinforce the main findings of the paper. They also suggest that either the organizational form of the counties and the party affiliation of their executives are not correlated with the party affiliation of the House Representative, or that, even council-executive counties, the President cares more about the party of the House Representative, consistent with the idea that he wants to influence the composition of Congress in order to favor his political agenda.

### G.4. States with only one congressional district

If a state has only one congressional district, this increases the correlation between the federal-state and the federal-county alignment measures. If we assume the extreme case in which all the states have only one congressional district as large as themselves, then the model of Equation (3) would not be identified. Even though the situation is away from this extreme case, there are states with one congressional district that increases the correlation between those two measures of alignment. This could reduce the significance of the individual parameter estimates, while still resulting in significant linear combinations like in panel B of Tables 1 and 2. In order to see whether the results are affected by the correlation between  $FS$  and  $FC$ , I drop from the sample the states with only one congressional district (Alaska, Delaware, North Dakota, Vermont, Wyoming and South Dakota). These results are in Column (5) of Table G1, and the estimates are very similar to the ones obtained earlier. Hence, we can conclude that states with only one congressional district are not driving the results found above.