CONTEMPORARY
ECONOMIC POLICY

PARTY CUES, POLITICAL TRENDS, AND FISCAL INTERACTIONS IN THE UNITED STATES

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Recent theoretical and empirical research has suggested that similarities in party affiliations across space will alter voters' comparisons, thus influencing fiscal policy mimicking. We employ a two-regime spatial panel data model applied to U.S. state governors from 1970 to 2012, and find rather weak empirical evidence of influence of political party affiliations in fiscal yardstick competition. Our observed cross-state interdependence in fiscal policies suggests voters may not weigh party affiliation heavily in their measure of comparative quality, treating each incumbent individually and independently. Incumbents strategically choose policy accordingly. This provides indirect support for the median voter theorem, in which incumbents' objective function is to maximize votes, independent of political affiliation. (*JEL* D72, H2, H7)

I. INTRODUCTION

Theoretical and empirical studies have repeatedly shown that the fiscal choices of politicians in a jurisdiction can influence the policies adopted by politicians in neighboring jurisdictions. This influence is commonly theoretically explained by the existence of spillovers or the flow of resources (see Brueckner 2003; Revelli 2005). Empirically, both yield the result that fiscal choices among jurisdictions are spatially correlated. Through the use of different estimation strategies, a vast body of empirical research using data for the United States and other countries has found suggestive evidence supporting both.

As explained by Brueckner (2003), the "resource-flow" theory suggests that incumbents mimic the popular fiscal choices adopted in neighboring jurisdiction in order to attract or detract mobile capital and labor (Tiebout 1956; Wilson 1999). Taxes and spending are set strategically to attract or detract a larger share of fixed capital that is distributed among jurisdictions. The spillover hypothesis relies on the assumption that even under limited flow of resources, policy choice in a jurisdiction can affect neighboring jurisdictions. Consequently, jurisdictions should strategically choose their policies to account for what may spill over from other jurisdictions. These spillovers may be either physical or informational. Physical spillovers include things such as environmental outcomes resulting from others' policy choices. Other examples include police or road expenditures (see Brueckner 2003).

Informational spillovers are those that can affect the way in which policymakers choose a level of policy, regardless of whether physical spillovers exist. In these cases incumbents derive utility from holding office and maximize their chances of reelection by choosing policies that are popular among voters (Alesina, Roubini, and Cohen 1997; Besley and Case 1995). Voters have imperfect information about the real cost of public goods and the level of taxes needed to provide them. As such, they rely on information about other jurisdictions' levels of public services and taxes to evaluate whether their incumbent is wasting resources and needs to be voted out. Incumbents acknowledge this by adjusting their policy choices taking into account the information available from other jurisdictions. This

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ABBREVIATIONS

LM: Lagrange Multiplier
ML: Maximum Likelihood
SAR: Spatial Autoregressive
SDM: Spatial Durbin Model

Contemporary Economic Policy (ISSN 1465-7287)
Vol. 37, No. 4, October 2019, 600–620
Online Early publication March 5, 2019

doi:10.1111/coep.12421

is commonly known in the literature as yardstick competition and, like in the "resource-flow" hypothesis, results in some observed level of policy mimicking.

Another recent explanation that can also result in policy mimicking across jurisdictions suggests that part of the observed fiscal interaction among jurisdiction is due to social interactions (Redoano 2007). The social interaction hypothesis suggests that fiscal similarities reflect incumbents' propensity to behave in the same way as a reference group, suggesting some of these interactions are largely driven by group similarities. Based on the works of Hazan (2003) and others, Santolini (2009) proposes a theoretical model in which political parties are politicians' main reference group, as parties reflect individuals' preferences and ideology. In a model in which all incumbents are of the same party, Santolini (2009) finds that increases to the conformity among similar politicians yields a "tax mimicking called a *political trend*." Leviathan-type politicians are "more sensitive to changes in the average tax rates of peers," suggesting that increases to conformity produces higher taxation levels among Leviathan-type incumbents. In a cross-sectional study of Italian municipalities, Santolini (2008) finds empirical evidence supporting the *political trend* hypothesis, in which incumbents' fiscal choices are positively correlated with those in neighboring jurisdictions governed by an incumbent of the same party. This hypothesis has been empirically tested once more by Delgado, Lago-Peñas, and Mayor (2015a) using tax setting policies for a cross-section of Spanish municipalities.

Using a theoretical model of yardstick competition, Geys and Vermeir (2008) also conclude that a reference group can affect fiscal interactions among jurisdictions. However, their model not only focuses on the similarities among incumbents from the same party, but also on the dissimilarities with incumbents of the opposite party. Unlike the traditional model of yardstick competition, where the quality of each candidate is independently and identically distributed (i.i.d.), their model assumes that party affiliation affects that party's incumbents' quality uniformly. Voters take this into consideration when forming their comparative information sets, and judge their incumbent's relative performance by accounting for party similarities and dissimilarities with those to whom they are being compared. As a result, an incumbent's choice to strategically mimic those in her party could simultaneously mean a deviation from those in the opposite party. Depending on the level of political competition the incumbent may have to balance her choices to also take into consideration the policies in jurisdictions with incumbents from the opposite party. This model suggests that an empirical analysis of fiscal interactions should not only consider neighbors from the same party, as in Santolini (2008) and Delgado, Lago-Peñas, and Mayor (2015a), but also neighbors of the opposite party.

We use panel data from the United States to consider the influence of party affiliation—a measure of similarities in political ideology—on fiscal policy mimicking across states. Using state data for the United States to test the influence of party similarities across incumbents is particularly useful due to two relatively unique aspects. First, U.S. states are fiscally autonomous. Although they are governed by some federal laws, each of the states sets many of its own laws and policies, including fiscal ones. Second, politics in United States have been traditionally dominated by two well-defined parties: Republicans (right-leaning) and Democrats (left-leaning). Recent history shows that the country has become increasingly politically polarized, making the distinction between the two parties more stark.

Using a long panel allows us to control for unobserved local characteristics by including spatial fixed effects without concerns for degrees of freedom in a way that is not possible using cross-sectional data. Panel data also allow us to mitigate concerns that the observed results are due to special circumstances during a specific year. Although panel data have been extensively used in studies of fiscal mimicking, particularly for the case of the U.S. states, they have not been used to test the role of party affiliation (Santolini 2008 and Delgado, Lago-Peñas, and Mayor 2015a use cross-sections). We extend the empirical literature by simultaneously allowing for spatial interactions with neighboring jurisdictions of the same and the opposite party separately. We employ a two-regime spatial panel econometric model to test for differences in the relative fiscal performance of incumbents from the same party versus incumbents of opposite parties, and question whether party trends are indeed important drivers in fiscal mimicking.

The results of our analysis for the sample period provide statistical evidence that spatial patterns in fiscal policies among U.S. states are, for the most part, not driven by ideological similarities. Specifically, we find that fiscal variables are not only correlated among states governed by the same political party, but also among states with governments from opposite parties. Furthermore, we find that in most cases there is no statistical difference in the degree of spatial correlation, providing little support for political trends as a major driver of fiscal similarities among U.S. states.

Our results suggest that if voters and candidates use the relative fiscal performance of nearby politicians as a yardstick measure, they do not discriminate based on party similarities. Although politicians do select themselves into a political party, stiff political competition may prevent them from targeting very differentiated fiscal agendas. With little difference in the quality of party politicians, voters' comparisons seem unaffected by party (dis)similarities. On average, voters appear to hold all politicians to the same standard, leading incumbents to equally take into consideration the fiscal policies in neighboring states with incumbents from both parties.

The details of our analysis, including a description of the data and econometric techniques used, are presented below after a brief summary of the recent literature. We conclude by providing a summary of the main takeaways with some reflections regarding horizontal competition among state governments in the United States.

II. BACKGROUND LITERATURE AND MOTIVATION

Empirical and theoretical considerations of strategic interactions in fiscal policy choices have been well considered in the literature. Since Case (1993), there has been a great interest in the topic and research generally falls into one of two camps. The "resource-flow" hypothesis suggests that jurisdictions compete for mobile labor and capital, which can help boost economic growth and thus increase tax revenues. With a fixed level of labor and/or capital sorting themselves across jurisdictions according to their preferences, this camp predicts that officials will end up mimicking some of the policies adopted in other jurisdictions (Tiebout 1956). The spillover hypothesis predicts similar empirical results predicting that outcomes of some fiscal policies spill over to nearby jurisdictions, thus forcing those jurisdictions to adjust policy accordingly. The yardstick competition hypothesis typically falls under the spillover hypothesis. In this context, information about other jurisdictions' fiscal performance spill over to other jurisdictions. With information asymmetries between voters and public officials about the true cost of providing public goods, voters judge their incumbents using information on the fiscal performance of similar jurisdictions. This type of strategic behavior can be motivated by politicians deriving utility from holding office, a theory that has been studied extensively by public choice scholars. Knowing that voters will use relative fiscal performance to evaluate their public officials, incumbents increase their chances of reelection if their fiscal policies and performance do not deviate significantly from those adopted elsewhere (see Brueckner 2003, Allers and Elhorst 2005, and Salmon 2014 for surveys of this literature).

Empirically, both of these hypotheses result in fiscal policies being spatially correlated. There is no absolute consensus in the literature as to which of these theories explains the presence of spatial correlation in tax and spending settings. However, most recent studies have found support for some sort of comparative evaluation of fiscal performance across jurisdictions (Delgado, Lago-Peñas, and Mayor 2015a). Although the literature is extensive, some recent studies typically cited include Hanes (2002), Lundberg (2006), Revelli (2002b), and Solé-Ollé (2006) which find evidence of spatial spillovers; Besley and Case (1995), Elhorst and Fréret (2009), and Bartolini and Santolini (2012) which find support for yardstick competition; and Wilson (1999), which provides a review on the factor mobility-based competition (or resource-flow).

Additional recent papers on the interdependence of tax policy have included dynamics in the analysis of excise taxes (Devereux, Lockwood, and Redoano 2007; Esteller-Moré and Rizzo 2014; Hoffer and Lacombe 2017). These studies have found that even when accounting for the time persistence of tax policy, neighboring policies do tend to exert influence on a jurisdiction's choice of policy. However, the interdependence is only found for some excise taxes—mostly cigarettes, and there is some debate on the degree or magnitude of such interdependence. Additionally, the results from the different studies are not conclusive about the source of such tax interdependence (i.e., yardstick competition versus resource-flow competition). For example, Devereux, Lockwood, and Redoano (2007) and Hoffer and Lacombe (2017) argue that the possibility of smuggling plays an important role in driving the competition in cigarette tax rates. On the other hand, Esteller-Moré and Rizzo (2014) find that the evidence of tax competition in cigarette taxes is politically driven, mostly present among nonterm-limited governors.[1]

Traditionally, political variables are the main instrument to test the existence of yardstick competition. Besley and Case (1995) use information on whether a state governor in the United States is eligible to be reelected for another term and use this information to test whether there are observed differences in the way term-limited and nonterm-limited governors mimic their neighbors' tax policies. Their findings suggest that, contrary to those who can run for reelection, term-limited governors (i.e., ineligible for another term in office) are less likely to respond to their neighbors' policies, providing evidence of strategic behavior. Bordignon, Cerniglia, and Revelli (2003) use data on reelection capabilities of mayors in Italian municipalities and also find (partial) evidence of yardstick competition. Others, such as Elhorst and Fréret (2009), Deskins and Hill (2010), Dubois and Paty (2010), and Padovano and Petrarca (2014), have used variables such as election year, vote margin, and party majority coalitions to measure politicians' sense of security in office and the degree to which such factors affect their mimicking behaviors. With some caveats, the majority of them find some evidence of strategic behavior, providing additional support to the yardstick competition hypothesis. Ermini and Santolini (2010) use alternative measures of neighborliness, including political party affiliation, and different spending categories and find little support for yardstick competition in favor of spillovers among Italian councils.

A typical concern in this literature relates to the roles played by reference groups. While most studies use contiguous neighbors as a starting point, many explore the use of other reference groups. In comparative studies, for example, it is important to know which jurisdictions can be considered the "relevant neighbors." As Case, Rosen, and Hines Jr. (1993) point out in one of the earliest studies in this literature "it is not obvious that geography is the most relevant factor. States with similar demographics may exert the most powerful mutual influences because their populations are most likely to compete in national markets." Indeed, distinctions about neighbors can have important implications. For example, if tax rates are more strongly correlated among jurisdictions with similar demographic or economic characteristics—but independent of geographic location—it weakens the argument for physical spillovers favoring some sort of information spillover in which policy adoption is very strategic. Case, Rosen, and Hines Jr. (1993), Schaltegger and Küttel (2002), and Solé-Ollé (2003) consider alternative definitions of neighbors based on population, income, demographics, and distance. Many of these studies considering such alternatives find that similarities among these other characteristics do exert more influence in fiscal policy choices, highlighting the importance of networks and reference groups. Note, however, that the degree of inter-jurisdictional mimicking can decrease as governments increase their level of fiscal autonomy (Schaltegger and Küttel 2002).

With a few exceptions, the literature has paid little attention to the use of political networks as an alternative measure of neighborliness. Not until recently, "Santolini (2008, 2009) introduced the idea of 'social interactions' to explain tax mimicking" (Delgado, Lago-Peñas, and Mayor 2015a, 351). This hypothesis suggests that politicians of the same party socially interact with each other to advance platforms aligned with the party's ideologies. In earlier work, Ashworth, Geys, and Heyndels (2006) found evidence that taxation of authorities with similar ideologies is closely correlated. Similarly, Santolini (2008) found empirical evidence that tax rates among Italian municipalities in the March region strongly correlate with those in neighboring municipalities that are governed by the same coalition. Foucault, Madies, and Paty (2008) find similar results using expenditures, but conclude that the correlation is due to common shocks rather than social interactions.

Santolini (2009) formalized the political/social interaction hypothesis, which she calls "political trend." The theoretical model predicts strong sensitivity to changes in fiscal policies by "ideological peers," particularly among Leviathan-type politicians. This model is primarily useful for comparisons between benevolent and Leviathan-type governments, as

1. There exist many other important studies supporting each hypothesis in the literature. See Delgado, Lago-Peñas, and Mayor (2015a) for the most recent extensive review of the empirical literature. Table 1 of their study names many important empirical studies, including the place where the sample was drawn (i.e., country), the demographic controls used, the methodology and fiscal variables studied, the political variables used to test for strategic interactions, and the main results. Although including all studies on tax mimicking and strategic interaction is nearly impossible, important work on horizontal competition includes Wildasin (1988), Heyndels and Vuchelen (1998), Revelli (2001, 2002a, 2002b), Feld and Kirchgassner (2001), Brueckner and Saavedra (2001), Takahashi (2004), Baicker (2005), Allers and Elhorst (2011), and Padovano (2013).

it assumes all jurisdictions are governed by the same party. Recent studies by Santolini (2008) and Delgado, Lago-Peñas, and Mayor (2015a) use cross-sections of tax rates for Italian and Spanish municipalities to test the "political trend" hypothesis.[2] While they show partial support for the yardstick competition hypothesis, both find robust empirical evidence supporting the "political trend" idea, where incumbents' fiscal choices correlate with those in neighboring jurisdictions that are ruled by incumbents of the same party or ideology. This would suggest that much of the fiscal interaction observed in the data is due to political similarities across neighboring jurisdictions, making jurisdictions with similar political ideologies a better measure of neighborliness. Although quite useful, these empirical studies fail to consider possible interactions with jurisdictions governed by politicians of the opposite party. Considering such interactions is important because political preferences among voters are not constant through time, as evidenced by party turnover. Depending on the degree of political competition, politicians of different political parties may converge or diverge in terms of public good provision. This is particularly important when the cutoff (i.e., the deciding) voter differs from the median voter (Krasa and Polborn 2010). If ideological specialization plays a role in elections, it should also affect strategic comparisons and therefore fiscal strategic interaction.

Indeed, Geys and Vermeir (2008) present a theoretical framework of yardstick comparisons that discriminates between party similarities *and* party differences among neighboring incumbents. While their model follows some of the previous literature by assuming that candidates' "quality" is exogenous, it instead assumes that quality is not i.i.d.[3] The model assumes that quality consists of a politician-specific part (which can be i.i.d.), and a party-specific part. This implies that there is an intraparty correlation and that candidates of the same party can be assumed to be close substitutes. In this way, voters account for party similarities and differences when comparing incumbents' fiscal performance. An important feature of the model is that the degree of substitution among candidates of the same party increases when voters regard the party-specific part of the politician's quality to be significantly stronger than the individual one. In such cases, inter-jurisdictional comparisons heavily depend on party similarities at the time of reelection, even if the incumbent is ineligible for reelection. Similar to the traditional models, voters judge their government's inefficiencies (i.e., excess taxation and/or expenditures) using the levels of taxation and expenditures in nearby jurisdictions as a point of comparison. However, their model suggests that the impact of high or low levels of relative inefficiencies depends on whether nearby jurisdictions are governed by members of the same or opposite party.

According to Geys and Vermeir (2008), relative fiscal inefficiencies at home are judged differently by voters if the comparison group is composed of incumbents from the opposite party. Due to a low degree of substitution, an incumbent can afford higher levels of relative fiscal inefficiencies when they are being compared to incumbents of the opposite party, since these would hurt her/his chances of reelection (or the election of a candidate from the same party) less. As such, an incumbent is less concerned about inter-jurisdiction comparisons with members of the opposite party. In the model, comparisons with other incumbents of the same party may be more important for reelection prospects, but the direction of the influence is ambiguous at best; suggesting that they can be positive, negative, or none at all.

When examining the spatial correlation of fiscal policies, the conclusions drawn by Geys and Vermeir (2008) would imply that growth in expenditures and taxation in neighboring jurisdictions governed by the opposite party benefits the local incumbent. At a minimum, excessive taxation and expenditures in those jurisdictions may give room to the local incumbent to slightly increase inefficiencies without hurting his/her chances of reelection significantly. On the other hand, high expenditures and taxes (i.e., high inefficiencies) in nearby jurisdictions governed by the same party may have to be offset by the local incumbents to increase the probability that a member of such party will be elected in the next cycle. In times of growing budgets, these results can have important implications in terms of fiscal interactions among neighboring jurisdictions. Although not entirely predictable, the interdependence of fiscal policy among jurisdictions of the same party can potentially be negative if

2. Note that testing for political trends is only part of the analysis in Santolini (2008) and Delgado, Lago-Peñas, and Mayor (2015a). Both studies also use party and other political variables to test for yardstick competition and/or spillovers.

3. See Geys and Vermeir (2008) for a list of articles that have attempted to endogenize quality in other principal-agent frameworks.

incumbents feel the need to diverge from their peers' inefficiencies. On the other hand, one could expect a positive—albeit weak—spatial correlation among jurisdictions governed by opposite parties. These predictions differ from those in the political trend hypothesis, in which incumbents of the same party will choose similar policies. In order to test for differences in the presence, and degree, of fiscal interdependence among incumbents of the same and opposite parties we use a two-regime spatial panel model with tax and expenditure data from the lower 48 U.S. states, described below.

III. EMPIRICAL IMPLEMENTATION

A. *Empirical Strategy*

Fiscal interdependence is typically studied in the empirical literature using spatial econometric techniques. In a traditional framework, a panel data model (in vector notation) that assumes strategic interaction among the political leaders of neighboring jurisdictions assumes a linear relationship of the form

$$(1) \qquad Y_t = \rho W Y_t + \sum_{r=1}^{k} X_{tr}\beta_r + \varepsilon_t,$$

where Y_t is a $n \times 1$ vector of fiscal measures made by the n jurisdictions at time t. Although the fiscal measure varies from study to study, common measures include expenditures, categories of expenditures, taxes, or tax rates (e.g., excise tax rates). The model in Equation (1), commonly referred to as the spatial autoregressive (SAR) model allows one to measure the spatial correlation of the dependent variable. In Equation (1), W is an $n \times n$ row-normalized weight matrix of neighboring jurisdictions, however defined. As such, each row of W identifies a jurisdiction's neighbors and provides them with an equal weight. Nonneighbors receive a value of zero.[4] The term WY_t is a vector that contains neighbors' average taxes and/or expenditures for each jurisdiction at time t.

Estimating Equation (1) has two problems well known in the literature. One issue is that it cannot be estimated via ordinary least squares due to the simultaneity between own and neighbors' tax/expenditures. In order to obtain consistent estimates, one must use either maximum likelihood (ML) or an instrumental variable approach (Anselin 2013). The second issue is that identifying strategic interaction is difficult due to the potential presence of exogenous spatially correlated shocks (Brueckner 2003; Revelli 2005). Omitted spatially autocorrelated variables could bias the estimate of ρ in Equation (1). While a strong instrument could help dissipate this bias, allowing for spatial autocorrelation of the unobserved may still be needed.[5] In the absence of strong instruments, one must be especially careful when specifying the model to deal with these sources of potential endogeneity. LeSage and Pace (2009) motivate the use of a spatial Durbin model (SDM) when one suspects that all spatial correlation could stem from omitted variables. The SDM is similar to the SAR in Equation (1), but includes spatially weighted control variables in the right-hand side. Although the SDM has been criticized as an imperfect solution to identification issues (Gibbons and Overman 2012), Elhorst and Fréret (2009) note that a panel data analysis that includes spatially weighted control variables (i.e., WX_t) that account for the potential omission of some variables, space fixed effects that control for unobserved space characteristics, and time-fixed effects that can be seen as a replacement for the control of spatial correlation in the error term, can increase the likelihood that the identifying variation comes from changes in the control variables, reducing the identification problem pointed out by Manski (1993) and others. Additionally, in order to overcome the potential for simultaneity bias, we follow Elhorst and Fréret (2009) and estimate the model via ML.[6]

Equation (2) shows the cross-sectional SDM that has been used to test the "political trend" hypothesis.

$$(2) \qquad Y = \rho W Y + \sum_{r=1}^{k} X_r\beta_r + \sum_{r=1}^{k} W X_r\theta_r + \varepsilon,$$

4. Alternative definitions allow for different weights depending on the level of relative importance. Although some studies have explored such alternatives—for example, Case, Rosen, and Hines Jr. (1993)—the majority use equal weights as the benchmark. Recently Delgado, Lago-Peñas, and Mayor (2015b) investigate similarities in the quality of life as a measure of neighborliness to analyze its impact on yardstick competition.

5. A robust Lagrange Multiplier (LM) test for the presence of spatial correlation in the error term in our tax data using the model in Equation (1) ameliorates this concern. The robust LM test of 0.1325 (p value: .716) fails to reject the null of no spatial autocorrelation in the unobservable.

6. See Elhorst (2003) for an explanation of spatial panel-data estimations and the treatment of the intercepts under ML estimation. Note that the inclusion of spatially lagged control variables helps to account for the potential of spatially correlated electoral outcomes.

where W is the row-normalized spatial weight matrix of neighbors. As stated in the empirical literature on "political trends," prior to row-normalizing W, w_{ij} is set equal to 1 when jurisdictions i and j share a common border *and* are governed by the same coalition/party, and zero otherwise (Santolini 2008). As such, WY is an $n \times 1$ vector with the mean of each jurisdiction's neighboring values of y.[7] The set of x variables in Equation (2) includes both demographic and political controls. In this model, a positive and significant $\hat{\rho}$ implies that the fiscal policies among neighboring jurisdictions governed by the same party are positively correlated, suggesting some degree of mimicking or fiscal interdependence.[8] We take advantage of the two-regime model developed by Allers and Elhorst (2005), which was extended for the use of panel data in Elhorst and Fréret (2009), to simultaneously test for the spatial relationship among neighbors of the same *and* opposite parties. Their two-regime SDM model for panel data, in matrix notation, is defined as

$$Y_t = \rho_1 W_{1t} Y_t + \rho_2 W_{2t} Y_t + X_t \beta_k + W X_t \theta_k + \Gamma_i + \lambda_t + \varepsilon. \tag{3}$$

In its original form, $W_{1t} = D_t W$ and $W_{2t} = I_n - D_t W$. As usual, W is a $n \times n$ row-standardized spatial weight matrix of neighbors (n corresponds to the total number of cross-sectional observations).[9] D_t is an $n \times n$ diagonal matrix with $d_{ii} = 1$ if jurisdiction i belongs to a certain political regime measured at time t (e.g., ruled by a left-leaning party or governed by a term-limited incumbent) and zero otherwise. By design, $I_n - D_t$ is the complementary matrix (e.g., a value of 0 in the main diagonal when $d_{ii} = 1$ and vice versa). Thus, if D_t is defined by whether an incumbent is a Democrat, then $W_{1t}Y_t$ is equal to Democrats' neighbors' average level of fiscal policy during this period. By composition, $W_{2t}Y_t$ would then be a vector of non-Democrats' neighbors' average policy level. The use of panel data allows for time variation in the regime defined by D_t. As originally designed by Elhorst and Fréret (2009), this conditional two-regime model is particularly useful to test for evidence of yardstick competition, which has also been widely used in the literature and to which we will come back later.

We slightly modify W_{1t} and W_{2t} to test the influence of political similarities on fiscal interdependence. We follow the "political trend" literature and define W_{1t} as the row-standardized matrix of neighbors that are governed by incumbents of the same party at time t. Similarly, W_{2t} corresponds to the matrix of neighbors governed by incumbents of the opposite party. This means that if a jurisdiction has six neighbors, and four of them have incumbents of the same party, $W_{1t}Y_t$ is a vector that includes the average of those four neighbors' policy level at time t; and $W_{2t}Y_t$ includes the average of the other two. This is the same for every jurisdiction at time t. Possible evolutions of ideological preferences and thus party affiliation over space and time can present some identification issues. However, the use of ML and the fact that our measure of neighborliness still depends heavily on geographic proximity, an exogenous factor, mitigate such concerns.[10] Using D_t, one can find W_{1t} and W_{2t} algebraically by row-normalizing $(D_t W D_t) + ((I_n - D_t) W (I_n - D_t))$ and $(D_t W (I_n - D_t)) + ((I_n - D_t) W D_t)$, respectively.[11] This approach to studying social and political interactions in fiscal interdependence not only has the advantage that it can measure the correlation with incumbents of the same and opposite parties simultaneously, but it also allows us to test for statistical differences between $\hat{\rho}_1$

7. Similarly, Delgado et al. (2015a, 357) code W with a "1 when jurisdictions i and j are neighbors and are ruled by the same political party and 0 otherwise."

8. LeSage and Pace (2009) note that the magnitudes of the spatial coefficients found via ML estimation, among others, should be carefully interpreted. Alone, they capture the spatial autocorrelation which is typically bounded between −1 and 1. Interpreting these coefficients as elasticities may be misleading.

9. As noted before, some studies have introduced a dynamic component to account for the persistence of policy (Devereux, Lockwood, and Redoano 2007; Esteller-Moré and Rizzo 2014; Hoffer and Lacombe 2017). Foucault, Madies, and Paty (2008) also include a time lag of the dependent variable in their one-regime panel model. Yu, de Jong, and Lee (2008) and Lee and Yu (2010) developed a quasi-ML estimator for such dynamic panels when N and T are large, but it has been only developed for one-regime spatial panels.

10. As mentioned above, some studies like Foucault, Madies, and Paty (2008) have begun introducing dynamics. Hory (2017) finds that in the case of European budgets, there is a timing component to fiscal mimicking, and it is not contemporaneous. Although these are important, they are not studied in the context of two regimes. We believe this is an interesting component for future research on U.S. state budgets under two opposite regimes.

11. Note that Santolini (2008) does include a dummy variable with values equal to 1 when jurisdiction i does not have any contiguous jurisdictions from the same coalition (party), and zero otherwise. However, this dummy is used as a control variable in the regression, and is not interacted with the policy choice in question.

and $\widehat{\rho_2}$, as has been commonly done in recent studies of yardstick competition.

We test these relationships and their difference using measures of neighbors that extend beyond the traditional geographic contiguity measure. We do this by increasing the set of each state's neighbors by including all neighbors' neighbors (i.e., second-order neighbors) as part of the neighboring set. Then we remove contiguous neighbors and use only second-order neighbors in W. If political party similarities are a major driver of fiscal strategic interaction, it should be observable even among noncontiguous neighbors. Yet if any observed party interaction in fiscal policy among contiguous neighbors is either due to the flow of resources or the spatial correlation in political ideology, any observed influence of party similarities in spatial interdependence among contiguous neighbors would not be observed when we only consider second-order neighbors.[12]

A priori, there is no clear expectation of the direction and relative magnitude of $\widehat{\rho_1}$ and $\widehat{\rho_2}$. If the political trend hypothesis is true, one should expect $\widehat{\rho_1}$ to be positive and statistically significant while $\widehat{\rho_2}$ should be either indistinguishable from zero or at the very least, significantly lower than $\widehat{\rho_1}$. This would suggest that politicians rely more heavily on their political reference group when choosing a stance on fiscal policy and discount the fiscal performance of neighbors from the opposite party. On the other hand, if voters' evaluation of relative performance does depend on party differences or similarities, and increases in spending and taxation are seen as a source of inefficiency, as proposed by Geys and Vermeir (2008), $\widehat{\rho_2}$ can be positive—although small—and $\widehat{\rho_1}$ can be either statistically zero or negative. In such case, one would expect $\widehat{\rho_1} - \widehat{\rho_2}$ to be negative and statistically significant. In either case, if we find that there is no statistical difference between $\widehat{\rho_1}$ and $\widehat{\rho_2}$, even when one of them is not statistically significant, that suggests that fiscal interdependence is not heavily influenced by party differences and/or similarities. Instead, this would imply that, as previously thought, incumbents' quality is i.i.d. and they would use *all* information in other jurisdictions to maximize their own individual utility.

12. We also consider all states in the continental United States as potential neighbors, allowing us to capture all of the states with incumbents of the same party. However, when the spatial weight matrix is defined this way, the two-regime model only contains two distinctive vectors at any point in time: one for all left-leaning states (i.e., Democrats) and one for all right-leaning states (i.e., Republicans). While there is time variation in this measure of W, the lack of cross-sectional variation creates collinearity problems if one includes time fixed effects. Although we estimate the model without time dummies, the estimated coefficients are biased and thus not comparable to our other results. The results for overall taxes and spending are qualitatively similar to our initial results and are available upon request.

B. Data

We analyze annual fiscal data from the 48 lower U.S. states from 1970 to 2012. We first focus on total tax revenue and expenditure per capita and then extend the analysis to specific spending categories. As stated in Geys and Vermeir (2008), voters use their total individual tax burden to measure the total running costs of providing public goods. In general, excessive levels of total taxation and/or spending are perceived by voters as inefficient, lowering the incumbent's (and her party's) popularity. However, differences in political ideologies among the decisive voter and his/her preferred candidate can provide significant differences in the way politicians set taxation and spending targets, potentially influencing the way in which they interact with neighboring politicians of the same and/or opposite party. Democrats, for example, are typically associated with higher levels of taxation and spending while Republicans tend to advocate for a reduced role of government in the economy. If political parties do indeed differ across these two dimensions, one could expect to observe differences in the way they correlate with one another across space.

Since differences across parties may come in the form of the type of preferred spending, rather than overall levels, we also analyze spatial interdependence in some specific spending categories. Examining different categories allows us to account for differences in spending tastes and the influence of single-issue voters.[13] While voters do seem to care about "frontline" issues, such as overall tax and spending inefficiencies, secondary issues may also influence incumbents' policy choices if there are sizeable groups of single-issue voters (Esteller-Moré and Rizzo 2014; List and Sturm 2006). We do not analyze specific sources of tax revenue for two reasons. The most significant concern is that states vary in their primary source of tax revenue. Some states do not tax personal or corporate income, and instead rely more heavily on sales tax revenues. As such, the spatial distribution

13. We thank an anonymous referee for this suggestion.

of these states can potentially bias the estimates of spatial correlation and spatial interdependence downward. A secondary concern is that in order to better capture tax policy choice, one needs space and time variation in tax rates rather than revenue since it may be directly affected by economic conditions. Historical rates are available for some types of excise taxes, but not readily available for all of the major sources of tax revenue.

Note that our overall measures of taxes and expenditures exclude intergovernmental transfers and total tax revenues only include revenues collected from taxes to pay for current obligations. Similarly, direct expenditures do not include transfers made to other levels of government (i.e., federal and local governments). Our state finance data are retrieved from the Survey of Government Finances.[14]

We follow the literature and use a geographic contiguity spatial weight matrix to define a state's neighbors.[15] We also follow the literature on fiscal interdependence and electoral accountability by focusing on the U.S. state governors, relying on the assumption that they are the main proponents of the fiscal agenda (Besley and Case 1995; Crowley and Reece 2013; Leguizamon and Crowley 2016).[16] As described above, we use the governors' political party affiliation to form W_1 and W_2. For every year, W_1 captures the set of neighboring states with a governor of the same political party, and W_2 captures the set of contiguous neighbors with governors of the opposite party.[17] As we mentioned in the previous section, we consider alternative spatial weight matrices (W) to allow for greater and/or different information markets.

We follow the literature and include the typical set of explanatory variables. All specifications include states' real per capita personal income (net of transfers), population density, the proportion of the population at least 65 years old, the proportion of the population between 5 and 17 years old, and the percent of the population that is white. We also control for the rate of civilian employment. These variables account for the states' basic demands and resources. Our income variable measures the resources available to the state, density captures economies of scale in the provision of state goods and services, and age composition measures the differences in states' demands and tastes for the provision of public goods.

We also include political variables that can affect strategic decisions. We follow Besley and Case (1995) and Leguizamon and Crowley (2016) and control for governors' closeness to retirement by including their age at time t.[18] We also include a "Democrat" dummy to account for ideology, whether the incumbent is term-limited, and the governor's past elections' winning margin. These last two account for the possibility of reelection, the incumbents' popularity, and whether a state is likely to be more or less politically competitive. As mentioned above, the SDM model for panel data also controls for neighbors' averages of the explanatory variables and space and time fixed effects. These state indicator variables account for unobservable characteristics that are unique to each state, while the time dummies control for common shocks. Table 1 presents descriptive statistics, where all monetary variables are adjusted for inflation using 2010 dollars.

A first look at our measures of taxes and expenditures suggests that party ideology could play a role in fiscal policymaking. In Table 2 we present the difference in fiscal policy between Democrat and Republican governors by decade and region. For the most part, we observe that Democrats tend to spend and tax more than Republicans. This trend is reversed in the 1990s. This difference, however, varies greatly by region. In the Pacific region, there was significant increase in the amount that Democrat governors surpassed Republican ones in the late 1990s, which could potentially be explained by an increase in Democratic support during the time. In New England, Republican governors

14. Annual data correspond to the fiscal year.

15. As Besley and Case (1995) suggest, geographic neighbors are likely to both experience similar shocks to their tax bases and to belong to the same media network, thus providing more accurate information about changes in economic conditions and the subsequent adjustments to fiscal policy.

16. It is important to note that final state budgets in the United States result from lengthy negotiations between the governor and the legislature. This process can be complicated, especially when a state government is politically divided (Alt and Lowry 1994). Modeling the degree of divisiveness empirically can be complex and it is out of the scope of this paper. Future research on political and social interactions can include the role of the dominant party in legislature in the presence of divided and unified governments. See Rose (2010) for a review on political institutions and their effect on fiscal sustainability in the United States.

17. We rely on ideology scores to classify any incumbent who is officially registered as an independent.

18. Work on electoral accountability suggests that an incumbent's time horizon affects policy choice by decreasing the effect of term limits. Crowley and Reece (2013), for example, study family dynasties as an extension of an incumbent's political horizon.

TABLE 1
Descriptive Statistics

Variables	Mean	Standard Deviation	Minimum	Maximum
Democrat governor	0.541	0.498	0	1
Governor's age	54.45	7.890	34	79
Governor's winning margin (%)	15.26	13.67	0	71.38
Term-limited governor	0.279	0.449	0	1
Proportion of white	0.863	0.0949	0.581	0.996
Proportion of young (ages 5–17)	0.199	0.0290	0.148	0.305
Proportion of elderly (ages 65+)	0.122	0.0199	0.0630	0.185
Population density	173.5	241.2	3.438	1,207
Civilian employment	0.851	0.0946	0.589	1.221
Real per capita state tax revenue ($)	1,997	622.5	700.3	7,936
Real per capita state direct expenditures ($)	3,147	1,214	1,051	7,647
Real per capita income (net of transfers) ($)	26,865	6,350	13,026	52,342
Number of observations	2,064			
Number of states	48			
Years	43			

Notes: Monetary variables are adjusted for inflation and presented in 2010 dollars. The empirical analysis uses log transformations of these variables.

appeared to have taxed more than their Democrat counterparts throughout the 1980s, 1990s, and 2000s. A general pattern, however, is not entirely clear.

A descriptive look at the relationship between the expenditures (and taxes) of governors of the same party compared to that of governors of the opposite party, presents a clearer pattern. For each state, we measure the average per capita spending and tax revenue of their contiguous neighbors. In doing so, we separately average the expenditures and taxes of neighboring states with governors of the same party and with governors of the opposite party. We repeat this exercise using second neighbors only. In Table 3 we present those results as a proportion of the expenditures (and taxes) in the home state, aggregated by decade. In most cases, the mean spending and tax revenue in neighboring states is less than the spending at home (i.e., most ratios are less than 1), regardless of party differences among neighbors.

In the case of first-order neighbors, we observe that the average taxation and spending is much closer when neighboring governors belong to the same party. Averaged across decades, the mean expenditures of neighbors with governors of the same party is approximately 98% of the expenditures at home. This percent is much lower for neighbors with governors of the opposite party (approximately 86%). The percent for tax revenues is 97% and 84%, respectively. These averages would provide some support for the theory that parties serve as a reference group, influencing the spatial interdependence of fiscal policy. However, the results when we use second-order neighbors as a reference group yield a different story. Policies in neighboring states with a governor of the opposite party are closer to the policies at home, although compared to neighbors of the same party, the differences are rather small. The section below discusses the results obtained using the more formal empirical method described in the previous section.

IV. RESULTS

A. *Tax Revenues and Expenditures*

Table 4 provides estimates of the traditional one-regime SDM using three different measures of neighbors (W).[19] These results are used as a benchmark and also allow us to explore the importance of neighborliness. The estimates are mostly consistent with those found in the literature. State income per capita provides more resources, increasing both tax revenue and direct expenditures. Employment has a similar effect, although it is not statistically different from zero in the case of expenditures. Although states with higher proportion of young and older individuals tend to have higher tax revenue and expenditures per capita, these effects are not statistically significant.

Population density appears to have a positive effect on both tax revenues and expenditures, but

19. Typical diagnostic tests of spatial correlation, such as the Moran's I and LM tests, confirm the existence of the spatial correlation.

TABLE 2
Party Differences in Fiscal Policy by U.S. Census Region

	Democrats-Republicans			
Region	**1970s**	**1980s**	**1990s**	**2000s**
Expenditures				
New England	368.129	−247.958	−36.021	−344.19
Middle Atlantic	339.07	304.31	−260.20	491.70
East North Central	127.74	457.86	−158.80	172.53
West North Central	−16.25	−207.46	−192.53	203.19
South Atlantic	−538.60	−536.69	41.56	867.16
East South Central	215.30	417.59	172.77	−216.69
West South Central	131.73	3.92	207.41	643.65
Mountain	267.22	389.16	−139.80	303.07
Pacific	191.62	1.30	939.95	318.45
Taxes				
New England	84.38	−102.76	−149.83	−223.68
Middle Atlantic	196.21	63.22	−239.83	65.20
East North Central	−110.62	225.19	−198.57	−55.37
West North Central	358.06	256.88	226.49	−29.84
South Atlantic	−128.46	−273.21	−35.36	299.87
East South Central	105.22	183.80	283.41	5.92
West South Central	−9.43	109.65	−177.92	350.51
Mountain	−14.43	166.45	27.477	488.22
Pacific	290.14	154.88	−232.91	−678.85

Note: Per capita values adjusted for inflation and presented in 2010 dollars.

TABLE 3
Average Spending and Taxation in Neighboring States as a Proportion of Own Levels

	First-Order Neighbors		Second-Order Neighbors	
	Same Party	**Opposite Party**	**Same Party**	**Opposite Party**
Expenditures				
1970s	0.9689	0.8193	0.9322	1.0162
1980s	0.9671	0.8926	0.9707	0.9621
1990s	0.9789	0.9353	0.9484	0.9804
2000s	1.0063	0.7941	0.9458	1.0535
Average	0.9803	0.8603	0.9493	1.0031
Taxes				
1970s	0.9363	0.7828	0.9692	0.9626
1980s	0.9764	0.8418	0.9959	0.9115
1990s	0.9915	0.9559	0.9525	1.0134
2000s	0.9941	0.8045	0.9380	1.0527
Average	0.9746	0.8463	0.9639	0.9850

Notes: Authors' calculations. Proportions are estimated as a ratio of average expenditures/taxes in neighboring states with governors from the same and opposite party and the local expenditures/taxes. They are then averaged across states and years. All expenditures and tax revenues are in real terms in 2010 dollars.

the magnitude is relatively small. The percent of white appears to have the opposite effect on taxes and expenditures. The statistical results seem to suggest that states with a higher percent of white individuals tend to have an aversion to too much spending. However, these estimates also suggest that states with higher proportions of white tend to collect more taxes per person, holding other things equal. The results on the political variables suggest modest to no effect of these variables on both taxation and expenditures. Once we control for age and spatial dependence, term-limited governors do not seem to have higher levels of taxation, and in fact have lower levels of expenditure.

The estimated coefficients on the neighbors' averages of the control variables—that is, WX—suggest that some of these variables are important determinants of a state's average spending and tax revenues, supporting the idea

TABLE 4
SDM—Estimates of Simple Spatial Interaction

	First-Order Contiguous Neighbors (W)		**First- and Second-Order Neighbors (W)**		**Second-Order Neighbors (W)**	
Variable	**Per Capita Tax Revenues (1)**	**Per Capita Direct Expenditures (2)**	**Per Capita Tax Revenues (3)**	**Per Capita Direct Expenditures (4)**	**Per Capita Tax Revenues (5)**	**Per Capita Direct Expenditures (6)**
Own coefficients ($\widehat{\beta}_r$)						
Per capita personal income	0.6550	0.2390	0.6084	0.2276	0.5476	0.2192
	(11.9112)	(4.5670)	(11.7685)	(4.5894)	(11.8349)	(4.9017)
Civilian employment	1.0638	0.1140	1.1467	0.1618	1.1621	0.1086
	(9.9017)	(1.1130)	(11.1692)	(1.6437)	(12.7017)	(1.2282)
Proportion of young (ages 5–17)	0.0786	0.1160	0.0909	0.0845	0.0471	0.0680
	(0.7385)	(1.1440)	(0.8519)	(0.8259)	(0.4627)	(0.6909)
Proportion of elderly (ages 65+)	0.0782	0.1660	0.0925	0.0665	0.0033	0.0026
	(0.4456)	(0.9930)	(0.5170)	(0.3880)	(0.0196)	(0.0158)
Population density	0.0004	0.0006	0.0001	0.0001	0.0001	0.0000
	(2.7228)	(4.7290)	(0.6152)	(1.1279)	(0.5178)	(0.1371)
Percent of white	0.7834	−0.2960	0.7719	−0.5905	0.4898	−0.6351
	(5.2520)	(−2.088)	(5.2497)	(−4.1904)	(3.5394)	(−4.7329)
Governor's age	0.0008	0.0001	0.0009	0.0002	0.0009	0.0005
	(3.0396)	(0.4670)	(3.1206)	(3.1004)	(3.3996)	(1.7299)
Democrat governor	0.0066	0.0050	0.0059	0.0056	0.0080	0.0067
	(1.5893)	(1.2830)	(1.4560)	(0.5368)	(1.9671)	(1.7064)
Term-limited governor	0.0004	−0.0240	0.0019	−0.0208	0.0041	−0.0195
	(0.0846)	(−4.705)	(0.3401)	(−2.4846)	(0.7875)	(−3.8455)
Governor's winning margin	−0.0002	0.0004	−0.0003	0.0004	−0.0003	0.0004
	(−1.3894)	(2.7699)	(−1.7184)	(3.1004)	(−1.7772)	(2.9756)
Neighbors' average ($\widehat{\theta}_r$)						
Per capita personal income	−0.0390	0.1280	−0.1066	0.0498	0.1428	0.0387
	(−0.4924)	(1.7510)	(−1.0561)	(0.5369)	(−0.3341)	(0.4525)
Civilian employment	−0.3287	−0.5370	−0.3908	−0.5326	0.0515	−0.6222
	(−2.0667)	(−3.609)	(−1.7166)	(−2.4846)	(0.2524)	(−3.2262)
Proportion of young (ages 5–17)	0.2746	−0.0366	0.5640	−0.2707	0.0636	0.0000
	(1.1678)	(−0.1636)	(1.2298)	(−0.6155)	(0.2225)	(−0.5346)
Proportion of elderly (ages 65+)	0.7810	0.1306	1.4527	−0.5210	0.1195	−0.4714
	(1.8842)	(0.3311)	(1.8056)	(−0.6756)	(0.2479)	(−1.0121)
Population density	−0.0004	−0.0006	0.0005	0.0009	0.0016	0.0020
	(−1.8493)	(−2.635)	(1.6529)	(2.6794)	(5.4589)	(7.0461)
Percent of white	−1.0822	−0.0008	−2.2017	1.2209	−1.4574	2.4331
	(−4.2904)	(−0.0034)	(−5.9041)	(3.4180)	(−4.6376)	(8.0118)
Governor's age	−0.0002	0.0012	−0.0008	0.0019	−0.0016	0.0004
	(−0.4068)	(2.2950)	(−0.7848)	(1.8740)	(−2.1336)	(0.5470)
Democrat governor	0.0094	−0.0170	0.0220	−0.0084	0.0198	0.0103
	(1.1401)	(−2.166)	(1.5293)	(−0.6074)	(1.8406)	(0.9885)
Term-limited governor	−0.0013	−0.0454	0.0007	−0.0462	0.0028	−0.0065
	(−0.1193)	(−4.176)	(0.0328)	(−2.3233)	(0.1942)	(−0.4625)
Governor's winning margin	0.0004	0.0001	−0.0002	0.0000	−0.0002	0.0000
	(1.5888)	(0.2238)	(−0.4893)	(0.0784)	(−0.6058)	(0.1030)
Spatial dependence coefficient ($\widehat{\rho}$)	0.1240	0.2311	0.1717	0.3630	0.1071	0.2080
	(4.1742)	(8.2290)	(3.8444)	(9.5253)	(2.8464)	(5.6815)
Log-likelihood	2,205.63	2,298.585	2,236.1625	2,311.0716	2,255.0238	2,320.2825
Number of observations	2064	2064	2064	2064	2064	2064
Number of periods	43	43	43	43	43	43

Notes: Regression estimated using concentrated ML with space and time fixed effects. All monetary variables are adjusted for inflation to 2010 dollars and log-transformed using natural logs. t-statistics are in parenthesis.

that neighboring and/or nearby states belong to common information markets.[20]

For estimations in which we account for all spatially weighted explanatory variables, we observe that both taxes and expenditures are statistically spatially autocorrelated. Holding all other variables constant, states appear to follow the policies adopted in nearby states. Although the literature on the spatial dependence of excise tax rates has documented a wide range in the magnitude of the spatial correlation, our estimates are consistent with those found in the recent studies. As documented by Hoffer and Lacombe (2017), recent studies have found estimates of the spatial correlation coefficients between 0.1 and 0.3. After accounting for dynamics, they find an estimate around 0.2 for the case of cigarette taxes.

Columns (3) and (4) of Table 4 provide the results when we allow for even larger information and economic markets. In this case, the spatial weight matrix W also includes second-order neighbors as part of a state's set of neighbors (i.e., include neighbors of contiguous neighbors). The results are, generally, qualitatively consistent with those in columns (1) and (2), except for the fact that we observe stronger spatial dependence (ρ). This suggests that states do indeed use information from other states, and this information is not limited to neighboring states. Depending on the states' characteristics, other states around the country may provide additional information to both voters and incumbents. The stronger spatial correlation found in columns (3) and (4) suggests that information, and perhaps political trends, may be a stronger prediction of spatial interdependence among U.S. fiscal performance. In columns (5) and (6) we reestimate the results excluding first-order contiguous neighbors to measure whether the flow of resources is an important driver of such spatial interaction. Presumably, if much of the interdependence is due to these flows, we would find weak evidence of spatial correlation when only second-order neighbors are considered. As columns (5) and (6) show, the spatial correlation persists both economically and statistically. This provides some suggestive evidence that a great part of such fiscal interdependence can be explained by policy comparisons.[21]

TABLE 5
Two-Regime SDM Estimates of Political/Party Trends

	Per Capita Tax Revenues	**Per Capita Direct Expenditures**
Panel A: *W* of first-order contiguous neighbors		
Same party neighbors ($\widehat{\rho_1}$)	0.0250	0.1297
	(1.1153)	(5.7455)
Opposite party neighbors ($\widehat{\rho_2}$)	0.0508	0.0708
	(2.2359)	(3.1173)
Difference ($\widehat{\rho_1} - \widehat{\rho_2}$)	−0.0257	0.0589
	(−0.8152)	(1.7963)
Panel B: *W* of first- and second-order neighbors		
Same party neighbors ($\widehat{\rho_1}$)	−0.0418	0.1631
	(−1.2694)	(5.2322)
Opposite party neighbors ($\widehat{\rho_2}$)	0.1080	0.1085
	(3.4428)	(3.6582)
Difference ($\widehat{\rho_1} - \widehat{\rho_2}$)	−0.1498	0.0545
	(−3.2234)	(1.1878)
Panel C: *W* second-order neighbors only		
Same party neighbors ($\widehat{\rho_1}$)	−0.0058	0.0649
	(−0.02195)	(2.3873)
Opposite party neighbors ($\widehat{\rho_2}$)	0.0618	0.0824
	(2.4177)	(3.1311)
Difference ($\widehat{\rho_1} - \widehat{\rho_2}$)	−0.0676	−0.0175
	(−1.8760)	(−0.4572)

Notes: All models control for demographic characteristics and are estimated using concentrated ML with space and time fixed effects. All monetary variables are adjusted for inflation to 2010 dollars and log-transformed using natural logs. *t*-statistics are in parenthesis.

To fully understand whether there is statistical evidence of either a political trend or a party influence in fiscal comparisons in the United States, we estimate the two-regime SDM where we discriminate between neighbors of the same party and neighbors of the opposite party. We present these results in Table 5. Our estimated coefficients $\widehat{\beta}$ are consistent with those in Table 4, so we omit them for brevity and focus on the two-regime coefficients ($\widehat{\rho_1}$ and $\widehat{\rho_2}$).

The results in Table 5 are organized by the type of W employed. Panel A presents results when we only consider first-order neighbors. As shown, the spatial interactions are positive but rather small, particularly for the case of taxes. Interestingly, the estimates for the case of taxes suggest that not only is the spatial dependence coefficient for neighboring states with incumbents of the same party half of the one with

20. LeSage and Pace (2009) note that the magnitudes of these coefficients are informative but with limited interpretative power. However, this does not limit inference because the SDM analysis does allow proper interpretation of the statistical significance and direction of each variable. LeSage and Pace (2009) develop routines to estimate marginal effects that separate direct—or own—estimates from those that come from neighbors. These marginal effects are available for panel data but not for the two-spatial regime model used here.

21. We thank an anonymous referee for this suggestion.

neighboring states with governors of the opposite party, but it is also statistically undistinguishable from zero. These results partially contradict the political trend hypothesis and instead favor the implications of Geys and Vermeir's (2008) model: increased tax inefficiencies in neighboring states that are governed by the opposite party may give local incumbents some room to increase their own inefficiencies without significantly hurting their chances of reelection. All else equal, when neighbors of the same party increase inefficiencies, local incumbents will have a better chance for reelection if they do not follow suit.

The results in Panels B and C provide additional evidence of this pattern with respect to taxes. Although not statistically significant, the estimate for the spatial correlation for states with governors of the same party suggests a small negative correlation. In the context of Geys and Vermeir (2008), this would suggest that when incumbents of the same party in neighboring jurisdictions increase inefficiencies, local incumbents may feel the need to send a stronger signal by severely decreasing inefficiencies at home hoping to increase the possibilities of reelection (or election of a successor of the same party if term-limited). The positive spatial dependence in taxes among neighboring states with governors of the opposite party persists and is statistically different from zero. Note, however, that the test for differences in spatial behavior provides only weak statistical evidence of differences in magnitude, especially when we consider second-order neighbors only. Although we only seem to find spatial interdependence among fiscal policies for governors of the opposite party, the lack of statistical differences implies that there is not much evidence suggesting that party affiliation matters in fiscal interactions.[22]

Analyses on total direct expenditures per capita yield slightly different results when it comes to states with governors of the same party. Although there appears to be evidence that the spending policies among states governed by politicians of the same party also seem to be correlated, a lack of difference with the estimated correlation for the case of neighboring incumbents of the opposite party suggests that political/party trends are not a main driver of fiscal interdependence. However, note that these results also fail to provide strong statistical support for a theory of party differences in fiscal interdependence (Geys and Vermeir 2008). While this may be surprising, one should note that voters may be relatively more sensitive to taxes than expenditures. Tax burdens, in the eyes of voters, may be a better measure of potential inefficiencies, crucial in models of yardstick competition.

Besley and Case (1995) conduct their empirical analysis using tax changes rather than levels. When voters have incomplete information about the incumbent type, changes can provide information to voters on whether the policies implemented are valid responses to unexpected shocks. We investigate the robustness of our results using tax and expenditure changes.

We follow Besley and Case (1995) using 2-year changes in tax burdens and direct expenditures since governors may take more than a year to fully implement budgets. The results in Table 6 provide some evidence of same-party spatial dependence among U.S. governors, although not enough to fully support evidence suggesting that political trends drive spatial interdependence of fiscal policies. As shown in Panel A, the spatial interaction among neighboring governors of the same party is positive and statistically different from zero. This contrasts with the observed estimate for neighboring governors of the opposite party, which is smaller and not statistically different from zero. Although the estimate for neighbors of the opposite party becomes statistically significant in Panel B, when we also include second-order neighbors in W, the magnitude is slightly smaller. In all three panels, however, we find no strong statistical difference between the two coefficients, suggesting that even though changes in the tax burden in neighboring states governed by politicians of the same party seem to be more strongly correlated, this relationship is not statistically different from the one with governors of the opposite party.[23]

The results for state per capita direct expenditures provide similar conclusions. Regardless of the neighbors included in W, states' average expenditures seem to be equally related to

22. The magnitudes of the spatial correlations in Table 5 are not directly comparable to those in Table 4, since these are conditional correlations. However, the smaller magnitudes in Table 5 are consistent with the idea that overall fiscal interdependence is not influenced by similarities in party affiliations, but rather an aggregated response to the policies of all neighbors. The magnitudes in Table 5 are not large enough to be significant on their own, but when aggregated, they are large enough to be statistically meaningful.

23. Gelman and Stern (2006) show the importance of testing for the difference in coefficients, even when one appears statistically not significant, as in Panel A.

TABLE 6
Two-Regime SDM Estimates of Political/Party Trends Using Changes ($\Delta_{t-(t-2)}$)

	Per Capita Tax Revenues ($\Delta_{t-(t-2)}$)	Per Capita Direct Expenditures ($\Delta_{t-(t-2)}$)
Panel A: *W* of first-order contiguous neighbors		
Same party neighbors ($\hat{\rho}_1$)	0.0639	0.0691
	(2.7302)	(2.9198)
Opposite party neighbors ($\hat{\rho}_2$)	0.0277	0.0700
	(1.1694)	(2.9103)
Difference ($\hat{\rho}_1 - \hat{\rho}_2$)	0.0362	−0.0009
	(1.0919)	(−0.0249)
Panel B: *W* of first- *and* second-order neighbors		
Same party neighbors ($\hat{\rho}_1$)	0.0837	0.0735
	(2.5199)	(2.1701)
Opposite party neighbors ($\hat{\rho}_2$)	0.0694	0.0894
	(2.1957)	(2.7592)
Difference ($\hat{\rho}_1 - \hat{\rho}_2$)	0.0142	−0.0159
	(0.3026)	(−0.3232)
Panel C: *W* of second-order neighbors only		
Same party neighbors ($\hat{\rho}_1$)	0.0423	0.0281
	(1.5235)	(0.9865)
Opposite party neighbors ($\hat{\rho}_2$)	0.0725	0.0407
	(2.6806)	(.4682)
Difference ($\hat{\rho}_1 - \hat{\rho}_2$)	−0.0302	−0.0126
	(−0.7776)	(−0.3146)

Notes: All models control for demographic characteristics and are estimated using concentrated ML with space and time fixed effects. All monetary variables are adjusted for inflation to 2010 dollars and log-transformed using natural logs. *t*-statistics are in parenthesis.

the expenditures in states with governors of the same party and states with governors of the opposite party. These results, consistent with those in Table 5, suggest that there is little evidence of political trends or party influences in fiscal interdependence at the state level in the United States. Even though Table 5 provides some weak empirical evidence in favor of the predictions made by Geys and Vermeir (2008), particularly for the case of taxes, the results in Table 6 suggest that differences in comparative behavior due to party similarities do not seem apparent among U.S. governors. Theoretically, this may imply that the quality of the incumbent is indeed i.i.d. for the case of U.S. governors, and not dependent upon party affiliation. These results provide partial indirect evidence in favor of the median voter theorem, suggesting that party ideology plays a small role. Note that the results still suggest that state fiscal policies appear to be spatially correlated, even with noncontiguous neighbors.

Though total expenditures and the taxes collected to finance them can be useful when measuring the relative performance of an incumbent, incumbents' policy choices may be better measured by specific types of spending. Many voters are single-issue voters. They care about the general fiscal performance, but they may also feel strongly about a particular issue. These preferences can be driven by political ideology which can potentially affect the way incumbents use neighbors' policies to influence their policy choices. As such, it is plausible that differences in fiscal interdependence across political similarities can be more evident when analyzing specific policies (i.e., types of spending). In the section below, we study fiscal interdependence and the influence of ideological similarities for five of the major spending categories in state budgets.

B. Disaggregated Spending Categories

In this section, we analyze state spending per capita for police, public welfare, education, health, and highways. These are direct expenditures and exclude all intergovernmental transfers. In Table 7 we present the results for the one-regime SDM using first-order neighbors only. As shown, the spatial correlation coefficient suggests that there is not enough statistical evidence in favor of fiscal interdependence in police and public welfare expenditures. Spending on education, health, and highways does appear to be spatially correlated, with magnitudes comparable to those above and the ones documented in recent studies.

Tables 8 and 9 provide the estimations when we consider our alternative definitions of neighborliness. We continue to find statistical support for the spatial interdependence of spending in education and highways. While the spatial correlation of police expenditures is statistically significant among second-order neighbors, this is not the case for health expenditures. This suggests that some of the state interdependence in health expenditures may be primarily driven by the flow of resources. Overall, the data in this model specification suggest that state expenditures on public welfare are not spatially interdependent.

In order to consider whether the interdependence of these policy choices depends on party ideologies, political networks, party similarities, or party differences, we turn to our two-regime model. The results for the spatial correlation coefficients are provided in Table 10. The estimates for police and public welfare spending are, for the most part, statistically indistinguishable from zero. In all three panels, we find that holding

TABLE 7
Spatial Interaction by Spending Category: Contiguous Neighbors Only

Variable	First-Order Contiguous Neighbors (W) Police Expenditure (1)	Public Welfare Expenditure (2)	Education Expenditure (3)	Health Expenditure (4)	Highway Expenditure (5)
Own coefficients ($\widehat{\beta}_r$)					
Per capita personal income	0.6961	0.3405	0.1842	0.1691	0.2603
	(6.6726)	(1.6608)	(2.8171)	(1.1950)	(2.3191)
Civilian employment	1.2657	−0.7619	0.6459	0.5772	1.2526
	(6.2169)	(−1.8989)	(5.0528)	(2.0790)	(5.7139)
Proportion of young (ages 5–17)	−0.2579	0.3784	0.0901	0.2549	0.1251
	(−1.2785)	(0.9532)	(0.7116)	(0.9302)	(0.5758)
Proportion of elderly (ages 65+)	−0.5491	0.4146	0.0711	0.2821	0.3935
	(−1.6518)	(0.6337)	(0.3407)	(0.6245)	(1.0989)
Population density	−0.0008	−0.0022	0.0005	−0.0006	0.0012
	(−2.9265)	(−4.4117)	(3.3310)	(−1.8341)	(4.3026)
Percent of white	−1.4769	−2.6524	0.4013	0.2471	−0.1768
	(−5.2300)	(−4.7747)	(2.2653)	(0.6446)	(−0.5814)
Governor's age	−0.0001	−0.0010	−0.0002	0.0016	0.0012
	(−0.1164)	(−0.9604)	(−0.4728)	(2.1812)	(2.1911)
Democrat governor	−0.0018	0.0509	0.0048	−0.0003	−0.0232
	(−0.2280)	(3.2518)	(0.9571)	(−0.0304)	(−2.7067)
Term-limited governor	−0.0244	−0.0569	−0.0188	−0.0213	−0.0356
	(−2.4038)	(−2.8460)	(−2.9467)	(−1.5440)	(−3.2546)
Governor's winning margin	0.0002	0.0007	0.0001	−0.0006	0.0010
	(0.8323)	(1.1624)	(0.4678)	(−1.5960)	(2.9973)
Neighbors' average ($\widehat{\theta}_r$)					
Per capita personal income	0.4281	0.1389	0.0287	−0.0667	0.2302
	(2.8951)	(0.4868)	(0.3152)	(−0.3388)	(1.4703)
Civilian employment	−0.6089	2.9437	−0.8291	−3.2367	−0.4782
	(−2.0499)	(5.0550)	(−4.4642)	(−8.0354)	(−1.4936)
Proportion of young (ages 5–17)	−0.2302	−0.5614	0.3719	−0.2818	0.0408
	(−0.5167)	(−0.6404)	(1.3306)	(−0.4657)	(0.0850)
Proportion of elderly (ages 65+)	−0.1481	−0.9512	0.9673	−1.2150	0.5955
	(−0.1885)	(−0.6154)	(1.9633)	(−1.1389)	(0.7039)
Population density	0.0029	0.0036	0.0008	−0.0017	0.0001
	(6.0284)	(3.7500)	(2.6840)	(−2.6514)	(0.1220)
Percent of white	0.7289	0.5356	0.3374	0.0814	−0.9170
	(1.5218)	(0.5680)	(1.1231)	(0.1253)	(−1.7818)
Governor's age	−0.0023	0.0026	−0.0003	0.0051	0.0014
	(−2.1584)	(1.2285)	(−0.4752)	(3.4441)	(1.1815)
Democrat governor	0.0252	−0.1106	−0.0116	0.0638	0.0137
	(1.6081)	(−3.5853)	(−1.1800)	(2.9996)	(0.8105)
Term-limited governor	−0.0150	−0.0865	−0.0590	−0.0703	−0.0309
	(−0.6967)	(−2.0415)	(−4.3537)	(−2.4052)	(−1.3311)
Governor's winning margin	0.0002	−0.0003	0.0007	0.0003	−0.0004
	(0.3366)	(−0.2632)	(1.9502)	(0.4721)	(−0.6949)
Spatial dependence coefficient (ρ)	0.0432	0.0091	0.1278	0.0711	0.1362
	(1.4141)	(0.2931)	(4.3196)	(2.3587)	(4.6025)
Log-likelihood	889.96	−507.12	1848.71	256.74	732.51
Number of observations	2064	2064	2064	2064	2064
Number of periods	43	43	43	43	43

Notes: Regression estimated using concentrated ML with space and time fixed effects. All monetary variables are adjusted for inflation to 2010 dollars and log-transformed using natural logs. *t*-statistics are in parenthesis.

all other things equal, policy choices for police and public welfare in neighboring states does not influence spending at home, regardless of party differences and similarities. With the exception of first-order neighbors, we observe the same results for the case of highway expenditures. The results suggest that highway spending among contingent neighbors of the opposite party tend to be

TABLE 8
Spatial Interaction by Spending Category: First- *and* Second-Order Contiguous Neighbors

	First- and Second-Order Contiguous Neighbors (W)				
Variable	**Police Expenditure (1)**	**Public Welfare Expenditure (2)**	**Education Expenditure (3)**	**Health Expenditure (4)**	**Highway Expenditure (5)**
Own coefficients ($\widehat{\beta}_r$)					
Per capita personal income	0.7828	0.3356	0.0840	0.2886	0.1255
	(7.8943)	(1.7174)	(1.3821)	(2.0924)	(1.1767)
Civilian employment	0.9425	0.3012	0.7496	−0.3594	1.3934
	(4.7862)	(0.7764)	(6.2146)	(−1.3120)	(6.5827)
Proportion of young (ages 5–17)	−0.2853	0.4658	0.0055	0.0867	0.0677
	(−1.3936)	(1.1550)	(0.0436)	(0.3044)	(0.3077)
Proportion of elderly (ages 65+)	−0.5427	0.4489	−0.1016	−0.0212	0.2727
	(−1.5822)	(0.6643)	(−0.4836)	(−0.0443)	(0.7394)
Population density	−0.0007	−0.0030	0.0001	−0.0005	0.0011
	(−2.8886)	(−5.9627)	(0.4119)	(−1.2738)	(4.0096)
Percent of white	−1.4217	−3.4433	0.1887	0.6800	−0.4922
	(−5.0479)	(−6.2011)	(1.0931)	(1.7358)	(−1.6255)
Governor's age	0.0000	−0.0003	0.0000	0.0015	0.0013
	(0.0825)	(−0.3171)	(0.0282)	(1.9990)	(2.3629)
Democrat governor	0.0001	0.0424	0.0053	0.0092	−0.0216
	(0.0169)	(2.7511)	(1.0990)	(0.8470)	(−2.5648)
Term-limited governor	−0.0263	−0.0332	−0.0132	−0.0273	−0.0374
	(−2.5702)	(−1.6509)	(−2.1049)	(−1.9180)	(−3.4002)
Governor's winning margin	0.0002	0.0008	0.0001	−0.0006	0.0009
	(0.8156)	(1.4421)	(0.4347)	(−1.3540)	(2.7569)
Neighbors' average ($\widehat{\theta}_r$)					
Per capita personal income	0.3775	−0.6037	0.0997	−0.2883	0.5332
	(1.9594)	(−1.6679)	(0.8814)	(−1.1281)	(2.6747)
Civilian employment	0.3815	1.4077	−1.1165	−1.7817	−0.7682
	(0.8856)	(1.6662)	(−4.2566)	(−2.9714)	(−1.6634)
Proportion of young (ages 5–17)	−0.2024	−0.0656	−0.1826	−2.0442	−0.2206
	(−0.2301)	(−0.0379)	(−0.3389)	(−1.6709)	(−0.2333)
Proportion of elderly (ages 65+)	0.3733	−0.1723	−0.4280	−5.1007	−0.8875
	(0.2421)	(−0.0567)	(−0.4531)	(−2.3754)	(−0.5353)
Population density	0.0031	0.0096	0.0020	−0.0019	0.0004
	(4.8602)	(7.5407)	(5.0559)	(−2.1683)	(0.5421)
Percent of white	−0.2891	4.1076	0.3863	−0.5000	0.2060
	(−0.4019)	(2.9166)	(0.8820)	(−0.5031)	(0.2682)
Governor's age	−0.0027	0.0079	0.0004	0.0053	−0.0022
	(−1.3240)	(1.9764)	(0.3360)	(1.8735)	(−1.0293)
Democrat governor	0.0176	−0.0767	0.0333	−0.0004	0.0343
	(0.6379)	(−1.4112)	(1.9652)	(−0.0092)	(1.1574)
Term-limited governor	−0.1640	0.0336	−0.0641	−0.0901	−0.1088
	(−4.1231)	(0.4308)	(−2.6348)	(−1.6348)	(−2.5494)
Governor's winning margin	0.0013	0.0013	−0.0005	0.0002	0.0018
	(1.3188)	(0.6486)	(−0.7599)	(0.1519)	(1.6544)
Spatial dependence coefficient (ρ)	0.0804	−0.0052	0.2935	0.0602	0.2047
	(1.6948)	-(0.1046)	(7.2705)	(1.2460)	(4.6606)
Log-likelihood	894	−504	1897	213	741
Number of observations	2064	2064	2064	2064	2064
Number of periods	43	43	43	43	43

Notes: Regression estimated using concentrated ML with space and time fixed effects. All monetary variables are adjusted for inflation to 2010 dollars and log-transformed using natural logs. *t*-statistics are in parenthesis.

spatially interdependent. However, there is not enough evidence to suggest that such this interaction is statistically different from the possible interaction with neighbors of the same party.

The results in column (4) do suggest that party similarities across neighboring states could play a role in the way governors allocate resources toward education. In all three panels, the education spending among neighbors of the same party and neighbors of the opposite party appear to be spatially correlated. However, we find little evidence that these two correlation

TABLE 9
Spatial Interaction by Spending Category: Second-Order Contiguous Neighbors Only

	Second-Order Contiguous Neighbors Only (W)				
Variable	**Police Expenditure (1)**	**Public Welfare Expenditure (2)**	**Education Expenditure (3)**	**Health Expenditure (4)**	**Highway Expenditure (5)**
Own coefficients ($\widehat{\beta}_r$)					
Per capita personal income	0.9543	0.2771	0.0391	0.2246	0.1727
	(10.6031)	(1.5834)	(0.7254)	(1.7962)	(1.7983)
Civilian employment	0.6733	0.6434	0.5840	−0.8872	1.3862
	(3.7800)	(1.8617)	(5.4803)	(−3.5895)	(7.3083)
Proportion of young (ages 5–17)	−0.2583	0.5067	−0.0082	0.1303	0.0347
	(−1.3040)	(1.3173)	(−0.0687)	(0.4734)	(0.1642)
Proportion of elderly (ages 65+)	−0.4951	0.5804	−0.1335	0.0042	0.1865
	(−1.4973)	(0.9040)	(−0.6743)	(0.0091)	(0.5290)
Population density	−0.0003	−0.0028	0.0002	−0.0005	0.0010
	(−1.2634)	(−5.8021)	(1.0018)	(−1.5098)	(3.5756)
Percent of white	−1.2484	−3.4484	0.1902	0.6139	−0.6403
	(−4.6477)	(−6.6009)	(1.1816)	(1.6445)	(−2.2356)
Governor's age	0.0001	0.0005	0.0002	0.0014	0.0015
	(0.2771)	(0.5083)	(0.7762)	(1.8609)	(2.6887)
Democrat governor	0.0048	0.0445	0.0091	0.0046	−0.0152
	(0.6066)	(2.8959)	(1.9195)	(0.4177)	(−1.8051)
Term-limited governor	−0.0245	−0.0303	−0.0111	−0.0295	−0.0371
	(−2.3971)	(−1.5287)	(−1.8189)	(−2.0796)	(−3.4104)
Governor's winning margin	0.0004	0.0005	0.0001	−0.0005	0.0009
	(1.2421)	(0.7986)	(0.5991)	(−1.2679)	(2.9761)
Neighbors' average ($\widehat{\theta}_r$)					
Per capita personal income	0.1055	−1.0041	0.1858	−0.1448	0.6686
	(0.5981)	(−3.0355)	(1.8103)	(−0.6125)	(3.6564)
Civilian employment	1.1827	−2.2077	−0.6381	0.7413	−0.7330
	(3.0392)	(−2.9324)	(−2.7475)	(1.3755)	(−1.7683)
Proportion of young (ages 5–17)	0.0850	0.0409	−0.4172	−0.7569	−0.1244
	(0.1528)	(0.0378)	(−1.2523)	(−0.9795)	(−0.2098)
Proportion of elderly (ages 65+)	0.4945	1.0236	−1.1572	−2.3962	−1.1308
	(0.5275)	(0.5623)	(−2.0614)	(−1.8405)	(−1.1317)
Population density	0.0025	0.0083	0.0027	−0.0007	0.0015
	(4.5158)	(7.6823)	(7.9856)	(−0.9065)	(2.4412)
Percent of white	−0.0889	4.3393	1.0068	1.7599	1.9793
	(−0.1450)	(3.6466)	(2.7463)	(2.0714)	(3.0378)
Governor's age	−0.0008	0.0038	0.0005	−0.0011	−0.0046
	(−0.5739)	(1.3426)	(0.5766)	(−0.5616)	(−3.0002)
Democrat governor	0.0387	0.0540	0.0530	−0.1057	0.0371
	(1.8503)	(1.3288)	(4.2290)	(−3.6435)	(1.6680)
Term-limited governor	−0.1316	0.1065	−0.0150	−0.0127	−0.0624
	(−4.6428)	(1.9350)	(−0.8851)	(−0.3227)	(−2.0638)
Governor's winning margin	0.0013	0.0019	−0.0010	−0.0004	0.0025
	(1.6811)	(1.2571)	(−2.0389)	(−0.4016)	(2.9283)
Spatial dependence coefficient (ρ)	0.1034	0.0572	0.3016	0.0174	0.0727
	(2.7158)	(1.4944)	(8.7205)	(0.4457)	(1.8905)
Log-likelihood	881	−487	1927	204	750
Number of observations	2064	2064	2064	2064	2064
Number of periods	43	43	43	43	43

Notes: Regression estimated using concentrated ML with space and time fixed effects. All monetary variables are adjusted for inflation to 2010 dollars and log-transformed using natural logs. *t*-statistics are in parenthesis.

coefficients are statistically different from one another. So although information on neighbors' spending on education may influence a governor's choice, such strategic behavior is not affected by the party affiliation of governors in those states. The only instance in which we find some, albeit very weak, statistical evidence that party similarities could play a role in policy interactions, is for the case of health expenditures in panel C (second-order neighbors only). In this case, it appears that most of the difference in spending interdependence comes from a negative response to neighboring incumbents of the same party. While this result is consistent with

TABLE 10
Two-Regime (SDM) Estimates of Political/Party Trends by Spending Categories

	Police Expenditure (1)	Public Welfare Expenditure (2)	Education Expenditure (3)	Health Expenditure (4)	Highway Expenditure (5)
Panel A: *W* of first-order contiguous neighbors					
Same party neighbors ($\hat{\rho}_1$)	−0.0090	−0.0357	0.0481	0.0279	0.0388
	(−0.3920)	(−1.5130)	(2.0799)	(1.2000)	(1.6703)
Opposite party neighbors ($\hat{\rho}_2$)	0.0022	0.0197	0.0645	0.0218	0.0474
	(0.0934)	(0.8170)	(2.7500)	(0.9216)	(2.0111)
Difference ($\hat{\rho}_1 - \hat{\rho}_2$)	−0.0112	−0.0555	−0.0164	0.0061	−0.0085
	(−0.3455)	(−1.6358)	(−0.4872)	(0.1830)	(−0.2549)
Panel B: *W* of first- and second-order neighbors					
Same party neighbors ($\hat{\rho}_1$)	0.0129	−0.0769	0.0652	−0.0200	0.0214
	(0.3872)	(−2.1857)	(1.9855)	(−0.5774)	(0.6329)
Opposite party neighbors ($\hat{\rho}_2$)	−0.0284	−0.0333	0.1340	−0.0250	0.0441
	(−0.8874)	(−0.9832)	(4.2749)	(−0.7511)	(1.3617)
Difference ($\hat{\rho}_1 - \hat{\rho}_2$)	0.0413	−0.0435	−0.0688	0.0050	−0.0227
	(0.9181)	(−0.9062)	(−1.4106)	(0.1063)	(−0.4765)
Panel C: *W* of second-order neighbors					
Same party neighbors ($\hat{\rho}_1$)	0.0411	0.0176	0.1057	−0.0605	0.0059
	(1.5103)	(0.6371)	(3.9458)	(−2.1472)	(0.2136)
Opposite party neighbors ($\hat{\rho}_2$)	−0.0053	−0.0314	0.1214	0.0051	0.0063
	(−0.2022)	(−1.1710)	(4.7048)	(0.1866)	(0.2352)
Difference ($\hat{\rho}_1 - \hat{\rho}_2$)	0.0464	0.0490	−0.0157	−0.0656	−0.0004
	(1.2436)	(1.2812)	(−0.4088)	(−1.6692)	(−0.0103)

Notes: All models control for demographic characteristics and are estimated using concentrated ML with space and time fixed effects. All monetary variables are adjusted for inflation to 2010 dollars and log-transformed using natural logs. *t*-statistics are in parenthesis.

the idea that a governor may want to partially offset the notion that members of his party are overspending in this category, we find little statistical evidence that party trends and/or party interactions play a significant role in the interdependence of fiscal policy among states.[24]

V. CONCLUDING REMARKS

Recent literature suggests that spatial interdependence in fiscal policy is strategic and can be partly driven by ideological similarities among those in charge of state budgets. Our analysis of U.S. panel data on state governors above confirms that states' fiscal policies are spatially interrelated. Our statistical results suggest that this interdependence can be observed even when states are not contingent neighbors, minimizing concerns that the observed correlation is simply due to common regional shocks. While this does not rule out the flow of resources as a potential source of such interaction, it does provide some evidence that the interdependence can be indeed strategic. However, we find little evidence that any of such interaction is influenced by party similarities or differences. A test for differences suggests that the interdependence between the policies of governors of the same party is not statistically different than the relationship between neighboring state governors of opposite parties. This result persists even when we control for reelection eligibility and winning margins, a measure of how contested a future election may be.

Overall, the results of this study challenge the notion that similarities and differences in political ideology can play a role in the way fiscal policies interrelate across jurisdictions. Although it is possible that the quality of the incumbent may be

24. We also estimated the models using spending on these categories as a share of total spending and all the results are qualitatively similar.

affected by political ideology, our results suggest that similarities in fiscal policy are not driven by similarities in the political affiliation of incumbents. As incumbents use the policy of other states as a reference, the results suggest that they do not consider whether the incumbents in other states belong to the same or the opposite party. These results provide some indirect evidence in favor of the median voter theory, suggesting that politicians are interested in maximizing the number of votes, regardless of political ideology.

A possible avenue for future research could be to incorporate dynamics into the two-regime model. As of today, such a model has not been developed but could potentially enhance our understanding of the influence of political party influences. As noted before, some of the most recent literature studying the interaction of fiscal policies in a one-regime model has included a dynamic component to account for past trends. To completely understand whether party ideology influences fiscal interdependence, one could also account for differences in historical political dominance.

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