Mayoral Partisanship and Municipal Fiscal Policy

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Abstract

Does it matter for municipal policy which party controls the mayorship in municipal government? The bulk of the existing evidence says no. But there are a variety of theoretical reasons to believe that mayoral partisanship should affect municipal policy. We examine the impact of mayoral partisanship in nearly 1000 elections in medium and large cities over the past 60 years. In contrast to previous work, we find that mayoral partisanship has a significant impact on the size of municipal government. Democratic mayors spend substantially more than Republican mayors. In order to pay for this spending, Democratic mayors issue substantially more debt than Republican ones and pay more in interest. Our findings show that mayoral partisanship matters for city policy. Moreover, our findings add to a growing literature indicating that the constraints imposed on city policymaking do not prevent public opinion and elections from having a meaningful impact on municipal policy.

Keywords: Local politics, mayors, representation, elections [1]

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[1]Replication files are available in the JOP Data Archive on the Dataverse (http://thedata.harvard.edu/dvn/dv/jop). In addition, supplementary material for this article is available in the appendix in the online edition.

Introduction

A number of recent studies have found that municipal policy outcomes are responsive to the opinion and partisanship of the mass public (Einstein and Kogan, 2015; Palus, 2010; Tausanovitch and Warshaw, 2014). More liberal cities spend substantially more than conservatives cities and levy higher taxes on their citizens. A plausible mechanism for the link between public opinion and municipal policy outcomes is that more liberal cities tend to elect more Democratic mayors, who then expand the size of government. However, the bulk of the empirical evidence on the impact of partisanship on municipal governments' policies suggests that the mayor's partisanship has no effect on the size of municipal government (Ferreira and Gyourko, 2009) or the share of spending that goes to a variety of specific policy areas (Gerber and Hopkins, 2011). This work emphasizes the economic, political, and legal constraints facing local policymakers (Gerber and Hopkins, 2011; Nivola, 2002; Peterson, 1981, 1995; Rae, 2003; Self, 2003). The juxtaposition of these two lines of research raises a puzzle. How does representation in municipal government work if partisan selection in elections is not affecting policy outcomes?

To resolve this puzzle, we build the largest and most comprehensive dataset of municipal elections compiled to-date to examine the effect of mayoral partisanship on the size of municipal government in cities with more than 75,000 people. Our dataset of mayoral election returns includes over 3,000 electoral contests across 307 cities over the past six decades. It spans a larger time period and a much greater number of medium and large cities than previous studies, which gives us much more statistical power than previous work to identify the precise effect of mayoral partisanship on the size of municipal government. Next, we use a regression-discontinuity design to estimate the causal effect of electing a Democratic versus Republican mayor on city policies (Ferreira and Gyourko, 2009; Gerber and Hopkins, 2011). For this analysis, we focus on approximately 1,000 elections in 204 cities where the top two candidates

in the election were a Democrat and a Republican.

In contrast to previous research, we find that electing a Democratic mayor over a Republican mayor leads to an increase in per capita municipal expenditures, as well as additional spending in a variety of specific program areas.[2] We find that Democratic mayors modestly increase per capita taxes. The bulk of the expansion in the size of government under Democratic mayors, however, appears to be paid for by increasing debt. Indeed, Democratic mayors issue substantially more debt than Republican mayors, and cities with Democratic mayors pay more interest to service this debt. These findings are robust across different time horizons, periods of history, and cities of different sizes.

Overall, we conclude that mayoral elections matter for policy in medium and large cities. At a broader level, our results indicate that partisanship plays a role in local politics in much the same way that it does in the United States at the state and federal levels. The constraints imposed on city policymaking do not prevent public opinion and elections from having a meaningful impact on municipal policy. Our findings suggest that one of the mechanisms for the link between public opinion and policy is that more liberal cities tend to elect more Democratic mayors, who then expand the size of government.

The paper proceeds as follows. First, we discuss previous literature on representation and elections in municipal government. Next, we discuss our data and research design. Then, we present our findings on the impact of mayoral partisanship on the size of municipal government. We also discuss a number of robustness checks, and we examine whether the impact of mayoral partisanship varies across institutional contexts. Finally, we briefly conclude and discuss the implications for future research.

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[2] The comparison of Democratic victories to Republican victories is arbitrary, as all estimates provide the impact of one party's victory relative to a victory by the other party.

Background

There is a large literature at the state and federal levels showing that there are substantial differences between Democratic and Republican elected officials. Democrats in both Congress and state legislatures have much more liberal roll call voting records than Republicans (Lee, Moretti, and Butler, 2004; Shor and McCarty, 2011). Moreover, the election of a Democratic governor or state legislative majority leads state policy outcomes to shift to the left (Caughey, Warshaw, and Xu, 2015). This suggests that mayoral partisanship should have an effect on municipal policy.

However, the literature on local governments suggests that partisanship acts differently at lower levels of government than on the national stage. Some have even gone so far as to say that local-level politics is divorced from the partisan conflict prevalent in national policy-making because of the nature of the issues that local politics deals with. As Adrian (1952) puts it, there is "no Republican way to pave a street and no Democratic way to lay a sewer" (766). If this assertion is true, then there would be little reason to expect partisan control of city governments to matter.

In addition, cities are restricted due to statutory constraints (Ladd and Yinger, 1989), economic competition with other cities (Peterson, 1981), and sorting of citizens into places that provide favorable policies (Tiebout, 1956). Furthermore, city governments typically overlap with other jurisdictions in the responsibility for providing services to citizens locally (Ferreira and Gyourko, 2009; Peterson, 1995). These constraints could mute the impact of mayoral partisanship on policy (Gerber and Hopkins, 2011).

To date, the bulk of the research on partisan control of city governments supports the view that the partisanship of city officials does not matter much. Ferreira and Gyourko (2009) investigate the effect of mayoral partisanship on fiscal policies based on data from a survey of all cities in the United States with a population above 25,000 in the year 2000. Using a regression discontinuity design, they look at close elections

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where Democratic and Republican candidates are nearly tied in their votes to determine the effect of electing a Democratic mayor, under the assumption that these cities are otherwise similar. They find that the partisanship of the mayor elected in these close races has no effect on the size of municipal government. They attribute their null findings to the relative homogeneity of preferences within a given city (Tiebout, 1956). However, another potential explanation for their null results is that their data includes many small towns and cities (Gerber and Hopkins, 2011, 331). In fact, the majority of the cities in their dataset had fewer than 75,000 people in 2000. These places are less likely to exhibit any variation in the size of their governments. Moreover, elections in small towns are more likely to center on managerial performance rather than party or ideology (Oliver, Ha, and Callen, 2012). In addition, Ferreira and Gyourko (2009)'s dataset does not include many large cities (e.g., Boston, Chicago, Pittsburgh) where we might expect to see the largest effects of mayors.

Gerber and Hopkins (2011) build on this important finding by extending their method to spending and revenue in specific issue categories. They examine the impact of barely electing a Democratic mayor on the allocation of city spending and revenues in large cities with a population greater than 170,000 people between 1990 and 2010. If the partisanship of a city's mayor matters at all for municipal policy, then the authors expect that the effect of electing a mayor of a given party should change the division of spending between these categories. Using a similar regression discontinuity design, they demonstrate that narrowly electing a Democratic mayor leads to a decrease in the share of expenditures that cities devote to police and fire protection spending. But they find no other effects of partisan control of city governments on the share of expenditures going to different areas or the share of revenues from various sources. However, it is important to note that their analysis is based on a very small sample of cities, which greatly limits their statistical power.

In stark contrast to the literature that focuses on the constraints on urban poli-

cymakers, another line of literature emphasizes the link between the mass public and city policies. Tausanovitch and Warshaw (2014) show that public opinion on city policies is strongly linked to national-level cleavages. Moreover, a variety of studies show that city policies are responsive to the views of their citizens. Percival, Johnson, and Neiman (2009) shows an association between county-level ideology and several policy outputs in California counties. Einstein and Kogan (2015) and Hajnal and Trounstine (2010) similarly find a correlation between the partisan preferences of local constituencies and the fiscal policies that city governments produce. More recent advances in the estimation of public opinion at the local level have led to even more evidence of a connection between citizens and government. Tausanovitch and Warshaw (2014) show that city government is responsive to public opinion. The conclusion of these papers is that state and local governments are responsive to the policy preferences of their citizens. One potential mechanism for this responsiveness is partisan selection in mayoral elections.

Theoretical Expectations

We begin with the assumption that a mayor's partisanship influences his or her personal fiscal policy preferences and that the mapping between a mayor's partisanship and policy preferences will be related to the distribution of fiscal preferences across parties that exists at the national level (Gerber and Hopkins, 2011). A variety of previous work indicates that political parties are coalitions of officeholders that coordinate across levels of government (Aldrich, 1995). Indeed, Democratic legislators have more liberal ideal points than Republicans in both Congress and state legislatures (Lee, Moretti, and Butler, 2004; Shor and McCarty, 2011). Moreover, the election of a Democratic governor or state legislative majority leads state policy outcomes to shift to the left (Caughey, Warshaw, and Xu, 2015). We expect similar

tendencies to hold at the municipal level in medium and large cities.[3] The best evidence for the fact that Democratic mayors tend to have more liberal preferences on fiscal issues comes from Einstein and Glick (2014). They conducted a survey of over 70 American mayors – including many from the nation's largest cities – to directly measure when and why mayors prioritize redistribution. They find that Democratic mayors are much more likely to list socioeconomic inequality as one of their top two policy issues. The implications of this previous work are clear: in the absence of constraints, Democratic mayors are likely to seek higher levels of municipal spending than Republican mayors.

Of course, mayors are constrained by a multitude of factors. Most importantly, there are a variety of state institutions that constrain municipal tax and revenue policies (Ladd and Yinger, 1989, Chapter 6, Mullins and Wallin, 2004). Indeed, many states have passed limits on municipalities' ability to levy property taxes (Ladd and Yinger, 1989, 136-137). Some states limit property tax revenues relative to property value, while others limit municipalities' ability to increase property tax rates or property assessments (Mullins and Cox, 1995; Mullins and Wallin, 2004). Moreover, about a quarter of states ban local municipalities from levying sales taxes on their citizens, and almost every state imposes some limits on sales tax levels (NCSL, 1997). This implies that mayors will have limited ability to change municipal tax revenue, but more leeway to change city expenditures.

Given the many constraints on new taxes, the best way for mayors to fund increases in spending may be to issue more municipal debt. When tax and expenditure limitations were imposed, many cities shifted away from traditional sources of revenue towards bonds to fund capital improvements because the debt service on these

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[3] Hajnal and Trounstine (2010) demonstrate that larger cities have significantly more potential for differences in their spending decisions. Additionally, Oliver, Ha, and Callen (2012) argue that elections in small towns are more likely to center on managerial performance rather than party or ideology. Moreover, the scope of these smaller-level governments is especially limited. So we do not expect to see large effects of mayoral partisanship in smaller cities.

bonds was often exempt from these limits. In the twelve states that impose overall property tax limits, for instance, nine of them exempt debt service from these limits (Mullins and Cox, 1995). Despite the fact that many states limit new municipal debt, cities can often find creative ways to bypass debt limits. For instance, they can issue different types of revenue bonds that are not limited, such as non-guaranteed debt, which circumvents state methods of constraining city spending (Hildreth and Zorn, 2005; Aronson and Hilley, 1986). As a result, mayors that wish to spend money will finance these expenditures by issuing debt. We therefore expect Democratic mayors to issue more debt than Republican mayors.

We also expect that municipal institutions may matter for the ability of mayors to change policy (Hajnal and Trounstine, 2010). Progressive reforms, such as the imposition of nonpartisan ballots in municipal elections and the appointment of city executives rather than an elected chief executive, were instituted in many places to insulate local governments from the changing wishes of the population. Many reformers hoped to decrease the power of parties, and thought these institutions would decrease the entrenched nature of city government.

One of the "the most frequently analyzed and politically debated feature of municipal government" is the choice of cities' form of government (Lubell et al., 2009). The council-manager system eliminates the political position of an elected mayor as chief executive, and instead, cities hire a professional city manager to run the government and make daily administrative decisions. In cities with the strong mayor form of government, mayors may have more ability to influence policy compared with council-manager cities where the mayorship is often more of a figurehead position (Wolman, Strate, and Melchior, 1996). Alternatively, it is possible that the agenda setting powers of mayors in council-manager systems enable them to influence fiscal policy despite their lack of formal executive powers (Svara, 1999, 157-158). Indeed, Feiock et al. (2016) demonstrate that the binary classification of cities into council-manager

and strong mayor systems masks considerable heterogeneity in mayors' powers.

Nonpartisan elections, which have been instituted in the majority of U.S. cities, might naturally influence the effect of partisanship on local policies (Gerber and Hopkins, 2011). Those candidates who run under a party label in officially partisan elections might be able to change policy without fear of revealing their partisan preferences to voters in a subsequent nonpartisan election. On the other hand, mayors that are elected in nonpartisan elections might restrain their underlying policy preferences in order to avoid alienating voters, and might be more responsive to the wishes of the median voter (Caldarone, Canes-Wrone, and Clark, 2009). Furthermore, the imposition of nonpartisan ballots was intended to remove the influence of party on local elected officials. The lack of partisan labels might reduce the tendency of mayors to adopt policies in line with national political cleavages (Bledsoe and Welch, 1987; Welch and Bledsoe, 1986).

Data and Research Design

Previous research has been limited in its scope, focusing on a small number of cities or a limited range of time. We improve upon this by broadening the set of cities and by using a design-based causal identification strategy to isolate the impact of changing partisan control of city governments on the size of municipal government.

The target universe for our study is cities with more than 75,000 people in the year of a mayoral election. This means that a growing city would enter our target universe when its population reached 75,000 people, while a shrinking city would leave our target universe when its population dipped below this threshold.[4] There were 380 cities with more than 75,000 people in the year 2000. This is a diverse array of cities.

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[4] Contrast our strategy with Gerber and Hopkins (2011) whose target universe was the "130 largest U.S. cities as identified by the U.S. Census Bureau in 2007," which effectively meant those cities over 170,000 in population, and Ferreira and Gyourko (2009) whose target universe was cities and towns with more than 25,000 people in 2000.

It includes cities such as Utica, NY, and Tracy, CA, at the smaller end, as well as large cities like New York, Los Angeles, and Chicago at the upper end of the spectrum. We focus on medium and large cities because these municipalities are likely to have more fiscal flexibility than smaller cities and towns. In addition, this is the minimum size city that appears in the Census's Historical Data Base of Individual Government Finances every year.[5] Finally, it is much easier to collect municipal elections data for medium and large cities than for smaller cities and towns.[6]

Municipal Election Data

The major hurdle to studying local elections has been a paucity of data (Trounstine, 2009). In this paper, we build a dataset of mayoral election returns that spans a larger time period and a greater number of cities than in any previous research. For each mayoral election in cities in our target universe, we sought information on when the election occurred, the votes received by the top two candidates, and the candidates' party affiliations. We coded candidates' partisanship based on any clear indicators that candidates' leaned toward one of the two parties.[7] These indicators included past or future partisan elected offices that a candidate held, mentions in historical newspaper articles of their partisanship, and campaign-donation-based data. For instance, we would code a candidate as a Democrat if they ran for state legislature as a Democrat prior to running for mayor. We would also code a candidate with a "liberal" campaign finance (CF) score as a Democrat.[8] Where cities elect mayors through a run-off system, we included the results of the final election.

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[5] Indeed, cities below this size are only in the Census finance data every several years because the Census employs a rotating sample strategy for smaller cities and towns.

[6] In our preliminary research, we found that it was nearly impossible to find election results for most cities with fewer than 75,000 people since these elections are often not covered by the news media. Hopkins and Pettingill (2015) also notes the difficulty of obtaining election results for smaller cities.

[7] It is possible that this approach will weight our data toward more partisan candidates. However, this is the same approach that previous studies in this literature have taken (e.g., Ferreira and Gyourko, 2009; Gerber and Hopkins, 2011).

[8] Hill and Huber (2015) shows that CFscores are extremely accurate proxies for individuals' party identification.

We built the foundation of our database of municipal elections by merging the data on elections from 1950-2005 from Ferreira and Gyourko (2009), data on elections between 1989-2010 from Gerber and Hopkins (2011), data that we collected from the website OurCampaigns.com, which includes elections between 1950 and 2014, and campaign finance-based measures of candidates' party ID (CF-Scores) between 1980 and 2012 (Bonica, 2014).[9] In order to reduce errors or discrepancies in these sources, we checked for conflicts between the four sources, and identified those elections where any of the four disagree on either vote shares or partisan information. We then conducted a search of online sources and news archives to correct these discrepancies. We therefore have partisan information for officially partisan races or other races where party appeared on the ballot, as well as many officially nonpartisan races.

Of the target universe, we recovered some information for 3,059 mayoral elections taking place in 307 cities.[10] However, many of these elections matched a major party candidate against an Independent or nonpartisan candidate. In other cases, we were not able to recover both candidates' party identification. The sample that we use for our regression discontinuity design consists of the 981 contests in 204 cities where we could identify the top two-vote getters as a Democrat and a Republican.[11] The Democrat won in 63% of the mayoral elections in this main sample. One important feature of the data is the large number of close mayoral elections. The winning margin is below 20% in over half of our observations (527 out of 981), and in nearly a fifth of the elections, the winning margin is below 5%.[12]

The cities in our main sample contain over 30% of the United States population.

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[9] The full details of this process are available in the Supplementary Appendix.

[10] In the supplemental appendix, we compare our sample of cities with the target universe of cities with more than 75,000 people. Overall, we find no substantively large differences between our sample and the target population

[11] Our quantity of interest – the impact of electing a Democrat over a Republican – is identified only for this subsample.

[12] This larger sample of cities is particularly useful for the RD design, which requires observations close in vote margin to the threshold of zero in order to determine a local average treatment effect (LATE). The far larger number of observations within the bandwidth which can be used to compute the treatment effect are what provide a distinct advantage over smaller datasets.
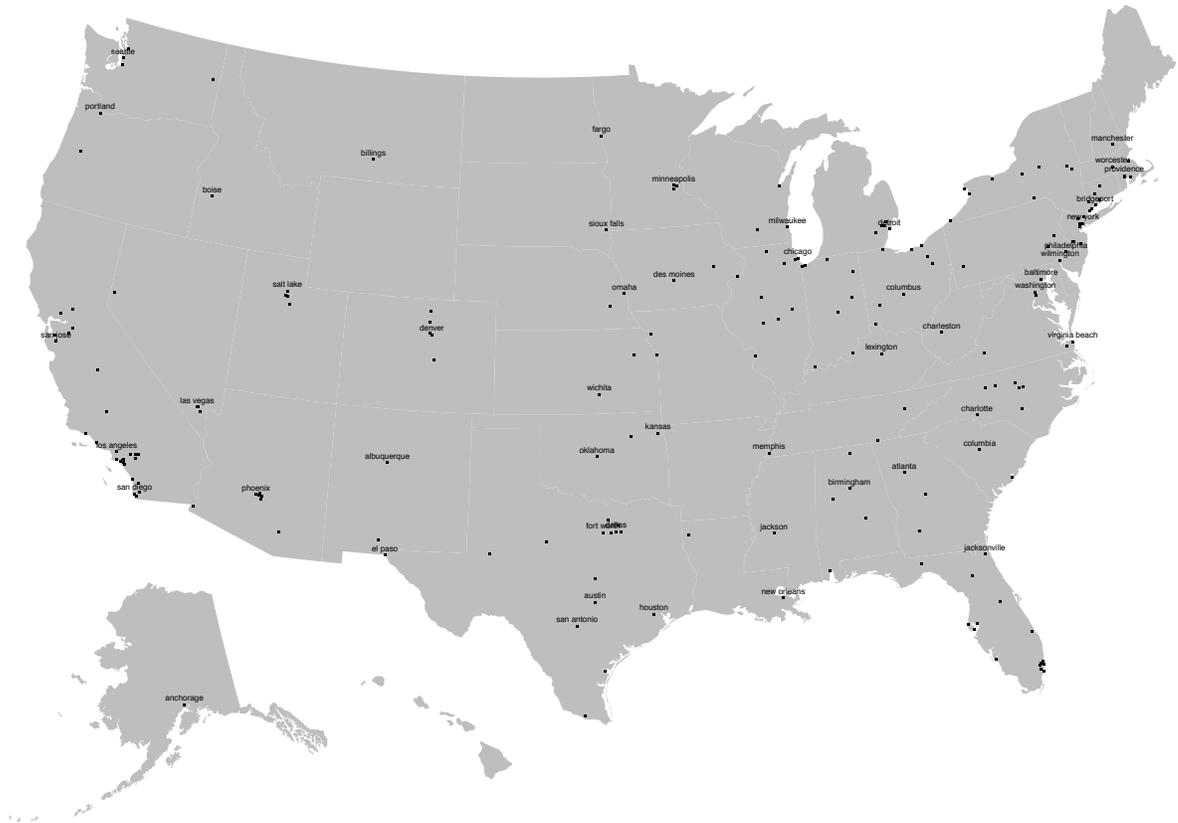
Figure 1: Cities in Election Dataset

This dataset is, to our knowledge, the most comprehensive available set of information on mayoral elections for medium and large U.S. cities over the past sixty-five years. Each of the cities that appear in our data are shown visually in Figure 1, with the largest city in each state and all cities with populations over 500,000 people in the year 2000 labeled. Our data contains cities from 46 different states.

Municipal Fiscal Data

To study the impact of mayors on city fiscal outcomes, we use fiscal data from the Historical Data Base of Individual Government Finances. These data are based on a Census of Governments conducted every five years and the Annual Survey of Gov-

ernments collected in every noncensus year. These data provide detailed revenue, expenditure, and employment data for U.S. local governments.[13] We adjusted all monetary figures into 2012 dollars. We also adjusted for cost-of-living differences between states (Berry, Fording, and Hanson, 2000).[14] In our main analysis, we use per capita expenditures and revenues to account for population differences across cities.[15] However, we obtain generally similar, though smaller and noisier, results when we focus on the share of total spending or revenues in particular categories (see the supplementary appendix for more details).[16]

We focus much of our analysis on total per capita expenditures because this measure captures the size of government, one of the core 'liberal-conservative' issues in American politics (Ellis and Stimson, 2012, 3-4).[17] On average, cities with Democratic mayors spend about $2,167 per capita, while cities with Republican mayors spend about $1,749 per capita. Whether the correlation between mayoral partisanship and the size of municipal government is causal—rather than due to differences

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[13] For our RDD analysis on the causal impact of mayors, it is crucial to accurately assign fiscal data to the appropriate year. As a result, we dropped a small number observations from the Annual Survey of Government Finances where we could not determine the year in which fiscal data was collected.

[14] We obtain substantively similar results if we do not adjust for cost-of-living differences between states.

[15] One challenge in focusing on per capita figures is that annual population figures are often unavailable between the decennial censuses. As a result, we conduct a linear interpolation of population figures provided by the Annual Survey of Government Finances for years in which annual population figures were unavailable.

[16] Our primary analysis focuses on the impact of mayoral partisanship on per capita spending and revenue rather than on the share of revenue or spending in particular programmatic categories. Focusing on spending amounts rather than shares allows us to capture uniform increases or decreases in spending across all areas due to mayoral partisanship (e.g., when a Democratic mayor increases spending across many programmatic areas). Moreover, changes in the amounts of spending are more readily interpretable than changes in shares of spending across programs. Indeed, an increase in the share of spending in a particular area could be driven by an *increase* in the absolute level of spending in that area, or it could be driven by a *decrease* in the absolute level of spending in other areas. This makes it difficult to interpret the theoretical processes driving changes in the share of spending or revenue across categories.

[17] One of the challenges in research on municipal politics is that there are few comprehensive sources of information on city policies. Ideally, we would use an existing dynamic measure of the "conservatism" of city policies that is analogous to the scaled measure of state policy developed by Caughey and Warshaw (Forthcoming). However, there is no existing dynamic measure of policy conservatism available at the city level.

in the economy or other contextual features of municipal government—is the subject of the empirical analyses in the following sections.

We also analyze the impact of mayoral partisanship on individual spending categories, such as roads, housing, libraries, parks, and interest on debt. This enables us to see the areas where mayoral partisanship matters for municipal spending. In addition, we examine the impact of mayoral partisanship on total city revenue, as well as aggregate tax collections, property taxes, sales taxes, and city debt levels.

Municipal Institutions Data

In order to assess the impact of different institutions at the city level, we gather data on the form of government and whether cities have partisan or nonpartisan elections during the elections in our data. These data are from the International City/County Management Association's (ICMA) Form of Government surveys.[18] These surveys have responses for each city about the timing of elections, as well as the composition of city government. They also record whether a city has a strong mayor system or a council-manager form of government. In addition, the surveys ask whether partisan labels appear on the ballot in municipal elections. We use the form of government and partisan elections responses to assess the differential impact of mayoral partisanship in cities with different institutions.

Regression Discontinuity Design

We use a regression discontinuity design (RDD) to identify the effect of mayoral partisanship on the size of municipal government. This design uses the fact that a

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[18] The ICMA collected these institutional data every 5 years from 1981 to the present via a survey of city and county government officials. We develop a panel dataset of municipal institutions from the surveys in 1981, 1986, 1991, 1996, 2001, 2006, and 2011 by interpolating data points for years between surveys from the most recent survey conducted. For years before 1981, we use the 1981 survey data, and for years in which the survey does not have a response for a given city we use the most recent survey for which that city responded. For an overview of other studies using ICMA data, see Trebbi, Aghion, and Alesina (2008).

continuous dimension often has cutoff values that place individual units into different qualitative categories. The RDD has been used by researchers to determine the effect of units being in a given category in such varied applications as class size in education, job training programs, and locations close to geographic boundaries. By assuming some degree of randomness in the placement of units around these threshold cutoff values, a researcher can mimic experimental assignment to treatment categories. For the purposes of this paper, we exploit the fact that whether a Democrat occupies the office of mayor changes discontinuously at 50% of the two-party vote share (Ferreira and Gyourko, 2009; Gerber and Hopkins, 2011). Around this discontinuity, the winner is likely to be determined by pure chance as long as there is some unpredictable component of the ultimate vote (Lee, 2008). Thus, the winner of these narrow races is quasi-random. By emulating a random experiment, our regression discontinuity design enables us to causally identify the local average treatment effect of electing a Democratic mayor rather than a Republican mayor on the size of municipal government and other city fiscal outcomes.[19]

The key identifying assumption of the RD design is that the distribution of units' potential outcomes is continuous at the treatment threshold (Hahn, Todd, and Klaauw, 2001; Lee and Lemieux, 2010). The main estimation challenge is modeling the "jump" in the outcome variable at the threshold. The current best practice is to model the relationship between the assignment and outcome variables with local linear regression, using a bandwidth chosen to minimize mean-square-error (MSE) and adjusting confidence intervals to account for remaining bias (Calonico, Cattaneo, and Titiunik (2014b); see also Imbens and Kalyanaraman (2012)).

In some electoral settings the continuity assumption appears to be violated due to incumbents' ability to win narrow victories (Caughey and Sekhon, 2011). However,

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[19] Previous studies in the urban politics literature have also used the regression discontinuity design to examine the local incumbency advantage (Ferreira and Gyourko, 2009; Trounstine, 2011), the effect of black mayors on city policy outcomes (Hopkins and McCabe, 2012), and the effect of female mayors on policy outcomes (Ferreira and Gyourko, 2014).

Eggers et al. (2015) find no evidence of pro-incumbent sorting in close mayoral races. To further test the validity of the the continuity assumption in this context, we conduct several placebo tests. Consistent with Eggers et al. (2015)'s findings, we find no discontinuities in the partisan composition of city government at the time of the mayoral election (Table 1, rows 1–4). We also find no discontinuities in contemporaneous spending (row 5) or the difference in lagged spending between time t and t-2 (row 6).[20] Our placebo tests suggest that the distribution of units' potential outcomes is continuous at the treatment threshold. Thus, the RD design appears to be well suited for examining the impact of mayoral partisanship on city fiscal outcomes.

Table 1: Covariate continuity tests for the mayoral RD design

Outcome Variable	Estimate (Robust CI)	$\Pr > |z|$	N	BW
Democratic Vote Share in t -2	0.02 (-0.06,0.1)	0.55	241	9.4
Democratic Vote Share in t -4	-0.01 (-0.06,0.06)	0.95	602	7.29
Democratic Mayor in t-2	-0.01 (-0.29,0.21)	0.76	350	9.04
Democratic Mayor in t-4	0.04 (-0.16,0.21)	0.77	873	9.6
Total Expenditures (t)	-31.02 (-508.16,461.81)	0.93	1047	9.67
Change in Total Expenditures (t)	-39.34 (-188.28,78.57)	0.42	1003	6.68

Estimated using the default local-linear regression bandwidth (BW) and robust confidence intervals calculated by `rdrobust` (Calonico, Cattaneo, and Titiunik, 2014a).

Lee and Lemieux (2010, 331–3) suggest differencing the dependent variable in RD designs as a way to increase statistical efficiency. Following this approach, we estimate treatment effects on changes in fiscal outcomes rather than on levels.[21] Specifically, our main analysis focuses on the difference between fiscal outcomes in the year the

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[20] This is the lagged version of the dependent variable in our main analysis.
[21] Gerber and Hopkins (2011) use a similar approach.

mayor was elected and two years after the election.[22]

Main Results

In this section, we present our main results based on a regression discontinuity design (RDD). First, we analyze the effect of electing a Democratic mayor on municipal spending. We find that Democratic mayors in medium and large cities spend $96 more per capita than Republican mayors (Figure 2).[23] The average city in our data spends about $1,819 per capita in total expenditures. So Democratic mayors increase the average city's spending by 5%.[24] This is equivalent to about one tenth of the cross-sectional standard deviation in per capita expenditures between cities. We also find that, relative to Republican mayors, Democratic mayors increase general expenditures by $85 per capita, which is equivalent to a 5% increase in general expenditures.[25]

Next, we turn to the effect of Democratic mayors on spending across different policy areas. Table 2 shows the point estimates from our regression discontinuity models of the effect of mayoral partisanship on city spending, as well as other details of the models, such as the bandwidth, robust confidence intervals, and p-values. The left column shows the results using the raw version of the outcome variables, while the right column shows the results using logged versions of the outcome variables. The logged results reduce the effect of outliers, while the raw results have the advantage of easy interpretability.

While the statistical significance of different spending areas varies, the point estimates for individual spending areas are almost all positive. In several spending areas, we find significant effects of Democratic mayors using the raw output variable, but

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[22] We obtain similar results if we focus on the difference between fiscal outcomes in the year the mayor was elected and 3-6 years after the election.

[23] In Online Appendix C, we show that this result is substantively robust to different bandwidths.

[24] On the log scale, we find that Democratic mayors increase expenditures by .04 [0, .1], which is consistent with our main results.

[25] General expenditures consist of all city expenditures other than utility expenditures, liquor stores expenditure, and employee-retirement or other insurance trust expenditure.
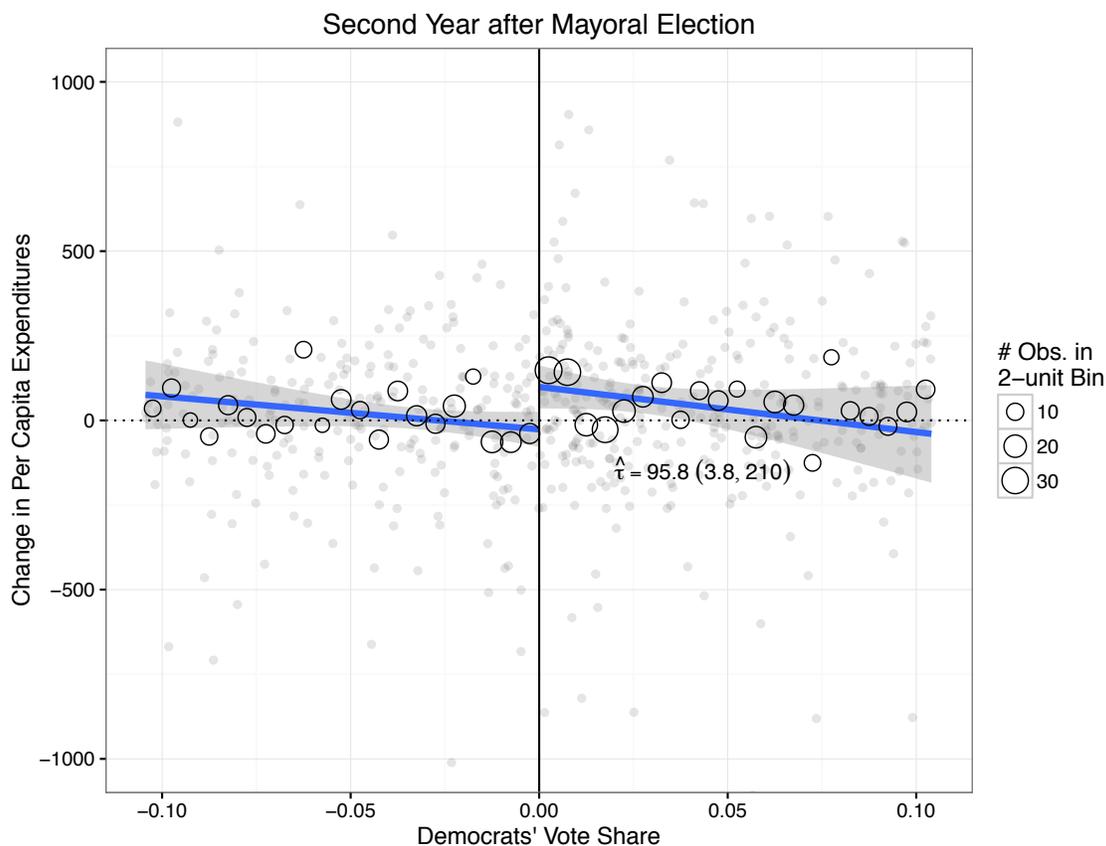
Figure 2: The effect of mayoral partisanship on per capita municipal expenditures

insignificant effects using the logged output variable. The most robust effect on an individual spending area is that Democratic mayors increase interest payments by $19 per capita (20%) compared to Republican mayors.

In contrast to Gerber and Hopkins (2011), we find no statistically significant evidence that Democratic mayors decrease spending on police or fire protection relative to Republican mayors. Instead, our results tentatively suggest that Democratic mayors increase police spending, although the results do not quite approach conventional levels of statistical significance. We also find no evidence that Democratic mayors increase spending on education, welfare, healthcare, administrative expenses, sanitation, or utilities. The null results for education and welfare spending are somewhat surprising. However, more than half of the cities in our data do not actually spend

Table 2: City Fiscal Outcomes: Spending per Capita

	Per Capita			Logged Per Capita			
Outcome Variable	Coef	Pr > |z|	BW	Coef	Pr > |z|	BW	N
Total Expenditures	95.78	0.04	10.45	0.04	0.09	10.47	981
	(3.8, 210)			(0, 0.1)			
General Expenditures	85.14	0.07	9.23	0.05	0.06	7.53	981
	(-8.5, 195.7)			(0, 0.1)			
Roads	23.59	0.1	8.59	0.04	0.54	10.05	981
	(-4.5, 54.9)			(-0.1, 0.2)			
Parks	10.51	0.3	9.12	0.05	0.66	7.27	981
	(-10.1, 32.8)			(-0.2, 0.4)			
Housing	22.07	0.04	6.27	0.23	0.31	10.14	954
	(1.7, 49.8)			(-0.3, 0.9)			
Libraries	3.75	0.07	7.43	-0.06	0.91	5.74	9076
	(-0.2, 7.9)			(-0.5, 0.4)			
Education	12.59	0.37	11.19	0.19	0.67	5.86	981
	(-16.4, 44.3)			(-0.4, 0.6)			
Fire	3.87	0.21	7.55	-0.04	0.31	13.22	981
	(-2.7, 11.8)			(-0.1, 0)			
Police	7.65	0.17	7.22	0.04	0.1	8.33	981
	(-3.6, 21)			(0, 0.1)			
Health	2.92	0.43	6.79	0.41	0.18	6.83	935
	(-4.6, 10.8)			(-0.2, 1.1)			
Sanitation	-6.5	0.72	7.2	-0.09	0.65	6.49	981
	(-41.4, 28.7)			(-0.7, 0.4)			
Utilities	14.85	0.39	9.71	0.18	0.31	8.57	981
	(-17.1, 43.8)			(-0.2, 0.6)			
Welfare	-0.58	0.71	9.57	0.33	0.36	5.96	981
	(-8.7, 5.9)			(-0.3, 0.9)			
Administration	0.98	0.58	8.21	0.04	0.8	8.53	899
	(-3.8, 6.7)			(-0.2, 0.3)			
Interest	18.76	0	6.64	0.22	0.05	7.27	981
	(6.5, 36.4)			(0, 0.5)			

Estimated using the default local-linear regression bandwidth (BW) and robust confidence intervals calculated by `rdrobust` (Calonico, Cattaneo, and Titiunik, 2014a).

anything on either of these policy areas.[26] In addition, most school boards are directly elected with well-defined roles and autonomy from the municipal government

[26] On average, city governments spend less than one half of 1% of their budgets on public welfare and less than 5% of their budgets on education (Hajnal and Trounstine, 2010). Moreover, the median city spends $0 on these two categories.

(Berry and Howell, 2007; Hess, 2002). These factors limit the ability of mayors to exert influence in these policy areas in most cities.

We next analyze the effect of a Democratic mayor on municipal revenues and taxes per capita. Table 3 shows that Democrats raise taxes by the relatively modest amount of $42 per capita (5.8%). Much of the increase in city tax revenues comes from increasing sales taxes revenues per capita by $10 per capita (7%). We find no robust evidence that Democratic mayors increase property taxes, perhaps due to the many constraints on city property tax levies (Mullins and Wallin, 2004).

Overall, we find no evidence that Democratic mayors increase total city revenues. This is somewhat surprising given our earlier findings that Democratic mayors spend substantially more than Republican ones. If Democratic mayors do not increase total city revenue, how do they pay for the higher spending levels we highlighted earlier? The answer is that they increase debt.[27] We find that Democratic mayors issue $251 (11%) more in per capita debt than Republican mayors.[28] Moreover, the increase in municipal debt under Democratic mayors persists for at least five years after the election (Online Appendix D).

Robustness

In order to examine the robustness of our results, we ran several additional sets of analysis. These robustness checks help rule out the possibility that our results are artifacts of any particular subset of data.

First, we examined the effect of mayoral partisanship on per capita expenditures

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[27] It is important to note that this debt is not counted as revenue by the Census fiscal data. Indeed, the "Glossary of Selected Terms Used in U.S. Census Bureau Publications of Government Finances" states that the municipal revenue variable includes "all amounts of money received by a government from external sources ... other than from issuance of debt, liquidation of investments, and as agency and private trust transactions."

[28] We also examined how mayoral partisanship influences different types of municipal government debt. We find that Democratic mayors increase guaranteed ("full faith and credit") debt by $175. However, they have no significant effect on non-guaranteed ("revenue") debt.

Table 3: City Fiscal Outcomes: Revenues Per Capita

Outcome Variable	Per Capita			Logged Per Capita			
	Coef	Pr > |z|	BW	Coef	Pr > |z|	BW	N
Revenues	-4.41	1	8.16	0.01	0.83	8.68	981
	(-110.1, 110.6)			(0, 0.1)			
Revenues - Own Sources	13.63	0.7	9.22	-0.01	0.91	12	980
	(-74.7, 110.8)			(-0.1, 0)			
Taxes	42.39	0.06	6.41	0.02	0.21	9.96	981
	(-1.3, 101.7)			(0, 0.1)			
Property Tax	18.36	0.17	5.86	0.1	0.16	10.34	981
	(-10.3, 59.4)			(-0.1, 0.3)			
Sales Tax	10	0.04	8.49	0.33	0.06	8.13	981
	(0.5, 22.7)			(0, 0.8)			
Intergov. Revenue	-34.2	0.23	5.27	-0.07	0.24	6.26	981
	(-120.4, 29.4)			(-0.3, 0.1)			
Debt	250.91	0.03	4.9	0.1	0.03	7.57	981
	(21.8, 502.3)			(0, 0.2)			

Estimated using the default local-linear regression bandwidth (BW) and robust confidence intervals calculated by `rdrobust` (Calonico, Cattaneo, and Titiunik, 2014a).

using subsets of our data based on particular sources. Table 4 shows the results. The first row shows our main results. In the second row, we show the effect of a Democratic mayor on expenditures in cities with more than 75,000 people that appeared in Ferreira and Gyourko (2009)'s dataset. In the third row, we show the effect of a Democratic mayor on expenditures in observations that appeared in Gerber and Hopkins (2011)'s dataset.[29] The fourth row shows the effect of a Democratic mayor in elections where we obtained data from OurCampaigns.com. The results are substantively similar across all three sets of data. Moreover, all three sets of results are significant at the 10% level. This indicates that our results are not driven by our coding of mayoral partisanship.

Given that we find a robust effect of mayoral partisanship on municipal expen-

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[29] In our electoral RD design, the estimand is the local average treatment effect (LATE) of narrowly electing a Democratic mayor rather than a Republican mayor. Thus, we drop elections from their dataset that did not have a Democratic and a Republican candidate in the race since the LATE is not defined in those cases.

ditures in medium and large cities using the replication data of both Ferreira and Gyourko (2009) and Gerber and Hopkins (2011), we also explored what factors drove the generally null findings in these studies. In Ferreira and Gyourko (2009), it appears that their null findings are primarily driven by the small cities in their sample. Consistent with our theoretical argument, when we examine cities in Ferreira and Gyourko (2009)'s data with between 25,000 and 75,000 people, we find a statistically insignificant effect of a Democratic mayor on per capita expenditures.[30] Another methodological difference between our analysis and Ferreira and Gyourko (2009) is that their analysis includes elections with all values of the two-party vote share in their sample, while ours only includes elections within an optimal bandwidth around the discontinuity of 50% (Calonico, Cattaneo, and Titiunik, 2014a). Indeed, in the Online Appendix we show that our main results are somewhat smaller when we use a bandwidth that includes the entire dataset in our analysis. Gerber and Hopkins (2011) do not directly examine the effect of mayoral partisanship on the size of municipal government. Instead, they primarily focus on the effect of mayoral partisanship on the allocation of spending across programmatic categories. In Online Appendix E, we show that we also obtain generally null results when we focus on the allocation, rather than the amount, of spending in each area.[31] We believe this reflects the fact that Democratic mayors generally increase spending across many program areas, while Republican mayors decrease spending across many program areas. Thus, the amounts of spending change more than the allocation across areas.

We also explore whether our results are driven by a few very large cities with unusually large partisan effects (Table 5). Following Gerber and Hopkins (2011), we define large cities as those with more than 170,000 people. We define medium cities

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[30] Given the difficulty of collecting election data on cities of this size (Hopkins and Pettingill, 2015), there may also be errors in their coding of municipal partisanship or election outcomes.

[31] Gerber and Hopkins (2011)'s null results may also be partially driven by their choice to compare Democratic mayors with both Independent and Republican mayors. As they acknowledge, this means that "candidates running for mayor [in their analysis] could include both people to the right of the Democratic candidate and people to the left" (Gerber and Hopkins, 2011, SI, 6).

Table 4: Effect of Mayoral Partisanship on Per Capita Expenditures using Data from Different Sources

Dataset	Coef	Pr > |z|	BW	N
Full Dataset	95.78	0.04	10.45	981
	(3.8, 210)			
Ferreira and Gyourko (2009)	159.57	0.02	9.21	560
	(23.4, 332.3)			
Gerber and Hopkins (2011)	269.5	0.08	5.82	98
	(-40, 638.3)			
OurCampaigns	126.01	0.06	9.1	499
	(-4.3, 291.1)			

Estimated using the default local-linear regression bandwidth (BW) and robust confidence intervals calculated by `rdrobust` (Calonico, Cattaneo, and Titiunik, 2014a).

as those with 75,000-170,000 people. While neither effect size crosses conventional statistical significance levels, the effect of a Democratic mayor on per capita expenditures appears to be similar in medium and large cities.[32] This suggests that our findings are not driven by a few large cities in our data.

Table 5: Effect of Mayoral Partisanship on Per Capita Expenditures in Medium and Large Cities

Dataset	Coef	Pr > |z|	BW	N
Full Dataset	95.78	0.04	10.45	981
	(3.8, 210)			
Medium Cities (75k-170k)	104.86	0.15	6.74	471
	(-38.6, 261.3)			
Large Cities (170k+)	124.74	0.16	9.93	510
	(-48.8, 304.5)			

Estimated using the default local-linear regression bandwidth (BW) and robust confidence intervals calculated by `rdrobust` (Calonico, Cattaneo, and Titiunik, 2014a).

Next, we examined whether the impact of mayoral partisanship on the size of municipal government has changed over time. Overall, we see little evidence of substantial heterogeneity in the effects of mayors over-time. While the point estimates are smaller in the earlier time period, none of the differences across time period are

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[32] The Pr > |z| or probability that this observed difference is due to chance is 0.87, and so we fail to reject the null hypothesis that the difference between medium and large cities is zero.

statistically significant.[33] Thus, our main results do not appear to be sensitive to the exact time period that we study.

Table 6: Effect of Mayoral Partisanship on Per Capita Expenditures by Time Period

Time Period	Coef	Pr > |z|	BW	N
Full Dataset	95.78	0.04	10.45	981
	(3.8, 210)			
1951-1971	95.64	0.09	5.98	217
	(-16.5, 207.9)			
1972-1991	185.21	0.1	11.23	331
	(-33.6, 416.1)			
1992-2012	139.5	0.14	7.55	433
	(-45, 306.7)			

Estimated using the default local-linear regression bandwidth (BW) and robust confidence intervals calculated by `rdrobust` (Calonico, Cattaneo, and Titiunik, 2014a).

We also examined whether the impact of mayoral partisanship on the size of municipal government varies when we exclude the south from our analysis. Table 7 shows that the effect of mayoral partisanship is somewhat larger when we exclude the south than in our main results.[34] Moreover, there is no significant effect of mayoral partisanship in the south. This could be due to greater ideological polarization between Democratic and Republican mayoral candidates in the non-south than in the south.

Finally, in Figure 3, we explored the sensitivity of our main results on per capita expenditures to alternative time horizons.[35] We find that it takes mayors two years to have an effect on municipal expenditures. However, after two years, the effect of a Democratic mayor stays relatively constant until at least 6 years after the initial election.[36] Thus, our main results do not appear to be sensitive to the time horizon

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[33] The Pr > |z| or probabilities that these observed differences are due to chance are 0.48 and 0.68, and so we fail to reject the null hypotheses that the difference between the first and second time periods or first and third periods are zero.

[34] Note, however, that the difference is not statistically significant. The Pr > |z| or probability that this observed difference is due to chance is 0.23, and so we fail to reject the null hypothesis that the difference between southern and non-southern cities is zero.

[35] For this analysis, we subset our data to the period 1950-2006 to ensure that each time horizon uses a similar dataset.

[36] The constant effect size after two years is consistent with the results in Caughey, Warshaw, and Xu (2015) about the long-term impact of governors on policy.

Table 7: Effect of Mayoral Partisanship on Per Capita Expenditures in the Non-South

Region	Coef	Pr > |z|	BW	N
Full Dataset	95.78	0.04	10.45	981
	(3.8, 210)			
Non-South	167.83	0.01	7.17	751
	(51.1, 322.9)			
South	-3.58	0.81	6.45	230
	(-271.1, 212.2)			

Estimated using the default local-linear regression bandwidth (BW) and robust confidence intervals calculated by `rdrobust` (Calonico, Cattaneo, and Titiunik, 2014*a*).

that we select for mayors to have an impact on fiscal policies.
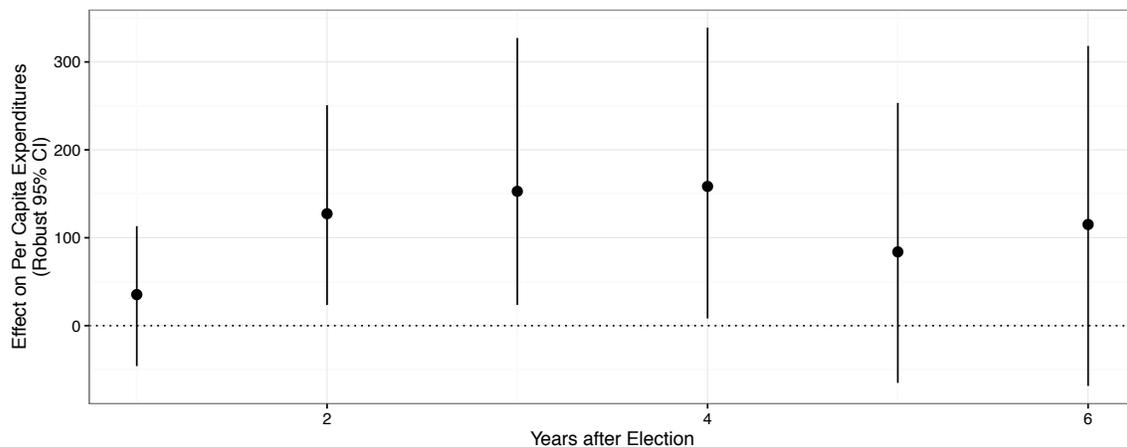
Figure 3: The effect of mayoral partisanship on per capita municipal expenditures 1-6 years after an election

Differences Across Municipal Institutions

In this section, we examine whether the impact of mayoral partisanship varies in cities with different institutions. We test whether the impact of mayors on policies differs in officially partisan vs. nonpartisan cities, and whether those cities with a strong mayor system differ from those with a council-manager form of government. However, it is important to note that these comparisons could be conflating the causal effect of institutions with other cross-sectional differences between cities. Indeed, our research

24

design identifies the local average treatment effect (LATE) of a Democratic mayor on city fiscal outcomes. It does not enable us to causally identify differences in the impact of mayoral partisanship across institutions.

The differential impact of partisan mayors in cities with partisan and nonpartisan ballots is shown in Table 8.We find an effect of Democratic mayors on expenditures in nonpartisan cities, but no statistically significant effect in officially partisan cities. While the estimated effect is larger in nonpartisan cities, the difference between the effect of mayors in partisan and non-partisan elections is not statistically significant.[37]

Table 8: Differences between Effect of Mayor in Cities on Per Capita Expenditures with Partisan and Non-Partisan Elections

	Coef	$\Pr > |z|$	BW	N
Partisan Elections	73.4	0.25	6.47	501
	(-57.7, 222.7)			
Non-Partisan Elections	175.87	0.09	10.03	440
	(-28.5, 370.5)			
Difference	-102.47	0.41		

Estimated using the default local-linear regression bandwidth (BW) and robust confidence intervals calculated by `rdrobust` (Calonico, Cattaneo, and Titiunik, 2014a).

We next look at the differential ability of mayors to affect policy in cities with strong mayor systems relative to cities with mayor-council systems where the city manager is the chief executive of the municipal government. These results are shown in Table 9. While the estimated effect is somewhat larger in council-manager cities, the difference in the effect of mayoral partisanship between the two systems is not statistically significant. This demonstrates that our estimate of the effect of Democratic mayors is not driven by one form of government.

Overall, our results indicate that institutions do not seem to affect the degree to which mayors change policy. While contrary to some expectations from the urban politics literature, the lack of variation across institutions is in line with studies showing

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[37] Our findings here are similar to Gerber and Hopkins (2011), who also report no statistically significant difference between the impact of mayors in cities with partisan and nonpartisan elections.

no difference in responsiveness (Tausanovitch and Warshaw, 2014) or economic voting (Hopkins and Pettingill, 2015) across cities with different types of institutions.[38]

Table 9: Differences between Effect of Mayor on Per Capita Expenditures in Cities with and without City Managers

	Coef	$\Pr > |z|$	BW	N
Council-Manager System	120.82	0.07	5.62	341
	(-9.9, 303.9)			
Strong Mayor System	60.55	0.5	8.03	572
	(-114.5, 233.8)			
Difference	60.27	0.62		

Estimated using the default local-linear regression bandwidth (BW) and robust confidence intervals calculated by `rdrobust` (Calonico, Cattaneo, and Titiunik, 2014a).

Conclusion

Municipal governments play a crucial role in American democracy (Trounstine, 2010). They employ millions of workers and spend well over a trillion dollars each year (U.S. Census Bureau, 2007). Therefore, it is very important to understand the effect of mayoral elections on the size of municipal government. The consensus in the existing literature is that the party of the mayor has virtually no effect on city fiscal outcomes (Ferreira and Gyourko, 2009; Gerber and Hopkins, 2011). In this study, we examine the relationship between the mayor's party and city fiscal outcomes in cities with more than 75,000 people using a much larger dataset than previous studies.

We show that electing a Democratic mayor over a Republican mayor leads to an increase in overall expenditures, as well as additional spending in a variety of specific policy areas. However, we find that Democratic mayors only modestly increase taxes. Instead, the bulk of the expansion in the size of government under Democratic mayors appears to be paid for through increasing debt. Indeed, Democratic mayors issue

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[38] The lack of differences across institutions are also in line with Gerber and Hopkins (2011, SI 5)'s finding that municipal institutions do not affect the impact of a mayor's partisanship on the allocation of municipal spending across programmatic categories.

substantially more debt than Republican mayors, and cities with Democratic mayors pay much more interest to service this debt.

We also examine whether the impact of mayoral partisanship varies in cities with different institutions. We find no significant differences in the effect of mayoral partisanship in cities with partisan and non-partisan elections, or cities with strong-mayor and council-manager systems. This demonstrates that the effect of Democratic mayors is not driven by one form of government. It also indicates that reform institutions designed to insulate local politics from the control of parties do not seem to change the effect of the mayor's partisan affiliation on policy.

Overall, we conclude that despite the multitude of constraints on city governments, elections have an important impact on municipal policy in medium and large cities. Moreover, partisan selection plays a role in local politics in much the same way that it does in the United States as a whole. In contrast to the argument that Democratic and Republican mayors do not have a partisan way of implementing city policy, we show that Democratic mayors substantially expand the size of government relative to Republican ones. Our findings also provide a mechanism for the link between public opinion and municipal policies (Tausanovitch and Warshaw, 2014). It seems likely that one of the mechanisms for responsiveness in municipal government is that more liberal cities tend to elect more Democratic mayors, who then expand the size of government. This extends theories of policy responsiveness at other levels of government, and shows that elections at the local level are an important way that democracy in the United States reflects the will of its people.

Future research should examine whether the partisanship of mayors affects non-fiscal policies, such as gay rights policies. Future work should also examine whether the partisan composition of city councils affects municipal policies. Finally, future research should continue to explore the interaction between the impact of mayors and the institutional constraints on municipal governments.

Acknowledgements

References

Adrian, Charles R. 1952. "Some General Characteristics of Nonpartisan Elections." *American Political Science Review* 46(3): 766–776.

Aldrich, John H. 1995. *Why Parties? The Origin and Transformation of Party Politics in America.* University of Chicago Press.

Aronson, J. Richard, and John L. Hilley. 1986. *Financing State and Local Governments.* Washington, D.C.: Brookings Institution Press.

Berry, Christopher R, and William G Howell. 2007. "Accountability and local elections: Rethinking retrospective voting." *Journal of Politics* 69(3): 844–858.

Berry, William D., Richard C. Fording, and Russell L. Hanson. 2000. "An Annual Cost of Living Index for the American States, 1960–1995." *Journal of Politics* 62(2): 550–567.

Bledsoe, Timothy, and Susan Welch. 1987. "Patterns of Political Party Activity Among US Cities." *Urban Affairs Review* 23(2): 249–269.

Bonica, Adam. 2014. "Mapping the Ideological Marketplace." *American Journal of Political Science* 58(2): 367–386.

Caldarone, Richard P, Brandice Canes-Wrone, and Tom S Clark. 2009. "Partisan Labels and Democratic Accountability: An Analysis of State Supreme Court Abortion Decisions." *The Journal of Politics* 71(02): 560–573.

Calonico, Sebastian, Matias D. Cattaneo, and Rocío Titiunik. 2014a. *rdrobust: Robust Data-Driven Statistical Inference in Regression-Discontinuity Designs.*

Calonico, Sebastian, Matias D. Cattaneo, and Rocío Titiunik. 2014b. "Robust Nonparametric Confidence Intervals for Regression-Discontinuity Designs." *Econometrica* 82(6): 2295–2326.

Caughey, Devin, and Christopher Warshaw. Forthcoming. "The Dynamics of State Policy Liberalism, 1936–2012." *American Journal of Political Science* .

Caughey, Devin, and Jasjeet S. Sekhon. 2011. "Elections and the Regression Discontinuity Design: Lessons from Close U.S. House Races, 1942–2008." *Political Analysis* 19(4): 385–408.

Caughey, Devin, Christopher Warshaw, and Yiqing Xu. 2015. "The Policy Effects of the Partisan Composition of State Government." Working paper available at http://cwarshaw.scripts.mit.edu/papers/CWX_PartyCompos150719.pdf.

Eggers, Andrew C., Anthony Fowler, Jens Hainmueller, Andrew B. Hall, and James M. Snyder, Jr. 2015. "On The Validity Of The Regression Discontinuity Design For Estimating Electoral Effects: New Evidence From Over 40,000 Close Races." *American Journal of Political Science* 59(1): 259–274.

Einstein, Katherine, and David Glick. 2014. "Cities, Inequality, and Redistribution: Evidence from a Survey of Mayors." Working Paper available at http://sites.bu.edu/kleinstein/files/2015/09/MayorsInequality_V21.pdf.

Einstein, Katherine Levine, and Vladimir Kogan. 2015. "Pushing the City Limits: Policy Responsiveness in Municipal Government." *Urban Affairs Review* 52(1): 3–32.

Ellis, Christopher, and James A Stimson. 2012. *Ideology in America*. Cambridge University Press.

Feiock, Richard C., Christopher M. Weible, David P. Carter, Cali Curley, Aaron Deslatte, and Tanya Heikkila. 2016. "Capturing Structural and Functional Diversity Through Institutional Analysis: The Mayor Position in City Charters." *Urban Affairs Review* 52(1): 129–150.

Ferreira, Fernando, and Joseph Gyourko. 2009. "Do Political Parties Matter? Evidence from US Cities." *The Quarterly Journal of Economics* 124(1): 399–422.

Ferreira, Fernando, and Joseph Gyourko. 2014. "Does gender matter for political leadership? The case of US mayors." *Journal of Public Economics* 112: 24–39.

Gerber, Elisabeth R, and Daniel J Hopkins. 2011. "When Mayors Matter: Estimating the Impact of Mayoral Partisanship on City Policy." *American Journal of Political Science* 55(2): 326–339.

Hahn, Jinyong, Petra Todd, and Wilbert Klaauw. 2001. "Identification and Estimation of Treatment Effects with a Regression-Discontinuity Design." *Econometrica* 69(1): 201–209.

Hajnal, Zoltan L, and Jessica Trounstine. 2010. "Who or What Governs?: The Effects of Economics, Politics, Institutions, and Needs on Local Spending." *American Politics Research* 38(6): 1130–1163.

Hess, Frederick M. 2002. "School Boards at the Dawn of the 21st Century: Conditions and Challenges of District Governance." Report available at https://www.aei.org/wp-content/uploads/2011/10/20060228_SchoolBoards.pdf.

Hildreth, W Bartley, and C Zorn. 2005. "The evolution of the state and local government municipal debt market over the past quarter century." *Public Budgeting & Finance* 25(4s): 127–153.

Hill, Seth, and Gregory Huber. 2015. "Representativeness and Motivations of Contemporary Contributors to Political Campaigns: Results from Merged Survey and Administrative Records." Working Paper available at http://www.sethjhill.com/HillHuberDonorate_062515.pdf.

Hopkins, Daniel J, and Katherine T McCabe. 2012. "After It's Too Late: Estimating the Policy Impacts of Black Mayoralties in US Cities." *American Politics Research* 40(4): 665–700.

Hopkins, Daniel J, and Lindsay M Pettingill. 2015. "Economic Voting in Big-City US Mayoral Elections." Working paper available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2567294.

Imbens, Guido, and Karthik Kalyanaraman. 2012. "Optimal Bandwidth Choice for the Regression Discontinuity Estimator." *Review of Economic Studies* 79(3): 933–959.

Ladd, Helen F, and John Yinger. 1989. *America's Ailing Cities: Fiscal Health and the Design of Urban Policy.* Johns Hopkins University Press Baltimore.

Lee, David S. 2008. "Randomized experiments from non-random selection in US House elections." *Journal of Econometrics* 142(2): 675–697.

Lee, David S., and Thomas Lemieux. 2010. "Regression Discontinuity Designs in Economics." *Journal of Economic Literature* 48(2): 281–355.

Lee, David S., Enrico Moretti, and Matthew J. Butler. 2004. "Do Voters Affect Or Elect Policies? Evidence From the U. S. House." *Quarterly Journal of Economics* 119(3): 807–859.

Lubell, Mark, Richard C Feiock, De La Cruz, and Edgar E Ramirez. 2009. "Local Institutions and the Politics of Urban Growth." *American Journal of Political Science* 53(3): 649–665.

Mullins, Daniel R, and Bruce A Wallin. 2004. "Tax and expenditure limitations: Introduction and overview." *Public Budgeting & Finance* 24(4): 2–15.

Mullins, Daniel R, and Kimberley A Cox. 1995. *Tax and Expenditure Limits on Local Governments.* Center for Urban Policy and the Environment, Indiana University and ACIR.

NCSL. 1997. *Critical Issues in State-Local Fiscal Policy: A Guide to Local Option Taxes.* Foundation for State Legislatures and National Conference of State Legislatures.

Nivola, Pietro S. 2002. *Tense commandments: Federal prescriptions and city problems.* Brookings Inst Press.

Oliver, J Eric, Shang E Ha, and Zachary Callen. 2012. *Local Elections and the Politics of Small-scale Democracy.* Princeton University Press.

Palus, Christine Kelleher. 2010. "Responsiveness in American Local Governments." *State and Local Government Review* 42(2): 133–150.

Percival, Garrick L, Martin Johnson, and Max Neiman. 2009. "Representation and Local Policy Relating County-Level Public Opinion to Policy Outputs." *Political Research Quarterly* 62(1): 164–177.

Peterson, Paul E. 1981. *City Limits.* University of Chicago Press.

Peterson, Paul E. 1995. *The Price of Federalism.* Brookings Institution Press.

Rae, Douglas W. 2003. *City: Urbanism and its end.* Yale University Press.

Self, Robert O. 2003. *American Babylon: Race and the struggle for postwar Oakland.* Princeton University Press Princeton, NJ.

Shor, Boris, and Nolan McCarty. 2011. "The Ideological Mapping of American Legislatures." *American Political Science Review* 105(3): 530–51.

Svara, James H. 1999. "The Embattled Mayors and Local Executives." In *American State and Local Politics: Directions for the 21st Century*, ed. Ronald E. Weber, and Paul Brace. New York: Chatham House: Seven Bridges Press pp. 139–165.

Tausanovitch, Chris, and Christopher Warshaw. 2014. "Representation in Municipal Government." *American Political Science Review* 108(03): 605–641.

Tiebout, Charles M. 1956. "A Pure Theory of Local Expenditures." *The Journal of Political Economy* 64(5): 416–424.

Trebbi, Francesco, Philippe Aghion, and Alberto Alesina. 2008. "Electoral Rules and Minority Representation in US Cities." *The Quarterly Journal of Economics* 123: 325–357.

Trounstine, Jessica. 2009. "All Politics is Local: The Reemergence of the Study of City Politics." *Perspectives on Politics* 7(03): 611–618.

Trounstine, Jessica. 2010. "Representation and Accountability in Cities." *Annual Review of Political Science* 13: 407–423.

Trounstine, Jessica. 2011. "Evidence of a Local Incumbency Advantage." *Legislative Studies Quarterly* 36(2): 255–280.

U.S. Census Bureau. 2007. "Census of Governments.".

Welch, Susan, and Timothy Bledsoe. 1986. "The Partisan Consequences of Nonpartisan Elections and the Changing Nature of Urban Politics." *American Journal of Political Science* 30(1): 128–139.

Wolman, Harold, John Strate, and Alan Melchior. 1996. "Does Changing Mayors Matter?" *The Journal of Politics* 58(1): 201–223.

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Mayoral Partisanship and Municipal Fiscal Policy: Online Appendix

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A   Mayoral Elections Database

In order to build our database of mayoral elections, we merged data on mayoral elections from four different sources:

- Data on elections from 1950-2005 used in Ferreira and Gyourko (2009)

- Data on elections between 1989-2010 used in Gerber and Hopkins (2011)

- Data that we collected by scraping the website OurCampaigns.com, which includes elections between 1950 and 2014

- Campaign finance-based measures of candidate party ID based on Adam Bonica's CF-Scores between 1980-2012 (Bonica, 2014)

Ferreira and Gyourko (2009) gathered data by conducting a survey and using information reported by city officials. They contacted all cities in the U.S. with a population above 25,000 in the year 2000. Ferreira and Gyourko (2009) ask city officials to report information on their city's mayoral elections from 1950 to 2005, including the timing, vote totals, type of election, and names of the candidates. They also ask city officials to report the partisanship of mayoral candidates, identified based on historical voter registration records. They supplement this with partisan information gathered via newspaper archives on the News Bank website.

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Gerber and Hopkins (2011) collected their data from election commissions, archived newspapers, official city websites, the ICMA, NCSL, and the Census of Governments. They focus on cities above 170,000 people (the 130 largest cities as of the year 2007). This allows them to gather a publicly available (to voters) informational cue about the partisanship of candidates, but in certain ways it also restricts the possible coding of partisanship. For example, if a candidate runs on an officially nonpartisan ballot and is not (at the time) mentioned in a local newspaper associated with a certain party, then Gerber and Hopkins would have no choice but to code her as nonpartisan. This candidate may be entirely partisan, but her partisanship simply wasn't important to the newspaper given the official nonpartisan status of the election.

OurCampaigns.com (OC) is a crowd-sourced political information website that allows users to contribute information on candidates and campaigns at all levels of government. Data from OC have been previously used by Miller (2013) and Vogl (2014). Mayoral elections listed on this site have the date of the election, candidate names and partisanship, vote totals, and often even more detailed information on the candidates. These user-contributed sources ranged from archived newspaper articles to official city election returns. The OC data that we collect is limited only by whether a city has a dedicated page on the site and which years have been reported by users. For some cities, this can date back before 1950; for others it is only a handful of election years.

The campaign finance-based measure of partisanship that we use is the "CFscores" developed by Adam Bonica (Bonica, 2014). The intuition behind them is relatively simple: by creating a large matrix of the matchup between contributors and candidates for federal and state elections whom they contribute to, CFscores are able to estimate ideology. The assumptions behind this method of estimation is that contributors donate — on average — to more ideologically proximate candidates than more distant ones. A recent working paper indicates that CFscores may display sub-

stantial amounts of measurement error in their ideological placements of individuals, but they yield extremely accurate estimates of individuals' party identification (Hill and Huber, 2015).

We match the candidate names in our comprehensive elections data to the names in the contributor database of 15 million contributors in the 1980-2012 election cycles (Bonica, 2013).[1] We then split the resulting candidate pool into three divisions: those with CFscores more than 0.33 standard deviations above the median, those more than 0.33 standard deviations below the median, and those close to the median. The group with the high CFscores is labeled Republican by this measurement, while the group with the low CFscores is labeled as a Democrat. Candidates in the median group are not used in this analysis as they are not determined as partisan by this method because they have relatively moderate donating patterns.

In order to correct errors or discrepancies in these sources, we checked for conflicts between the four sources, and identified those elections where any of the four disagree on either vote shares or partisan information. We then conducted a search of online sources much as Gerber and Hopkins (2011) did to identify the vote counts and possible partisanship of candidates. We do not, however, limit our search to the newspaper or election report for that particular election: we broaden the search for partisan information to future and past political campaigns for each candidate, as well

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[1]We take the matching CFscore from the contributor matching the full name and city of residence of our candidate and who made a contribution within six years of the first or last time they appear in our elections data. For candidates who matched more than one contributor within the strict time and location frames that we used to search for matches, we implemented a manual matching method. For candidates who matched multiple distinct contributors across multiple election cycles but who each had the same CFscore, we simply assigned them that unique CFscore. For those who matched contributors with more than one unique CFscore, we determined the correct match by referring to the occupation listed in the CFscore database. If the occupation was listed as 'mayor' or that city's government, we used that contributor's CFscore. If there were no contributors who listed city government as their occupation, we searched for biographical information on the candidates in the election to determine their occupation at the time they ran. From archival newspapers and other sources we were able to determine the occupation of the candidate at the time of the election, and so matched the contributor with the correct occupation. If we were unable to find the occupation of the mayoral candidate, we did not determine a correct match and therefore did not assign a CFscore. Similarly, for those contributor matches that had no occupation listed and therefore no way to distinguish the correct match, we did not assign a CFscore.

as official biographical information or published newspaper articles. We therefore have partisan information for officially partisan races or other races where party appeared on the ballot, as well as officially nonpartisan races when the candidate previously or later ran for political office under a party. If biographies or historical newspapers listed candidates as partisan, we use that partisanship in our data as well. To give an example, in the 1983 election in Birmingham, Alabama, Richard Arrington Jr. was officially a nonpartisan candidate, but according to a 1984 article in *The Tuscaloosa News*, Arrington was a member of the executive committee in the state's Democratic Party. His opponent, John Katopodis, ran for Jefferson County Commission as a Republican in 1986. Both candidates can therefore be coded as partisan despite this information being unavailable from the Birmingham mayoral ballot in 1983. We then use these data to examine whether (and which) fiscal policies are changed by mayors in American cities.

B   Descriptive Statistics on our Sample of Cities

Descriptive statistics for the cities that we use in our final sample of elections are presented in Table B1. In the first column, we report summary statistics (mean and standard deviation) for several characteristics. Since we choose to focus on cities over a population threshold of 75,000 people, our sample of cities is biased in its average size relative to all cities in the U.S., shown in the second column. Relative to the entire country, our sample is also somewhat regionally weighted towards the west and northeast. It is less white and more black than cities across the entire country, as well as slightly more educated and wealthier, and with a higher median home value.

Table B1: City Summary Statistics

	Final Sample	All U.S. cities	>75k population
	(1)	(2)	(3)
Population	322,728	8,226	231,987
	(671,322)	(68,368)	(505,955)
% West	0.28	0.17	0.37
	(0.45)	(0.37)	(0.48)
% South	0.32	0.33	0.31
	(0.47)	(0.47)	(0.46)
% Northeast	0.40	0.14	0.31
	(0.49)	(0.35)	(0.46)
% White	0.65	0.85	0.66
	(0.18)	(0.21)	(0.18)
% Black	0.19	0.07	0.16
	(0.18)	(0.16)	(0.17)
% College degree	0.16	0.12	0.17
or more	(0.07)	(0.10)	(0.08)
Median household	$39,561	$38,520	$42,215
income	(10,865)	(18,805)	(12,517)
Median home	$120,467	$95,025	$139,116
value	(60,144)	(92,257)	(77,381)
Number of cities	203	25,375	380

Statistics are from 2000 U.S Census data. Standard deviations in parentheses.

However, since our target population of cities was those over 75,000 in population, a more appropriate comparison is the subset of cities in the U.S. over that threshold.

Our final sample consists of 203 of these 380 cities. Summary statistics for these cities are shown in the last column of Table B1. Relative to our target population, our sample has a slightly higher average population and is somewhat more regionally weighted towards the northeast and away from the west. Racially, our cities have a slightly higher black population, while educational attainment of the cities in our sample are quite similar to the target group of cities. Our sample has cities with slightly lower median household income and median home value.

C Sensitivity of Main Results to Different Bandwidths

In this section, we show that our main results on the effect of mayoral partisanship on the size of municipal government are not sensitive to different bandwidths in our regression discontinuity model. Indeed, we find stable results across a wide variety of bandwidths for both expenditures per capita and logged expenditures per capita. The only difference across bandwidths is that the point estimates are somewhat smaller for very wide bandwidths.
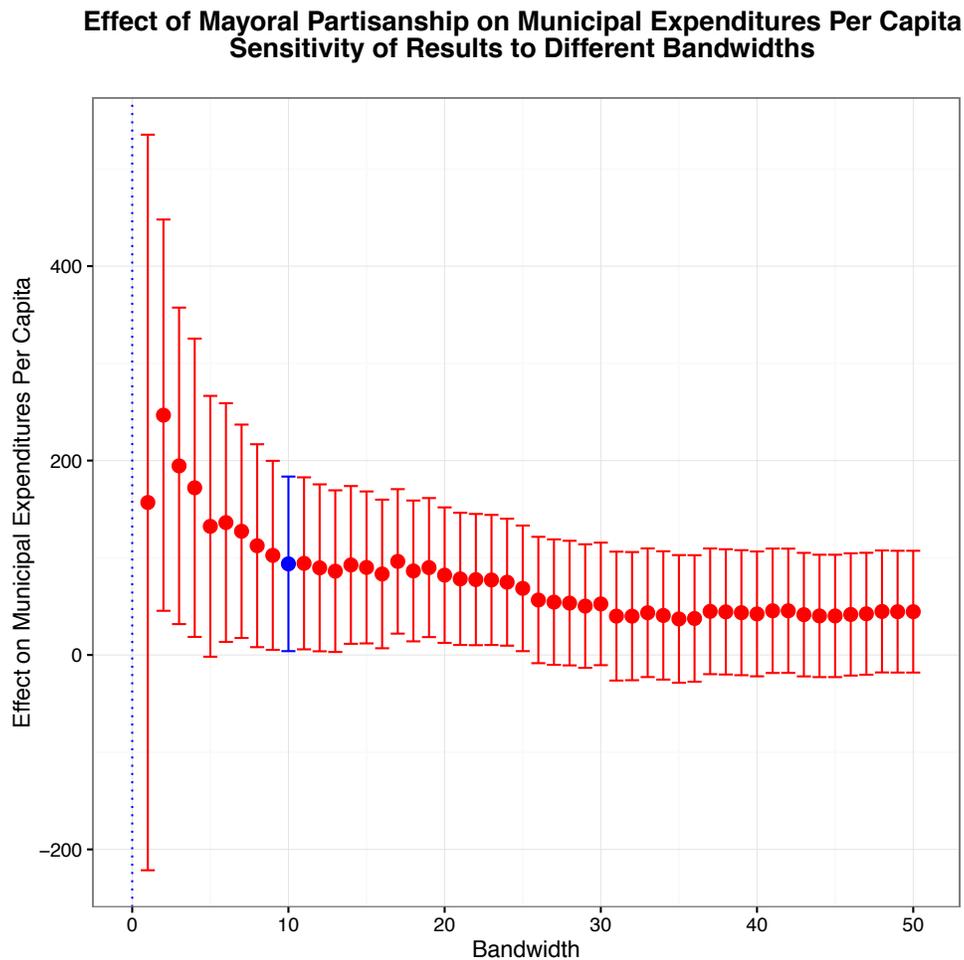
Effect of Mayoral Partisanship on Municipal Expenditures Per Capita
Sensitivity of Results to Different Bandwidths

Figure C1: Robustness of Main Results to Different Bandwidths (optimal bandwidth from Calonico, Cattaneo, and Titiunik (2014) in blue)
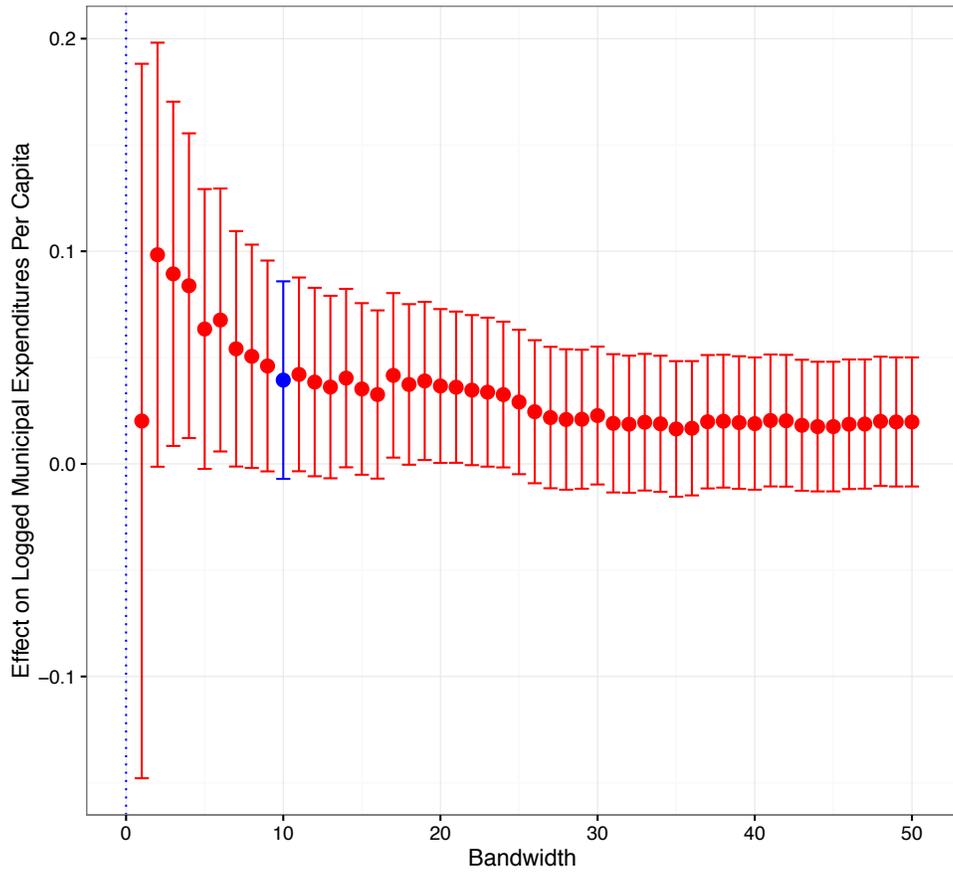
Figure C2: Robustness of Main Results to Different Bandwidths (optimal bandwidth from Calonico, Cattaneo, and Titiunik (2014) in blue)

D Long-term Effect of Mayoral Partisanship on Municipal Debt

In this section, we show that the increase in municipal debt under Democratic mayors persists for at least five years after the election. Figure D1 shows the effect of mayoral partisanship on per capita debt 1-6 years after an election.[2] Consistent with our main results on municipal expenditures, we find that it takes mayors two years to have an effect on municipal debt. However, after two years, the effect of a Democratic mayor stays relatively constant until at least 6 years after the initial election.[3] Thus, our results in the main text on municipal debt do not appear to be sensitive to the time horizon that we select for mayors to have an impact on municipal debt levels.
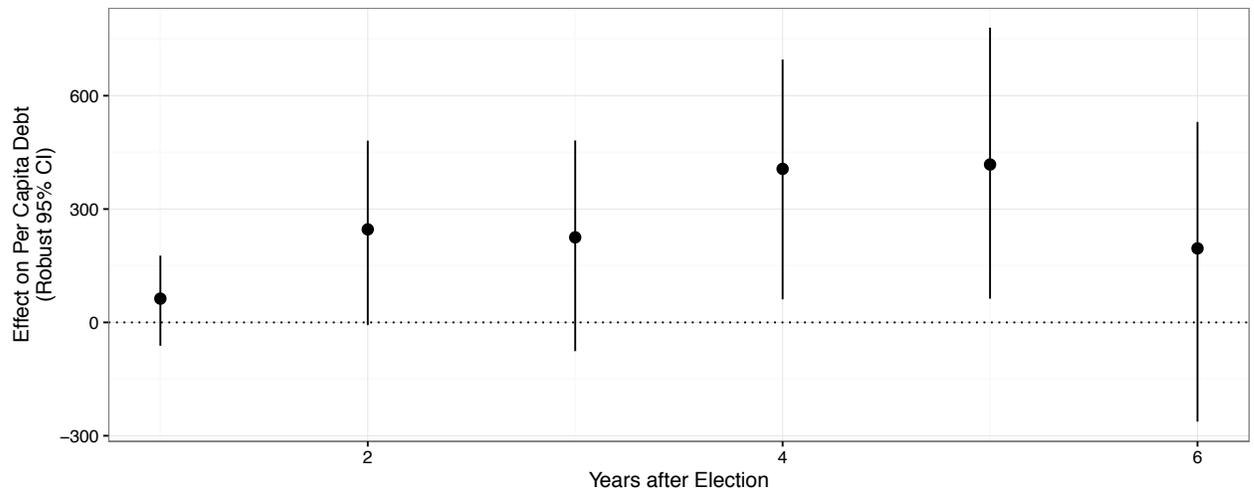

Figure D1: The effect of mayoral partisanship on per capita municipal debt 1-6 years after an election

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[2] For this analysis, we subset our data to the period 1950-2006 to ensure that each time horizon uses a similar dataset. Thus, the point estimates are slightly different than those in the main text.
[3] The constant effect size after two years is consistent with the results in Caughey, Warshaw, and Xu (2015) about the long-term impact of governors on policy.

E Effect of Mayoral Partisanship on the Allocation of Municipal Spending

While we focus on the effect of mayoral partisanship on the amount of municipal spending in the main body of the paper, the allocation of spending to different programmatic areas is also the subject of intense partisan and ideological debate. In Table E1, we show the effect of mayoral partisanship on the allocation of spending to different categories.

Table E1: City Fiscal Outcomes: Allocation of Municipal Spending (results in percentages)

Outcome Variable	Coef	$Pr > |z|$	BW	N
Roads	0.4	0.6	9.97	989
	(-1.18, 2.02)			
Parks	0.04	0.95	9.83	989
	(-0.99, 1.06)			
Housing	1.05	0.09	6.58	962
	(-0.19, 2.71)			
Libraries	0.11	0.36	6.47	915
	(-0.13, 0.35)			
Education	-0.27	0.34	11.8	989
	(-1.21, 0.41)			
Fire	-0.19	0.52	6.87	989
	(-0.79, 0.4)			
Police	-0.16	0.76	6.82	989
	(-1.04, 0.76)			
Health	-0.12	0.36	7.72	943
	(-0.48, 0.17)			
Sanitation	-0.77	0.47	8.45	989
	(-3.02, 1.4)			
Utilities	0.33	0.63	7.38	989
	(-1.43, 2.36)			
Welfare	-0.13	0.39	7.77	989
	(-0.5, 0.19)			
Administration	0.04	0.68	8.78	907
	(-0.28, 0.44)			
Interest	0.26	0.41	7.04	989
	(-0.49, 1.19)			

Overall, the magnitudes of the effect of mayoral partisanship on spending shares,

and the corresponding statistical significance levels, are generally smaller than the effects on spending amounts that we discuss in the main results. We believe this reflects the fact that Democratic mayors generally increase spending across many program areas, while Republican mayors decrease spending across many program areas. Thus, the amounts of spending change more than the allocation across areas.

References

Bonica, Adam. 2013. "Database on Ideology, Money in Politics, and Elections: Public version 1.0 [Computer file].".

Bonica, Adam. 2014. "Mapping the Ideological Marketplace." *American Journal of Political Science* 58(2): 367–386.

Calonico, Sebastian, Matias D. Cattaneo, and Rocío Titiunik. 2014. *rdrobust: Robust Data-Driven Statistical Inference in Regression-Discontinuity Designs.*

Caughey, Devin, Christopher Warshaw, and Yiqing Xu. 2015. "The Policy Effects of the Partisan Composition of State Government." Working paper available at http://cwarshaw.scripts.mit.edu/papers/CWX_PartyCompos150719.pdf.

Ferreira, Fernando, and Joseph Gyourko. 2009. "Do Political Parties Matter? Evidence from US Cities." *The Quarterly Journal of Economics* 124(1): 399–422.

Gerber, Elisabeth R, and Daniel J Hopkins. 2011. "When Mayors Matter: Estimating the Impact of Mayoral Partisanship on City Policy." *American Journal of Political Science* 55(2): 326–339.

Hill, Seth, and Gregory Huber. 2015. "Representativeness and Motivations of Contemporary Contributors to Political Campaigns: Results from Merged Survey and Administrative Records." Working Paper available at http://www.sethjhill.com/HillHuberDonorate_062515.pdf.

Miller, Michael K. 2013. "For the Win! The Effect of Professional Sports Records on Mayoral Elections." *Social Science Quarterly* 94(1): 59–78.

Vogl, Tom S. 2014. "Race and the Politics of Close Elections." *Journal of Public Economics* 109: 101–113.