Municipal Bonds, State Politics, and Economic Outcomes*

Jaewon Choi, Joerg Picard, Andrei Simonov, and Hayong Yun**

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Abstract

We find that changes in the credit spreads of state-issued municipal bonds around gubernatorial elections predict future economic outcomes. A 0.203% (one standard deviation) increase in credit spread around an election is associated with a 3.1% decline in state GDP per capita and a 0.06% increase in the state unemployment rate at the end of the elected governor's tenure. As a possible channel of predictability, we show that changes in credit spreads predict fiscal outcomes, such as changes in deficits during the tenure of elected governors. Also, changes in municipal bond credit spreads around gubernatorial elections predict the market value, revenue, and operations of firms locally operating within a state. Our finding is consistent with the idea that quality of government is an important determinant of the cost of state financing, and that investors have access to information on local politics, which is reflected in municipal bond markets.

Keywords: municipal bonds, predictability, fiscal policy.
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* All errors are our own. Please address correspondence to authors via email.

** Jaewon Choi, jaewchoi@illinois.edu, Department of Finance, College of Business, University of Illinois at Urbana-Champaign, 4035 BIF, 515 East Gregory Drive, Champaign, IL, 61820, Tel. (217) 244-0840; Joerg Picard, picardj1@msu.edu, Department of Finance, Eli Broad College of Business, Michigan State University, 329 Eppley Center, East Lansing , MI 48824, Tel.(616) 617-9900; Andrei Simonov, simonov@msu.edu, Department of Finance, Eli Broad College of Business, Michigan State University, 321 Eppley Center, East Lansing , MI 48824, Tel.(517) 884-0455, Fax.(517) 432-1080; Hayong Yun, yunha@bus msu.edu, Department of Finance, Eli Broad College of Business, Michigan State University, 339 Eppley Center, East Lansing , MI 48824, Tel.(517) 884-0549.

Introduction

What determines the cost of public financing? While this is a fundamental question in public finance, empirically establishing links between determinants of the costs of public financing and their associated costs is challenging, because factors that influence determinants may also influence associated costs.

In this paper, we are interested in one such determinant: the default risk of municipal bonds stemming from the quality and fiscal responsibility of its state government. Instead of directly measuring fiscal responsibility and relating the results to associated public financing costs, we focus on shifts in public financing costs, and follow subsequent economic and fiscal outcomes.

Specifically, we examine price responses on gubernatorial election days, and relate them to subsequent economic and fiscal outcomes during the tenure of the elected governors. Using changes in the credit spreads of state-issued municipal bonds around gubernatorial election days from 2000 to 2013, we find that an increase in credit spreads around election days is associated with a deterioration in state economic performance measured by GDP per capita and unemployment rate during the tenure of its elected governor. For example, a 0.203% (one standard deviation) increase in credit spreads on election days is associated with a 3.1% (of sample standard deviation) decline in state GDP per capita, and a 0.06% (of sample standard deviation) increase in state unemployment rate at the end of the elected governor's tenure.

We further investigate why municipal investors' response on gubernatorial election days has predictive power for subsequent economic outcomes during elected governors' tenure. We find that changes in credit spreads around election days predict subsequent fiscal outcomes, such as deficit per GDP during elected governors' tenure; these influence the default risk of municipal

bonds. For example, a 0.203% (one standard deviation) increase in credit spreads on election days is associated with a 1.92% (of sample standard deviation) increase in deficit per GDP. These findings suggest that changes in credit spreads contain information on election outcomes based on municipal bond investors' expectations about incoming governors' fiscal policies and how they will impact the default risk of municipal bonds, as well as subsequent economic outcomes. As a robustness test, we examine changes of these macroeconomic outcomes around two placebo events: spread changes around 100 days prior to election and year-to-month prior to election spread changes. For both placebo events, we find no significant changes of these macroeconomic variables.

Finally, we document firm-level evidence on municipal bond market predictability. For firms locally operating within a state, a 0.203% (one standard deviation) increase in credit spreads on election days is associated with a 9.8% (of sample standard deviation) decrease in Tobin's Q and a 2.75% (of sample standard deviation) decrease in revenue. For the two placebo tests, we do not find any significant decrease in Tobin's Q or revenue.

Our paper contributes to the extant literature by providing a link between the quality of government and the cost of public financing. Rather than relying on contemporaneous or past measures of government quality to link with the costs of public financing, we use future realized economic and fiscal outcomes and link them to the ex-ante costs of public debt financing. Our findings also suggest a channel on how information about local politics is reflected in financial markets through municipal investors, who are typically wealthy individuals in the local economy and well-connected to local politicians[1]. That is, wealthy individuals, through their political connections, can correctly assess the future policies of newly elected candidates and reflect their

[1] According to SIFMA, about 50 percent of holders of municipal securities are individuals. This number increases to 74 percent if we take into account indirect holdings via mutual funds that specialize in municipal bonds. Tax exempt nature of municipal bonds makes them more beneficial for individuals in highest tax bracket.

views on elected governors in the municipal bond markets. This is similar to the link described by Snowberg, Wolfers, and Zitzewitz (2007), where changes in expectations on election day reveal the market's anticipation of the economic policies of different candidates.

The rest of the paper is organized as follows: In Section I, we discuss the related background and outline our empirical hypotheses. In Section II, we discuss our sample construction and sample properties. Section III identifies the link between changes in credit spread and voting outcomes driven by past economic performances. Section IV presents our main results on the predictability of changes in the municipal bond credit spread on election days for subsequent economic and fiscal outcomes during the elected governors' tenure. We offer concluding thoughts in Section V.

I. Background

I.1. The Municipal Bond Market, Gubernatorial Elections, and State Finances

The governor of a state or insular territory has the role of chief executive. Compared to most other nations, the United States grants each state and its governor wider power and more control over their territory; the governor maintains sovereign police power, is not subordinate to federal authorities (except in special cases spelled out by the enumerated powers section of the federal constitution), and serves as the political and representative head of the state.

The governor is directly elected and almost all states grant their governor a four-year term; the exceptions are New Hampshire and Vermont, which elect their governor for only two years. Most states (thirty-six) hold gubernatorial elections in the same year as mid-term elections

(two years before and after presidential elections). Eleven states hold them at the same time as presidential elections. The remaining states hold elections one year before or after presidential elections.

Local governments (states, counties, cities) and some of their agencies (special-purpose districts: school districts, publicly owned airports, sewer systems, bridges, etc.) rely heavily on municipal bonds (estimated $3.7 trillion outstanding in 2011) to finance public projects to build and maintain infrastructure for economic growth. Municipal bonds are politically and financially separated from federal bonds so that, for instance, the default of a municipal bond does not allow its bondholders to hold the federal government responsible. In the United States, the federal government generally has no tax authority over municipal bonds; they are often exempt from federal income taxes. This tax exemption reduces the cost of debt for the municipal issuer compared to a non-tax-exempt issuer with a similar term and risk structure.

The two basic types of municipal bonds are general obligations bonds and revenue bonds. General obligation bonds are backed by the full faith and credit of the issuing entity, which usually means the authority's unlimited or limited taxing power, and often require public approval by vote. Revenue bonds are tied directly to the economic success of the financed project (toll from a bridge or road, profit from a stadium or hospital, etc.), and generally bondholders have no other recourse.

Municipal bonds are initially sold through a single underwriter or underwriter syndicate, assisted by a bond counsel that provides their legal opinion on whether the issuer is authorized to issue the proposed bonds and their tax status. Because of their special tax-exemption status, municipal bonds are often held by individuals in high tax brackets residing in the same state as the bond's issuing authority.

All states except Vermont have a legal requirement to balance their budgets. Some of these requirements are constitutional, some are statutory, and some have been derived by judicial decision from constitutional provisions about state indebtedness. The definition and stringency of what constitutes a balanced budget also varies. Most states (43) require the budget introduced by the governor to be balanced. Also most states (39) require the budget enacted by the legislature to be balanced. Some states require expenditures within a fiscal year to stay within the cash available for that fiscal year, and most states (37) do not allow unavoidable deficits to be carried over into the next fiscal year for resolution.

In practice, balanced budget requirements refer to state operating budgets and not to state capital budgets, which are typically financed by municipal debt. Operating budgets include annual expenditures such as salaries and wages, aid to local governments, health and welfare benefits, and other expenditures that are repeated from year to year. Courts have ruled that states may not issue debt to balance their operating budget.

Thirty-six states grant the governor some degree of authority to reduce spending to maintain a balanced budget. Some states prohibit executive budget revisions, while others restrict the amount and nature of such revisions.

State pension funding is based on an actuarially-determined annual required contribution, but states have significant discretion on how to follow this guideline and how these contributions are calculated. Although currently there are no legal repercussions for underfunded pensions, two states (New Jersey and Illinois) are in the process of allowing lawsuits to seek full contributions.

Changes to state taxes are governed by state legislatures with varying levels of majority needed. Where most states require simple majority, some states have moved towards a super majority of votes of the years.

Do muni investors care about elections on the local level? Casual analysis of analysts' recommendation and business press pre- and post- election coverage shows that they do. For example, in the pre-2014 elections analysis, BlackRock Head of Municipal Bonds Peter Hayes pointed out that in Pennsylvania and Illinois "winners' policies around pension reform will be critical to how each state viewed by the credit rating agencies and the broader municipal market." [2] Eaton Vance lists five states (California, Illinois, Kansas, Pennsylvania, and Wisconsin) "where the outcome of the elections may impact state credit quality – positively and negatively – in the near future."[3] Post-election Municipal Market Analytics' newsletter (dated November 10th, 2014) noted that "Gina Raimondo's election in Rhode Island helped validate the state's pension reform and likely precludes the risk of a state default on its 38 Studio bonds in the future: both strong positives for state credit quality and trading value. Bruce Rauner's election in Illinois, by contrast, creates uncertainty over future state budget balance—Mr. Rauner has been opposed to extending personal income tax surcharges that many credit analysts assume are critical revenue inputs."[4]

I.2. Relation to Prior Literature

Political science has long been interested in the connections between fiscal policy and election outcomes and between fiscal policy and the party in power. Besley and Case (1995a) show that state taxes and spending are higher under Democratic governors and higher still if an incumbent Democrat is ineligible for reelection because of term limits. The same authors (Besley and Case,

[2] "Munis, Midterms and What to Watch" by Peter Hayes, October 26, 2014, cited by http://www.blackrockblog.com/2014/10/26/munis-midterms-watch/.
[3] http://funds.eatonvance.com/what-the-us-midterm-elections-mean-for-municipal-bond-investors.php
[4] http://www.mma-research.com/MMA/NonMembers/MMAIssuer/content/2014/MMA_Issuer_2014-11-10.pdf

1995b) find that the governors of states with better economic performance than their neighboring states are more likely to be reelected. Peltzman (1987, 1992), Kone and Winters (1993), and Niemi, Stanley, and Vogel (1995) find that voters punish the incumbent party's candidate for past increases in spending and state taxes. However, there are no rewards for decreasing state taxes (Kone and Winters, 1993). We differ from the political science literature by focusing on the predictability of economic outcomes based on the responses of municipal bond market pricing around elections.

In public economy literature, Bayoumi, Goldstein, and Woglom (1995), Lowry and Alt (1994), and Poterba and Rueben (2001) test whether the interest rates at which states can borrow funds are dependent on state fiscal institutions. This literature is of interest for two reasons: First, because capital markets are one of the institutions that may discipline states when they pursue lax fiscal policies, studying how fiscal institutions affect borrowing rates can provide evidence on whether this disciplinary device is effective. Second, borrowing rates provide a unique market-based measure of prospective state fiscal performance.

We differ from this literature by focusing on the market’s prediction about the incoming administration’s policies rather than a particular constitutional arrangement (like a balanced budget provision in the state constitution). Although state defaults are rare, they have occurred (English, 1996). The link between outstanding debt and budget deficit is rather straightforward: an increase of debt level relative to its state economy corresponds to higher spreads. On the other hand, growth (contraction) of a state economy decreases (increases) spreads even with no current deficit (Poterba & Rueben, 2001). It is important to note once again that we concentrate on new information that comes to light as a result of an election.

Pastor and Veronesi (2012, 2013) find that political uncertainty can impose costs on financing. Gao and Qui (2014) use changes in bond spread as proxy for short term resolution of uncertainty on election days. In contrast, we show that spread contains information about long term economic prospects of states.

I.3. Hypothesis Development

If municipal bond investors have no information on an elected governor, there should be no systematic correlation between credit spreads on election days and future economic outcomes. However, many local investors are wealthy individuals with connections to local politicians (Appleson, Parsons, and Haughwout, 2012). Investors might lack total knowledge of the mood of an electorate, but once the mood is revealed, their connections and inside knowledge of local politics is especially useful. While outsiders are limited to publicly available information, local investors may have additional private information due to personal acquaintance with the candidate over the years (e.g., alumni, served together on boards for local organizations), and can better assess their policies during subsequent tenure.

It is important to note that municipal bonds represents unique asset class that is mostly owned by individuals. Moreover, because of tax-exempt feature of munis, they are owned mostly by local individuals. In 2011, out of $3.7 trillion US municipal bond market individuals directly hold more than half, or $1.879 billion, when $930 billion in mutual fund holdings is included, the household share rises to three-quarters (Appleson, Parsons, and Haughwout, 2012).

It has long been documented that Treasury bond yield curves predict future GDP growth (for example, Ang, Piazzesi, and Wei (2006) for a summary of the literature). Gilchrist and

Zakrajšek (2012) show how corporate credit spreads are related to business cycles. Although these studies link how future economic activities are affected by current bond prices, the impact of politics on future economic activities is not examined in the literature.

To the extent that state politics shape economic policies and municipal bond investors can anticipate the policies' effect on the future economy of a state, the effect of economic policies will be priced in municipal bonds. In addition, municipal bond prices will most likely reflect this information given the outcome of an election. This predictability can be observed in aggregate state-level macroeconomic variables. Also, firms operating within a state are strongly influenced by consumer demand, which is driven by state fiscal policy, and hence their revenues as well as other real decisions are likely to be predicted by responses in the municipal bond market around election days.

The following sections will examine both state-level and firm-level implications of predictability based on municipal bond market responses around gubernatorial election days.

II. Data

II.1. Municipal Bonds

We draw from three sources to compute municipal bond spreads. We start with the terms and conditions from the Mergent Municipal Bond database, which covers general obligation and revenue bonds issued by U.S. states and local municipalities between 2000 and 2013, and use U.S. government bond yields of corresponding maturity to calculate credit spreads. We augment

these data with municipal bond spreads obtained from the Municipal Securities Rulemaking Board (MSRB) and the Bloomberg terminal for the years 2000 to 2013.

Revenue bonds are backed at least partially by some economic outcome of the funded project itself (i.e. toll road, sports arena) and bonds issued by local municipalities (cities, schools, special districts) are exposed to their own intrinsic credit risks, which may not be directly linked to the state's economic and fiscal health. Since our main purpose is to focus on state finances and state economic conditions, we only select general obligation bonds issued by states. The creditworthiness of these bonds is most affected by changes in the economic outlook and fiscal policy of that particular state.

II.2. Election Data

We match these yield data with gubernatorial election data, which is obtained from official state websites and Wikipedia. Key information on gubernatorial elections includes election dates and elected and runner-up candidates' profiles, including political affiliations and votes won, as well as the circumstances of the elected individuals' eligibility (retirement, term limits, incumbency status). The U.S. Census Bureau also provides information on the number of seats in the upper and lower houses in each state.

II.3. State Economic Data

For each set of gubernatorial election data, we merge annual economic variables for the year of the election and up to 4 years after it. Information on the annual state GDP per capita and state

personal income per capita is obtained from the Bureau of Economic Analysis. Information on the state unemployment rate is obtained from the Bureau of Labor Statistics. Information on annual retail trade, revenue, expenditures, number of firms, population, and migration is obtained from the U.S. Census Bureau. Information on annual long-term unemployment rate in each state is obtained from the Integrated Public Use Microdata Series (King et al, (2010)). Information on each state's quarterly housing index is obtained from the Federal Housing Finance Agency. Information on the annual number of corporate bankruptcy cases filed in each state is obtained from the American Bankruptcy Institute. Finally, the funding ratio for each state's pension fund is obtained from Morningstar for 2012 and 2013, and from the Center for Retirement Research at Boston College for the earlier period (2005-2010). The resulting sample consists of 11,729 state-issued municipal bond-election pairs, and 11,725 pairs with valid spread changes before and after gubernatorial elections.

II.4. Corporate Data

To measure the impact of election results on corporations operating mainly in a single state, we follow a procedure similar to that of Garcia and Norli (2012); we parse state names in firms' annual 10-K filings and tag firms as single state, which show a frequency of 90% or more of a single state mentioned among all state names in a filing. Using this procedure, we tagged 2,095 of the 11,811 total firms with available 10-K filings as mainly operating in a single state. Firms' operations may move to different states over time or grow (shrink) to multiple (single) state operations. We track the mentions of state names in firms' filings over time and assign a single

state identifier for each annual filing date. Only 318 firms have two state identifiers, 52 have three, and 6 have four.

We link the above identified firms with monthly stock prices and quarterly accounting data from the Center for Research in Security Prices (CRSP) and Compustat databases.

II.5. Definition of Variables

The key explanatory variable, Spread Change, measures the change in the credit spreads of state-issued municipal bonds around an election day. We measure credit spreads by subtracting corresponding Treasury constant maturity yields from municipal bond yields, where the Treasury constant maturity yields are constructed using linear interpolation. To measure changes in credit spreads around election days, we take the credit spreads of the closest day before and after the election day within a seven-day window.

The dependent variables are changes in economic or fiscal outcomes over 1-year to 2-year horizons. For economic outcomes, we consider GDP per capita, retail trade, and the unemployment rate in each state. For fiscal outcomes, we consider deficit per GDP. Deficit per GDP is measured by expenditure minus revenue divided by GDP. Changes in retail trade, GDP per capita, the unemployment rate, and the funding ratio of state pensions are measured by the differences in log values between 1 to 2 years after the election and the year of election. The change in deficit per GDP is measured by differences in raw values between 1 to 2 years after elections and the year of election. We winsorize all these variables at the 1^{st} and 99^{th} percentile.

For firms that are singled out as mainly single state, we merge corporate finance and accounting ratios from quarterly Compustat data. We track firm value by Tobin's Q (which is

total assets plus stock price times number of outstanding shares minus values of common equity minus deferred taxes all divided by total assets), revenue, inventory, and total number of employees. To account for heterogeneity in firm characteristics, we control for firm size (log of total assets), leverage (long term and short term debt divided by total assets), and Tobin's Q prior to election. We winsorize the remaining values at the 1st and 99th percentiles.

II.6. Summary Statistics

For each state election pair, the number of municipal bonds in our sample and their spreads are averaged and merged with the electoral and state economic. Table I lists the averages across the 43 states as well as the average of all states and elections. With the exception of Rhode Island—where an independent candidate won an election—the Democratic candidate makes up the difference between 100% and the Republican candidate's winning percentage. Overall, a Republican candidate was elected 52.0% of the time. When calculating the change in municipal bond spreads for each state and election, we can draw on an average of 86.6 bond pricing observations with an average of 447.3 data points per election available for California and only 1 bond for some other states like Arizona, Indiana, and South Dakota. The table also lists the municipal bond spreads themselves, calculated as the average of the two pricing points immediately before and after the election. Municipal bonds on average are trading at a discount of 17.2 basis points relative to T-bills; since state-issued municipal bonds are typically exempt from federal taxes, this is reasonable. There are large variations in spread levels, however; some states trade at a discount of more than 1%, like Arizona, New Hampshire, and New York, while other states, like Delaware, Illinois, Indiana, and South Dakota, trade at a premium over T-bills.

GDP per capita averages just over $46,000 and the unemployment rate is 6.3% on average in election years. States run an average deficit of negative 0.5 as a percentage of GDP, with Arkansas (−4.0%), Mississippi (−2.6%), and Montana (−1.9%) as the worst offenders, and New Jersey (+0.8%) and South Carolina (+0.6%) as the healthiest states. State pensions on average are funded at 80.4%; only two states, Florida and North Carolina, are fully funded at 102.0%, and Oklahoma (58.1%), Illinois (58.3%), and Rhode Island (58.9%) funded at under 60%. To measure the impact of elections on firms that mainly operate in single states, we can match 72.2 firms to a state, with the largest number of matches occurring in the economically important states, like California (588), New York (301), Texas (213), and Florida (213). For smaller states, like Arkansas, Arizona, Montana, New Mexico, Rhode Island, South Dakota, and Vermont, we could match only fewer than ten firms.

Table II shows variable means (Column 1), standard deviations (Column 2), and 25/50/75 percentiles (Column 3-5) for key variables 1 year after elections (on elections for the accounting ratios), and means and standard deviations of key variables 2 to 4 years after elections (Columns 6-7 for two years, Columns 8-9 for three years, Columns 10-11 for 4 years after elections).

Panel A shows summary statistics at the state level. The average spread change of 1.4 basis points and its median of 0.0 are negligible. The large standard deviation of 16.2 basis points, however, indicates substantial variation across the sample.

About 85% of our municipal bond data sample is connected with the elections in November of 2006, 2010, and 2012; also, the financial crisis, which started just before the November election in 2008, and the subsequent recovery leaves marks on the economic variables over time.

Next we consider the variables measuring fiscal responsibility. The state deficit is reduced by -0.6% on average during the first year after an election, but increases for years 2 and 3 to 0.1% and 1.2%, but it shows almost no change (-0.3 %) after the election cycle in year 4 compared to its election year base. Overall, the standard deviations are all larger than their corresponding means. Bond level statistics shown in Panel B follow similar pattern as in state level statistics shown Panel A.

In Panel C, we show summary statistics for single state firms. For firms that operate mainly in single states, firm value (Tobin's Q) is about 2.469 in election years, The standard deviation of 2.143 and the lower median (compared to the mean) of 1.737 indicates high cross-sectional differences and skewness in the distribution. The mean of revenue as a percentage of total assets is 0.948. Here also the high standard deviation of 0.701 and the lower median of 0.830 are indicative of high dispersion and skewness. The mean of inventory per total asset is 0.124 with a large standard deviation (0.137) and low median of 0.087.

III. Municipal Bond Spreads and Economic Forecasts

III-1. Municipal Bond Spreads and Future Economic Outcomes

In this section, we test our first hypothesis, that changes in credit spreads around gubernatorial elections predict future economic and fiscal outcomes. If municipal bond investors can predict the future economic outcomes of states, then an increase in credit spreads on election dates will negatively predict future economic outcomes.

As measures of future economic outcomes, we employ the following variables: the state's retail trade ($retailtrade$), the state's GDP per capita ($GDP/population$), and the unemployment rate ($unemployment$). We also include per capita personal income ratio, housing prices, net migration out of the state, long-term unemployment, and the state's corporate bankruptcy rate and obtained qualitatively similar results, which are not shown to conserve space.

We estimate the following predictive regression of the economic outcome variables:

$$\Delta Y_{i,t+k} = a_{i,0} + a_{i,k}\Delta CS_{i,j,t} + e_{i,j,k},$$

where $\Delta Y\left(\equiv Y_{i,t+k} - Y_{i,t}\right)$ is the change in economic outcome variable Y between year $t+k$ and election year t of state i. The economic variables are measured at the end of each year, and thus $Y_{i,t}$ is measured after the election. $\Delta CS_{i,j,t}$ is the change in the credit spreads of state i issued municipal bond j around election day t. Since credit spreads can be missing, we use the difference in credit spreads closest to election days in a (-7, +7) day window. The standard errors are clustered at the state level and we provide estimates with and without state fixed effects.

Table III provides the estimation results for economic forecasts. We find that for most economic outcome variables considered as independent variables, an increase in credit spreads predicts worse economic outcomes. For example, an increase in credit spreads around election days predicts a decrease in future GDP per capita for the horizon from 1 through 2 years. Note that the year of governor's inauguration is denoted as year 0. Also, we exclude years 3 and 4 to exclude influences from the next election. The estimated coefficients are statistically significant at the 5% level. Since we use first differences, state fixed effects are absorbed, and year fixed effects are included but not shown in table. Standard errors are double clustered at year and state level. For the other economic outcome variable such as retail trade and unemployment rate, we find similar results, showing that the municipal bond markets predict future economic outcomes.

For example, taking the estimates without fixed effects, a one standard deviation increase in spread change on gubernatorial election days leads to 3.05% (of sample standard deviation) decrease in GDP per capita 2 years after the election.

When significant, our variables have on average a partial R^2 of about 0.5-1.5%. The horizon on which spread matters varies. For example, for change in retail trade, most of the predictive power is in years 1 and 2, while for unemployment and GDP per capita, predictive power is higher in years 3 and 4.

In the last two rows of Table III, we also examine whether municipal bond credit spreads can predict the fiscal responsibility of the state. Specifically, we regress the change in the deficit to GDP ratio as well as state pension underfunding ratio on credit spread changes. The estimation results show that an increase in credit spreads predict worse state fiscal responsibility. We find that an increase in credit spreads predicts an increase in the state deficit from 1 through 2 year horizons. The estimated coefficients are statistically significant in all predicting horizons.

Overall, the results in Table III show that the municipal bond market can predict future economic and fiscal outcomes. In the next section, we examine the effect of political uncertainty on the ability of the municipal bond market to predict these outcomes.

III-2. State Specific Firm Characteristics

After analyzing the impact of municipal bond spread changes on the public sector, we turn our attention to their impact on corporations. We focus on firms that mainly operate within a single state and analyze their value (Tobin's Q), revenue, inventory, and employment over 2 years after an election, as well as cross-sections of size and value quintiles.

Table IV shows the results for Tobin's Q, revenue, inventory, and employment for firm i in quarter t for chosen left side variable $\Delta Y_{i,t}$. $CS_{s,e}$ is changes in credit spread around elections in state s and election date e. All regressions are estimated with year fixed effects, and errors are double clustered by state and year.

Overall, increase in credit spread around gubernatorial election has a negative impact on firm value: a one standard deviation increase in credit spread around election day leads to 9.78% (of sample standard deviation) decrease in Tobin's Q.

Confirming the negative impact of positive spread changes on future retail trade, we find that spread changes around elections in a state lead to significantly decreased revenue two years after elections for firms operating mainly in that state. Quarterly revenue is reduced by 2.75% (of sample standard deviation) over 2 years.

These negative impacts of increased credit spreads (around gubernatorial election days) on firm value and revenue leads to contraction in business activities: firms decrease inventories and shrink work force two years after elections.

In summary, widening municipal bond spreads around state elections impede the future value, revenue, and operations of companies mainly operating in that state.

IV. Conclusions

We find that changes in the credit spreads of state-issued municipal bonds around gubernatorial election days predict future economic outcomes. A 0.203% (one standard deviation) increase in credit spread on an election day is associated with a 3.05% decline in state GDP per capita and a 0.06% increase in the state unemployment rate at the end of the elected governor's tenure. We

attribute this predictability to two findings: First, changes in municipal bond credit spreads contain information on voting outcomes. Second, changes in credit spreads predict fiscal outcomes, such as changes in deficits and the pension funded ratio during the tenure of the elected governors. The main finding of this paper is consistent with the idea that the quality of government is an important determinant of the cost of state financing, and that local investors have access to information on local politics that is reflected in the municipal bond market.

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Table I. State Election Averages

The table shows key variables during elections between 2000 and 2013 for each of 43 states. A Democratic candidate wins in the cases where a Republican candidate did not win, with the exception of Rhode Island, where an Independent candidate won an election. Then number of municipal bonds and spreads are first averaged by each state and election and then averaged across all elections by state. Spread at election is the average in bond credit spreads of the closest day before and after the election in percent, where the credit spread is bond yield minus the 1 month T-bill yield. GDP per capita is the annual GDP attributed to each state per state capita. Unemployment rate is the fraction of the labor force unemployed in each state. Deficit per GDP is state expenditure minus revenue divided by GDP in each state. Pension funded ratio is pension assets divided by pension liability. Pension assets are the actuarial values of assets and pension liabilities are the actuarial accrued liability. Number of single state firms is the number of unique firms where a single state makes up 90% of the mentions of all states in the company's 10K filing. Information on annual state GDP per capita is obtained from the Bureau of Economic Analysis. Information on the state unemployment rates is obtained from the Bureau of Labor Statistics. Information on annual retail trade, revenue, expenditures, and population is obtained from the U.S. Census Bureau. Municipal bond data is obtained from the Municipal Securities Rulemaking Board (MSRB) and T-bill information is obtained from the St. Louis Fed. Spread at election is winsorized at the 1st and 99th percentile.

State	# elections	Rep win (%)	# muni bonds	Spread at election (bps)	Retail trade (mil)	GDP per capita	Unempl (%)	Deficit over GDP	Pension funded (%)	# single state firms
Avg all states	2 9	52 0	86 6	-17 2	18,052	46,085	6 3	-0 5	80 4	72 2
AK	2	100 0	19 0	-22 8	1,926	66,857	6 8	-4 0	66 9	9
AL	3	100 0	21 3	-19 2	11,538	36,180	5 7	0 4	83 1	20
AR	3	33 3	44 0	-17 8	6,090	35,967	6 3	-0 9	83 6	9
AZ	1	0 0	1 0	-107 2	19,757	44,001	3 7	-1 3	82 9	21
CA	4	50 0	447 3	-21 8	106,411	51,119	7 6	-0 1	89 8	588
CT	3	66 7	188 3	-30 0	10,996	64,353	6 3	0 3	62 3	54
DE	3	0 0	57 7	31 8	2,486	62,990	6 1	0 3	96 6	110
FL	3	100 0	95 3	-25 5	50,142	40,594	6 5	-0 7	102 0	207
GA	3	100 0	124 0	-19 8	23,672	44,276	6 4	0 4	95 2	76
HI	3	66 7	68 3	-22 5	3,762	47,786	4 2	0 3	70 1	10
IA	2	50 0	5 5	-30 6	7,556	46,071	4 8	-1 4	84 7	14
IL	3	0 0	129 7	28 7	32,097	50,717	6 9	0 3	58 3	75
IN	2	100 0	1 0	192 5	15,881	43,899	9 0	0 3	63 6	41
LA	3	66 7	30 3	-7 2	11,991	45,714	5 4	-1 1	64 6	23
MA	3	33 3	197 3	-40 5	16,821	58,415	5 9	0 1	72 2	164
MD	3	33 3	77 0	-46 6	15,047	51,739	5 0	0 1	80 3	39
ME	2	50 0	27 0	-22 0	4,285	38,779	6 2	-1 0	71 7	11
MI	3	33 3	36 7	-57 9	24,981	41,249	8 1	-0 2	85 5	71
MN	3	66 7	76 0	-65 8	14,077	50,486	5 3	-0 2	88 4	110
MO	3	33 3	21 3	-5 0	15,246	42,871	7 1	-0 3	80 2	23
MS	3	100 0	96 0	-14 5	6,864	31,217	7 0	-2 6	71 7	14
MT	2	0 0	79 5	-44 0	2,038	36,852	4 8	-1 9	73 0	7
NC	4	25 0	52 0	-47 0	21,343	43,844	7 2	-1 3	102 0	59
NH	6	16 7	58 0	-129 4	4,455	46,665	4 7	0 0	66 2	11
NJ	4	50 0	51 8	-46 6	25,652	55,867	6 8	0 8	85 7	130
NM	2	50 0	5 5	26 5	3,970	39,185	6 7	1 2	83 6	4
NV	2	100 0	161 0	-7 6	9,635	48,761	8 9	-1 2	72 7	84
NY	3	33 3	100 0	-124 3	49,282	58,425	6 3	-0 8	98 1	301
OH	3	66 7	186 7	-32 2	28,907	43,260	6 8	-1 0	79 8	99
OK	3	66 7	3 0	3 4	8,304	38,095	5 2	-0 4	58 1	19
OR	3	0 0	186 3	-29 4	7,882	44,428	7 6	-0 6	95 8	30
PA	3	33 3	99 3	-30 5	30,401	44,968	6 0	0 3	88 5	116
RI	2	50 0	67 0	-24 2	2,785	47,057	8 0	-1 0	58 9	9
SC	3	100 0	87 3	-15 2	10,800	36,480	7 5	0 6	75 5	25
SD	1	100 0	1 0	182 5		46,507	5 0	-0 4	96 1	3
TN	2	50 0	70 0	-36 5	19,947	41,016	7 0	-0 5		16
TX	3	100 0	198 0	-32 2	62,456	46,939	6 3	-0 2	89 1	213
UT	4	100 0	34 3	11 7	7,098	42,622	5 9	-0 5	84 5	35
VA	2	0 0	97 5	-73 7	21,260	51,899	4 0	-1 1	81 3	71
VT	5	60 0	73 8	-28 4	1,922	41,777	4 8	-0 3	79 3	5
WA	3	0 0	166 0	37 2	20,552	52,651	7 2	0 4	93 5	76
WI	4	50 0	155 3	0 3	13,588	44,580	6 3	-0 6	99 1	31

Table II. Summary Statistics, State Economic Variables, and Single State Firm Variables

The table shows the mean, standard deviation (1 to 4 year horizon), and 25/50/75 percentile values (1 year horizon) of key variables used in this paper. The sample period is from 2000 to 2013. Changes in economic outcomes are measured by the difference between log values 1 to 4 years after an election and the year of election, except for deficit per GDP, which is its raw value. Changes in credit spread is changes in bond yield minus risk free rate (yield of maturity matched treasury securities) around election days. GDP per capita is the annual GDP attributed to each state per state capita. Unemployment rate is the fraction of the labor force unemployed in each state. Retail trade is annual retail trade for each state. Deficit per GDP is state expenditure minus revenue divided by GDP in each state. Tobin's Q is total assets plus stock price times number of outstanding shares minus values of common equity minus deferred taxes all divided by total assets. Revenue is total revenue. Inventory is total inventories. Number of employees is the total number of employees. Information on annual state GDP per capita is obtained from the Bureau of Economic Analysis. Information on the state unemployment rate is obtained from the Bureau of Labor Statistics. Information on annual retail trade, revenue, expenditures, and population is obtained from the U.S. Census Bureau. Corporate variables are from Compustat quarterly data. All variables are winsorized at the 1st and 99th percentile.

Panel A. State characteristics

Horizon	1 year						2 years			3 years			4 years		
Variables	Mean	SD	p25	p50	p75	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Change in credit spread	0.014	0.162	-0.041	0.000	0.056	118	0.014	0.162	118	0.014	0.162	118	0.014	0.162	118
GDP per capita	0.011	0.016	0.001	0.012	0.022	116	0.019	0.032	106	0.020	0.051	103	0.019	0.062	72
Unemployment rate	-0.010	0.137	-0.106	-0.041	0.059	116	0.061	0.307	106	0.082	0.456	103	0.249	0.441	72
Retail trade	0.036	0.019	0.024	0.035	0.050	63	0.057	0.043	61	0.138	0.051	35	0.169	0.059	33
Deficit/GDP	-0.006	0.018	-0.015	-0.009	-0.002	106	0.001	0.025	103	0.012	0.045	72	-0.003	0.022	70

Panel B. Bond characteristics

Horizon	1 year						2 years			3 years			4 years		
Variables	Mean	SD	p25	p50	p75	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Change in credit spread	0.001	0.203	-0.042	-0.005	0.026	9133	0.001	0.203	9133	0.001	0.203	9133	0.001	0.203	9133
GDP per capita	0.013	0.013	0.008	0.014	0.022	8966	0.026	0.026	7830	0.031	0.041	7535	-0.001	0.068	1442
Unemployment rate	-0.076	0.092	-0.121	-0.091	-0.064	8966	-0.102	0.246	7830	-0.157	0.379	7535	0.426	0.495	1442
Retail trade	0.028	0.019	0.015	0.025	0.044	1227	0.032	0.048	1214	0.148	0.045	368	0.177	0.041	326
Deficit/GDP	-0.011	0.016	-0.017	-0.014	-0.006	7830	0.011	0.018	7535	0.034	0.052	1442	0.001	0.021	1301

Panel C. Single state firm characteristics

Horizon	1 year						2 years			3 years			4 years		
Variables	Mean	SD	p25	p50	p75	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Tobin's Q	2.469	2.143	1.186	1.737	2.962	2095	2.412	2.072	1813	2.489	2.000	1596	2.317	1.866	1435
Revenue	0.948	0.701	0.443	0.830	1.307	2095	0.957	0.667	1813	0.958	0.658	1596	0.974	0.666	1435
Inventory	0.124	0.137	0.010	0.087	0.188	2095	0.124	0.133	1813	0.123	0.132	1596	0.126	0.132	1435
Number of employees	5.643	6.218	1.984	3.739	6.966	2095	5.464	6.061	1813	5.220	5.866	1596	5.085	5.499	1435

Panel D. Single state firm: changes since election

Horizon	1 year						2 years			3 years		
Variables	Mean	SD	p25	p50	p75	N	Mean	SD	N	Mean	SD	N
Change in credit spread	-0.044	0.131	-0.077	-0.003	0.038	2095	-0.044	0.131	2095	-0.044	0.131	2095
Tobin's Q	-0.029	1.510	-0.451	0.006	0.388	1813	-0.001	1.772	1596	-0.237	1.977	1435
Revenue	0.011	0.263	-0.076	0.016	0.104	1813	0.005	0.332	1596	0.019	0.385	1435
Inventory	0.000	0.042	-0.010	0.000	0.011	1813	-0.003	0.056	1596	-0.002	0.065	1435
Number of employees	-0.177	1.768	-0.584	-0.070	0.346	1813	-0.433	2.182	1596	-0.500	2.574	1435

Table III. Municipal Bond Market Reaction and Future Economic Outcomes

This table shows the ability of credit spread change to predict future economic outcomes. Main test (Columns I and II) consider spread changes before and after each election. When spreads are not available 1 day before and after an election, we choose the closest credit spread from 14 days prior to 14 days after the election. Placebo 1 (Columns III and IV) consider spread changes around 100 days prior to elections. Similar to the main test, when spreads are not available 1 day before and after 100-day prior to an election, we choose the closest credit spread from 14 days prior to 14 days around these dates. Placebo 2 (Columns V and VI) consider spread change from beginning of election year to one month prior to elections. The dependent variables for economic outcomes are the changes in GDP per capita, unemployment rate, retail trade, and deficit per GDP over 1, 2 year horizons after each election. The key explanatory variable is changes in credit spread around an election. The intercept and year fixed effects are included but not shown. The t-statistics are shown in parentheses and standard errors are clustered at the state and year level. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

		Main test (Election day)		Placebo 1 (Election day-100)		Placebo 2 (Year to election)	
Dependent variables		1 year	2 years	1 year	2 years	1 year	2 years
		(I)	*(II)*	*(III)*	*(IV)*	*(V)*	*(VI)*
GDP per capita	Change in credit spread	-0.0026**	-0.0039**	0.0008	0.0000	0.0008	0.0000
		[-2.05]	[-2.05]	[0.76]	[0.01]	[0.76]	[0.01]
	Observations	8,966	7,830	9,018	7,810	9,018	7,810
	R-squared	0.1540	0.3106	0.1382	0.3041	0.1382	0.3041
Unemployment rate	Change in credit spread	0.0018***	0.0007*	0.0001	0.0001	0.0001	0.0001
		[4.41]	[1.97]	[0.59]	[0.57]	[0.59]	[0.57]
	Observations	7,830	7,535	7,810	7,494	7,810	7,494
	R-squared	0.2332	0.4904	0.1890	0.4974	0.1890	0.4974
Retail trade	Change in credit spread	-0.0024	-0.0042**	-0.0005	-0.0005	-0.0005	-0.0005
		[-1.47]	[-2.26]	[-0.47]	[-0.31]	[-0.47]	[-0.31]
	Observations	1,227	1,214	1,287	1,262	1,287	1,262
	R-squared	0.6579	0.8348	0.6456	0.8284	0.6456	0.8284
Deficit/GDP	Change in credit spread	0.0006	0.0017***	0.0000	-0.0001	0.0000	-0.0001
		[0.56]	[3.22]	[0.06]	[-0.17]	[0.06]	[-0.17]
	Observations	7,830	7,535	7,810	7,494	7,810	7,494
	R-squared	0.6671	0.5392	0.6695	0.5652	0.6695	0.5652
Pension Underfunding	Change in credit spread	0.0070**	0.0015	0.0081	0.0059	0.0081	0.0059
		[2.43]	[0.65]	[1.25]	[1.55]	[1.25]	[1.55]
	Observations	7,704	7,409	7,691	7,375	7,691	7,375
	R-squared	0.0296	0.0619	0.0307	0.0618	0.0307	0.0618

Table IV. Impact on Single State Firms

The table shows the impact of changes in state municipal bond spreads on firms operating mainly in a single state. The dependent variables are Tobin's Q, revenue, inventory, and number of employees prior to election to 2 years after each election. The explanatory variable is changes in credit spread around an election. Firm size (natural logarithm of total assets), Tobin's Q (total assets plus stock price times number of outstanding shares minus values of common equity minus deferred taxes all divided by total assets) and book leverage (short term and long term debt divided by total assets) as of election days are controlled to account for heterogeneity in firm characteristics. Intercepts and year fixed effects are included but not shown. The t-statistics are shown in parentheses and standard errors are clustered at the state and year level. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Dependent variables	Change in Tobin's Q		Change in revenue		Change in inventory		Change in number of employees	
	(I)	*(II)*	*(III)*	*(IV)*	*(V)*	*(VI)*	*(VII)*	*(VIII)*
Spread change	-0.910**	-0.854**	-0.053***	-0.045***	0.029***	0.030***	-1.579***	-1.49**
	(-2.19)	(-2.15)	(-4.45)	(-2.77)	(2.72)	(2.92)	(-3.07)	(-2.41)
Log(assets)		-0.081*		0.005		0.002**		0.000**
		(-1.93)		(1.02)		(2.30)		(2.02)
Tobin's Q		-0.423***		-0.022***		-0.001		-0.000***
		(-13.93)		(-3.07)		(-1.65)		(-5.10)
Book leverage		0.002		-0.096**		-0.021**		-0.001***
		(0.01)		(-2.13)		(-2.25)		(-2.71)
Constant	-1.146***	0.330	-0.075***	-0.010	-0.009	-0.007	-0.001***	-0.001**
	(-3.52)	(1.16)	(-10.67)	(-0.47)	(-1.33)	(-0.89)	(-3.00)	(-2.02)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.060	0.293	0.010	0.033	0.015	0.027	0.009	0.054
Observations	1596	1596	1596	1596	1596	1596	1596	1596