When Politics Meets Green Finance:

The Dynamics of Green Municipal Bond Issuance in the U.S.

Abstract

Our study investigates the issuance of green municipal bonds around the political cycle in the United States. Using state-quarter level data from 2014 to 2023, we examine how the share of green bonds in total municipal issuance changes in the period preceding elections. Our results show that on average, green issuance rises by 1.6% during pre-election periods, with the effect concentrated in states governed by Democratic incumbents. We further document that Democratic leaders tend to increase green issuance in less competitive races, where political security enables them to pursue long-term environmental goals. Additionally, reduced political risks lower borrowing costs, providing a financial channel that further boosts green issuance. Republican states, however, make little use of green bonds, consistent with their lower emphasis on environmental agendas. These findings indicate that a predictable and stable political environment creates favourable conditions for sustained green financing. Overall, gubernatorial elections provide a unique window into how political dynamics shape financing decisions, highlighting that the path of green financial innovation cannot be understood apart from democratic processes.

Keywords: Municipal Bonds; Green Bonds; Gubernatorial elections; Electoral Competition

1. Introduction

For a long time, local governments in the United States have struggled to obtain adequate financial support from the federal government to satisfy infrastructure needs (Boarnet, 2014). To fill this gap, they turned to the capital market, and since the first issuance in New York in 1812, municipal bonds have gradually become a central pillar of local finance and investment (Chen et al., 2013). Nowadays, these bonds form the foundation of subnational public finance, funding nearly three-quarters of infrastructure projects nationwide and reaching about $400 billion in new issuance each year (Medda & Cocconcelli, 2018).

Rather than pure financial instruments, municipal bonds are deeply entangled with the political settings in which they are issued. Prior research reveals the significant role of corruption and political connections on municipal bond sales and underwriting, and politically connected underwriting practices, such as pay-to-play contributions, significantly drive up underwriting fees (Butler et al., 2009). Refined evidence indicates that in contested mayor elections, public officials are more likely to issue revenue bonds instead of general obligation bonds, signaling fiscal credibility and reducing exposure to political criticism over potential misuse of funds (Aneja et al., 2015). Gubernatorial election-related uncertainty also makes an important source of higher municipal bond yields, with the political risk premium particularly pronounced in competitive races (Gao et al., 2019).

Our study thus investigates how the political cycle influences the issuance of green municipal bonds, an emerging segment of the municipal bond market. We focus on the green municipal bond market around U.S. gubernatorial elections from 2014 to 2023[1]. These elections provide an ideal setting to study political influence for two reasons. First, governors possess significant authority to affect state economies and policy

[1] We do not use mayoral elections as research settings for two reasons. First, issuers of green municipal bond are highly fragmented, including cities, counties, special districts, and state-level entities, making it difficult to attribute clear political influence at the local government level. Second, jurisdictions with mayoral elections rarely coincide with green bond issuance during the same period. For example, although California held nine mayoral elections in 2022—among the highest across all states—only two cities issued green bonds, representing just 28.2% of the state's issuance that year. This sparse overlap between local elections and issuance severely limits the statistical power and external validity of inferences based on mayoral election timing. By contrast, gubernatorial elections constitute a well-defined, statewide political shock with broader implications for environmental policy and public finance (Gao et al., 2019).

agendas (Peltzman, 1987). Second, the largely predetermined timing of these elections, together with the staggered four-year cycle in most cases, helps mitigate concerns of endogeneity and provide natural sources of empirical variation (Gao et al., 2019). Our study examines changes in the share of green bond issuance relative to total municipal issuance prior to elections, providing a relative measure of green financing over time compared with total issuance. The final dataset consists of 147 elections and 2,019 state-quarter observations.

Our main finding is that states tend to increase the green share during periods leading up to elections, with an average rise of 1.6%, largely driven by states governed by Democratic incumbents, after controlling for state- and country-level factors. Robustness tests support this result. First, one concern is that our findings might be driven by spurious election timing effects. To address this, we conduct a placebo test shifting elections backward by one year, which yields no significant effects. Second, given that presidential elections could confound gubernatorial cycles, we explicitly control for presidential elections; the main effect remains unchanged, and the presidential term is insignificant. Finally, as the dependent variable is a fractional share, we estimate a fractional logit model that is better suited for bounded outcomes, and the results remain consistent.

We next propose several hypotheses to further investigate how electoral dynamics shape green bond issuance. On one hand, leaders may face stronger accountability pressures and are more likely to undertake stricter environmental policies in hotly contested elections (Fredriksson et al., 2005; Wilson & Damania, 2005). This may lead to greater green bond issuance, especially among Democratic leaders. On the other hand, in less competitive races, political security provides greater autonomy, especially for Democratic leaders, to pursue long-term green initiatives (Jacobs, 2016; Jacques, 2022; List & Sturm, 2006). Moreover, the reduced political risks associated with less competitive races can lower financing costs (Gao et al., 2019; Jens, 2017), thereby encouraging green issuance. We assess these hypotheses by leveraging variation in electoral competition, captured by the voting difference between the top two candidates. Our results support that increases in the green share occur during less competitive

elections, and this effect is confined to states won by Democratic candidates. This pattern is inconsistent with the electoral accountability mechanism and calls for closer examination of the alternative channels.

We then test the two mechanisms separately. First, we find that in states where Democrats hold large electoral advantages, more environmental bills are enacted in the pre-election period. Since environmental legislation is recognized as a manifestation of credible long-term green commitment (Hussain et al., 2023), this pattern provides evidence for our hypothesis by indicating that political security enables leaders to advance such initiatives. Second, we show that Democratic governments are more likely to expand green financing in states with high climate concern. This effect reinforces our hypothesis, as public support weakens opposition to environmental policies (Schaffer et al., 2022), facilitating green initiatives under political security. Third, using U.S. Treasury yields and offering yields of municipal bonds, we confirm that a larger green share is associated with lower borrowing costs. This evidence is consistent with the hypothesis that reduced political risks translate into cheaper financing and thereby encourage green issuance. However, green issuance is not an electoral strategy by Republicans. Overall, our findings reveal how political and financial factors jointly shape green issuance, and gubernatorial elections provide a distinctive setting to capture these dynamics.

Our research makes two main contributions to the existing literature. First, it extends the political economy literature on environmental policymaking. Most extant research examines various political factors and their impact on conventional measures such as environmental spending (Bonnet & Olper, 2024; Cremer et al., 2008; Fredriksson et al., 2005; Pacca et al., 2021). Our research is related to Gao et al. (2019), who study the impacts of the U.S. gubernatorial elections on the whole municipal bond market, but differs by focusing specifically on the green municipal bonds. It also builds on prior research on political competition such as List and Sturm (2006), which demonstrates that electoral competitiveness alters politicians' incentives to implement environmental policies. Therefore, our study fills the gap by incorporating new

financial instruments into the analysis of political dynamics and providing a more nuanced view of their role in environmental governance.

Second, our findings contribute to the literature on green bonds, which has largely concentrated on pricing issues (Flammer, 2021; Larcker & Watts, 2020; Zerbib, 2019). While some research highlights institutional and macroeconomic conditions that enable green issuance (Dan & Tiron-Tudor, 2021; Tolliver et al., 2020), political contexts where green bonds are issued have received far less attention. A closely related study by Chang et al. (2024) investigates the U.S. green municipal bond market and shows that how political leanings of counties affect issuance and pricing. However, focusing solely on party affiliation is too coarse to account for temporal variation in issuance. And a broader dynamic perspective that incorporates electoral cycles is necessary. Therefore, our study extends the literature by situating municipal green bonds within the dynamics of electoral politics, highlighting the role of political motivations in this emerging market.

The remainder of the paper is organized as follows. Section 2 reviews the relevant literature and outlines the hypotheses. Section 3 presents the data and descriptive statistics. Section 4 describes the empirical methodology. Section 5 reports the main results along with robustness checks. Section 6 examines the underlying channels and offers possible explanations for the findings. Finally, Section 7 provides the conclusions.

2. Related Literature and Hypothesis Development

2.1. Elections, party affiliation and green bond issuance

Governors play a central role in determining state policies, such as taxes, procurement and state budgets, implying that changes in governorship can directly reshape policy priorities and economic outcomes at the state level (Besley & Case, 1995). The extant literature reveals the extensive impacts of gubernatorial elections on capital markets (Çolak et al., 2017; Jens, 2017) and fiscal performance (Cummins & Holyoke, 2018; Douglas et al., 2025). Moreover, the pre-election time window of elections provides an important setting to observe how these effects are impacted by electoral dynamics. Nordhaus (1975) finds that fiscal policies tend to be restrained at

the beginning of a term but expansionary as elections approach. This pattern reflects politicians' incentives to appeal to voters and signal performance (Katsimi & Sarantides, 2012). Such electoral dynamics can also extend to local governments' financing decisions, as research shows that municipal bond yields rise in anticipation of gubernatorial elections due to elevated political uncertainty (Gao et al., 2019), highlighting the sensitivity of municipal finance to electoral cycles. Building on this evidence, it is reasonable to expect that the municipal green bond market, as an emerging segment of municipal finance, may likewise be influenced by gubernatorial elections.

In addition, party affiliation interacts with these electoral dynamics, as environmental policies are constrained by the ideological preference of the ruling political party (Bortolotti et al., 2004). While environmental protection was regarded as a bipartisan concern in the early 1970s, subsequent decades saw a widening partisan divide on this issue, with pro-environmental initiatives increasingly aligned with Democrats and less embraced by Republicans (Dunlap et al., 2001). Hu et al. (2021) attribute this divide to two main factors. First, Democrats' stronger preference for market intervention makes them more willing to adopt instruments, thereby leading to stricter environmental regulation. Second, supported by the working class who are more vulnerable to environmental risks, Democrats have strong incentives to pursue stringent regulations (Benton, 1997; Lamla, 2009). In contrast, as regulatory costs fall heavily on entrepreneurs and capital owners, Republicans are less inclined to adopt strict environmental policies (Chang & Berdiev, 2011). These partisan differences are also reflected in the issuance of municipal green bonds, which explicitly link borrowing to environmental goals, with Democratic-leaning counties shown to be more likely to issue them than Republican-leaning counterparts (Chang et al., 2024).

Taken together, gubernatorial elections alter states' incentives to use fiscal instruments during pre-election periods, and these effects are compounded by partisan differences in environmental priorities. Because Democrats place greater emphasis on environmental agendas than Republicans, the combination of electoral dynamics and

partisan preferences makes Democratic states more inclined toward municipal green bond issuance. Therefore, we derive the following hypothesis:

Hypothesis 1: *States with different political affiliations exhibit distinct preference for municipal green bonds during pre-election periods. Specifically, states governed by Democratic leaders are expected to show a stronger inclination toward green issuance than Republican states*.

2.2. Electoral competition and green bond issuance

Building on Hypothesis 1, we next examine whether the effect differs by the degree of electoral competition, an important dimension of political economy that may shape politicians' behaviour. Given the contrasting theoretical arguments, we outline two opposing expectations and examine which one aligns with the empirical evidence.

2.2.1. Competitive pressure and green issuance

Prior research highlights the role of electoral competitiveness in assessing environmental policies (Hu et al., 2021). Wilson and Damania (2005) find that intensified political competition yields more stringent environmental policies and better environmental outcomes. Although its effect on reducing petty corruption is context-dependent, the general finding underscores the disciplining role of competition in promoting stricter environmental action. In addition, Fredriksson et al. (2005) show that civic engagement by itself does not necessarily strengthen environmental policy; its effect becomes significant only under sufficiently high levels of electoral competition. Their finding reveals the critical role of competition: when it is weak, governments can more easily cater to special interests and dilute environmental regulations, but when competition intensifies, policymakers are compelled to adopt stricter environmental actions in response to voter demands.

The extant literature rarely extends to emerging policy instruments. Municipal green bonds, backed by local governments' credit and directed to infrastructure projects, are subject to regular reporting and oversight (Fidelity, 2021), and thus represent an important addition to the environmental policy toolkit. Examining how electoral competition shapes the issuance of green municipal bonds not only resonates with existing theories linking competition and environmental policy but also constitutes a

key contribution of this study. Given the partisan divide in environmental policymaking discussed in the previous section, the incentive is asymmetric: Democratic leaders, who prioritize environmental goals, are more inclined to utilize green issuance, whereas Republican leaders face weaker incentives to do so.

Hypothesis 2: *Democratic leaders are more likely to issue green municipal bonds in competitive races, while Republican leaders are less likely to do so.*

2.2.2. Political security and green issuance

Electoral competition is not always conducive to long-term policymaking. Prior research shows that when governing parties hold a clear electoral advantage, they are more inclined to implement policies that yield long-term benefits, since the risk of losing power is relatively low (Jacobs, 2016). Moreover, Jacques (2022) argues that when parties have a high probability of remaining or entering office, they are more capable of making credible commitments to long-term policies to invest in the future. Environmental policies, which requires substantial upfront investment while generating benefits over extended horizons, thus fit within the long-term policy framework (O'Mahony, 2021). Consistent with this view, List and Sturm (2006) find that governors enjoying overwhelming support are substantially less likely to manipulate environmental policies, while Democrats with a strong majority are more inclined to pursue green spending as part of their long-term agenda.

Municipal green bonds, issued with maturities averaging over 12 years (Lam & Wurgler, 2024), are designed to support long-term infrastructure programs. Accordingly, political security affords Democratic leaders the autonomy and incentives to expand green bond issuance in line with their long-term policy agenda. Therefore, we propose the following hypothesis:

Hypothesis 3*: Democratic leaders are more likely to increase the share of green issuance in secure areas due to their greater autonomy in advancing long-term policies, whereas Republican leaders are less likely to do so.*

2.2.3. Financing costs and green issuance

Another explanation considers the role of political stability in determining financing costs. Research shows that uncertainty arising from governorship turnover is

an important source of risk in financial markets. Heightened by electoral competition, this uncertainty increases municipal financing costs and dampens seasoned equity offerings, debt issuance, and IPO activities in the pre-election period (Çolak et al., 2017; Gao et al., 2019; Jens, 2017). Similarly, sovereign-debt studies identify political risk as a critical component of yield spreads, and improvements in political stability are associated with lower spreads and increased foreign direct investment (Bekaert et al., 2014; Sonenshine & Kumari, 2022). Large electoral margins thus signal a more predictable political environment and thus lower political risk, which reduces risk premia and financing costs, in turn facilitating greater green bond issuance. This effect should be more pronounced in Democratic strongholds, where leaders are inclined to promote green spending, while Republican leaders remain less committed to it. This gives rise to the following hypothesis:

Hypothesis 4: *Democratic leaders are more likely to increase the green share in secure areas because lower political risk reduces financing costs, while Republican leaders are less likely to do so.*

3. Data

3.1. Election variables

We obtain election data from the Stateline database and Congressional Quarterly (CQ) Electronic Library. The dataset contains information on election dates, candidates' and incumbent governors' party affiliations, as well as vote margins. We also include mayoral elections in Washington, D.C., as the mayor serves as the chief executive under the Home Rule framework, an institutional role comparable to a state governor, so we treat D.C. mayoral races as the state-equivalent gubernatorial elections for our purpose. In total, our study covers 147 gubernatorial elections in the United States held between 2014 and 2023[2]. Gubernatorial elections are typically held in early November, though in some cases they may occur as early as October or extend into mid-November. In all instances, however, the elections are completed within the fourth quarter of the election

[2] California gubernatorial recall election in 2021 is excluded, as it neither led to a change in governorship nor adhered to the regular four-year election cycle. The special recall election was triggered in August 2021 following a series of petitions to recall the incumbent Democratic Governor Gavin Newsom, primarily due to criticism of his policies on issues such as high taxes.

year. Most states hold gubernatorial elections every four years, with a few exceptions. The timing of these elections varies institutionally across states, and Table 1 provides a summary of each state's election cycle. Following Jens (2017), we construct *Gub election* that is a binary variable equal to one if a gubernatorial election takes place in the given state and year, and zero otherwise. In election years, *Votediff* is defined as the margin between the winner and the runner-up, measured as decimals. In addition, we define party-specific dummies: *Vote Dem* equals one if the Democratic candidate wins the gubernatorial election.

3.3. Municipal bond variables

Municipal bond data are drawn from the Bloomberg database and cover all 50 states and Washington, D.C. from 2014 Q1 to 2023 Q4, excluding territories such as Puerto Rico and Guam. We aggregate individual issuance records to the state–quarter level and calculate the ratio of green municipal bond issuance volume to total municipal bond issuance volume, denoted as *Muni green*. Unlike Chang et al. (2024), who focus on the number and total amount of green municipal bond issuance, our measure emphasizes the relative importance of green bonds within each state's overall municipal bond market. This relative definition allows for meaningful comparisons of green bond activity both across states of different sizes and over time within the same state. State–quarters with no municipal bond issuance are excluded from the sample, since the green bond share is mathematically undefined when both the numerator and denominator are zero. For example, Wyoming had no issuance in 2015 Q4, 2016 Q1, and 2016 Q2, and these observations are excluded. This procedure produces 2,019 state–quarter observations.

3.3. Economic variables

We include several state and country level economic variables to control for municipal green issuance. Quarterly changes in gross domestic product (*GDP*) are obtained from the Bureau of Economic Analysis (BEA). As shown by Tolliver et al.'s study (2020), the size of economy plays an important role in driving growing green bond issuance. We also consider the size of the financial sector (*Financial industry*), measured as the natural logarithm of gross output in the finance and insurance sector at

the state level. It serves as a proxy for institutional infrastructure supporting bond market growth (Tu et al., 2020). Unemployment rates (*Unemployment*), drawn from the Bureau of Labor Statistics (BLS), are included as additional indicators of state-level fundamentals.

Prior studies show that credit ratings affect green bond issuance (Dan & Tiron-Tudor, 2021), making them a key control variable in our setting. We thus account for fiscal conditions by including Standard & Poor's (S&P) credit ratings of state governments. Annual state government credit ratings (*Credit rating*) are matched to each quarter of the year. To facilitate quantitative analysis, we transform the categorical ratings into an ordinal scale ranging from 1 for the lowest observed rating (BBB–) to 10 for the highest rating (AAA), where higher values indicate stronger creditworthiness. Moreover, the 10-year U.S. Treasury yield is widely used as a benchmark for financing costs and has been shown to affect bond issuance (Bruno et al., 2024). Based on this evidence, we include the 10-year U.S. government bond yields (*Long interest rate*), obtained from the Federal Reserve Bank of St. Louis, which reflects general financing costs at the national level.

Finally, environmental policies are further shaped by local economic interests (Bonnet & Olper, 2024). Following their practice, we focus on mining, quarrying, oil and gas extraction, and manufacturing industries, and use their output share (*Manufacturing industry*) as a proxy for their potential influence on environmental policymaking.

3.4. Descriptive statistics

Table 2 provides descriptive statistics for 2,019 state-quarter observations, along with 581 observations during only election years. For the whole sample, the green share has a mean value of 0.018 and a median value of zero. This means that green issuance makes up only a small fraction of state government financing budgets. This pattern holds even in election years, where the average share is 1.6%.

Turning to political variables, gubernatorial elections occur in roughly 30% of the sample, with vote difference ranging from as narrow as 0.2% to as wide as 67.1%. On average, Republican candidates were about 11 percentage points more likely to win

than Democrats during the sample period. These figures highlight substantial variation in electoral competitiveness, which provides a useful source of identifying variation in our empirical analysis.

Finally, the control variables reflect considerable heterogeneity in country- and state-level economic conditions. Quarterly GDP growth averages close to zero but spans sharp contractions and expansions, while unemployment ranges from 1.7% to nearly 25%. The size and structure of state economies also differ considerably: the financial sector variable, expressed in logarithmic form, displays marked variation across states, and the manufacturing share ranges from zero (observed in Washington, D.C.) to almost 30%. Credit ratings average about 8.4 (roughly AA) but extend from 1 (BBB–) to 10 (AAA), highlighting differences in fiscal health. The 10-year Treasury yield fluctuates between 0.7% and 4.2% during the sample period, reflecting shifts in the broader interest rate environment. Comparing the full and election-year samples, the distribution of these variables is broadly similar. Appendix Table A also provide definitions for all the variables used in the models.

4. Methodology

4.1. Identifying impacts of elections on green issuance

The timing of gubernatorial elections is constitutionally predetermined and occurs at fixed intervals, making them largely unaffected by contemporaneous economic or fiscal factors (Jens, 2017). This institutional feature has also been widely employed as a quasi-experimental setting to study financial outcomes, ranging from stock performance (Hu & Yin, 2025) to IPO activity (Çolak et al., 2017) and borrowing costs in municipal bond markets (Gao et al., 2019). Building on this approach, we focus on how scheduled gubernatorial elections affect the issuance of municipal green bonds, thereby extending the application of this framework to the growing area of green finance.

The dependent variable is the proportion of green issuance (*Muni green*) which captures how green issuance is changing relative to total issuance over time. The coefficient on gubernatorial elections (*Gub election*) captures the effect of election cycles. *Pre election* is a dummy variable equal to one for observations in Q2 and Q3,

and zero otherwise. The coefficient of interest is the interaction term between *Gub election* and *Pre election*, which measures the added effect of elections in Q2 and Q3, the key periods leading up to elections. Here we focus on the two quarters preceding gubernatorial elections as time windows to observe the pre-election share of green bond issuance in the municipal bond market. This practice follows Julio and Yook (2012), who define their event window around election periods. While their window spans both before and after elections, we restrict our analysis to the pre-election quarters, roughly corresponding to the second and third quarters. These quarters typically coincide with the primary and general campaign seasons, when candidates make policy pledges and parties make campaign efforts. Prior research shows that political activities are particularly intense during these periods (Hirano & Snyder, 2019). From a practical perspective, this makes the pre-election quarters a politically active window in which electoral incentives are most salient, allowing us to better capture the motives behind municipal green bond issuance. We estimate the following baseline model:

$$Muni\ green_{i,t} = \beta_0 + \beta_1 Gub\ election_{i,y} + \beta_2 Pre\ election_t + \beta_3 Gub\ election_{i,y} \times Pre\ election_t + \phi Controls_{i,t-1} + \delta_i + \delta_y + e_{i,t} \quad (1)$$

where i indexes states, t indexes year-quarter, and y indexes years. Our set of control variables includes GDP growth rates, unemployment rates, the log-transformed size of financial sector, state credit ratings, manufacturing share of output, and long-term interest rates. These variables are lagged one quarter to mitigate potential endogeneity. State and year fixed effects are also included to account for unobserved variation across states and over time. Standard errors are clustered at the state level.

4.2. Voting differences and green issuance

To test whether electoral competition impacts the effect of elections on municipal green bond issuance, we introduce a measure of electoral competitiveness. Specifically, we define *Votediff* as the vote margin between the winner and the runner-up in gubernatorial elections, with larger values indicating less competitive races. Most prior research measures electoral competitiveness with an indicator variable, commonly classifying elections with the ex-post vote margin below 5% or the sample median as "close" and those above as "less competitive" (Gao et al., 2019; Hu & Yin, 2025; Jens,

2017). Our study differs in that we use the vote margin as a continuous measure of competitiveness. This avoids arbitrary cutoff choices, preserves the full cross-state variation, enabling us to capture the marginal effects of electoral competition on municipal green bond issuance. As vote margins are only observed in election years, the analysis is correspondingly restricted to those years, consistent with our baseline setup. Specifically, we estimate the following model:

$$Muni\ green_{i,t} = \beta_0 + \beta_1 Election_{i,t} + \beta_2 Votediff_{i,t} + \beta_3 Election_{i,t} \times Votediff_{i,t} + \phi Controls_{i,t-1} + \delta_i + \delta_y + e_{i,t} \quad (2)$$

where i, t and y have the same denotation as Equation (1). Here, *Election* is a dummy variable equal to one if the observation falls within the second and third quarters preceding a gubernatorial election. Our main variable of interest is the interaction term between *Election* and *Votediff*, which captures how electoral competitiveness shapes the pre-election dynamics of municipal green bond issuance. Consistent with the baseline specification, we retain the same set of control variables and include state and year fixed effects.

5. Results

5.1. Baseline results

Results from the baseline regression model are reported in column (1) of Table 3. The coefficient on the interaction between *Gub election* and *Pre-election* is 0.016, positive and significant at the 5% level, indicating that the share of total municipal bond issuance accounted for by green bonds increases during the second and third quarters preceding gubernatorial elections. Given the sample mean of 0.018, this effect represents an 88.9% rise in the green share of total municipal issuance. This relatively large percentage change reflects the fact that green bonds account for only a small fraction of overall issuance, thereby making the observed rise economically meaningful. The result indicates that gubernatorial elections encourage state governments to place greater emphasis on green issuance, representing incremental progress in integrating environmental considerations into public finance.

Among control variables, GDP growth and unemployment are both significantly and negatively associated with the green share. Moreover, states with a higher

manufacturing share exhibit a significantly larger proportion of green issuance., contrary to expectations from prior studies. This may reflect strong environmental pressures and infrastructure needs in more industrialized states, which could encourage greater use of green bonds to support environmental projects.

In columns (2) and (3), we split the sample by party affiliations of the incumbent governors. In states with Democratic incumbents, the interaction term remains positive (0.018) and significant at the 10% level, whereas in states with Republican incumbents, the coefficient is statistically insignificant. In other words, the pre-electoral effect on green issuance is more pronounced under Democratic leadership, which is in line with Hypothesis 1. In states with Democratic incumbents, gubernatorial election years are associated with a lower overall share of green issuance. However, the positive and significant interaction term shows that this negative baseline is more than offset in Q2 and Q3, indicating a relative increase during the pre-election period. Taken together, this pattern reveals that the effect is concentrated in the pre-election quarters, rather than being significant across the entire election year.

For both groups, credit ratings have a positive effect on the green share, but the effect is only significant in Democratic samples. This may reflect a greater tendency of Democratic administrations to direct fiscal resources toward green projects when borrowing conditions are favourable. Overall, the baseline results indicate that electoral cycles, particularly under Democratic governorship, are associated with strategic increases in green issuance during the periods leading up to elections, while macroeconomic and structural factors also play a role in this process.

5.2. Robustness tests

Our estimation can be confounded by spurious election timing effects. Specifically, municipal bond issuance may follow fiscal or seasonal cycles, such as patterns tied to the fiscal year-end or to macroeconomic conditions that coincide with election years. To rule out this possibility, we conduct a placebo test by artificially shifting gubernatorial elections backward by one year to generate a placebo variable (*Placebo_Gub election*). If the baseline results are indeed driven by true elections, then replacing actual election years with artificially displaced ones should yield no

significant effect. As shown in panel A of Table 4, the interaction term between *Placebo_Gub election* and *Pre election* is statistically insignificant across all specifications, reinforcing the validity of the main findings. The placebo effect is also insignificant for both Democratic and Republican subsamples. Notably, when election timing is artificially displaced, party affiliation remains unchanged but the pre-electoral effect in the baseline specification disappears. This demonstrates that the baseline effects are largely driven by the actual occurrence of elections rather than to partisan characteristics.

Furthermore, gubernatorial elections may coincide with presidential elections, which raises another potential confounding concern (Hu & Yin, 2025). To account for this, we introduce an indicator variable, *Presidential election*, which equals one in years when presidential elections take place, and interact it with *Pre election*. This specification allows us to isolate the effect of gubernatorial elections from nationwide political dynamics associated with presidential contests. As reported in Panel B of Table 4, the coefficients on *Presidential election* × *Pre election* are statistically insignificant across all specifications, while the interaction terms for *Gub election* × *Pre election* remain significantly positive and economically comparable across the full sample and Democratic states. Our results indicate that the observed pre-electoral rise in green issuance is attributable to state-level gubernatorial dynamics rather than national electoral factors.

Finally, we address a methodological concern related to the nature of the dependent variable. Since our outcome is a proportion bounded between zero and one, linear models may generate fitted values outside the feasible range and suffer from heteroskedasticity. Additionally, the relationships between covariates and bounded outcomes may be nonlinear, with diminishing marginal effects near the boundaries. To account for these issues, we re-estimate the baseline specification using the fractional logit model of Papke and Wooldridge (1996), which is specifically designed for bounded dependent variables. We re-estimate the baseline model using fractional logit models and the results are reported in Panel C of Table 4. Consistent with OLS estimates, the interaction term between *Gub election* and *Pre election* remains

significantly positive in full sample and Democratic subsamples, while it is statistically insignificant in Republican subsamples. To provide a more intuitive interpretation, Appendix Table B.2 reports the corresponding average marginal effects (AMEs). Consistent with the baseline results, the share of green municipal bonds to total issuance increases by approximately 1.7 percentage points overall, and 2.1 percentage points in Democratic states in quarters preceding gubernatorial elections.

5.3. Identifying the effects of voting difference

We next examine how green issuance varies with electoral competitiveness. We estimate Equation (2) and provide the results in Table 5. For the full sample, the coefficient is positive but insignificant. When splitting samples by the party affiliation of winning governors, the interaction term is both positive and significant at the 5% level in states governed by Democrats. Specifically, a one-standard-deviation increase in voting difference (0.12) is associated with an approximate 2.23% rise in green issuance ratio during the pre-election period, nearly doubling the sample's average green ratio (2.32%). This finding indicates that Democratic leaders tend to boost green issuance when they anticipate a comfortable lead. By contrast, no significant effect is found in states governed by Republicans.

The negative coefficients on *Votediff* show that more competitive races are generally associated with higher levels of green issuance, which is consistent with the view that politicians have stronger incentives to signal commitment under intensified election pressure. However, our focus is the pre-electoral dynamics captured by the interaction term.

6. Additional Tests and Further Discussion

6.1. Political security and green issuance

As stated in Hypothesis 3, a plausible channel is that political security grants policymaker greater autonomy to pursue policies they regard as conducive to long-term benefits (Jacobs, 2016; Jacques, 2022). Increasing the share of government spending on green initiatives is also consistent with the policy priority of the Democratic Party (Chang et al., 2024). Consequently, electorally secure Democratic administrations

should be more inclined to support green policy frameworks and regulations, as they face fewer constraints from short-term political backlash or risks of policy reversal.

To test this hypothesis, we examine the number of green bills enacted, as environmental legislation is regarded as credible evidence of long-term green commitment (Hussain et al., 2023). Prior research shows that the stock and flow of climate laws worldwide serve as a core indicator of governments' long-term policy commitment and the institutionalization of climate action (Eskander et al., 2021; Fankhauser et al., 2015). At the U.S. state level, Marshall and Burgess (2022) demonstrate that the volume of enacted decarbonization bills provides a measure of legislative engagement and sustained political investment in climate mitigation. Moreover, Bromley-Trujillo and Holman (2020) find that Democratic-controlled states introduced mor climate bills significantly after 2016, indicating that bill counts reflect both policy commitment and the Democratic Party's long-term green stance. We then estimate the following model:

$$Ln(Bills)_{i,t} = \beta_0 + \beta_1 Election_{i,t} + \beta_2 Vote\ dem_{i,t} + \beta_3 Election_{i,t} \times Vote\ dem_{i,t} + \phi Controls_{i,t-1} + \delta_i + \delta_y + e_{i,t} \quad (3)$$

The dependent variable of the model is the log-transformed volume of environmental bills enacted at the state–quarter level[3]. The records are drawn from the Environment and Natural Resources State Bill Tracking Database maintained by the National Conference of State Legislatures (NCSL). *Vote dem* is a dummy equal to one when the Democratic Party wins the primary election and zero for Republican wins. The interaction term *Election* × *Vote dem* captures whether the impact of pre-election periods varies systematically across Democratic- and Republican-controlled states. We further classify states into high- and low-*votediff* groups according to whether the vote margin lies above or below the median. Because the volume of environmental bills, like the proportion of green issuance, reflects states' efforts in environmental governance,

[3] The database includes legislation on a wide range of environmental topics, including air quality, disaster preparedness, site remediation, land conservation, waste recycling, water management, and wildlife protection. It records detailed information on enactment dates and the states involved. Beyond enacted legislation, it also tracks bills at other stages, including pending, failed, or vetoed. Available at https://www.ncsl.org/environment-and-natural-resources/environment-and-natural-resources-state-bill-tracking-database-archive.

we use the same set of state-level controls as in the baseline model. In addition, we include per capita income is to account for income-driven demand for environmental quality (Grossman & Krueger, 1995).

Column (1) in Table 6 Panel A reports the estimateion for the high voting difference group. The interaction term is positive and significant at the 5% level, indicating that in states where Democrats enjoy a secure electoral advantage, the pre-election period is associated with a high level of green lawmaking activities. Column (2) reports the results for the low voting difference group, where the interaction term is not statistically significant. So compared to Republican states, Democratic counterparts do not exhibit a pre-election increase in environmental legislation under close electoral races. Overall, our results provide support for the long-term environmental governance channel.

6.2. Green public awareness and green issuance

The extant research highlights the impact of public beliefs on environmental policymaking. Huber et al. (2020) show that people are more likely to support environmental measures when they perceive them as fair and effective, implying that higher environmental awareness reduces political resistance. Consistent with this view, Bromley-Trujillo and Poe (2020) find that states with greater salience of climate issues are more active in adopting relevant policies, while the lack of public support can impede or reverse climate policy (Stokes, 2016). These studies highlight that high public environmental awareness lowers the political costs of green initiatives, thereby encouraging leaders to engage in environmental commitments. Therefore, we test whether the pre-election effect is amplified in states with higher environmental awareness, providing further evidence for the long-term governance channel proposed in Hypothesis 3.

The data on environmental awareness are drawn from the Yale Climate Opinion Map (YCOM), developed by the Yale Program on Climate Change Communication (Howe et al., 2015; Marlon et al., 2022). The dataset reports, for each state and year, the share of adults responding affirmatively or negatively to various climate-related questions. Following Afzali et al. (2025), we proxy state-level environmental

awareness by the average share of affirmative responses across the fifteen climate-related questions with complete coverage during the sample period included in the dataset (see Appendix Table B.2 for the full list)[4]. Higher levels of percentage of people who give affirmative answers then correspond with higher level of environmental awareness. Within a given year, the same values are assigned to all quarters. To mitigate potential endogeneity concerns, the raw data are first lagged by one quarter. The lagged annual values of awareness are then assigned to all quarters within a year. Based on these adjusted values, we construct a binary variable, *High aware*, which equals one for state–quarter observations above the median and zero otherwise. Building on the baseline specification in Equation (1), we augment the model by adding a triple interaction term of *Gub election* × *Pre election* × *High aware*, which serves as the key variable of interest:

$$Muni\ green_{i,t} = \beta_0 + \beta_1 Gub\ election_{i,y} \times Pre\ election_t \times High\ aware_{i,t-1} + \phi Controls_{i,t-1} + \delta_i + \delta_y + e_{i,t} \quad (4)$$

The results are reported in Table 7 that includes the single terms, two-way interactions, and the triple interaction term in Equation (4). Column (1) presents estimation for full samples, where the triple interaction term is significantly positive at the 10% level. Therefore, states with high environmental awareness experience a larger increase in the share of green bond issuance during pre-election periods, consistent with the hypothesis that public support reduces the perceived risks of adopting green initiatives. Column (2) restricts to states with Democratic incumbents, where the effect remains positive. This pattern aligns with the notion that Democratic leaders in environmentally concerned states are particularly inclined to expand green financing ahead of elections. Column (3) reports the results for states with Republican incumbents, where the interaction term is insignificant. The estimates indicate that higher climate awareness does not translate into a stronger pre-election effect under Republican

[4] The survey items include questions such as the estimated percentage who think Congress should do more to address global warming, who believe that most scientists agree global warming is occurring, and who report discussing global warming with friends or family. We incorporate as many such items as possible to provide a more accurate and comprehensive measure of state-level climate perceptions. Available upon request at https://climatecommunication.yale.edu/visualizations-data/ycom-us/ .

leadership. Overall, our results provide further support for Hypothesis 3 by showing that public concerns regarding environmental issues creates greater autonomy for Democratic leaders to pursue long-term environmental governance.

6.3. Electoral predictability and cost of capital

As discussed in Hypothesis 4, another potential channel for our findings is that large voting difference indicates weaker political uncertainty, which in turn reduces financing costs and makes bond issuance more attractive (Gao et al., 2019). To test this channel, we first examine regression results in Table 5. The coefficient of the long-term interest rates is negative and significant at the 10% level in Democratic-winning states (Column 2). This finding indicates that, larger proportions of green bond issuance in Democratic states are associated with lower borrowing costs at the national level, lending preliminary support to this financing-cost mechanism.

To further validate this channel, we replace the national long-term interest rate with state-level municipal bond yields as an alternative proxy for financing costs. National-level rates may not fully capture cross-state variation in borrowing conditions, so we use the offering yields of municipal bonds as a more direct proxy[5]. The data are drawn from Bloomberg, excluding observations with missing values. We then construct the proxy by computing state–quarter average offering yields (*Offering yields*), and the corresponding results are reported in Table 8. In column (2), the coefficient of *Offering yields* is significantly negative at the 10% level, while our main interaction term between *Election* and *Votediff* remains statistically positive. This provides further evidence that lower financing costs are at least partly responsible for the observed pre-electoral increase in green bond issuance in states with Democratic gubernatorial victories.

Overall, the aforementioned evidence indicates that the pre-election increase in green issuance is not driven by a single factor. Specifically, electorally secure Democratic states tend to expand green issuance, reflecting both greater policy flexibility associated with political stability and the effect of lower financing costs.

[5] Ideally, the offering yields of municipal green bond yields provide the most direct proxy for green issuance. Because some states did not issue green bonds during the sample period, we instead use the offering yields of the overall municipal bond market as a practical alternative.

7. Conclusions

Our study investigates the dynamics of green municipal bond issuance in periods preceding gubernatorial elections in the United States. It provides novel empirical evidence of an overall upward trend in green issuance in pre-election periods, after controlling for economic variables at both state and county levels[6]. The effect is particularly pronounced in states with Democratic incumbents. The findings remain robust to placebo tests with modified election timing, the inclusion of presidential elections, and alternative specifications. Moreover, we show that less competitive races are associated with a higher green share in states won by Democratic candidates. We also examine two possible mechanisms: one related to green agenda commitment and the other to financing costs. Our evidence supports both, indicating that in politically secure contexts, Democratic leaders are more likely to boost green issuance, motivated by long-term environmental objectives as well as the advantage of lower financing costs under reduced political risk. In contrast, green issuance is not a part of Republican electoral strategies.

These findings add new evidence to the study of electoral cycles and green finance. Beyond the traditional focus on partisan differences (Chang et al., 2024; Di Giuli & Kostovetsky, 2014), our research shows that the intensity of political competition shapes the adoption of innovative financial instruments. Consistent with prior research showing that electoral uncertainty raises borrowing costs (Gao et al., 2019), we find that a high level of electoral competition imposes an additional cost by suppressing green issuance. This finding reinforces prior research emphasizing political stability as a favourable setting for long-term green governance, bringing new support from the municipal green bond market. More broadly, our results underscore the importance of political turnover, highlighting that effective green finance initiatives cannot be understood in isolation from democratic processes.

[6] One potential concern is that the effect may depend on whether governors are eligible for re-election. Appendix Table B.2 shows that controlling for gubernatorial re-eligibility does not alter the main results. Furthermore, when issuance volume is used as the dependent variable (Appendix Table B.3), the coefficients remain insignificant across specifications, indicating that the documented effect reflects a compositional shift toward green issuance rather than a mere change in overall issuance volume.

Despite these insights, our study has several limitations. Municipal green bonds are still relatively new financial instruments, and our results are based on limited number of observations. In addition, the analysis focuses on gubernatorial elections, although many issuers operate at the county level. As the market matures and more data become available, future research could exploit mayoral elections to provide more granular evidence. Further work could also draw on project-level disclosures of municipal green bonds, including how funds are allocated across sectors, the magnitude of investments, and the subsequent environmental and economic outcomes, to provide more direct evidence for the mechanisms identified in this study.

Table 1: U.S. Gubernatorial Election Cycles between 2014 and 2023. The first column lists the election cycle category, and the second column lists the states including Washington, D.C. that fall into each category.

Election Cycle Category	States
Even-numbered years not divisible by 4 (midterm years)	AL, AK, AZ, AR, CA, CO, CT, DC, FL, GA, HI, ID, IL, IA, KS, ME, MD, MA, MI, MN, NE, NV, NM, NY, OH, OK, PA, RI, SC, SD, TN, TX, WI, WY
Year before presidential elections (year before a multiple of 4)	KY, LA, MS
Years divisible by 4 (concurrent with presidential elections)	DE, IN, MO, MT, NC, ND, UT, WA, WV
Year after presidential elections (year after a multiple of 4)	NJ, VA
Biennial elections (every even-numbered year)	NH, VT
*Oregon held gubernatorial elections in years 2014, 2016, 2018, and 2022.	

Table 2: Summary Statistics. The sample consists of election, municipal bond, economic variables from 2014 to 2023, with a whole sample of 2,019 and election-year sample of 581 observations. All state and country level control variables, including GDP growth rates, unemployment rates, the size of financial industry, credit ratings, manufacturing share and long-term interest rates. See Appendix Table A for variable definitions.

Variable	N	Mean	Std Dev	Min	Median	Max
Muni green	2,019	0.018	0.066	0	0	1
Gub election	2,019	0.288	0.453	0	0	1
Presidential election	2,019	0.200	0.400	0	0	1
GDP	2,019	0.005	0.021	-0.150	0.006	1.131
Unemployment	2,019	0.047	0.020	0.017	0.042	0.247
Financial industry (Ln)	2,019	9.644	1.214	6.709	9.745	12.970
Credit rating	2,019	8.433	1.595	1	9	10
Manufacturing industry	2,019	0.128	0.057	0	0.122	0.299
Long interest rate	2,019	0.023	0.008	0.007	0.022	0.042
Election observations only (gubernatorial election = 1)						
Muni green	581	0.016	0.073	0	0	1
Votediff	581	0.160	0.136	0.002	0.133	0.671
Vote Dem	581	0.442	0.497	0	0	1
GDP	581	0.005	0.018	-0.109	0.006	0.109
Unemployment	581	0.046	0.018	0.019	0.042	0.139
Financial industry (Ln)	581	9.588	1.232	6.709	9.583	12.970
Credit rating	581	8.394	1.562	1	9	10
Manufacturing industry	581	0.130	0.058	0	0.124	0.299
Long interest rate	581	0.024	0.006	0.007	0.026	0.042

Table 3: This table reports the effect of gubernatorial elections on green municipal bond issuance. The dependent variable is *Muni green*, the ratio of green bond issuance to the total issuance of municipal bonds. The variable of interest is the interaction term between *Gub election* and *Pre election*. Column (1) presents results for whole samples, while columns (2) and (3) present results for states with Democratic and Republican incumbents, respectively. Standard errors are clustered at the state level. T-statistics are reported in brackets. ***, **, * indicate that the parameter estimate is significantly different from zero at the 1%, 5%, or 10% level, respectively.

	(1) Whole	(2) Dem	(3) Rep
Gub election	-0.006	-0.011**	-0.002
	(-1.32)	(-2.13)	(-0.22)
Pre election	-0.004	-0.005	-0.003
	(-1.02)	(-1.37)	(-0.51)
Gub election × Pre election	0.016**	0.018*	0.014
	(2.24)	(1.94)	(1.33)
GDP	-0.196***	-0.171**	-0.226***
	(-4.18)	(-2.53)	(-3.30)
Unemployment	-0.286***	-0.322**	-0.216
	(-2.71)	(-2.24)	(-1.12)
Financial industry	0.178	0.026	0.021
	(0.92)	(1.14)	(0.69)
Credit rating	0.003	0.006**	0.001
	(1.15)	(2.21)	(0.26)
Manufacturing industry	0.118*	0.140	0.114
	(1.80)	(0.93)	(1.07)
Long interest rate	0.063	-0.602	0.632
	(0.14)	(-0.78)	(1.17)
Constant	-0.176	-0.263	-0.211
	(-0.93)	(-1.14)	(-0.77)
State/Year FE	yes	yes	yes
Observations	2,019	899	1,120
R Square	0.108	0.115	0.146

Table 4: This table shows several robustness tests. In Panel A, we conduct a placebo test by artificially shifting the actual election year backward by one year. The variable of interest is the interaction term between *Placebo_Gub election* and *Pre election*. Throughout this table, column (1) presents results for whole samples, while columns (2) and (3) present results for states with Democratic and Republican incumbents, respectively. Panel B presents regression results controlling for presidential election years. Panel C reports the results from fractional logit regressions, where the key independent variable is the interaction between *Gub election* and *Pre election*. The coefficients are presented in log-odds form; marginal effects for interpretation are reported in Appendix Table B.1. All regressions include the same control variables, and the same year and state fixed effects as in Table 3. Standard errors are clustered at the state level. T-statistics (z-statistics in Panel C) are reported in brackets. ***, **, * indicate that the parameter estimate is significantly different from zero at the 1%, 5%, or 10% level, respectively.

Panel A: Placebo test			
	(1)	(2)	(3)
	Whole	Dem	Rep
Placebo_Gub election	0.007	0.006	0.009
	(1.65)	(1.21)	(1.25)
Pre election	0.003	0.002	0.002
	(0.60)	(0.30)	(0.38)
Placebo_Gub election × Pre election	-0.005	-0.007	-0.002
	(-0.73)	(-0.68)	(-0.24)
Constant	-0.208	-0.397	-0.214
	(-0.85)	(-1.54)	(-0.60)
Controls	yes	yes	yes
State/Year FE	yes	yes	yes
Observations	1,801	808	993
R-squared	0.106	0.117	0.146
Panel B: Consider presidential elections			
	(1)	(2)	(3)
	Whole	Dem	Rep
Gub election × Pre election	0.015**	0.018*	0.013
	(2.17)	(1.93)	(1.22)
Presidential election × Pre election	-0.007	-0.006	-0.009
	(-0.80)	(-0.43)	(-0.78)
Constant	-0.165	-0.253	-0.189
	(-0.87)	(0.273)	(-0.69)
Controls	yes	yes	yes
State/Year FE	yes	yes	yes
Observations	2,019	899	1,120

R-squared	0.108	0.115	0.147
Panel C: Fractional logit model			
	(1)	(2)	(3)
	Whole	Dem	Rep
Gub election	-0.466	-0.637	-0.322
	(-1.20)	(-1.46)	(-0.49)
Pre election	-0.187	-0.227	-0.168
	(-1.01)	(-1.31)	(-0.51)
Gub election × Pre election	1.019**	1.087**	1.014
	(2.43)	(2.40)	(1.39)
Constant	-16.920	-27.70*	-21.14
	(-1.24)	(-1.94)	(-1.26)
Controls	yes	yes	yes
State/Year FE	yes	yes	yes
Observations	2,019	899	1,120
Pseudo R2	0.144	0.122	0.207

Table 5: This table presents regression estimates of the green municipal bond share on the interaction terms *Election* × *Votediff* and additional controls. Column (1) reports the findings for the full sample, while columns (2) and (3) show the results separately for states won by Democratic and Republican candidates, respectively. All regressions include the same control variables and the same year and state fixed effects as in Table 3. Standard errors are clustered at the state level. T-statistics are reported in brackets. ***, **, * indicate that the parameter estimate is significantly different from zero at the 1%, 5%, or 10% level, respectively.

	(1)	(2)	(3)
	Whole	Dem_vote	Rep_vote
Election	0.008	4.53E−4	0.011*
	(0.93)	(0.03)	(1.77)
Votediff	-0.089***	-0.187***	-0.060*
	(-2.96)	(-3.82)	(-1.70)
Election × Votediff	0.033	0.186**	-0.026
	(0.55)	(2.34)	(-0.61)
GDP	-0.123	-0.109	-0.132
	(-0.84)	(-0.29)	(-1.23)
Unemployment	-0.378	-0.483	0.229
	(-0.92)	(-0.59)	(0.76)
Financial industry	-0.007	0.081	0.005
	(-0.23)	(1.01)	(0.09)
Credit rating	3.74E-4	0.012***	-0.023
	(0.07)	(3.73)	(-1.03)
Manufacturing industry	0.553	0.587	1.218
	(1.22)	(1.00)	(1.36)
Long interest rate	-0.471	-1.926*	0.971
	(-0.83)	(-1.79)	(1.21)
Constant	0.047	-0.849	-0.024
	(0.14)	(-1.01)	(-0.05)
Controls	yes	yes	yes
State/Year FE	yes	yes	yes
Observations	581	257	324
R-squared	0.151	0.246	0.211

Table 6: This table reports regressions where the dependent variable is the log of enacted environmental bills at the state–quarter level. Key variables are *Election*, *Vote dem*, and their interaction. Controls include GDP growth, unemployment rate, per capita income, and manufacturing output share. The results for the high- and low-*votediff* subgroups are reported separately in Columns (1) and (2). Standard errors are clustered at the state level. T-statistics are reported in brackets. ***, **, * indicate that the parameter estimate is significantly different from zero at the 1%, 5%, or 10% level, respectively.

	Bills (Ln)	
	(1)	(2)
	High Votediff	Low Votediff
Election	0.039	0.427***
	(0.31)	(3.68)
Vote dem	-0.469**	-0.043
	(-2.09)	(-0.31)
Election × Vote dem	0.772**	-0.139
	(2.33)	(-0.94)
GDP	-1.585	4.434
	(-1.15)	(1.27)
Unemployment	-0.300	16.150***
	(-0.07)	(3.59)
Income	-4.490***	-6.128***
	(-3.61)	(-3.01)
Manufacturing industry	5.865**	5.823*
	(2.41)	(1.90)
Constant	48.650***	65.15***
	(3.60)	(2.90)
State/Year FE	yes	yes
Observations	291	290
R-squared	0.335	0.284

Table 7: This table reports estimation on the pre-election effect of state-level environmental awareness on pre-election green bond issuance. The key variable is the triple interaction of *Gubernatorial election*, *Pre-election*, and *High aware*. *High climate* equals one if a state's awareness measure is above the median. All models use the same controls as in Equation (1), with state and year fixed effects. Columns (1) to (3) show results for the full sample, states with Democratic and Republican incumbents, respectively. Standard errors are clustered at the state level. T-statistics are reported in brackets. ***, **, * indicate that the parameter estimate is significantly different from zero at the 1%, 5%, or 10% level, respectively.

	(1)	(2)	(3)
	Whole	Dem	Rep
Gub election	-0.002	-0.008	0.001
	(-0.26)	(-1.22)	(0.10)
Pre election	-0.002	0.001	-0.003
	(-0.32)	(0.14)	(-0.38)
High aware	-0.002	0.002	-0.003
	(-0.42)	(0.23)	(-0.38)
Gub election × High aware	-0.008	-0.004	-0.006
	(-1.14)	(-0.65)	(-0.61)
Pre election × High aware	-0.003	-0.007	4.00E-04
	(-0.50)	(-1.05)	(0.05)
Gub election × Pre election	0.002	-1.81E-04	0.004
	(0.25)	(-0.03)	(0.32)
Gub election × Pre election × High aware	0.026*	0.027*	0.025
	(1.99)	(1.94)	(1.23)
Constant	-0.178	-0.254	-0.230
	(-0.95)	(-0.79)	(-0.83)
Controls	yes	yes	yes
State/year FE	yes	yes	yes
Observations	2,019	899	1,120
R-squared	0.111	0.117	0.149

Table 8: This table reports the results of the test on the financing-cost mechanism, where offering yields at the state–quarter level are used as the proxy for state governments' borrowing costs. The dependent variable and key explanatory variables are the same as in Table 5, and all control variables are lagged by one quarter. Columns (1) – (3) report the estimates for the full sample, states won by Democratic and Republican candidates, respectively. T-statistics are reported in brackets. ***, **, * indicate that the parameter estimate is significantly different from zero at the 1%, 5%, or 10% level, respectively.

	(1)	(2)	(3)
	Whole	Dem_vote	Rep_vote
Election	0.009	-3.90E-4	0.013*
	(0.98)	(-0.03)	(2.01)
Votediff	-0.112***	-0.297***	-0.050
	(-2.82)	(-4.94)	(-1.43)
Election × Votediff	0.032	0.196**	-0.035
	(0.50)	(2.73)	(-0.79)
GDP	-0.120	-0.143	-0.172
	(-0.72)	(-0.37)	(-1.23)
Unemployment	-0.347	-0.452	0.192
	(-0.81)	(-0.57)	(0.63)
Financial industry	-0.019	0.052	-0.038
	(-0.59)	(0.57)	(-0.08)
Credit rating	-0.002	0.007**	-0.017
	(-0.33)	(2.24)	(-0.86)
Manufacturing industry	0.611	0.248	1.566
	(1.19)	(0.54)	(1.45)
Offering yields	-0.271	-1.818*	0.546
	(-0.78)	(-1.86)	(1.25)
Constant	0.165	-0.486	-0.038
	(0.47)	(-0.53)	(-0.08)
Controls	yes	yes	yes
State/Year FE	yes	yes	yes
Observations	571	252	319
R-squared	0.154	0.256	0.220

Appendix

Table A Variable Definitions: This table reports variable definitions and corresponding data sources. CQ refers to Congressional Quarterly (CQ) Electronic Library. BEA refers to the Bureau of Economic Analysis (bea.gov). BLS refers to the Bureau of Labor Statistics (bls.gov), S&P refers to S&P Global database. FRED refers to the Federal Reserve Bank of St. Louis and NCSL refers to the National Conference of State Legislatures. YCOM refers to the Yale Climate Opinion Maps survey.

Variable	Definition	Source
Political variables		
Gub election	Binary variable equal to one if a gubernatorial election took place in a given state and year.	CQ
Pre election	Binary variable equal to one if observations fall within the second and third quarters.	Authors' definition
Election	Binary variable equal to one if observations fall within the second and third quarters in election years.	Authors' definition
Presidential election	Binary variable equal to one if a presidential election occurred in a given year.	CQ
Votediff	Difference in vote shares between the first- and second-place candidates in a gubernatorial election.	CQ
Vote dem	Binary variable equal to one for Democratic wins and zero for Republican wins in gubernatorial elections.	CQ
Bond variables		
Muni green	Proportion of green municipal bonds in total municipal issuance for a given state and quarter.	Bloomberg
Offering yields	Mean offering yield of green municipal bonds within each state and quarter.	Bloomberg
Social and economic variables		
GDP	Quarterly GDP growth rate at the state level in decimals.	BEA
Unemployment	Quarterly state unemployment rates.	BLS
Financial industry	Natural logarithm of state–quarter financial sector output (in millions of dollars).	BEA

Credit rating	State government's annual credit rating, recoded on a scale from 1 to 10, where 10 corresponds to AAA and 1 corresponds to BBB+.	S&P
Manufacturing industry	Proportion of state output generated by mining, quarrying, oil and gas extraction, and manufacturing.	BEA
Long interest rate	Average 10-year U.S. Treasury yield at the state–quarter level	FRED
Income	Natural logarithm of per capita personal income at the state-quarter level.	BEA
Bills	Total number of environmental bills enacted at the state–quarter level.	NCSL
High aware	Binary variable equal to one for state–quarter observations where the awareness measure is above the median, and zero otherwise.	YCOM

Table B.1: This table reports the average marginal effects (AMEs) associated with the fractional logit regressions presented in Panel C of Table 4. These results provide a more intuitive interpretation of the coefficients by expressing them in percentage point changes in the dependent variable—the share of green municipal bonds. The estimates indicate that in quarters preceding gubernatorial elections, the green bond share increases by approximately 1.7 percentage points in the overall sample and by about 2.1 percentage points in Democratic states, while the effect is statistically insignificant in Republican states. These magnitudes are consistent with the baseline OLS estimates, reinforcing the robustness of the main findings. Z-statistics are shown in parentheses. ***, **, * indicate that the parameter estimate is significantly different from zero at the 1%, 5%, or 10% level, respectively.

	(1)	(2)	(3)
	whole	Dem	Rep
Gub election	-0.008	-0.012	-0.005
	(-1.20)	(-1.46)	(-0.49)
Pre election	-0.003	-0.04	-0.003
	(-1.01)	(-1.31)	(-0.51)
Gub election × Pre election	0.017**	0.021**	0.015
	(2.43)	(2.40)	(1.39)

Table B.2: This table lists the Yale Climate Opinion Maps (YCOM) survey items used to construct environmental awareness.

No.	Survey Item (verbatim from YCOM)
1	Estimated percentage who think Congress should be doing more/much more to address global warming.
2	Estimated percentage who believe that most scientists think global warming is happening.
3	Estimated percentage who discuss global warming occasionally or often with friends and family.
4	Estimated percentage who somewhat/strongly agree that they have personally experienced the effects of global warming.
5	Estimated percentage who somewhat/strongly support funding research into renewable energy sources.
6	Estimated percentage who think global warming will harm future generations a moderate amount/a great deal.
7	Estimated percentage who think their governor should be doing more/much more to address global warming.
8	Estimated percentage who think that global warming is happening.
9	Estimated percentage who think global warming will harm people in the US a moderate amount/a great deal.
10	Estimated percentage who think that global warming is caused mostly by human activities.
11	Estimated percentage who think their local officials should be doing more/much more to address global warming.
12	Estimated percentage who think global warming will harm them personally a moderate amount/a great deal.
13	Estimated percentage who somewhat/strongly support regulating CO2 as a pollutant.
14	Estimated percentage who think global warming will start to harm people in the United now/within 10 years.
15	Estimated percentage who are somewhat/very worried about global warming.

Table B.3: This table presents regression estimates of the green municipal bond share on the interaction terms *Election* × *Votediff* and additional controls. In particular, we include a dummy variable, *Incumbent*, which equals one if the incumbent governors are running for re-election in the next term and zero otherwise. Column (1) reports the findings for the full sample, while columns (2) and (3) show the results separately for states won by Democrats and Republicans, respectively. The main effect remains robust, while *Incumbent* is neither statistically nor economically meaningful, indicating that gubernatorial re-eligibility does not materially affect the results. Standard errors are clustered at the state level. T-statistics are reported in brackets. ***, **, * indicate that the parameter estimate is significantly different from zero at the 1%, 5%, or 10% level, respectively.

	(1)	(2)	(3)
	Whole	Dem_vote	Rep_vote
Election	0.008	4.37E-4	0.011*
	(0.93)	(0.03)	(1.79)
Votediff	-0.072**	-0.192***	-0.044
	(-2.59)	(-2.90)	(-1.00)
Election × Votediff	0.032	0.186**	-0.026
	(0.54)	(2.35)	(-0.65)
Incumbent	-0.010	0.002	-0.008
	(-1.54)	(0.10)	(-0.72)
Constant	0.022	-0.840	-0.025
	(0.07)	(-0.94)	(-0.06)
Controls	yes	yes	yes
State/Year FE	yes	yes	yes
Observations	581	257	324
R-squared	0.154	0.246	0.213

Table B.4: This table reports the effects of gubernatorial elections on total and green municipal bond issuance, both expressed in logarithmic form. The key variable is the interaction between *Gub election* and *Pre election*. Columns (1) and (4) present results for the full sample, while Columns (2) and (5) and Columns (3) and (6) report results for Democratic and Republican states, respectively. The set of control variables is the same as in Table 3. main effects are insignificant across all specifications, indicating that using issuance volume as the dependent variable does not yield comparable results. This indicates that the main effect documented in the paper is not simply driven by changes in issuance scale, but rather by structural shifts toward greener financing. Standard errors are clustered at the state level. T-statistics are reported in brackets. ***, **, * indicate that the parameter estimate is significantly different from zero at the 1%, 5%, or 10% level, respectively.

	Ln (issuance of municipal bonds)			Ln (issuance of green bonds)		
	(1)	(2)	(3)	(4)	(5)	(6)
	Whole	Dem	Rep	Whole	Dem	Rep
Gub election × Pre election	-0.025	-0.107	0.056	0.175	0.056	0.294
	(-0.47)	(-1.26)	(0.82)	(1.07)	(0.24)	(1.40)
Controls	yes	yes	yes	yes	yes	yes
State/Year FE	yes	yes	yes	yes	yes	yes
Observations	2,019	899	1,120	2,019	899	1,120
R-squared	0.806	0.827	0.795	0.394	0.472	0.302

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