Corporate Political Spending and State Tax Policy:

Evidence from *Citizens United*[*]

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Abstract

To what extent is U.S. state tax policy affected by corporate political contributions? The 2010 Supreme Court *Citizens United v. Federal Election Commission* ruling provides an exogenous shock to corporate campaign spending, allowing corporations to spend on elections in 23 states which previously had spending bans. Ten years after the ruling and for a wide range of outcomes, we are not able to identify statistically significant effects of corporate independent expenditures on state tax policy, including tax rates, discretionary tax breaks, and tax revenues. Our results allow for a moderate economic effect on corporate tax rates and revenues, but suggest economically insignificant effects for other tax outcomes of interest to firms and their owners. A complementary analysis of the original introduction of the spending bans supports our finding that corporate spending has modest, if any, effects on tax policy.

JEL Classification: D72, H20, H71
Keywords: campaign finance, political contributions, Citizens United, independent spending, state taxes, state revenues, state expenditures

Political contributions are often highly regulated, due to concerns about the influence of donations on election outcomes and, consequently, public policies. In particular, contributions from *organizations*, such as corporations and labor unions, are often more restricted than those made by individuals. As of 2022, 23 U.S. states prohibited corporations from directly contributing to state elections, and four more have stricter limits for corporations than for individuals (NCSL, 2022). The concern over the potential influence of organizations is particularly acute in the setting of tax policy: while corporations may have neutral or offsetting preferences over social issues, tax rules (especially the corporate tax rules) have direct effects on their financial well-being. The question remains whether corporations are able to use political contributions to decrease their tax burden.

In this paper we study the effect of corporate political expenditures on U.S. state tax rates, rules, revenues, and discretionary tax breaks. We identify the causal effect of political contributions on tax policy by exploiting the exogenous variation in corporations' ability to spend on elections borne by *Citizens United v. Federal Election Commission*. In January 2010, the United States Supreme Court overturned a 20-year precedent and prohibited the government from restricting independent political expenditures by organizations. The ruling thus allowed corporations, unions, and other organizations to make unlimited independent contributions i.e., expenditures on activities aimed at supporting candidates that are not given directly to the election campaigns. At the time of the decision, 23 states had laws banning corporations from spending in state elections. These bans were now effectively cancelled, which meant that corporations were free to spend in elections where they had previously been constrained. This ruling facilitates our difference-in-differences strategy: we compare tax policy outcomes in states that were affected by the 2010 ruling to those that were not, before and after 2010.

We analyze a comprehensive set of business tax policy instruments, building on past work by Gilens et al. (2021) and contemporaneous work by Akey et al. (2022). Although we cannot rule out moderate effects on the corporate tax rate, also found by Gilens et al. (2021) and Akey et al. (2022), we find relatively precise and robust null effects on a broad set of other tax outcomes of interest to firms and their owners. We also analyze the enactments of the bans on corporate independent expenditures (later reversed by *Citizens United*), and again find no statistically significant effects on tax policies. This analysis reinforces the conclusion that corporate independent expenditures have a modest, if any, effect on tax policy.

The *Citizens United* decision was highly controversial, and its critics warned of devastating impacts from independent spending by corporations. At the time of the ruling, the editorial board of the *New York Times* wrote that it "paved the way for corporations to use their vast treasuries to overwhelm elections and intimidate elected officials into doing their bidding" (Editorial, 2010). President Barack Obama also criticized the ruling, declaring it "a major victory for big oil, Wall Street banks, health insurance companies and the other powerful interests that marshal their power every day in Washington to drown out the voices of everyday Americans" (Barnes and Eggen, 2010).

The *Citizens United* ruling was in fact followed by a substantial increase in independent spending. Spencer and Wood (2014) use the pre-existing variation in state bans described above and find the increase in independent expenditures was twice as large in treatment states. Similarly, Petrova et al. (2019) find that *Citizens United* led to significant increases in political advertising. Therefore, we take the increase in corporate political spending as established knowledge, and study the effect of the ruling on tax policy outcomes.

Taxes are important to corporations—they are in the top three issues companies spent money lobbying on in each year of the past decade (OpenSecrets, 2022).[1] Our main analysis considers multiple tax outcomes: tax rates and base rules, discretionary tax breaks, and tax revenues. We focus on three tax rates: the top corporate tax rate, the top personal income tax rate, and the sales tax rate. Intuitively, reductions in the top corporate and top personal tax rates would be most beneficial to corporations and their high-income owners. Lower sales tax rates are good for business through their effect on the demand for goods. Corporations may also support changes in less salient tax rules, which can be just as financially beneficial.[2] For this reason, we also study the effects on other corporate tax features: the investment tax credit, the number of years allowed for loss carryforward, and the sales apportionment weights.[3]

Beyond explicitly changing tax policy, firms may be able to use contributions to elect or support politicians who, in return, offer them firm-specific tax breaks. After all, lowering the corporate tax rate has immediate revenue consequences that are salient to voters. In contrast, firm-specific tax breaks are often viewed as a job creation policy and have revenue

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[1] "Federal budget and appropriations" and "health issues" are the other top issues.

[2] Suárez Serrato and Zidar (2018) find that tax base rules and tax credits explain more of the variation in state corporate tax revenues than the tax rates.

[3] We consider a number of additional outcomes in Appendix B.

consequences that are realized in the future, making such tax deals more popular with voters (Slattery, 2022). Anecdotal evidence of a relationship between corporate spending and tax breaks has been reported on across the United States. In 2017 the *Los Angeles Times* published a three-part series on the Walt Disney Company's local political involvement, providing evidence that Disney was heavily spending on city council elections to elect "friendly candidates"—council members who had voted for Disneyland tax breaks in the past. Disney has received an estimated $1 billion in tax breaks from the city of Anaheim in the last 20 years, and spent $1.2 million in the 2016 city council election alone (Miller, 2017). For this reason, in addition to tax policy outcomes, we study the effect of the *Citizens United* ruling on discretionary tax breaks from 2002-2017 from Slattery (2020). Finally, we also consider whether the *Citizens United* ruling led to changes in overall tax revenues, as small changes across many dimensions of tax policy could add up to substantial effects.

In our difference-in-differences (DiD) specification, the treatment group consists of 21 states that enacted contribution bans before 2000, and our control group consists of the 27 states that did not enact bans prior to 2010.[4,5] Across all outcomes, we find no statistically significant effects of *Citizens United* on tax policy. For corporate tax rates and revenues, the results suggest a small but economically significant effect in the medium run. Corporate tax rates in treated states are 2% lower from 2010-2015, but 9% lower post-2015 (5% lower on average). We find a similarly sized estimate for corporate tax revenue. However, we find neither statistically nor economically significant effects of the *Citizens United* ruling on income or sales tax rates and revenues, investment tax credits or other tax rules, or on the frequency or magnitude of firm-specific discretionary tax breaks.

We supplement our analysis of the cancellation of the independent expenditure bans due to *Citizens United* with an equivalent event-study analysis of the ban introductions. We do not find any effect of the ban enactments on tax policy outcomes. For both the

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[4]Two states, Colorado and South Dakota, enacted bans after 2000. We exclude these states in order to provide a balanced panel and out of concern that they may still be experiencing changes in 2010 that are due to the adoption of the bans (rather than their cancellation). We also show that our results are robust to a more stringent restriction of excluding states that enacted bans after 1990, which allows us to observe pre-trends for 20 years before the *Citizens United* ruling.

[5]In our main analysis we consider all states with bans as treated, irrespective of whether they enacted bans only on corporate expenditures or both on corporate and union expenditures. We show that our results are similar, and if anything more precisely estimated null effects, when we limit the treatment group to states that banned corporate independent contributions only.

introduction and the cancellation of the bans, our results are also robust to changes to the econometric specification, the set of controls, and the sample. Specifically, we arrive at the same conclusions with an event study design and a simple difference-in-differences, with the exclusion of state- and time-varying controls, with a longer window around the *Citizens United* decision, and when we consider only the states that had bans on corporate spending (and not also unions) as treated.

Despite the fear that *Citizens United* would unleash corporate interests, our results suggest that independent corporate expenditures are unlikely to substantially drive tax policies. Of course, we cannot conclude that corporate political influence has no effect on other pro-business regulations. However, significantly lower taxes, an objective that unifies corporations of all types, were not realized in the wake of the Supreme Court ruling. One explanation for this could be that the companies with the most potential influence are multinational corporations that already avoid most state and local tax burden. Alternatively, it may be that tax policy did not change as a result of the *Citizens United* decision because independent expenditure bans did not limit corporate influence in the first place.

Our results raise a natural question: if *Citizens United* did not lead to more corporate-friendly tax policies, then what did the higher independent contributions documented by Spencer and Wood (2014) and Petrova et al. (2019) buy? While the precise answer to this question is outside of the scope of this paper, our results are consistent with the view of Ansolabehere et al. (2003): "campaign contributions should be viewed primarily as a type of consumption good, rather than as a market for buying political benefits." This conclusion is driven by two observations: a lack of extensive empirical evidence on the connection between contributions and legislative behavior, and low levels of contributions relative to the plausible payoffs. An alternative explanation is that tax breaks are only one of a myriad of ways corporations may benefit from their political contributions; for example, contributions may lead to preferential access to finance or allocation of government contracts, which we do not consider in this paper (Claessens et al., 2008; Goldman et al., 2013; Brown et al., 2015).[6]

Our paper contributes to two broad sets of literature. First, there is a rich literature that explores the causal effects of political contributions on policy outcomes (e.g., Bronars

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[6]There is some evidence that political contributions positively affect firm stock returns, but that the amount of contributions is negatively correlated with returns (Cooper et al., 2010; Aggarwal et al., 2012; Akey, 2015).

and Lott, 1997; Stratmann, 1995, 2002; Roscoe and Jenkins, 2005). We differ from this previous work in three key ways: we focus on state rather than federal policies, we study tax policy outcomes that the previous work has largely ignored, and we provide plausibly causal evidence.[7] Within this literature, a small number of papers explore the consequences of the *Citizens United* decision specifically, showing that it led to increased campaign contributions (Spencer and Wood, 2014; Petrova et al., 2019; Bassetti et al., 2020); increased conservatism and Republican election probabilities (Klumpp et al., 2016; Harvey and Mattia, 2019; Petrova et al., 2019; Abdul-Razzak et al., 2020; Cox, 2021); and reduced incentives for "revolving door employments" (Weschle, 2021).

This paper is most closely related to Gilens et al. (2021) and Akey et al. (2022), both of which study the effect of *Citizens United* on the state corporate tax rate. The primary focus in Gilens et al. (2021) is law policies affecting corporate interests such as plaintiff-friendly tort law and anti-corporate eminent domain laws; the corporate tax rate is the only tax outcome they consider. In contemporaneous work, Akey et al. (2022) study the effect of *Citizens United* on a wide range of labor and capital outcomes, including the state corporate, income, and sales taxes, as well as state tax revenues. Our focus, however, is a comprehensive evaluation of the effect of *Citizens United* on state tax policies. We consider an extensive set of outcomes, including tax rules such as investment tax credits, as well as firm-specific discretionary tax breaks. A further contribution of our paper is an analysis of the introductions of the bans later cancelled by *Citizens United*, which complements and reinforces the findings regarding the effect of the ruling. For overlapping outcomes (e.g., the corporate tax rate), our results are similar to the estimates in both papers, despite differences in approach.[8]

We also contribute to a vast literature that aims to understand the tax choices of state and local governments. A significant share explores the importance of politics, such as political structures (e.g., Alt and Lowry, 1994; Bernecker, 2016) and political cycles (e.g., Alesina et al., 1997; Nelson, 2000). Other studies demonstrate the importance of competi-

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[7]A notable exception is Chirinko and Wilson (2010), who show that contributions affect business tax rates in a period that pre-dates *Citizens United*. In their paper, many individual campaign contributions are attributed to business interests, suggesting that corporations were not entirely constrained in the states that restricted corporate political spending before *Citizens United*.

[8]Gilens et al. (2021) estimate a 4% decrease using a synthetic control method, and Akey et al. (2022) estimate a statistically insignificant 5% decrease using a DiD approach. Similarly, we estimate a noisy 5% decrease.

tion, preference-based sorting, federal mandates, and various institutional features on tax policies (see Robinson and Tazhitdinova (2022) for a partial summary). However, Robinson and Tazhitdinova (2022) show that the overall explanatory power of these factors is low, suggesting that either tax policies have a large idiosyncratic component or that other, unexplored, factors have an important influence on the tax-setting process. We contribute to this literature by studying one such possible channel—independent political contributions.

1 Background and Data

1.1 Campaign Finance and Corporations

Campaign finance refers to all funds used or raised to support a candidate, party, or issue. A corporation seeking to support a candidate in their election may either make direct contributions to their campaign ("hard money"), or independent expenditures ("soft money").

A direct contribution is a monetary or in-kind contribution to a candidate's campaign. States require that candidates disclose all contributions to their campaign and limit the amount an individual, corporation, political action committee (PAC), or political party can contribute to any given candidate. These contribution limits vary by type of contributor, office of candidate, and state. Independent expenditures, on the other hand, are defined as any spending on communication i.e., advertising in support of or against a candidate. While these communications are usually coordinated by a PAC, the important distinction from direct contributions is that the candidate themselves did not coordinate or approve the advertisement.

In 1912 Montana became the first state to ban corporations from making independent expenditures to state campaigns, in response to the activities of out-of-state copper mining interests. By 2010, the number of states with independent expenditure bans had increased to 23 (Klumpp et al., 2016). Figure 1 shows the map of the states in three groups: those that never enacted a ban on independent contributions, those that enacted a ban on corporate contributions only, and those that enacted a ban on both corporate and union contributions.[9] For the latter two groups, Figure 1 also displays the year the ban was enacted.

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[9]The last group includes New Hampshire, even though the state substituted its ban with a $5,000 limit in 2000. Since this limit is so low, we treat it as a ban.

Similar regulations were also implemented at the federal level. The Federal Election Campaign Act was passed in 1971, and remains the primary U.S. federal law regulating campaign spending and fundraising. With this act and the subsequent creation of the Federal Election Commission (FEC), regulations began to be put into place to limit the role of money in politics. The act was amended in 1974 to place legal limits on campaign contributions and expenditures.

1.2   *Citizens United v. Federal Election Commission*

In January 2010, decades of legal precedent were overturned when the Supreme Court, in *Citizens United v. FEC*, decided that the government cannot restrict independent political expenditures by corporations, labor unions, and other associations. The Supreme Court ruled, in a 5-4 decision, that banning corporate and union independent expenditures violated the First Amendment. This meant that corporations would still be subject to limits on direct candidate contributions, but would be able to spend freely on PACs and other associations that buy media advertising in support of their favored candidate.

The Court had upheld bans on contributions in the past, arguing that contributions may encourage "*quid pro quo* arrangements" and regulating such contributions would prevent corruption. However, they found independent expenditures to be, by definition, independent from the candidate, and thus not a source of *quid pro quo* corruption. The ruling came as a surprise to Democrats and Republicans alike as they had worked together eight years earlier to pass the 2002 Bipartisan Campaign Reform Act (McCain-Feingold), which restricted independent expenditures at the federal level.

While most of the media attention was focused on the potential adverse effects of *Citizens United* on federal elections, the decision was relevant to elections at all levels of government. At the time of this ruling, 23 states (our treatment group) prohibited corporations from spending in state elections. The *Citizens United v. FEC* ruling effectively cancelled these laws. Immediately after the ruling, the D.C. Court of Appeals invalidated various limits on contributions to independent expenditure groups, citing *Citizens United*. Most states immediately overturned previous legislation to reflect the federal law.

Appendix Figure A.1 shows the increase in independent spending for all state elections in the cycles following the ruling. Spencer and Wood (2014) use the variation in pre-existing

state bans described above and show that while independent expenditures increased in all states between 2006 and 2010, the increase was more than twice as large in the treated states. Petrova et al. (2019) use a similar strategy and find that *Citizens United* led to increases in political advertising. Thus, previous work has documented that the cancellation of bans indeed led to an increase in independent political contributions by corporations and unions. In this paper we will use the *Citizens United* ruling to study the effect of that increase in political spending on state tax policy.

1.3 Data

Table 1 presents descriptive statistics for the following tax outcomes:

Tax Rates. We collect data on the top corporate income tax, the top personal income tax, and the sales tax from the Book of the States (of State Governments, 1949-2020). We record the new tax rate in the year it becomes effective even if the change occurs at the end of the calendar year. Table 1 shows that treated states change tax rates more often in the pre-period, but the levels are similar. We also have data on excise taxes from the same source (results for these outcomes are in Appendix B).

Tax Base. We use data from Suárez Serrato and Zidar (2018) on corporate tax base features from 1980 to 2012. The tax base rules we use as outcomes in this paper include the investment tax credit rate, the number of years for loss carryforward, and the sales tax apportionment weights. We extend these variables to 2020. We choose these three tax base rules because there are changes in the period of interest (2000-2020).[10]

Tax Revenue. We collect data on tax revenue from the Census Annual Survey of State Government Tax Collections and the Census Annual Survey of State Government Finances, via the Government Finance Database (Pierson et al., 2015). We have revenue data from 1977 to 2020. The treatment and control states have similar tax revenue per capita in the pre-period—around $200 for the corporate tax and $1,000 for the individual income and sales tax (Table 1).

Tax Incentives. We use data on discretionary tax incentives, also known as "subsidy

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[10]In Appendix B, we also consider the minimum corporate tax rate, the number of years for loss carryback, and the top income tax bracket, from the Book of States and Suárez Serrato and Zidar (2018). Other tax base rules that explain much of the variation in tax revenue in Suárez Serrato and Zidar (2018) do not change in the post period.

deals," from Slattery (2020). This is a data set of almost 400 subsidy deals that firms received in exchange for locating or expanding in a specific location between 2002 and 2017, and can be thought of as the universe of large ($10 million+) deals in this time period. Subsidy deals are generally financed through establishment-specific tax abatements. For example, a subsidy deal for a new Ford assembly plant might specify that the Ford plant is exempt from corporate income taxes for 10 years, while all other automobile manufacturing plants in the state still pay the corporate income tax. We focus on mean subsidy spending, total subsidy spending, and the number of subsidy deals (see Appendix B for the size of subsidies conditional on winning as well as total business tax expenditures).

In addition, we take data on the year of independent expenditure bans in each state from Klumpp et al. (2016), and data on independent expenditures from Follow The Money (2020). We use a set of control variables from Robinson and Tazhitdinova (2022). Our control variables are state- and time- varying factors that may affect tax policy. For example, we control for whether or not there is a recession at the state level, the state unemployment rate, and the median household income. We also control for the governor's political party, state government shutdowns, and whether the governor is in their last term. For demographics, we control for population, the percent of the population that are children, and the percent of the population that are seniors, to speak to the demand for public spending. These state-level characteristics are likely correlated with tax policy—for example, we know that states are more likely to offer tax subsidies to firms when they have higher unemployment rates (Slattery, 2022). These control variables are summarized in Appendix Table A.1.

2 The Effect of Political Spending on State Tax Policy

2.1 Methodology

We use an event study approach to study both the introduction of independent expenditure bans and their cancellation due to the *Citizens United* ruling.

Using outcome data on tax rates, base, revenues, and incentives we estimate the following

equation for the effect of *Citizens United*:

$$\log(Outcome_{st}) = \sum_{\substack{k=2000 \\ k \neq 2009}}^{2020} \beta_k \ Treat_s \ 1_{t=k} + \delta \ X_{st} + \sigma_s + \eta_t + \varepsilon_{st}, \tag{1}$$

where s identifies states and t years, $Treat_s$ is equal to one if a state ever enacted a ban on independent contributions and zero otherwise, σ_s are state indicators, η_t are year indicators, and X_{st} are state- and time-varying controls. The coefficients of interest, β_k, represent the effect of the ban cancellation in year k relative to 2009, the year prior to *Citizens United*.

For the ban enactments, our event study specification is similar to the one above, but accounts for heterogeneity in the timing of the enactment:

$$\log(Outcome_{st}) = \sum_{\substack{k=-10 \\ k \neq -1}}^{10} \beta_k \ 1_{t=k} + \delta \ X_{st} + \sigma_s + \eta_t + \varepsilon_{st}, \tag{2}$$

where k identifies event time indicators. Here, $k = 0$ corresponds to the year when the ban is enacted, and $k = -1$ for states that never introduced a ban.

When analyzing the ban cancellation in 2010 (Equation (1)), we omit states that enacted bans during the study window (Colorado and South Dakota). Therefore, we use a balanced panel and ensure that dynamic adjustments to the ban introductions are not contaminating the sample. When analyzing a given outcome, we omit states that do not have that tax type or tax revenue source. We focus on the intensive margin response because tax adoptions and cancellations are very rare. As a result, when studying tax rates and revenues our outcome variable is always non-zero and we are able to employ a logarithmic specification. For tax rules and tax incentives, which take on zero values, we employ an equivalent inverse hyperbolic sine specification.

We cluster robust standard errors at the state level, resulting in 30 to 50 clusters depending on the outcome variable. Therefore, we also calculate wild bootstrap confidence intervals clustered at the state level and using Rademacher weights. These confidence intervals are slightly larger, further confirming our finding of no statistical significance.

2.2   Main Results

This section presents the estimates of Equation (1): the effect of *Citizens United* on state tax policy. The treatment group includes the 21 states that enacted a ban on corporate (or corporate and union) independent contributions prior to 2000. The control group includes the 27 states that never enacted a ban.

Tax Rates. The top panels of Figure 2 show the results of estimating Equation (1) with the logarithm of tax rate levels (in percentage points) as the outcome variable. For all tax rates, we see no statistically significant increase or decrease in tax rates after the *Citizens United* ruling. Our results are not driven by lack of power from estimating effects separately by year: the simple difference-in-differences (DiD) estimates are shown in the bottom left corner of each figure, and are also statistically insignificant. DiD estimates with separate indicators for groups of years, e.g. for 2010-2015 and 2016-2020, are also insignificant (Appendix Table A.2). Economically, our DiD point estimates imply a 5% or 0.40pp decrease for the top corporate income tax, a 7% or 0.46pp decrease for the top personal income tax, and a 1% or 0.06pp decrease for the sales tax, though these estimates are not statistically significant.[11]

The closest study to ours, Gilens et al. (2021), shows that the *Citizens United* decision led to lower corporate tax rates. While we use a difference-in-differences identification strategy instead of a synthetic control approach, we find a similar effect in terms of magnitude. The Gilens et al. (2021) results imply that *Citizens United* led to a 4% decrease (0.28pp) in the average state corporate income tax over 2010-2016. Our results suggest a 5% decrease over 2010-2020. In fact, the finding is also consistent with contemporaneous work of Akey et al. (2022), who, when studying the effect of *Citizens United* on capital and labor income, find a small and statistically insignificant effect on corporate taxes, estimating a 5% decrease.

These magnitudes can be compared with the size of average tax changes in the baseline period (2000-2009), which are presented in Table 1. Tax rates are fairly persistent over time, but when states do make changes, these changes are often substantial in size (Robinson and Tazhitdinova, 2022). For example, treated states that changed their corporate tax rate between 2000 and 2009 adjusted it by 10%. Over a five year period, the same states adjusted the corporate tax rate by 18%. We can thus place our estimates of how states responded

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[11]Results for excise tax rates are available in Appendix Figure B.5 and are similar.

to *Citizens United* within the context of how states change tax rates during business as usual. Overall, we can rule out tax decreases or increases that are larger in magnitude than average tax changes—the green horizontal lines on the graph mark the average tax increases and decreases of the outcome variables over 5 consecutive years (zeros excluded) during 2000-2009.

The results are not driven by pre-trends: we see fairly tight confidence intervals around zero in the pre-cancellation period for the corporate tax rate and the sales tax. Our difference-in-differences estimates are also supported by visual examination of raw tax rate data. Raw time series of tax rates in each state are available in Appendix Figure A.2.

Tax Revenues. The bottom panels of Figure 2 show the results of estimating Equation (1) with the logarithm of tax revenue (in 2020 dollars) as the outcome variable. The results for tax revenues are consistent with our findings on tax rates. Once again, we see fairly flat pre-trends and no statistically significant increase or decrease in tax revenues after the *Citizens United* ruling for income and sales tax revenue. The confidence intervals are larger, but all event studies rule out notable revenue decreases beyond 10-20%. Again, comparing these to average revenue changes in Table 1 suggests that we can rule out non-average decreases in tax revenue. However, we will note that the largest effect, though noisy, is a 14% decrease in corporate tax revenue. Notably, this decrease in state corporate tax revenues occurs in the medium run, which is consistent with the timing for our decrease in corporate tax rates.

Tax Base. We know that corporations also advocate for changes in less salient tax rules, and these rules are often more important for any one firm's tax bill than the rate (Suárez Serrato and Zidar, 2018). Therefore, we turn to the effects on corporate tax base rules: the investment tax credit rate, the number of years allowed for loss carryforward, and the sales tax apportionment weights. Since these outcomes take on zero values, we estimate Equation (1) using the inverse hyperbolic sine transformation.[12]

The top panels of Figure 3 summarize the results. Again, we can compare the effects with the average tax base changes in the pre-cancellation period (the green horizontal lines). We find no statistically or economically significant effects and we can rule out abnormally

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[12]Note that the interpretation of coefficients is similar to a log specification when the outcome variables take on large values (e.g. generally greater than 10), but must be adjusted otherwise (Bellemare and Wichman, 2020).

large changes of base rules. Results for other tax base outcomes (minimum corporate tax rate, loss carryback, and top income tax bracket) are available in Appendix Figure B.4 and are similar.

Tax Incentives. Lastly, while our results indicate that independent political contributions do not appear to significantly affect the overall levels of tax rates or rules, it could still be possible that wealthy donors—particularly, corporations—receive preferential tax treatments via targeted handouts. In fact, this is where one might expect the largest effect of political influence, as these tax incentives are already popular with voters and more easily manipulated by the governor (Slattery, 2022). Therefore, we look at how often states offer discretionary tax incentives to firms and the size of these incentives.

Once again, we employ an inverse hyperbolic sine specification to allow for zero values. The bottom panels of Figure 3 show the results. While the results are noisier—subsidy-giving can vary dramatically from year to year—we do not observe a statistically or economically significant increase in discretionary subsidies, irrespective of the subsidy measure used. Appendix Figure B.4 shows similar results conditional on winning, thus focusing on the intensive margin, as well as results for total business tax expenditures.

2.2.1 Robustness Checks

Methodology. Our difference-in-differences specification employs treatment and control groups that start at unequal baselines, contrary to the canonical model. Tazhitdinova and Vazquez-Bare (2022) show that such an approach may lead to biased estimates if the treatment effect is not constant or non-immediate. This issue is unlikely to affect our results for two reasons. First, in Section 2.3, we show that ban enactments do not appear to have effects on tax policy, thus suggesting a constant null treatment effect. Second, as a robustness check in Appendix C.2, we extend our pre-period to 1991 and exclude states that enacted bans after 1991 (OK, OH, AK, RI, CO, and SD), yielding a 20-year pre-period and giving us reassurance that treated states are no longer experiencing changes due to the adoption of the bans. We find similar results.

Recent work has documented that the inclusion of time-varying controls in two-way fixed effect regressions may lead to misleading estimates if such controls could themselves be affected by the treatment, or if the treatment effect is heterogeneous with respect to these controls (Caetano et al., 2022). To ensure that our results are robust to these issues,

we repeat the analysis using only state and year fixed effects as controls and find very similar results (Appendix C.4). Our results, however, are robust to other issues highlighted by de Chaisemartin and D'Haultfoeuille (2020), Sun and Abraham (2021), Callaway et al. (2021), and Goodman-Bacon (2021) because our treatment is binary and non-staggered i.e., the treatment occurs in the same year for all treated units.

Sample. Appendix C.1 excludes states that enacted a ban on both corporate and union independent contributions from the treatment group. One may worry that corporations and union expenditures may offset each other. We show that our results are robust to restricting the treatment group to states with corporate bans only. If anything, restricting to treatment states that only had corporate bans results in a more precisely estimated null effect of *Citizens United* on state tax policy.

As mentioned above, we also show results for a longer time period (Appendix C.2). Doing so further decreases the treatment sample from 21 to 17 states, but yields similar conclusions. Appendix C.3 shows that the results are not driven by sample selection, by including Colorado and South Dakota in the sample of treated states, even though they enacted bans post-2000.

Specification. Our results are also robust to functional form: estimates using an equivalent Poisson specification yield similar conclusions (Appendix C.5).

2.3   Ban Enactment Results

We supplement our main analysis on the cancellation of the bans with an analysis of ban introductions. We treat this evidence as suggestive, as it is possible that a state government's propensity to enact a stricter campaign finance legislation is correlated with that government's preference for pro-business tax policy. Furthermore, the staggered adoption of bans makes the analysis sensitive to the econometric issues highlighted earlier in Section 2.2.1.

When studying introductions we use a symmetric 10-year window around the year of enactment. For this specification, we do not restrict our sample to a balanced panel i.e., we include states that do not always collect a particular tax. This is because most tax adoptions occurred prior to the 1980s (Robinson and Tazhitdinova, 2022), around the same time as ban enactments.

Since our tax data starts in 1950, we can only study ban introductions that occur after 1950. States that enacted bans by 1950 are included in the control group. Therefore, when studying ban enactments, our control group consists both of states that have already enacted a ban and those that have never enacted a ban. The results are robust to limiting the control group to states that never enacted a ban. The revenue series start in 1977, so for those regressions we need to restrict to ban introductions that occur after 1977. Unfortunately, we cannot study the effect on tax base rules or tax incentives because we only have this data for later in the sample.

Figure 4 presents the results using Equation (2) to study the introduction of independent expenditure bans. While the results show wider confidence intervals, the overall conclusion stands: we do not observe statistically significant increases or decreases of tax rates after the enactments of the independent contribution bans.

Economically, the DiD point estimate suggests a 10% decrease in corporate tax rates, although the effect is not statistically significant. It is surprising that we also find a decrease in corporate tax rates here, as the ban *enactment* aims to restrict corporate influence on state policy. Of course, the adoption of the ban is not exogenous, and may be correlated with other state characteristics or preferences. Importantly, it may be that the states that are most concerned about corporate political influence still are subject to this influence, perhaps through lobbying or individual contributions, despite the ban.

3   Conclusion

In this paper we study the effect of corporate political spending on U.S. state tax policy. Across a wide range of tax policy outcomes, we are not able to detect a significant effect of *Citizens United*. We estimate a 5%, but noisy, decrease in corporate tax rates, which is consistent with prior work (Gilens et al., 2021; Akey et al., 2022). However, for less salient tax rules and discretionary tax incentives, we find a relatively precise and robust null effect. Moreover, we find no effect of the enactment of bans on corporate independent expenditures on state tax rates or revenues.

Our results thus suggest that corporate political contributions are unlikely to drive tax policies outright. However, there are many ways for corporations to support their favored candidates and advocate for their favored policies, whether it be CEO and employee indi-

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vidual contributions, charitable contributions to politician's favored charities, or lobbying (see, for example, Fremeth et al., 2013; Bertrand et al., 2020; Kang, 2016). Therefore, an alternative explanation for our finding that *Citizens United* did not change tax policy is not that money has no effect, but instead that the independent contribution bans were ineffective in limiting such corporate influence in the first place.

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4 Tables and Figures

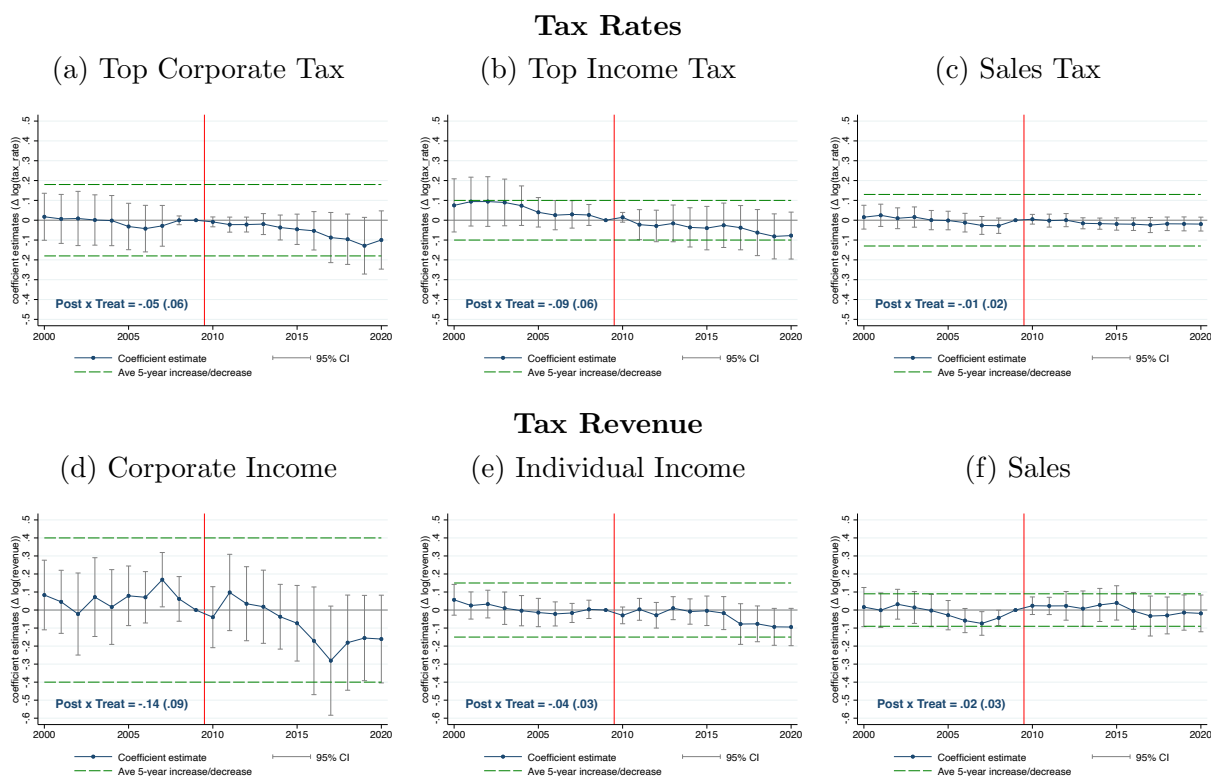Figure 1: Independent Contribution Ban Enactments
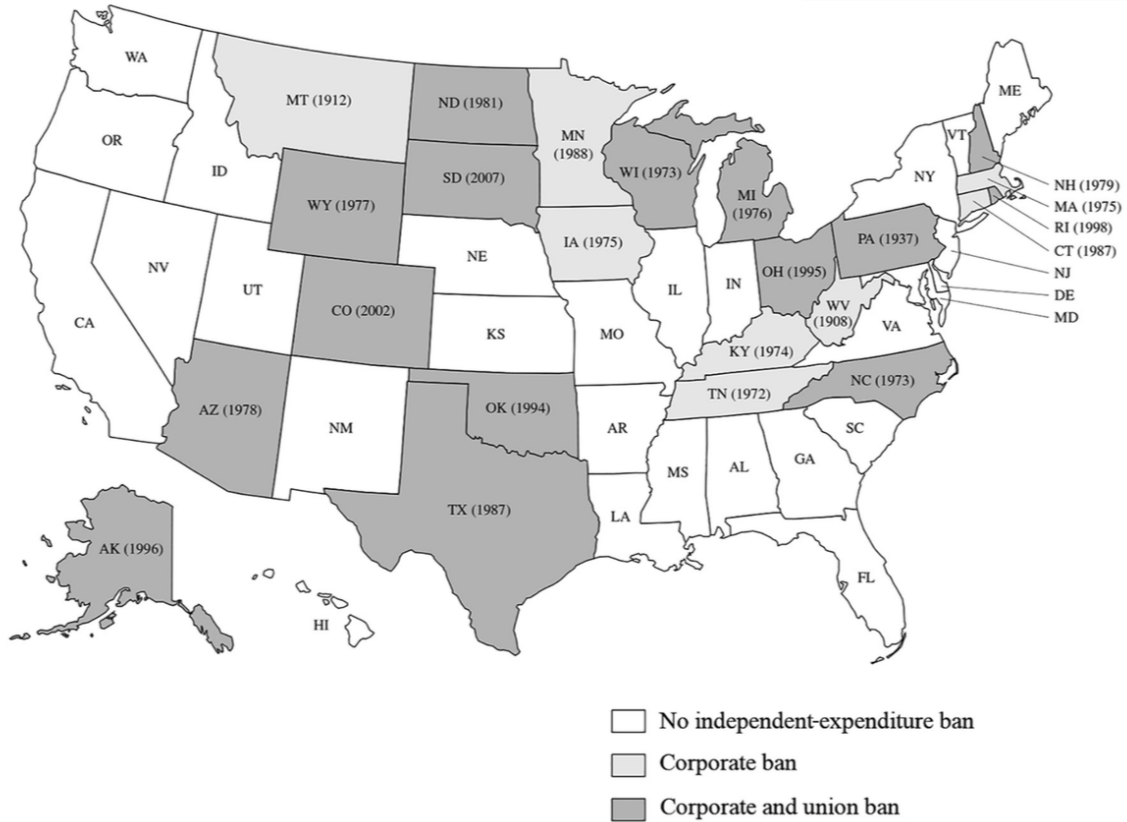
Notes: The map shows which states enacted a ban on independent corporate contributions only, enacted a ban on both independent corporate and independent union contributions, or never enacted a ban. The years identify when the bans were enacted. All bans were effectively cancelled by the January 21, 2010 Supreme Court ruling in *Citizens United v. Federal Election Commission* (558 U.S. 50 [2010]). Reproduced from Klumpp et al. (2016).

Table 1: Descriptive Statistics: 2000-2009

	Treatment Group				Control Group			
Outcome	Mean	Mean $|\Delta \log|$	Mean $|\Delta_5 \log|$	Years w/ Changes	Mean	Mean $|\Delta \log|$	Mean $|\Delta_5 \log|$	Years w/ Changes
Tax Rates (%):								
Top Corporate Income Tax	8.03	0.10	0.18	0.10	7.13	0.14	0.13	0.04
Top Personal Income Tax	6.51	0.12	0.10	0.23	6.69	0.07	0.13	0.12
Sales Tax	5.59	0.11	0.13	0.06	5.28	0.13	0.13	0.09
Tax Revenue per Capita ($):								
Corporate Income Tax	240	0.19	0.40	1.00	160	0.22	0.35	1.00
Individual Income Tax	1,010	0.07	0.15	1.00	1,120	0.07	0.13	1.00
Sales Tax	960	0.04	0.09	1.00	1,010	0.04	0.09	1.00

	Mean	Mean $|\Delta\text{asinh}|$	Mean $|\Delta_5\text{asinh}|$	Years w/ Changes		Mean $|\Delta\text{asinh}|$	Mean $|\Delta_5\text{asinh}|$	Years w/ Changes
Tax Base:								
Investment Tax Credit (%)	1.98	3.6	3.7	0.04	2.09	3.89	3.81	0.02
Loss Carryforward (Years)	14.58	0.57	0.64	0.03	15.87	0.67	0.43	0.03
Sales Apportionment (%)	54.23	0.36	0.23	0.08	53.14	0.13	0.51	0.07
Tax Incentives:								
Mean Subsidy Spending ($M)	35.34	4.03	3.12	0.41	61.50	3.15	4.10	0.45
Total Subsidy Spending ($M)	59.16	4.12	3.42	0.41	70.65	3.35	4.17	0.45
Number of Subsidy Deals	0.57	0.95	0.97	0.34	0.38	0.88	0.92	0.34

Notes: This table presents descriptive statistics for the 12 outcome variables in the pre-period (2000-2009). We display statistics separately for treatment and control groups. The first column of this table lists outcome variables' averages during 2000-2009. The second and third columns summarize the average magnitude of log-changes (or inverse hyperbolic sine-changes) of the outcome variables: either over 2 consecutive years or over 5 consecutive years. Years when no changes occur are not included when calculating $\Delta \log$ and $\Delta_5 \log$. Finally, the last column shows the share of years when the outcome variable has changed. Loss carryforwards are top-coded at 100.

Figure 2: The Effect of *Citizens United v. FEC* on State Tax Rates and Revenues
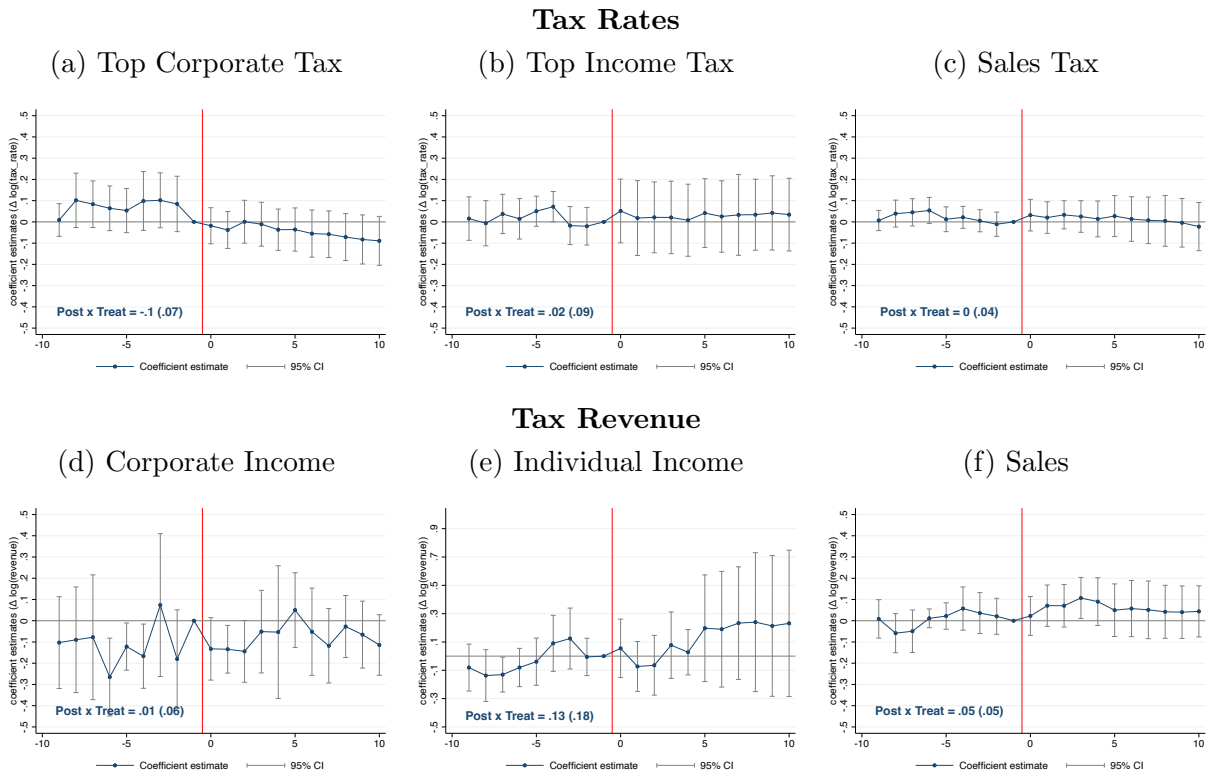
Tax Rates

(a) Top Corporate Tax

(b) Top Income Tax

(c) Sales Tax

Tax Revenue

(d) Corporate Income

(e) Individual Income

(f) Sales

Notes: This figure shows the results of estimating Equation (1). The outcome variable is the logarithm of the outcome in percentage points (tax rates) or in 2020\$ (revenue). Standard errors are clustered at the state level and 95% confidence intervals are reported. Wild bootstrap confidence intervals are slightly larger. The horizontal lines mark the (plus/minus) average changes of the outcome variables over 5 consecutive years (zeros excluded) during 2000-2009.

Figure 3: The Effect of *Citizens United v. FEC* on State Tax Base Rules and Incentives

Tax Base Rules

(a) Investment Credit (b) Loss Carryforward (c) Sales Apportionment

Tax Incentives

(d) Mean Subsidy Spending (e) Total Subsidy Spending (f) Number of Subsidy Deals

Notes: This figure shows the results of estimating Equation (1). The outcome variable is the inverse hyperbolic sine of the outcome, which are the tax base rules of interest (investment tax credits, years of loss carryforward, sales apportionment) and discretionary subsidy statistics (mean subsidy spending, total subsidy spending, number of subsidies). Standard errors are clustered at the state level and 95% confidence intervals are reported. Wild bootstrap confidence intervals are slightly larger. The horizontal lines mark the (plus/minus) average changes of the outcome variables over 5 consecutive years (zeros excluded) during 2000-2009. Loss carryforwards are top-coded at 100.

Figure 4: The Effect of Ban Enactments on State Tax Rates and Revenues

Tax Rates

(a) Top Corporate Tax

(b) Top Income Tax

(c) Sales Tax

Tax Revenue

(d) Corporate Income

(e) Individual Income

(f) Sales

Notes: This figure shows the results of estimating Equation (2). The outcome variable is the logarithm of tax rates in percentage points or tax revenue in 2020\$. Standard errors are clustered at the state level and 95% confidence intervals are reported. Wild bootstrap confidence intervals are larger.

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APPENDIX FOR ONLINE PUBLICATION

"Corporate Political Spending and State Tax Policy: Evidence from *Citizens United*" by Cailin Slattery, Alisa Tazhitdinova and Sarah Robinson

A   Additional Tables and Figures

Figure A.1: Independent Spending in State Elections 2005-2018
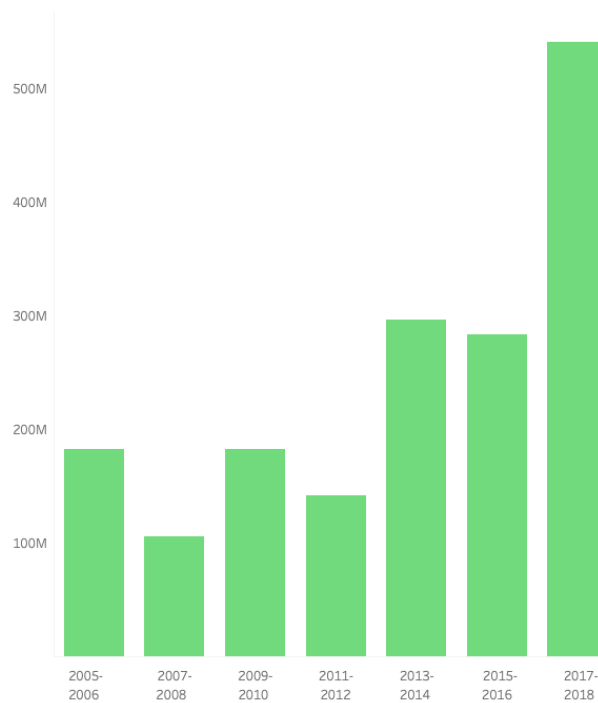
Notes: This figure shows total independent spending in state elections for cycles between 2005 and 2018. Independent spending increased after 2010 when *Citizens United* suddenly allowed unlimited independent political contributions from corporations and unions in the 23 states where such spending was previously banned. Note that spending levels for state elections are generally higher in non-presidential election years.
Source: Follow The Money (2020)

Table A.1: Control Variables

Economic factors	state recession and one year lag, state government shutdown
Political factors	whether this is a year in governor's last term, whether such a governor is Republican or a Democrat, interaction of divided government and deficit not allowed
Demographics	population, unemployment rate, percent of children (0-17 years old), percent senior residents (65+ years old), median household income

Notes: This table lists the control variables used in specifications (1) and (2), in addition to state and year fixed effects.
Source: Robinson and Tazhitdinova (2022)

Table A.2: Difference-in-Differences Estimates

	β_1: 2010-2015		β_2: 2016-2020	
Outcome	coef.	s.e.	coef.	s.e.
Tax Rates:				
Top Corporate Income Tax	-0.02	0.05	-0.09	0.08
Top Personal Income Tax	-0.08	0.05	-0.11	0.07
Sales Tax	-0.01	0.02	-0.02	0.02
Tax Revenue:				
Corporate Income Tax	-0.06	0.09	-0.25	0.12
Individual Income Tax	-0.02	0.03	-0.08	0.04
Sales Tax Revenue	0.04	0.03	-0.01	0.04
Tax Base:				
Investment Tax Credit	0.00	0.01	0.01	0.01
Loss Carry Forward	0.13	0.11	-0.07	0.18
Sales Apportionment Weight	-0.09	0.07	-0.01	0.09
Tax Incentives:				
Mean Subsidy Spending	-0.14	0.41	0.18	0.67
Total Subsidy Spending	-0.20	0.45	0.13	0.69
Number of Subsidy Deals	-0.05	0.10	-0.04	0.13

Notes: This table presents estimates for a simple DiD specification that includes separate post-treatment indicators for years 2010-2015 and years 2016-2020. Specifically, this table shows estimates of coefficients β_1 and β_2 from $\log(Outcome_{st}) = \beta_1 \, Treat_s \, 1_{t \in [2010,2015]} + \beta_2 \, Treat_s \, 1_{t \in [2016,2020]} + \delta \, X_{st} + \sigma_s + \eta_t + \varepsilon_{st}$ or equivalent inverse hyperbolic sine specification.
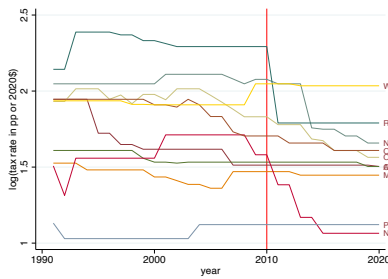
Figure A.2: Cancellation of Independent Contribution Bans

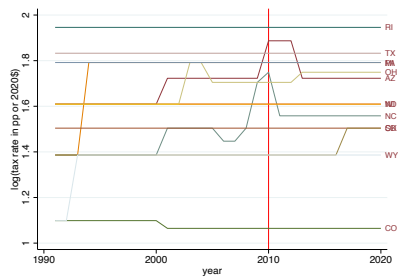**States that Banned Both Corporate and Union Contributions**
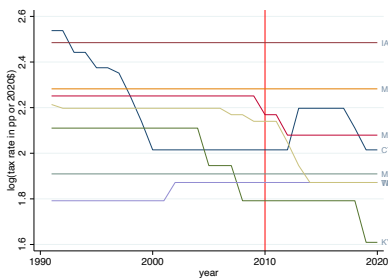
(a) Top Corporate Tax
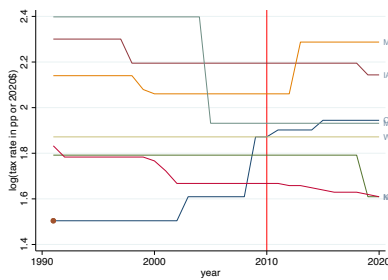
(b) Top Income Tax

(c) Sales Tax

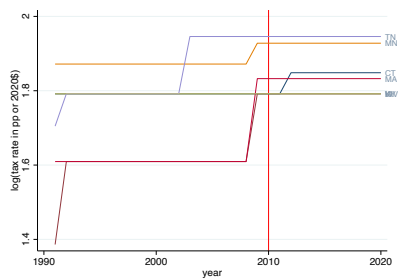**States that Banned Only Corporate Contributions**

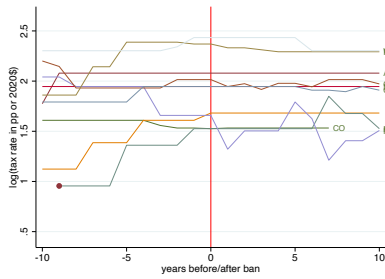(d) Top Corporate Tax

(e) Top Income Tax

(f) Sales Tax

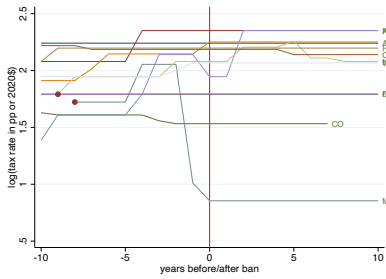*Notes*: These figures show the actual tax rates in treated states.

Figure A.3: Introduction of Independent Contribution Bans

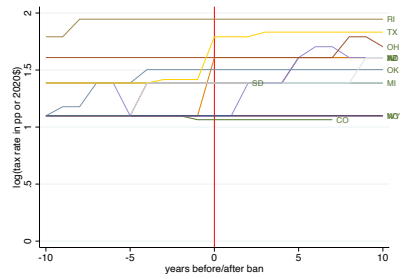**States that Banned Both Corporate and Union Contributions**
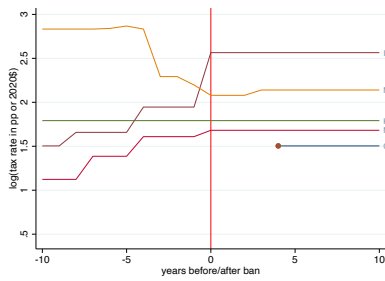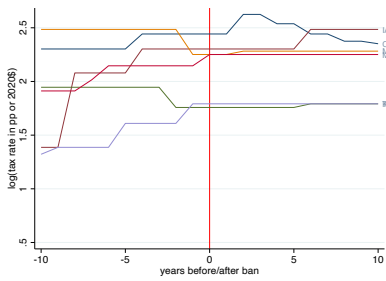
(a) Top Income Tax

(b) Top Corporate Tax

(c) Sales Tax

States that Banned Only Corporate Contributions
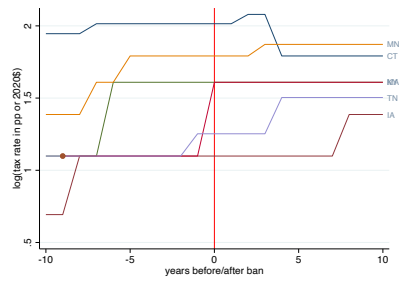
(d) Top Income Tax

(e) Top Corporate Tax

(f) Sales Tax

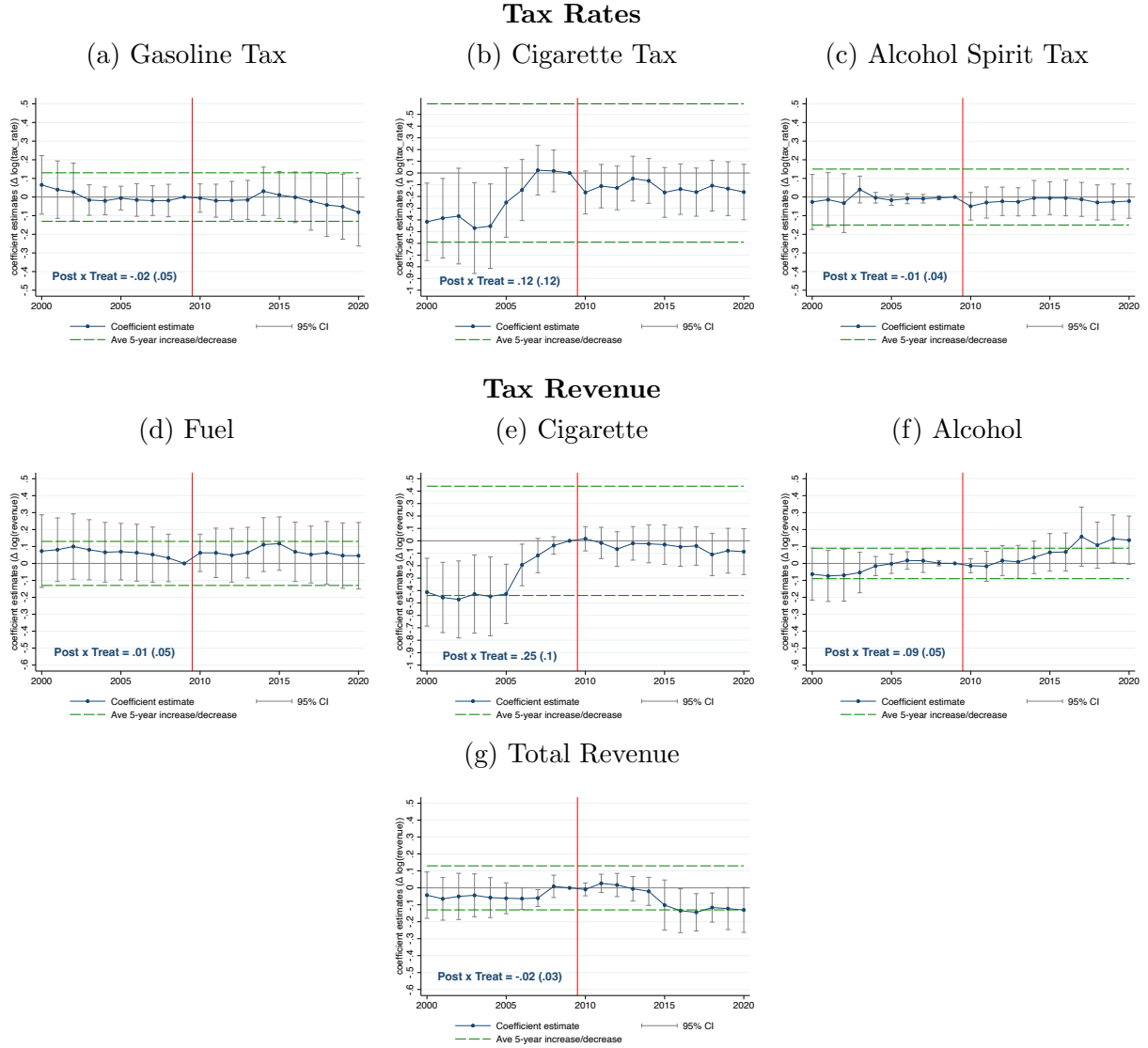*Notes*: These figures show the actual tax rates in treated states.

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B Other Tax Policy Outcomes

Figure B.4: The Effect of *Citizens United v. FEC* on State Tax Base Rules and Incentives

Tax Base Rules

(a) Min Corporate Tax   (b) Loss Carryback   (c) Top Income Tax Bracket

Tax Incentives

(d) Mean Subsidy Spending (Conditional on Winning)   (e) Total Subsidy Spending (Conditional on Winning)   (f) Total Business Tax Expenditures

Notes: This figure shows the results of estimating Equation (1). The outcome variable is the inverse hyperbolic sine of the outcome. Standard errors are clustered at the state level and 95% confidence intervals are reported. Wild bootstrap confidence intervals are slightly larger. The horizontal lines mark the (plus/minus) average changes of the outcome variables over 5 consecutive years (zeros excluded) during 2000-2009.

Figure B.5: The Effect of *Citizens United v. FEC* on State Tax Rates and Revenues
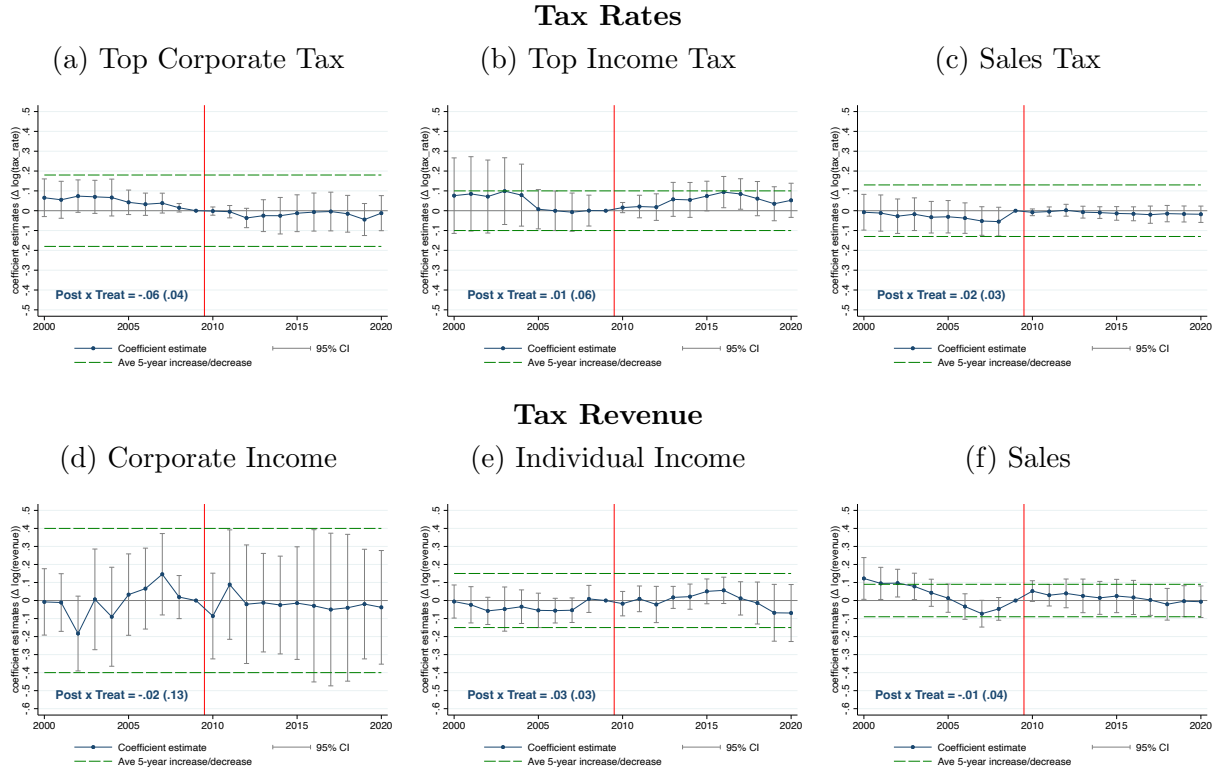
Tax Rates

(a) Gasoline Tax   (b) Cigarette Tax   (c) Alcohol Spirit Tax

Tax Revenue

(d) Fuel   (e) Cigarette   (f) Alcohol

(g) Total Revenue

Notes: This figure shows the results of estimating Equation (1). The outcome variable is the logarithm of the outcome in percentage points (tax rates) or in 2020$ (revenue). Standard errors are clustered at the state level and 95% confidence intervals are reported. Wild bootstrap confidence intervals are slightly larger. The horizontal lines mark the (plus/minus) average changes of the outcome variables over 5 consecutive years (zeros excluded) during 2000-2009.

C   Robustness Checks

We present five sets of robustness checks. Appendix C.1 limits the treatment group to states that banned corporate independent contributions only. Appendix C.2 extends the pre-period to 1991 and limits the treatment group to states that introduced bans prior to 1990. Appendix C.3 includes Colorado and South Dakota in the main sample, even though the bans were introduced post-2000. Appendix C.4 estimates Equations (1) and (2) without state- and time-varying controls, and only includes year and state fixed effects. Finally, Appendix C.5 presents estimates from the Poisson-equivalent of Equations (1) and (2).
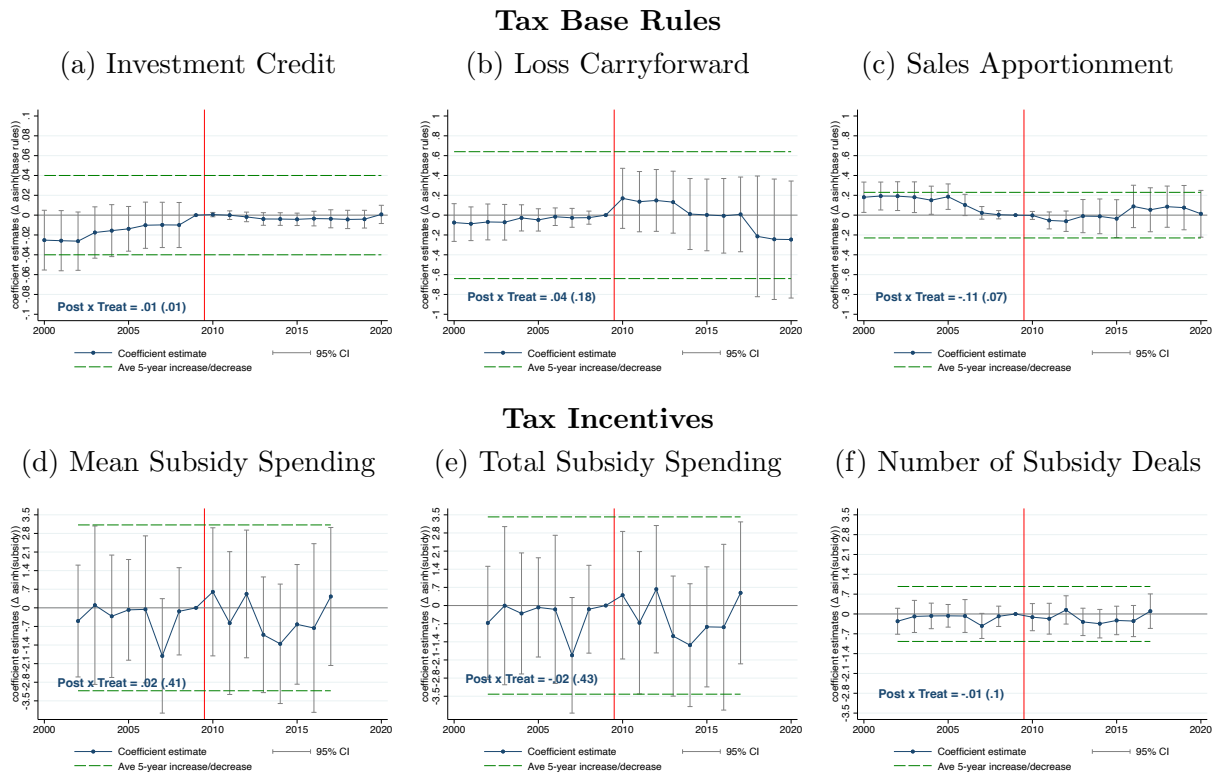
C.1 Robustness: Corporate Only Bans

Figure C.6: The Effect of *Citizens United v. FEC* on State Tax Rates and Revenues

Tax Rates

(a) Top Corporate Tax | (b) Top Income Tax | (c) Sales Tax

Tax Revenue

(d) Corporate Income | (e) Individual Income | (f) Sales

Notes: This figure shows the results of estimating Equation (1). The treatment group includes states that banned corporate independent contributions only. The outcome variable is the logarithm of the outcome in percentage points (tax rates) or in 2020$ (revenue). Standard errors are clustered at the state level and 95% confidence intervals are reported. The horizontal lines mark the (plus/minus) average changes of the outcome variables over 5 consecutive years (zeros excluded) during 2000-2009.

Figure C.7: The Effect of *Citizens United v. FEC* on State Tax Base Rules and Incentives

Tax Base Rules

(a) Investment Credit   (b) Loss Carryforward   (c) Sales Apportionment

Tax Incentives

(d) Mean Subsidy Spending   (e) Total Subsidy Spending   (f) Number of Subsidy Deals

Notes: This figure shows the results of estimating Equation (1). The treatment group includes states that banned corporate independent contributions only. The outcome variable is the inverse hyperbolic sine of the outcome. Standard errors are clustered at the state level and 95% confidence intervals are reported. Wild bootstrap confidence intervals are slightly larger. The horizontal lines mark the (plus/minus) average changes of the outcome variables over 5 consecutive years (zeros excluded) during 2000-2009. Loss carryforwards are top-coded at 100.
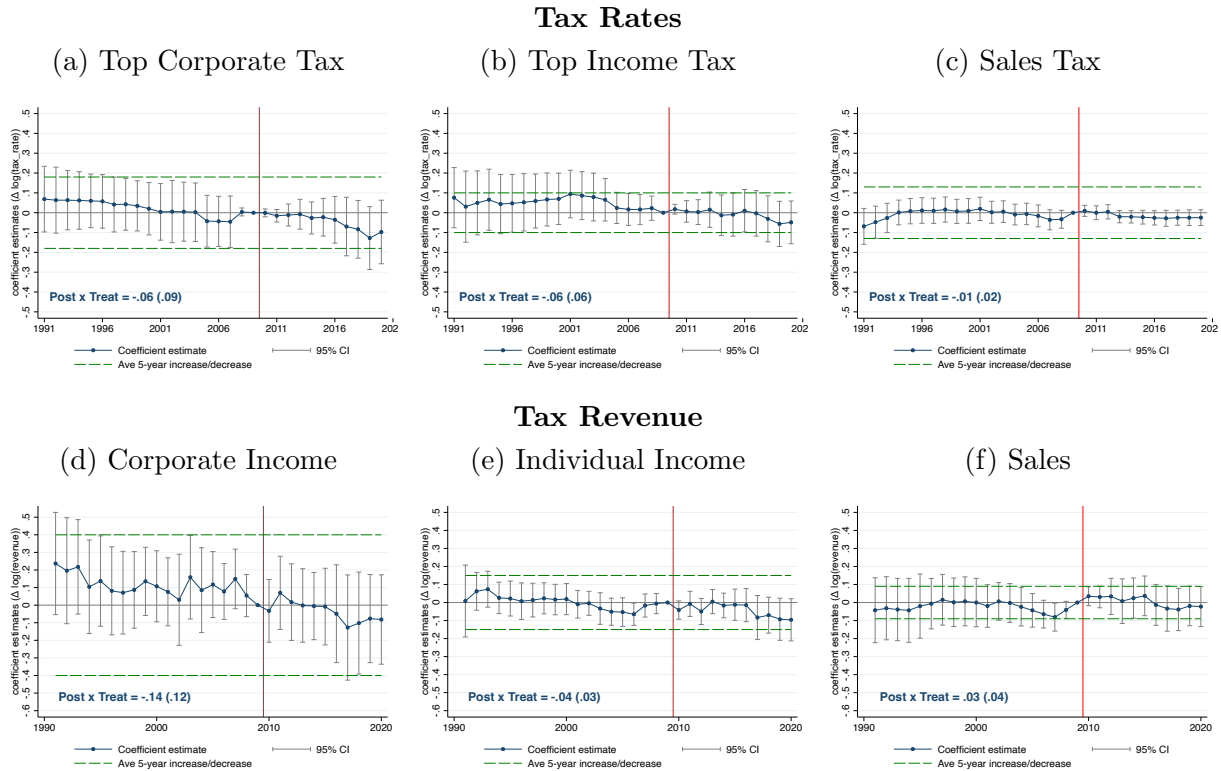
C.2 Robustness: Longer Sample

Figure C.8: The Effect of *Citizens United v. FEC* on State Tax Rates and Revenues

Tax Rates

(a) Top Corporate Tax   (b) Top Income Tax   (c) Sales Tax

Tax Revenue

(d) Corporate Income   (e) Individual Income   (f) Sales

Notes: This figure shows the results of estimating Equation (1). The treatment group only includes states that banned contributions by corporations and/or unions before 1990. The outcome variable is the logarithm of the outcome in percentage points (tax rates) or in 2020$ (revenue). Standard errors are clustered at the state level and 95% confidence intervals are reported. Wild bootstrap confidence intervals are slightly larger. The horizontal lines mark the (plus/minus) average changes of the outcome variables over 5 consecutive years (zeros excluded) during 2000-2009.

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Figure C.9: The Effect of *Citizens United v. FEC* on State Tax Base Rules

Tax Base Rules

(a) Investment Credit   (b) Loss Carryforward   (c) Sales Apportionment
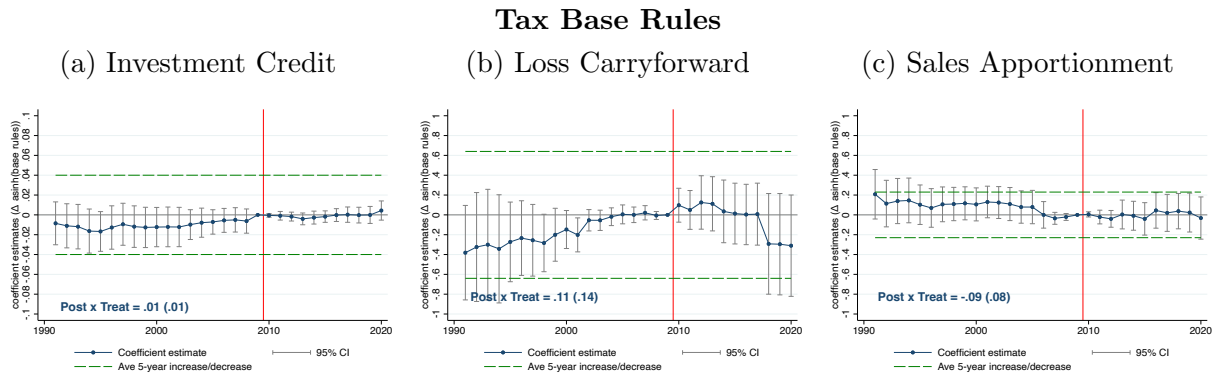
Notes: This figure shows the results of estimating Equation (1). State tax incentive outcomes are not included because we only have incentives data from 2002-2017. The treatment group only includes states that banned contributions by corporations and/or unions before 1990. The outcome variable is the inverse hyperbolic sine of the outcome. Standard errors are clustered at the state level and 95% confidence intervals are reported. Wild bootstrap confidence intervals are slightly larger. The horizontal lines mark the (plus/minus) average changes of the outcome variables over 5 consecutive years (zeros excluded) during 2000-2009. Loss carryforwards are top-coded at 100.
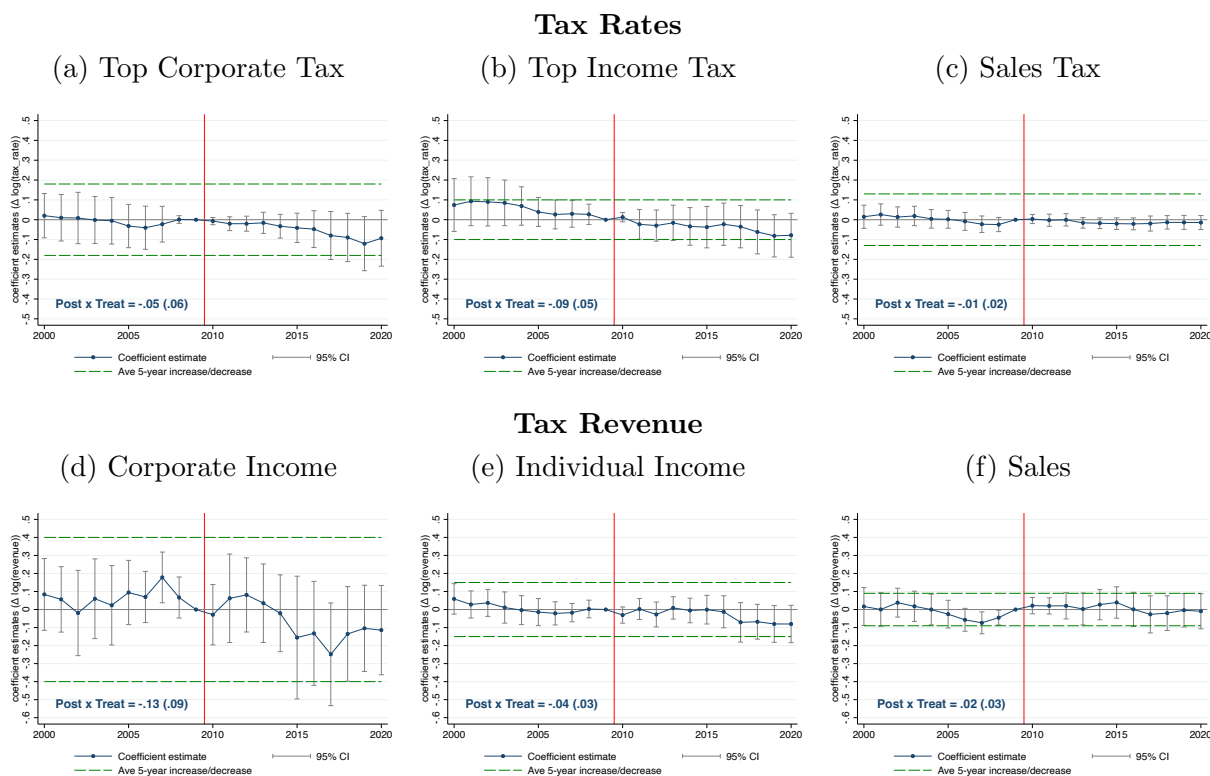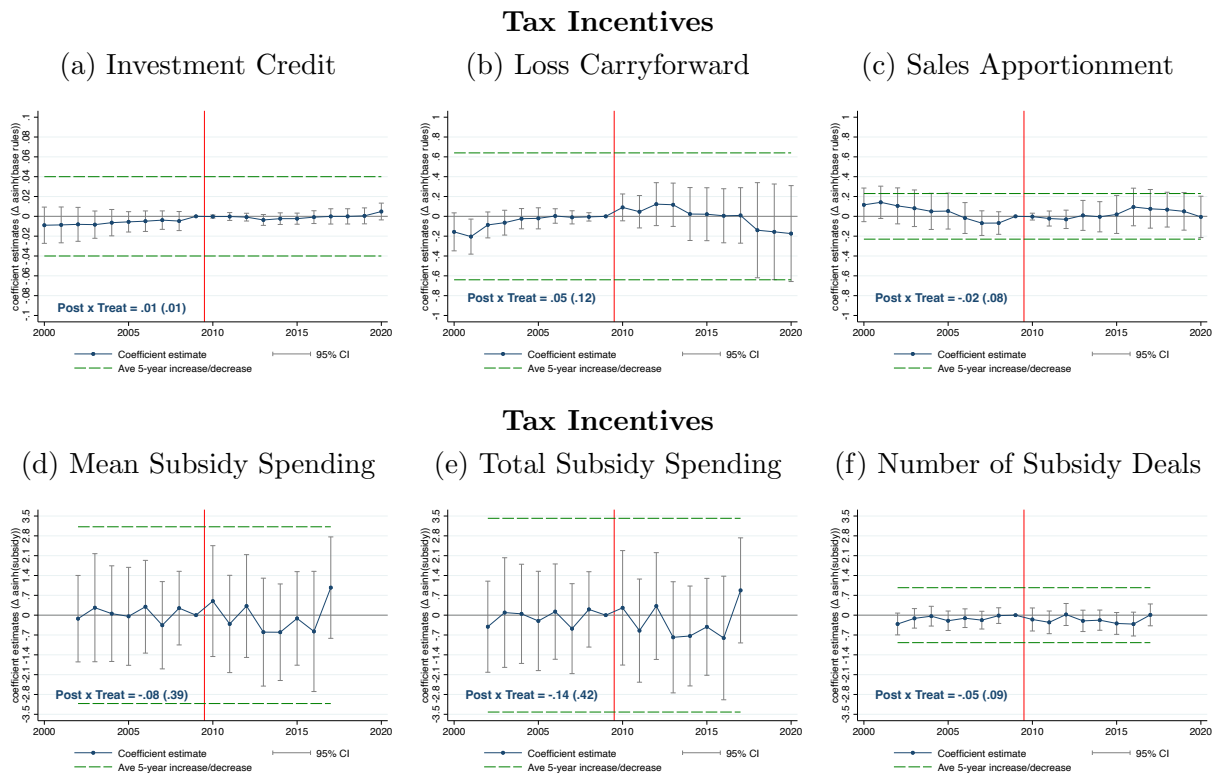
C.3 Robustness: No Sample Restrictions

Figure C.10: The Effect of *Citizens United v. FEC* on State Tax Rates and Revenues

Tax Rates

(a) Top Corporate Tax   (b) Top Income Tax   (c) Sales Tax

Tax Revenue

(d) Corporate Income   (e) Individual Income   (f) Sales

Notes: This figure shows the results of estimating Equation (1) with CO and SD included in the sample. However, only observations with positive respective tax rates are included. The outcome variable is the logarithm of the outcome in percentage points (tax rates) or in 2020$ (revenue). Standard errors are clustered at the state level and 95% confidence intervals are reported. Wild bootstrap confidence intervals are slightly larger. The horizontal lines mark the (plus/minus) average changes of the outcome variables over 5 consecutive years (zeros excluded) during 2000-2009.

Figure C.11: The Effect of *Citizens United v. FEC* on State Tax Base Rules and Incentives

Tax Incentives

(a) Investment Credit — (b) Loss Carryforward — (c) Sales Apportionment

Tax Incentives

(d) Mean Subsidy Spending — (e) Total Subsidy Spending — (f) Number of Subsidy Deals

Notes: This figure shows the results of estimating Equation (1) with CO and SD included in the sample. The outcome variable is the inverse hyperbolic sine of the outcome. Standard errors are clustered at the state level and 95% confidence intervals are reported. Wild bootstrap confidence intervals are slightly larger. The horizontal lines mark the (plus/minus) average changes of the outcome variables over 5 consecutive years (zeros excluded) during 2000-2009. Loss carryforwards are top-coded at 100.
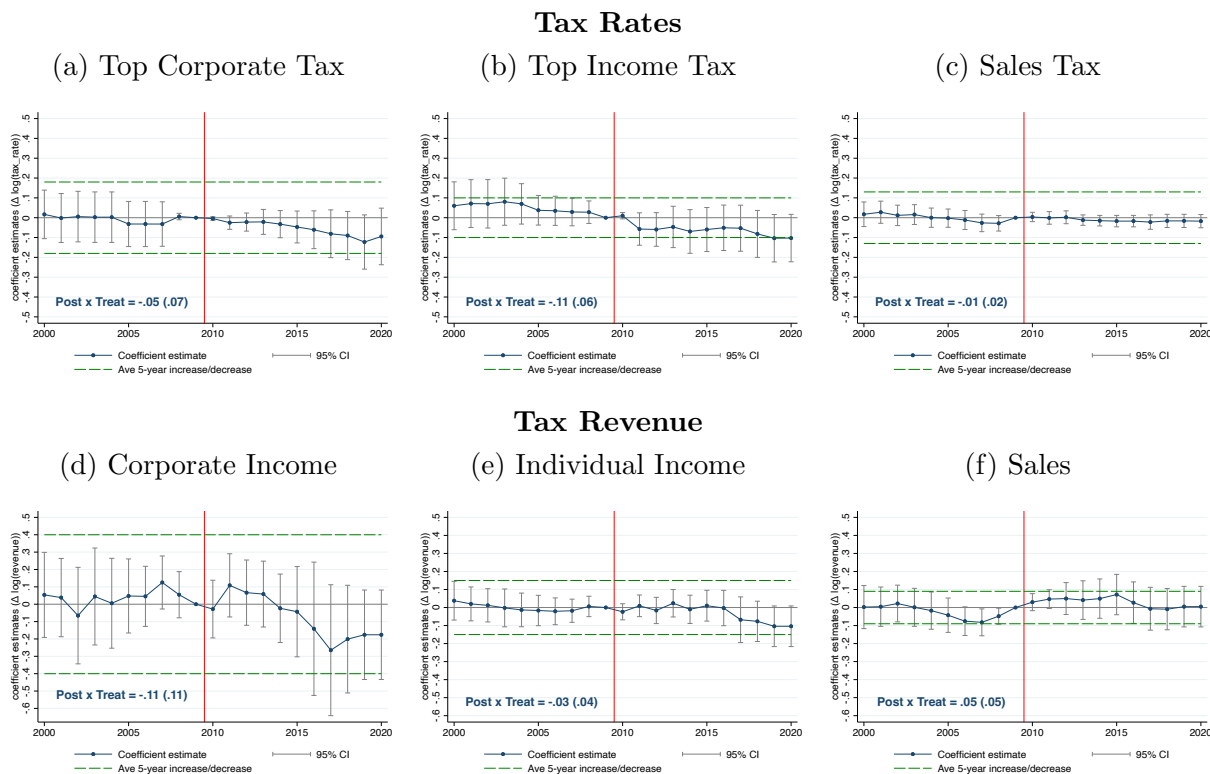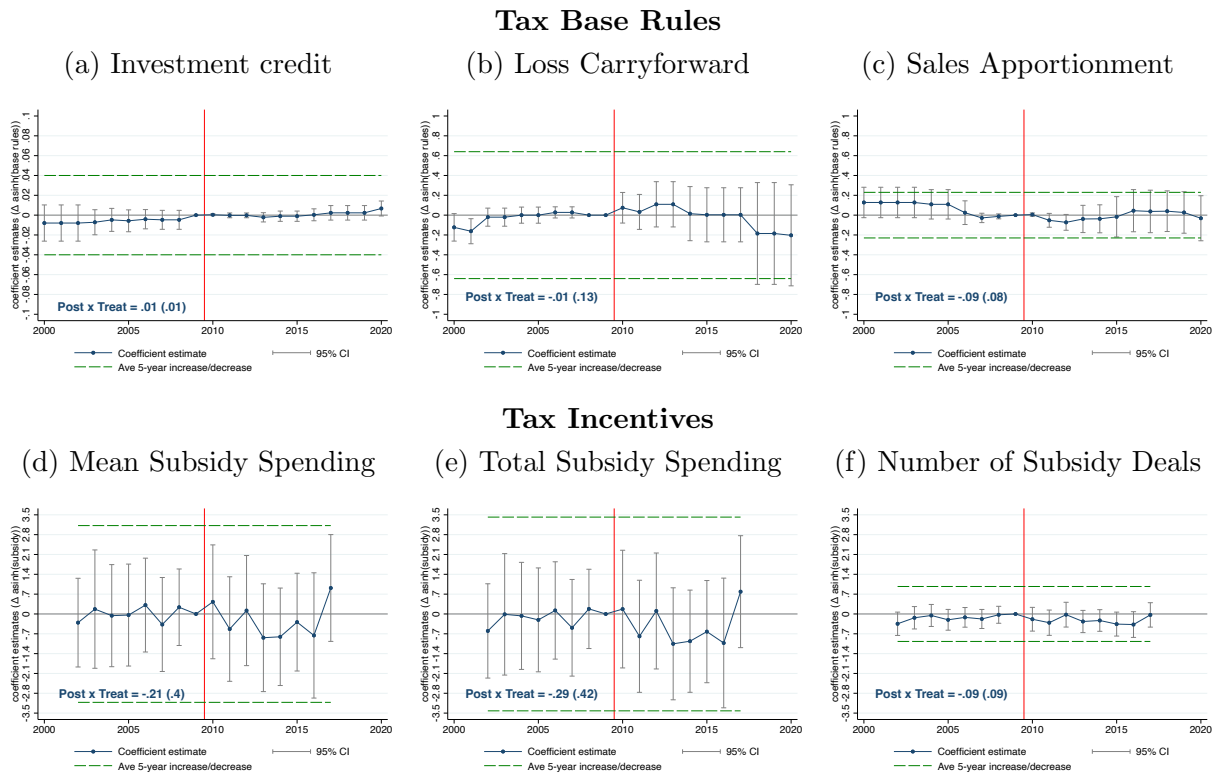
C.4 Robustness: No State- and Time-Varying Controls

Figure C.12: The Effect of *Citizens United v. FEC* on State Tax Rates and Revenues

Tax Rates

(a) Top Corporate Tax (b) Top Income Tax (c) Sales Tax

Tax Revenue

(d) Corporate Income (e) Individual Income (f) Sales

Notes: This figure shows the results of estimating (1) with state and year fixed effects, but no other control variables. The outcome variable is the logarithm of the outcome in percentage points (tax rates) or in 2020\$ (revenue). Standard errors are clustered at the state level and 95% confidence intervals are reported. Wild bootstrap confidence intervals are slightly larger. The horizontal lines mark the (plus/minus) average changes of the outcome variables over 5 consecutive years (zeros excluded) during 2000-2009.

Figure C.13: The Effect of *Citizens United v. FEC* on State Tax Base Rules and Incentives

Tax Base Rules

(a) Investment credit   (b) Loss Carryforward   (c) Sales Apportionment

Tax Incentives

(d) Mean Subsidy Spending   (e) Total Subsidy Spending   (f) Number of Subsidy Deals

Notes: This figure shows the results of estimating Equation (1) with state and year fixed effects, but no other control variables. The outcome variable is the inverse hyperbolic sine of the outcome. Standard errors are clustered at the state level and 95% confidence intervals are reported. Wild bootstrap confidence intervals are slightly larger. The horizontal lines mark the (plus/minus) average changes of the outcome variables over 5 consecutive years (zeros excluded) during 2000-2009. Loss carryforwards are top-coded at 100.
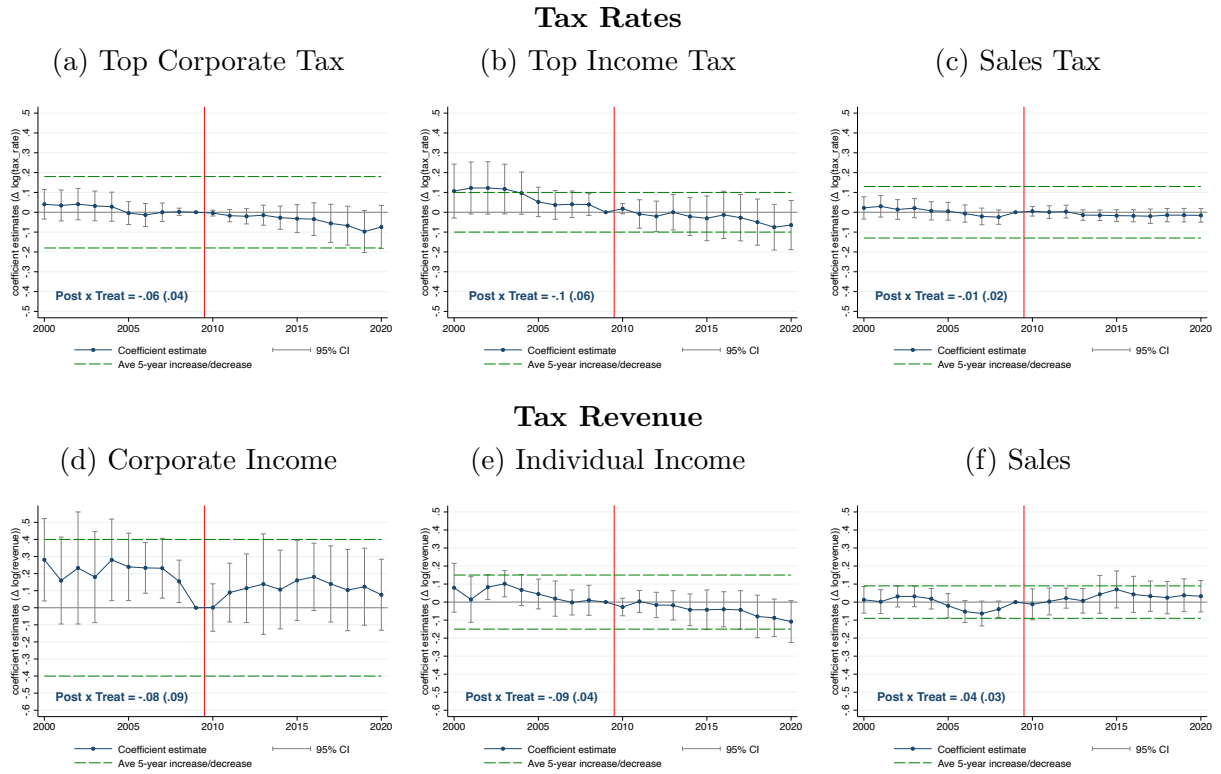
Figure C.14: The Effect of Ban Enactments on State Tax Policy

Tax Rates

(a) Top Corporate Tax

(b) Top Income Tax

(c) Sales Tax

Tax Revenue

(d) Corporate Income

(e) Individual Income

(f) Sales

Notes: This figure shows the results of estimating Equation (2) with state and year fixed effects, but no other control variables. The outcome variable is the logarithm of tax rates in percentage points or tax revenue in 2020$. Standard errors are clustered at the state level and 95% confidence intervals are reported. Wild bootstrap confidence intervals are larger.
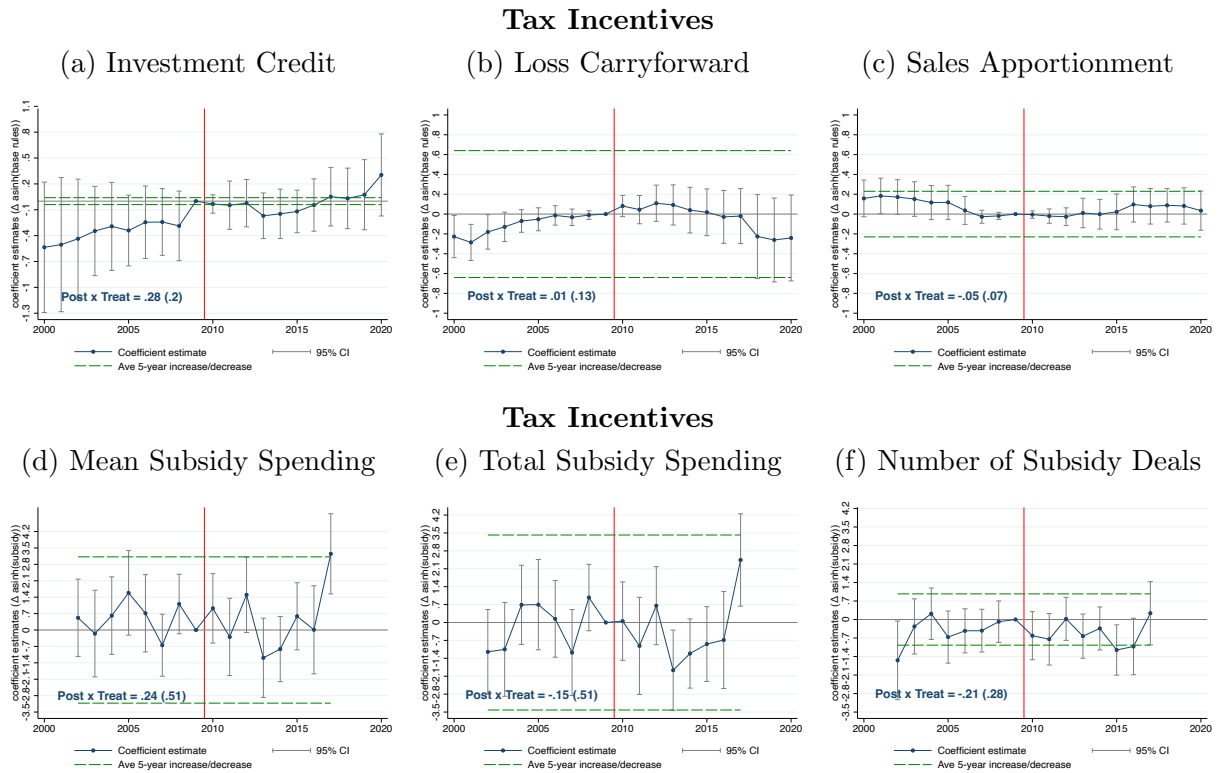
C.5 Robustness: Poisson

Figure C.15: The Effect of *Citizens United v. FEC* on State Tax Rates and Revenues

Tax Rates

(a) Top Corporate Tax   (b) Top Income Tax   (c) Sales Tax

Tax Revenue

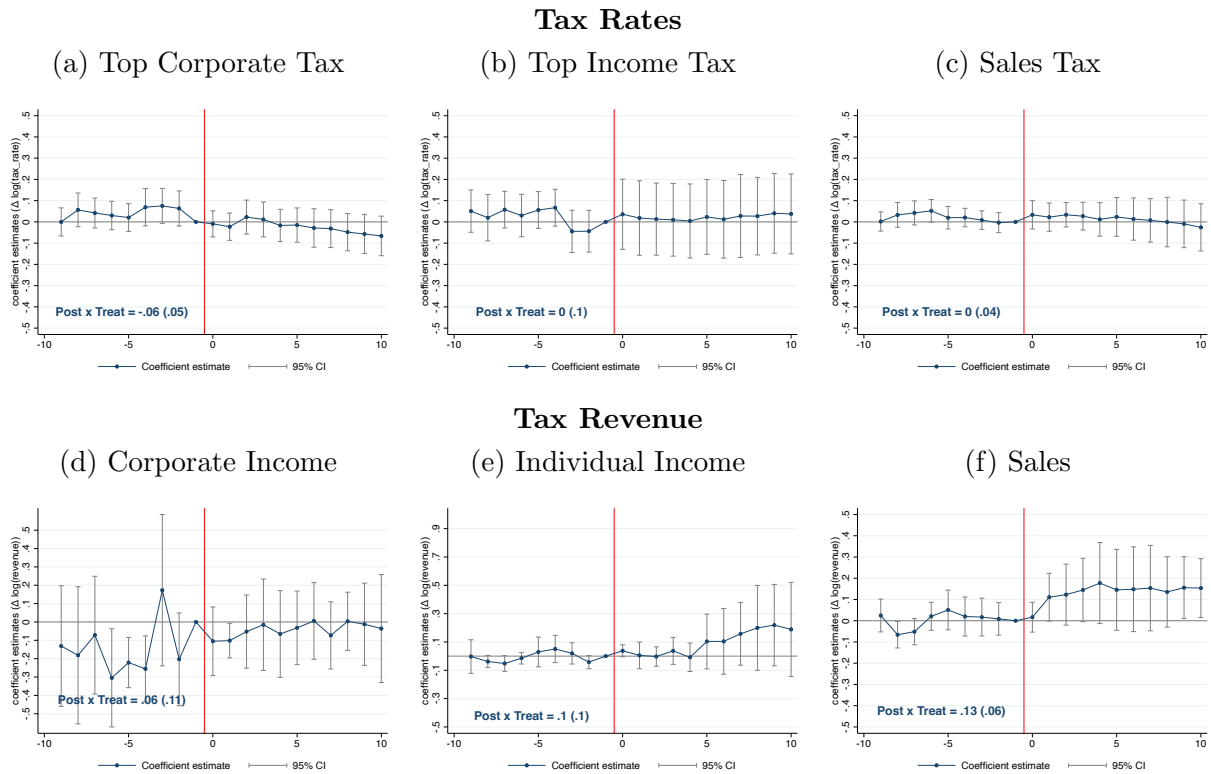(d) Corporate Income   (e) Individual Income   (f) Sales

Notes: This figure shows the results of estimating the Poisson-equivalent specification of Equation (1). Standard errors are clustered at the state level and 95% confidence intervals are reported. Wild bootstrap confidence intervals are slightly larger. The horizontal lines mark the (plus/minus) average changes of the outcome variables over 5 consecutive years (zeros excluded) during 2000-2009.

Figure C.16: The Effect of *Citizens United v. FEC* on State Tax Base Rules and Incentives

Tax Incentives

(a) Investment Credit   (b) Loss Carryforward   (c) Sales Apportionment

Tax Incentives

(d) Mean Subsidy Spending   (e) Total Subsidy Spending   (f) Number of Subsidy Deals

Notes: This figure shows the results of estimating the Poisson-equivalent specification of Equation (1). Standard errors are clustered at the state level and 95% confidence intervals are reported. Wild bootstrap confidence intervals are slightly larger. The horizontal lines mark the (plus/minus) average changes of the outcome variables over 5 consecutive years (zeros excluded) during 2000-2009. Loss carryforwards are top-coded at 100.

Figure C.17: The Effect of Ban Enactments on State Tax Policy

Tax Rates

(a) Top Corporate Tax   (b) Top Income Tax   (c) Sales Tax

Tax Revenue

(d) Corporate Income   (e) Individual Income   (f) Sales

Notes: This figure shows the results of estimating the Poisson-equivalent specification of Equation (2). Standard errors are clustered at the state level and 95% confidence intervals are reported. Wild bootstrap confidence intervals are larger.