Real Effects of Judicial Selection: The Role of Campaign Finance

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Abstract

This paper studies the real effects of campaign finance and judicial selection. Using the Supreme Court's surprise verdict in the Citizens United v. FEC case in 2010, I document that relaxing campaign finance restrictions led to a 61% increase in the average electoral expenditure of judicial candidates. Competition in judicial elections increased along with greater turnover of the judicial bench. Concomitantly, labor productivity increased by 6.6%, but only in states with judicial elections. This increase is driven by industries that are more reliant on the quality of legal institutions. Overall, I provide the first evidence that campaign finance deregulation in judicial elections increases electoral competition and scrutiny and improves factor allocation.

Keywords: Political Finance, Factor Productivity, Money in Politics, Judicial Elections, Contract Enforcement

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Introduction

Formal contracts reduce the need for trust and lower costs by enabling specialization and allowing trading parties to make relationship-specific investment. Consequently, effective legal institutions, such as courts that enforce contracts, are vital for efficient resource allocation (North et al., 1990), (Acemoglu, Johnson and Robinson, 2005), (La Porta et al., 1998). The effectiveness of legal institutions depends on the selection of judges because judges interpret laws and set legal precedents. Therefore, their selection has a direct effect on the legal environment and, hence, resource allocation. When judges are elected in popular elections, campaign finance is often employed by special interests to affect the outcome of elections. On the one hand, campaign finance restrictions may limit this external influence, potentially improving the quality of the judiciary.[1] On the other hand, such restrictions may also limit access to financing for judicial candidates, making it harder for financially constrained but otherwise qualified individuals to contest elections. The limited competition weakens the accountability associated with elections through which low-performing officials can be voted out. Therefore, the impact of less restrictive campaign finance on judicial quality and, by extension, on the efficient allocation of resources remains an open empirical question.

This paper examines the real effects of campaign finance on the State Supreme Court judge elections in the United States (US).[2] I exploit the heterogeneity in judge selection procedures and exogenous variation in campaign finance laws due to the surprising US Supreme Court ruling in the Citizens United v. Federal Election Commission (FEC) case in 2010 (hereafter, Citizens United) to study how campaign finance affects judicial selection and labor productivity.[3]

[1] Globally, restrictions on campaign financing from corporations, labor unions, and interest groups are standard, for example, the Bipartisan Campaign Reform Act (BCRA, 2002) in the United States and the Political Parties, Elections, and Referendums Act (PPERA, 2000) in the United Kingdom.

[2] High Court and State Supreme Courts, both terms are used interchangeably to refer to the highest courts in the state judicial system. In the remainder of the paper, I will use the term, State Supreme Courts to refer to the highest appellate body within the state court system.

[3] The following NPR article illustrates how the Supreme Court went to *great lengths* to deliberate on the issue, and also scheduled *rare* re-hearings in September 2009 before making a decision. `https://www.npr.org/2010/01/21/122805666/supreme-court-rips-up-campaign-finance-laws`

The decision by the US Supreme Court came in response to an appeal by Citizens United, a conservative non-profit, after a lower court prohibited the broadcast of a documentary attacking Hillary Clinton in 2009. In January 2010, the Supreme Court gave its final decision with 5 judges ruling in favor of and 4 against Citizens United. One important consequence of the Citizens United ruling was that it rendered restrictions on independent electoral expenditures unconstitutional.[4] Therefore, the ruling invalidated bans on independent expenditures by firms. Out of the 22 states that elect their State Supreme Court judges, 11 had instated such bans. I exploit this within-state change in campaign finance laws in a difference-in-differences design to estimate the political and real effects of campaign finance restrictions. I consider the states where Citizens United invalidated the bans on independent expenditures, the treated states, and states without such bans as control states. Conditional on the judge selection procedure, the difference between the outcomes before and after the ruling in non-affected (control) states represents how the outcome would have evolved without the changes in campaign finance restrictions. The difference between this outcome trend and the analogous difference for states where the bans were invalidated (treated) captures the effect of removing campaign finance restrictions on the outcome of interest.

The analysis proceeds in four parts. First, I show that when bans on independent expenditures are removed, the average independent expenditure in judicial elections increases by around $\$300,000$. At the same time, direct campaign contributions (or expenditures) increased by $\$220,000$ (61% increase over the pre-treatment average), even though the ruling did not change restrictions on direct expenditures. Further analysis suggests that direct campaign contributions from businesses and political parties drive the increase, while unions do not increase their direct contribution. Interestingly, contributions from lawyers, the dominant direct financing source, did not change after the Citizens United ruling. This is consistent with them not being constrained by the erstwhile bans on independent expenditures. Overall, the Citizens United ruling increased direct and independent expenditures mainly driven by contributions from businesses and political parties.

[4]Independent expenditures are incurred in support of or against a candidate's opponent without explicit coordination with the candidate, as opposed to direct expenditures, which come from direct contributions to the candidate's campaign fund.

If independent and direct expenditures are substitutes, the firms should have simply switched to independent expenditures, the less costly means of campaign finance. The increase in direct expenditures proves that these expenditures are not substitutes. A key point of difference is that independent expenditures can be used to attack an incumbent, even without a viable challenger. This hurts the incumbent's chances of winning, which encourages entry by new challengers and increases competition.

Second, I explore whether the higher expenditure in elections is associated with increased electoral competition. The Citizens United ruling eased access to independent expenditure, and therefore, candidate entry should increase consistent with Besley and Coate (1997) and Osborne and Slivinski (1996) citizen-candidate models of electoral entry. More challengers enter election races with the number of candidates per seat increasing by 35%. The electoral races become more closely contested, and the incumbent judges are 15% more likely to be voted out. The voter turnout in judicial elections also increases. These effects are mainly concentrated in states with non-partisan elections, i.e., no political party affiliation of judges is on the ballot. The lack of party affiliation reduces voter information, and expensive elections with widespread advertisements remedy this lack of information. This is consistent with prior research in political science by Hall (2001, 2007). Therefore, the Citizens United ruling heightened the scrutiny of incumbents and reinforced the threat of getting voted out of office.

Further, I examine the effect of Citizens United on the judicial bench. To do so, I employ CFscore from Bonica and Woodruff (2015) as a measure of judge ideology.[5] Considering that the bench of judges decides the State Supreme Court cases, I examine the effect on the average ideology of the bench. I find that the average bench ideology tends to become more right-leaning or business-friendly in states with judicial elections where the bans were removed. This suggests that the Citizens United ruling affects the judges' selection.

Third, I examine how the Citizens United ruling affected the legal environment and labor productivity. Using data from the Annual Survey of Manufactures, I measure labor productivity as the value added per worker at the state-sector level. I find that after the ruling, labor productivity increases by 8% (6.6% relative to 2010) in states where Citizens

[5]Prior research has documented that the ideological leanings of the judges predict their decisions Bonica and Woodruff (2015); Windett, Harden and Hall (2015)

United invalidated the bans on independent expenditures, and the judges are elected. At the same time, there is no significant effect on states without judicial elections. This rules out alternative explanations not operating through the legal environment channel, such as regulatory or tax policy, and the effect of other elections due to changes in the campaign finance restrictions. These results are robust to alternative labor productivity measures, sector, and state-specific time trends.

To corroborate the mechanism of changes in the legal environment causing productivity improvements, I test whether the productivity improvement is more pronounced for sectors more exposed to the legal system. For example, if the production process is complex or requires inputs from several sectors, the likelihood of a contractual dispute will be higher. Following Nunn (2005); Levchenko (2007) and using data from the Bureau of Economic Analysis (BEA), I construct a measure of incomplete contracts risk proxied by the inverse of the Herfindahl-Hirschman Index (HHI) (or dispersion) of inputs to the production process. I find that productivity improvements are driven by the sectors in the top tercile of this incomplete contracts risk exposure. No significant effect on productivity is observed for sectors exposed to incomplete contract risk in states without judicial elections after the Citizens United ruling. This is consistent with the change in the legal environment driving labor productivity improvements with stronger effects for sectors more exposed to incomplete contract risk where parties may be reluctant to make relationship-specific investments that boost productivity.

I find that establishment entry increases by 5% in treated states (where the ruling invalidated bans on independent expenditures) with judicial elections, while the ruling has no statistically significant effect on entry in states without judicial elections. The job reallocation rate, a measure of dynamism in the labor market, increases by 4%. The evidence on factor productivity, employment, and establishment entry is consistent with the ruling improving the legal environment, thereby, the resource allocation in states with judicial elections where the bans on independent expenditures were invalidated.

I consider alternative explanations unrelated to judicial selection and campaign finance that may cause the observed real effects. To account for historical, cultural, and geographic factors that affect the sorting of industries across states, I estimate a two-way fixed effects

model with state-sector fixed effects and rule out such cross-sectional differences across states as a likely cause. Another concern may be that other events around 2010 have affected productivity in the treated states. The effect of these events could differ across states depending on the judge selection procedure or the bans on independent expenditure. There are two events with a significant economic impact that may bias the results. First, the global financial crisis (GFC) of 2008-09. Second, the technological developments around 2010 improved the feasibility of hydraulic fracturing and led to a boost in Shale production. I find no evidence that the results are driven by these concurrent events. I also replicate my findings on labor productivity by using establishment level information from a sub-sample of the National Establishment Time Series (NETS) data.

Finally, in a conceptual framework, I demonstrate how greater accountability of judges due to competitive elections alleviates contracting frictions by improving the quality of legal institutions. This increases the productivity of inputs such as labor. More establishments enter, and employment increases. The intuition is as follows. Ideological decision-making by low-skill or biased judges is error-prone. In contrast, the accountability of judges pushes them to exert effort and reduces the likelihood of such errors in decisions. The errors impose a deadweight cost on contracting parties and lower productivity because contracting parties become averse to making relationship-specific investments. Accountability of judges alleviates this friction and improves productivity. The findings in this paper are consistent with the increase in accountability of judges due to competition and the more significant threat of getting voted out.

To summarize, this paper documents the novel channel of judge selection through which campaign finance affects productivity. Particularly, following the removal of bans on independent expenditures, the average electoral expenditure and competition in judicial elections increased, which strengthened the accountability of elected judges. The concurrent improvement in labor productivity, employment, and entry exclusively in states with judicial elections is consistent with reduced legal friction due to improvement in the legal environment.

Related Literature: I contribute to the literature that studies the effect of institutions on growth and productivity, Acemoglu, Johnson and Robinson (2005), La Porta et al.

(1998), Michalopoulos and Papaioannou (2014), and Haselmann, Pistor and Vig (2010). I highlight the importance of judicial selection procedures and campaign finance laws for the selection of judges and productivity. Other papers in this literature have focused on the contract-enforcement intensity and its effect on financial development, Brown, Cookson and Heimer (2017), and Cookson (2018). I exploit a similar variation in institutional intensity. However, the difference arises due to the election of judges and the importance of electoral finance in competitive elections. I illustrate a novel channel, i.e., increased competition in judicial elections improves accountability of elected judges, which improves the productivity of institutionally dependent sectors. This finding is in line with prior work that documents a link between within-country contract-enforcement intensity and the choice of production process Boehm and Oberfield (2020), and country-level legal reforms and labor productivity Chemin (2020).

This paper is also related to the literature that relies on the Citizens United v. FEC ruling to identify the effect of increased political expenditure on various economic variables of interest. This paper studies an alternative channel that affects the selection of state judges and the legal environment within a state. I also explore the implications for productivity and establishment entry, which depends on the quality of legal institutions. The papers in this literature most closely related are Akey et al. (2022), Denes, Scanlon and Schulz (2022), and Klumpp, Mialon and Williams (2016). Akey et al. (2022) highlights the democratizing effect of the ruling and how broader political participation leads to higher labor income. Denes, Scanlon and Schulz (2022) highlight the rise of dark money pools following the ruling, Klumpp, Mialon and Williams (2016) highlight how the ruling has led to higher turnover and increased expenditure in political races. This paper replicates some of these facts in the context of judicial races to show that political expenditures have increased, and electoral races have become more competitive, accompanied by shifts in the ideology of the judicial bench. The key takeaway from this paper has the flavor of Gilens, Patterson and Haines (2021), where the authors document a business-friendly shift in the laws in the aftermath of more relaxed campaign finance laws. However, the results in this paper offer an alternative explanation that is only operative in states with judicial elections.

The paper also contributes to the literature that studies resource misallocation due

to political frictions Fisman (2001), Faccio, Masulis and McConnell (2006), Haselmann, Schoenherr and Vig (2018), Alok and Ayyagari (2019). In this paper, I focus on the judicial friction due to lack of political accountability that may affect firms reliant on contract enforcement for their production process. I find that removing campaign finance restrictions increases political expenditure, electoral competition, and labor productivity.

1 Institutional Background

State courts decide the majority of cases related to criminal, civil (including contract law), and administrative law. State court judge selection procedures differ across states in the United States. In this paper, I abstract from the judicial selection in the lower state courts and focus on the selection procedure of the state Supreme Court judges (also referred to as high courts). The State Supreme Courts are the highest appellate body within the state court system, and decisions of the Supreme Court determine state law. In addition to hearing appeals and revising decisions of the lower courts, the state Supreme Court bench exercises control over the lower courts through periodic reviews, imposing case disposal protocols to enhance court efficiency and budgetary discretion. Therefore, the selection of state Supreme Court judges is crucial in determining the legal environment within a state.

Overall, 22 states undertake elections to select the bench of their Supreme Courts. Figure (1) illustrates the heterogeneity of selection procedures and how certain forms of selection are not localized in a particular region. This provides some degree of relief against endogenous selection into different procedures for selecting judges. The remaining 38 states have adopted some form of appointment. The judges are appointed either by the governor or the state legislatures or through a merit plan in which a governor-nominated commission appoints the judges, who are then approved by the legislature and the governor. Table (26) in the Appendix provides more details regarding the selection procedures for judges across different states.

The judge tenures differ across states. The judges' tenure in some states may last from 6 to 10 years, while some State Supreme Court judges may even serve until retirement. The judicial elections are either for an open seat, i.e., elections without incumbents where the

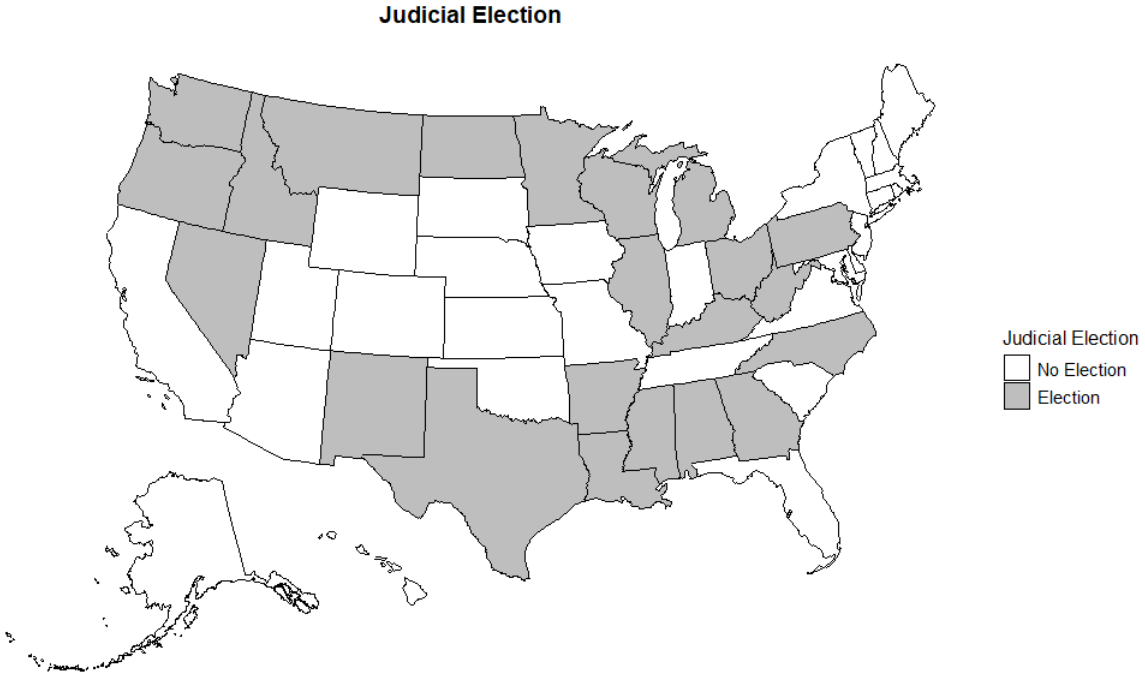


Figure 1: States with elections for the Supreme Courts in Grey. 22 states have judicial elections.

incumbent has retired or there may be a general election with incumbents and challengers. A majority of the states conduct elections in even-numbered years. In contrast, a few states, such as Pennsylvania (exclusively in odd-numbered years), Louisiana, and Wisconsin, may conduct elections in odd-numbered years.

The judicial candidates may raise funding for their election campaign from individual donors, special interest groups, or rely on personal wealth. Candidates use the funding for advertisements and paying staff involved in the electoral campaign. This type of expenditure is referred to as the direct expenditure. Additionally, independent advertisements run on behalf of the candidate highlight the candidate's ideological position or provide more information about the judges' track record. This type of expenditure incurred on behalf of the candidate without direct contact with him is referred to as independent expenditure. Figure (16) provides an illustration of an advertisement favoring candidate Janet Protasiewicz by Planned Parenthood, an ideological group in the Wisconsin State Supreme Court elections of 2023. Although there are disclosure requirements for direct and independent expenditures, the disclosure laws for independent expenditures are quite lax. The anonymity of donors makes independent expenditure the most preferred conduit for the flow of dark money in elections. The limitless flow of such dark money could lead to institutional capture.

To prevent capture by moneyed interests, some states had imposed bans on independent expenditures by corporations and/or unions in any state election. However, in March 2009, Citizens United, a non-profit conservative special interest group, appealed the decision of the District Court of Columbia to the Supreme Court of the United States. Later, in January 2010, the Supreme Court, in a surprise 5-4 ruling, rendered such bans on independent expenditure unconstitutional. The ruling was met with strong and conflicting reactions from various political actors. Most were concerned with the possibility of institutional capture due to the increasing flow of dark money into the elections. Certainly, the ruling allowed interest groups to donate more freely and anonymously through super PACs (Political Action Committees). Figure (2) illustrates the selection procedures, along with the states that had imposed a ban on independent expenditures. After the Citizens United ruling, these bans were invalidated, relaxing the campaign finance constraints for

firms and interest groups.

Judicial elections differ from legislative elections in one other dimension. While some states allow the party of the judge to be on the ballot, others do not. The former are termed partisan election states, and the latter are the non-partisan election states. Legal and Political science scholars such as Kang and Shepherd (2015), Lim (2013), and Ash and MacLeod (2021) have shown that this distinction is important in determining the political expenditures and quality of judges. Table (26) in the Online Appendix provides information about the states with partisan and non-partisan judicial elections. Overall, out of the 22 states with judicial elections, 11 states have partisan elections.

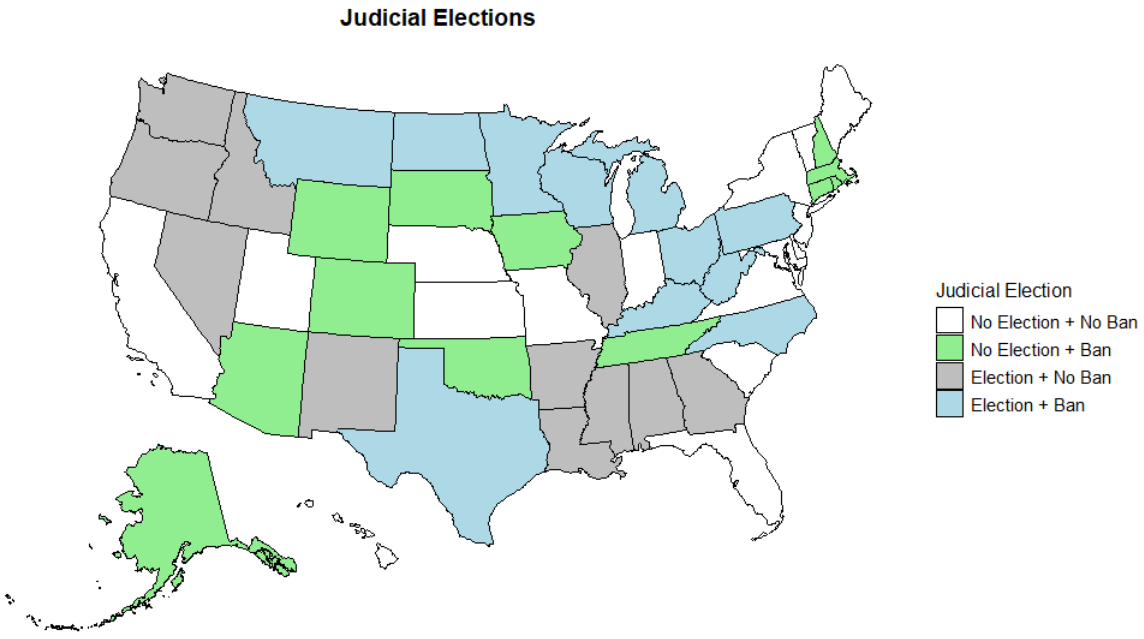


Figure 2: Judicial selection procedures and bans on independent expenditures by firms

2 Data and Identification Strategy

I combine data from several sources to draw a connection between campaign finance laws, actual political expenditure in judicial elections, outcomes in judicial elections, and productivity of the real sector. In this section, I will describe the sources of data along with the identification strategy. More details regarding the sample construction are in the Online Appendix.

2.1 Judge Elections Data

2.1.1 Election Expenditures Data

Political expenditure data are from the National Institute on Money in State Politics (NIMSP, OpenSecrets.org). The sample period for the direct expenditure is 2000-2022. Expenditure for some states goes as far back as 1989. However, NIMSP started collecting data for all 50 states only since 2000.[6] Overall, we have data covering the direct expenditure of 907 judicial candidates for 23 years, with 1235 candidate-year observations.[7] The independent expenditure data has limited coverage due to the lack of strong disclosure requirements. This data is available for 13 states with robust disclosure requirements from 2006-2022. Of the 13 states covered, 9 had imposed a ban on independent expenditures by incorporated entities before 2010.

2.1.2 Judicial Elections and Judge Ideology Data

Several judicial scholars have painstakingly collected and compiled data on judicial elections. In this paper, I use the most up-to-date and comprehensive source of this information

[6]See the disclosure from NIMSP available at `https://www.followthemoney.org/help/q-and-a` : "The institute has contributions data for candidates running for state office in all 50 states since 2000 (though data for some state races extends back to 1989). I (sic) began collecting ballot measure contributions data in 2004, and independent spending data for some state elections in 2006. I (sic) recently added contributions data for candidates running for federal office and some local offices beginning in 2011-2012."

[7]Figure 17 in the online appendix illustrates the lack of funding data availability before 2000, where it is clear that over 50% of the states going for state Supreme Court judge elections are not covered in the data.

from Kritzer (2015). This dataset provides information on all judicial elections from 1946 until 2020. The original dataset contains the identity of the candidates, their incumbency status, the votes received, the type of election, and the number of seats being contested. I use the sample starting from the year 2000 and collapse the data at the level of elections, which gives me 675 election-year observations.

Table 1: Summary Statistics: Judge Elections

	Mean	SD	25th percentile	Median	75th percentile	N
vote margin	0.39	0.38	0.10	0.20	0.84	638
no. of seats	1.03	0.16	1.00	1.00	1.00	675
no. of cand.	2.20	1.20	2.00	2.00	2.00	675
cands. per seat	2.13	1.10	2.00	2.00	2.00	675
incumb. win	0.90	0.42	0.00	1.00	1.00	675

In Table (1), we can see that the average margin of victory is 39%. For reference, the average margin of victory in the House of Representatives and the US Senate races in 2022 was 28% and 19.6% respectively.[8] Therefore, the judge election races are not as closely contested as the legislative elections, mainly because a majority of the election races are uncontested. The incumbents win with a probability of 90%, and there are incumbents contesting an election in 445 out of the 675 races. Therefore, conditional on an incumbent competing in the election, the turnover is low relative to the legislative elections where the incumbents are re-elected with a probability of around 80%.

Judge Ideology Political scientists have designed several spatial measures for capturing the ideology of judges. Of important note are three measures of judge ideology. The common-space CFScore compiled by Bonica and Woodruff (2015) relies on the political donation by judges, Public Assisted Judge Ideology (PAJID) from Brace, Langer and Hall (2000) relies on the electorate's ideological position at the time of election,, and the Windett, Harden, and Hall (WHH) score which combines elements of the common-space

[8]Source:`https://ballotpedia.org/Election_results,_2022:_Congressional_margin_of_victory_analysis`

approach with judicial decisions Windett, Harden and Hall (2015). In this paper, I employ the replication data from Wilhelm, Vining and Hughes (2023) which computes the PA-JID measures from 1979-2020. They also compile the CFScore from Bonica and Woodruff (2015) which is available until 2015.

2.1.3 Manufacturing Census Data

The state Supreme Court judges affect the legal environment within the state. An individual plant operating in a given state may be exposed to various shocks including shocks to its productivity. Additionally, there may be measurement errors at the plant level. Such plant-specific shocks and measurement errors wash out if we aggregate the measures of real activity at the industry level within the jurisdiction. This reduces noise in the real output data. I employ the sector-state level aggregates compiled by the Census Bureau for the manufacturing sector as part of the Annual Survey of Manufactures. In this dataset, we observe the capital expenditure, shipments, wage-bill, capital expenditure, and value-added at the 4-digit NAICS level by state at an annual frequency. The sample period is 2003-2021. There are 84 unique 4-digit NAICS sectors, resulting in a sample of $53,975$ state-sector-year observations. The panel is unbalanced and some state-sector pairs appear only after the treatment year 2010. To address this concern, I restrict the sample to include state-sector pairs having at least 1 pre-treatment year observation. This results in a sample of $33,620$ state-sector-year observations.

Table 2: Summary Statistics: Manufacturing Production

	N	Mean	SD	25th percentile	Median	75th percentile
Revenue (000 USD)	36,404	2,305,091	6,497,902	420,147.5	979,983.5	2,259,563
CapEx (000 USD)	36,316	64,372.8	182,708.2	7,806.5	23,506.5	60,965.5
Emp. (000)	36,404	3,824.4	5,495.8	1,097	2,108	4,197
Value Added (000 USD)	36,363	1,007,763	2,118,776	194,804	463,797	1,057,952
Labor Productivity (000 USD/emp)	36,363	273.6	302.7	132.0	192.9	307.9
Rev/Mat Cost	33,727	2.1	0.7	1.7	2.0	2.4
wage (000 USD/emp)	36,404	41.5	14.2	33.0	39.9	48.1

Table (2) shows that the distribution of all variables is skewed except the average wage of production workers. The average labor productivity computed as the ratio of value added per production worker, is USD $274,000$. In a given state, on average a sector employs

around 3,800 production workers and incurs an annual capital expenditure worth USD 64,400. The average wage of the workers is USD 40,000.

In addition to the Annual Survey of Manufactures, I also employ the business dynamics statistics data released for 19, 2-digit NAICS sectors for all 50 states annually for 22 years. The sample consists of 21,318 state-sector-year observations. This data allows me to observe the number of firms, establishments, employment, and other measures of business dynamism such as entry, exit, job creation, and job destruction rates.

2.1.4 Other Data

I also make use of other public sources of data such as state election commissions for gubernatorial election races, input-output data from the Bureau of Economic Analysis to compile the measure of sector-level institutional dependence. For robustness of results to disaggregation at the establishment level, I use the National Establishment Time Series (NETS) to provide establishment-level evidence on average productivity, and resource misallocation due to the relaxation of campaign finance restrictions.

2.2 Research Design

The United States (US) offers an interesting setting to study the effect of campaign finance restrictions on the selection of key officials and productivity. In total 22 states in the US employ elections to select judges to the highest state courts. The remaining 28 use some form of governor, or state-legislature appointment. The forces that determine the form of selection depend on the historical context of the particular state, and different states have adopted the selection procedure over a long span. For example, Virginia instated the current legislative election method of selection in 1779, whereas, Illinois switched to partisan elections in 1962. The common reasoning behind employing elections is to give more power to the citizens and prevent a possible capture of all branches of the government by a minority elite.

Another way to prevent elite control is by imposing campaign finance restrictions. For example, the Bipartisan Campaign Reform Act (BCRA) of 2002 imposed two key restrictions. First, it imposed limits on parties raising and spending in election campaigns.

Second, it restricted issue-advocacy advertisements run by incorporated entities and issue-based special interest groups for example, Right to Life. The 2010 ruling by the SCOTUS in the Citizens United v. FEC case, ruled that any campaign finance restriction imposed on organized interest groups is unconstitutional. This also applied particularly to bans on independent expenditure imposed by 23 states. The Supreme Court's decision was unexpected and was a $5-4$ split among the bench. This episode provides a natural experiment that immediately and unexpectedly eased the campaign finance restrictions in these 23 states. I consider these states as the treated states in a difference-in-difference framework.

For simplicity consider two periods $t \in \{0, 1\}$ and two states $s \in \{T, C\}$ with multiple sectors operating within each state. There is an intervention that affects state T, the treated states. The other state is the control state C which is unaffected by the treatment. Define the across time and within state-sector differences by Δ_t, so that

$$\Delta_t(y_{js}) = (y_{js1} - y_{js0})$$

The period following 2010 is the post-period in a simple 2×2 difference-in-differences (DD) research design. In this paper, I focus on the heterogeneous effect of campaign finance restrictions conditional on the type of judge selection procedure.

I estimate the following two-way fixed effects model,

$$\begin{aligned} y_{jst} = \delta_s + \delta_t + \beta_{ep} \cdot (Election_s \times Post_t) + \beta_{bp} \cdot (Ban_s \times Post_t) \\ + \beta_{ebp} \cdot (Election_s \times Ban_s \times Post_t) + \varepsilon_{jst} \end{aligned} \tag{1}$$

y_{jst} is any dependent variable of interest for unit j in state s at time t. δ_s are state fixed-effects that account for state-specific time-invariant geographic, historical, or cultural characteristics. Controlling for these allows us to isolate the historical or cultural determinants of selection into the decision to elect the judges, or impose bans on independent expenditures. δ_t is the time fixed-effect that accounts for election-cycle or year-specific shocks that affect the variable of interest across all states. I examine the heterogeneous treatment effects for states with judicial elections ($Election = 1$), and states without. Standard errors are clustered at the level of treatment assignment, i.e., at the level of states Abadie et al. (2023). Citizens United ruling affected campaign finance in all political races such as those of governors, state legislators, US Congress. However, these election races are

common across all states. Comparing the effect of Citizens United on states with judicial elections with those without, highlights the importance of judicial elections and the role of such campaign finance restrictions.

$$E[\Delta_t(y_{js})|Election_s = 1] = \beta_{ebp} + \beta_{bp} \ , \ E[\Delta_t(y_{js})|Election_s = 0] = \beta_{bp}$$

To causally identify the effect of the relaxation of campaign finance restrictions, the outcome variable must satisfy the assumption of parallel trends. This assumption is likely to hold if the states that had imposed a ban on independent expenditure do not differ significantly on observables relative to states that had not imposed such bans conditional on the selection procedure. In Table (13), I provide regression evidence that the treatment assignment, i.e. lifting of bans ($Ban = 1$) or the lifting of bans in states with judicial elections ($Election \times Ban = 1$) is uncorrelated with the average productivity measures, such as wage and labor productivity. Table (14) in the Appendix provides further evidence that among states that elect their State Supreme Court judges, whether a state imposed a ban on independent expenditures is uncorrelated to electoral variables such as democratic governor and president vote share, median income, and percentage of rich and poor households. Note that there are no statistically significant differences across states for productivity variables; there may be differences in investment and employment across states with bans on independent expenditures with judicial elections. I account for some of these differences by controlling for state, and state-sector fixed effects as well as state-specific time trends. The parallel trends assumption is later validated in the dynamic event-study specifications discussed along with the two-way fixed-effects regression evidence.

3 Judicial Elections and Competition

3.1 Political Expenditure in Judicial Elections

The National Institute on Money in State Politics (NIMSP) compiles expenditures disclosed by judicial candidates, and campaign finance donors from all 50 states. The NIMSP classifies the donations into different categories depending on the information in each disclosure. These categories include contributions from lawyers, businesses, unions, candidate self-funding, or political parties.

First, I consider the aggregate campaign contributions from different sources over the sample period, 2000-2021. In Figure (3), I combine the sources into the broad categories of Business, Lawyers, Party, and Unions. Small itemized contributions and donations where the source could not be attributed are classified as unassigned. 20% of the donations are unassigned. Trial lawyers constitute most prominent unified group to make direct contributions to judges. Their contributions, combined with those from lobbyists amount to 120 MM which is around 27% of all direct contributions in these elections. Political parties have donated around $50 MM (11%). When I consolidate the donations from different business interests, such donations are the leading source of campaign finance for judges competing in elections and amount to a total of $125 MM (28%). The unions and ideological groups have donated around $50 MM. In summary, the business interests and lawyers are more active than the unions when contributing directly to judicial candidates. Table (12) in the Appendix A.1 provides the summary statistics and illustrates how politically active different groups are.

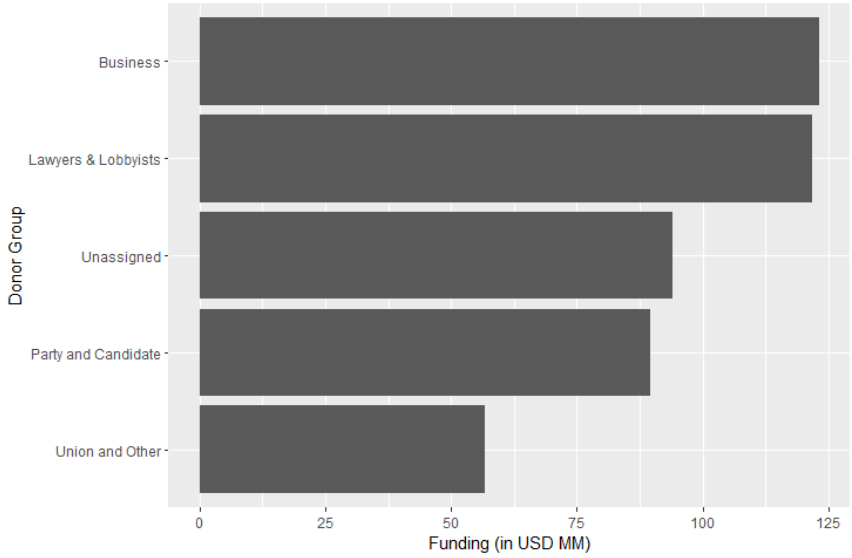


Figure 3: Funding of Judicial Candidates from different Donor Categories

The Supreme Court ruling lifted bans imposed on independent expenditure. Therefore, it is possible that direct expenditure remained unaffected. On the other hand, if competition in elections increased, then one may expect overall expenditures including direct expenditures to increase. In this case, we would expect that the direct expenditure in-

creases after the ruling in states where the bans were lifted relative to the states without such bans. In Figure (4) we compare the average direct expenditure in 2-year election cycles for treated and control states. The average direct expenditure rises sharply after 2010, in treated states. Also note that the pre-period trends in direct expenditure for treated and control states track each other quite well, except for the 2004 elections in Illinois. Note that such aggregated evidence does not account for state-specific factors such as history, culture, natural endowments, state income, and traditional partisan position that may influence the expenditure in judicial elections. In the following sections, I adopt the difference-in-differences (DD) framework to analyze the effect of the Supreme Court ruling on direct and independent expenditures, electoral competition, labor productivity, and investment.

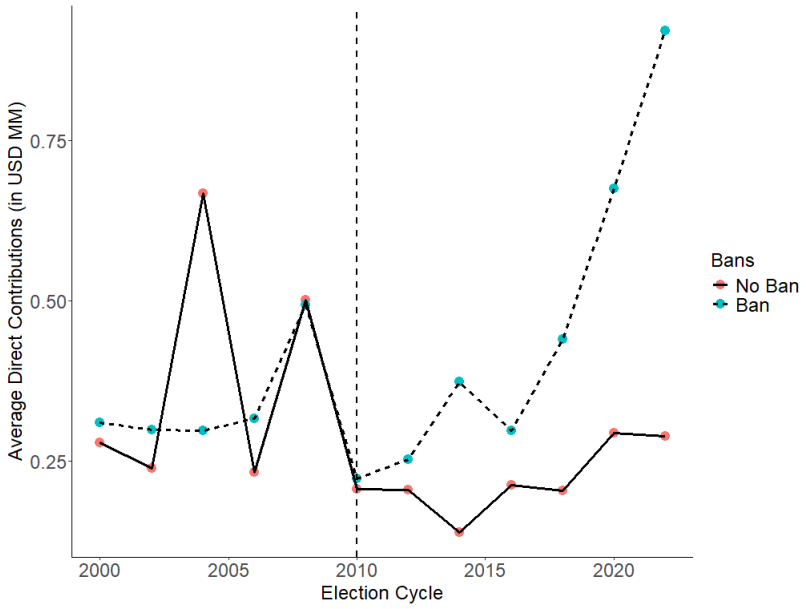


Figure 4: Average funding in USD for judicial elections in Treated vs. Control States

3.2 Political Expenditure: Effect of Citizens United

First, I test whether lifting bans on independent expenditure increased independent expenditure in judicial elections. If this true, then it confirms that the constraints on independent expenditure were binding in judicial elections. Akey et al. (2022), Denes, Scanlon and Schulz (2022), and Spencer and Wood (2014) have already documented this pattern for

other political races. Second, I examine the effect on direct expenditures. Direct expenditures could decline if there is substitution to the cheaper form of donations, or may remain unchanged because the Citizens United ruling did not directly apply to direct expenditures. To test for these hypotheses, I estimate regression equation.

$$y_{ist} = \delta_s + \delta_t + \beta \cdot Ban_s \times Post_t + \varepsilon_{ist} \tag{2}$$

in the regression specification $y_{ist} \in \{\text{Direct Expenditure}_{ist}, \text{Independent Expenditure}_{ist}\}$ for candidate i, in state s and time t, $Ban_s = \mathbb{1}(\text{State imposed ban on independent expenditure})$, $Post = \mathbb{1}(t > 2010)$. $\{\delta_s, \delta_t\}$ are state and time fixed-effect. The state fixed-effects account for state-specific time-invariant characteristics such as history, culture, and partisan electoral preferences. I present the estimates for the average effect of Citizens United on the direct and independent expenditures in Table (3). The average increase in direct expenditure is nearly $\$220,000$, and the independent expenditure increases by $\$300,000$.

Table 3: Effect on Political Finance of Judges

Note: This table presents the estimation results of Equation (1). The dependent variable is the total expenditure by a candidate in the judicial elections, measured in USD MM. Variable *Ban* indicates the states that had imposed a ban on independent expenditures by unions or corporations, which were rendered unconstitutional by the Supreme Court in 2010. The specifications in each column vary depending on the inclusion of state, and year fixed effects. Standard errors are clustered at the state level.

	(1) Independent Expenditure (in MM)	(2) Independent Expenditure (in MM)	(3) Direct Expenditure (in MM)	(4) Direct Expenditure (in MM)
Post	-0.49***		-0.39***	
	(0.13)		(0.11)	
Ban			-0.02	
			(0.15)	
Ban × Post	0.26*	0.30**	0.18*	0.22**
	(0.12)	(0.13)	(0.10)	(0.10)
Election Cycle FE	N	Y	N	Y
State FE	Y	Y	N	Y
Incumbency FE	Y	Y	Y	Y
N	251	251	1,227	1,227
R-sq.	0.35	0.36	0.08	0.27

Next, I test the assumption of parallel trends in direct expenditure and examine the

dynamic effects of the Supreme Court ruling on the funding of representatives in elections.[9] I estimate the following regression equation,

$$y_{ist} = \delta_s + \delta_t + \sum_{\substack{\tau=-5 \\ \tau \neq 0}}^{6} \beta_\tau \cdot Ban_s \times D_{t+\tau} + \varepsilon_{ist} \tag{3}$$

The 2010-11 election cycle is the reference. The coefficients indicate the difference in pre and post-treatment outcomes between treated (where Citizens United invalidated bans on independent expenditures) and control states relative to the difference in the 2010 election cycle. Figure (5) shows that the direct expenditure in treated and control states follows parallel trends in the pre-period. Interestingly, after Citizens United, the direct expenditures also in treated states increased compared to the control states indicating an overall increase in expenditures in judicial elections.

Dissecting the sources of this increase in expenditures, I find that the increase is mainly driven by businesses, political parties, and unassigned contributions. Interestingly, contributions from trial lawyers, the second-largest source of direct contributions did not increase differentially for the states with bans on independent expenditures after the Citizens United ruling. This is reasonable considering, Citizens United which invalidated the bans on independent expenditure eased campaign finance restrictions for firms, unions, and special interest groups.

Discussion Earlier in this section, I alluded to a possible explanation for why direct expenditure may increase when restrictions on independent expenditures are relaxed. I now provide evidence that is consistent with the view that incumbents are adept at using their position to get direct contributions, and challengers benefit from independent expenditures by groups with intentions to change the status quo. In Table (4), I consider the average independent and direct expenditure for candidates who are challengers, incumbents, or competing for an open seat. In states with bans, the pre-2010 independent expenditures are quite low compared to direct expenditure, and the incumbents enjoy a clear financing

[9]The independent expenditure data compiled by NIMSP has limited coverage for 13 states starting from 2006 due to poor disclosure. In a separate regression, available on request, I verify that the direct expenditures increase after Citizens United for this limited sample as well.

Note: This figure presents the estimation results of Equation (3). The dependent variable is the political expenditure by a judicial candidate, measured in USD MM. The figures indicate the coefficients and 90% confidence intervals that illustrate the dynamic effects on labor productivity due to the lifting of the bans imposed on independent expenditures by unions or corporations, which were rendered unconstitutional by the Supreme Court in 2010. Event Time, 0 is the year 2010. All estimations include state and year fixed effects. Standard errors are clustered at the level of the state.

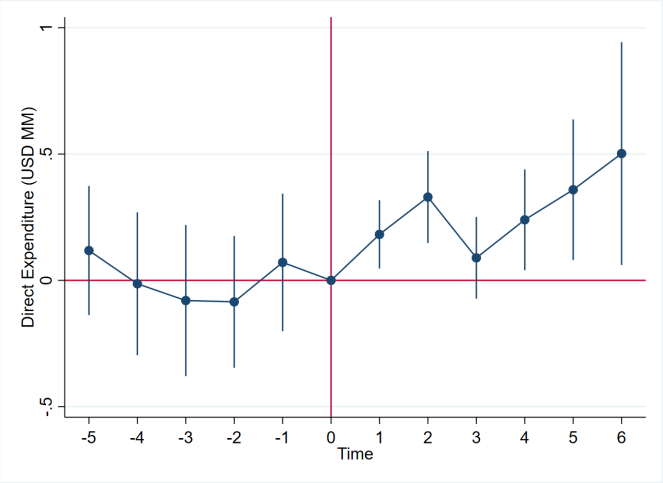
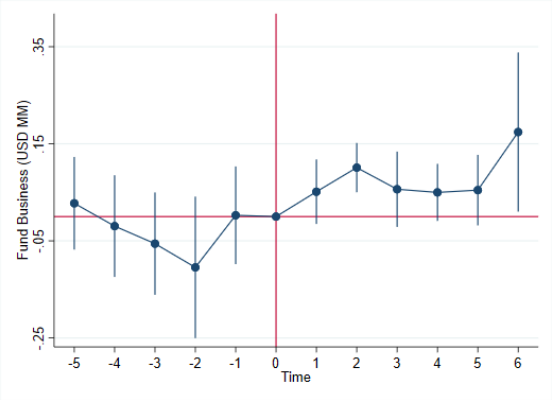
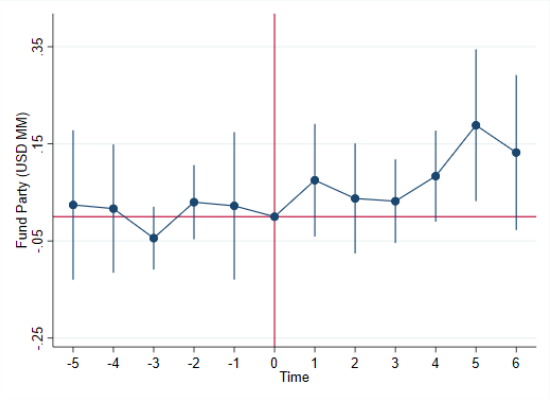


Figure 5: Event study plots. Event time is the 2010-2011 election cycle.

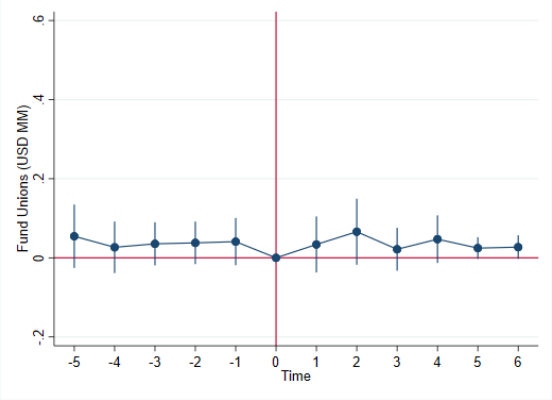
Note: This figure presents the estimation results of Equation (3). The dependent variable is the political expenditure by a judicial candidate, measured in USD MM from various sources such as Business groups in Panel (a), Party and self-funding from candidates in Panel (b), and funding from unions and other special interest groups in Panel (c). The figures indicate the coefficients and 90% confidence intervals that illustrate the dynamic effects on labor productivity due to the lifting of the bans imposed on independent expenditures by unions or corporations, which were rendered unconstitutional by the Supreme Court in 2010. Event Time, 0 is the year 2010. All estimations include state and year fixed effects. Standard errors are clustered at the level of the state.



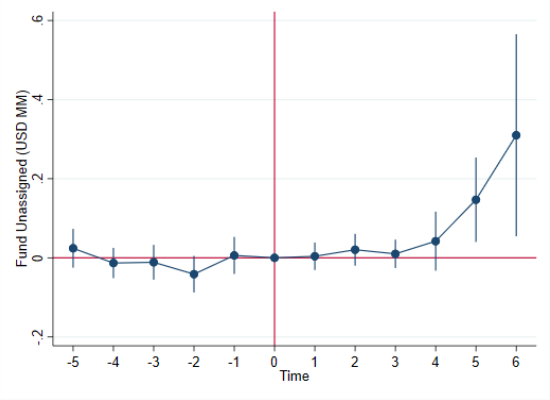
(a) Funding Business



(b) Funding Party



(c) Funding Unions



(d) Funding Unassigned

Figure 6: Changes in directe contributions to judicial candidates from different donor categories

advantage relative to challengers. During the same period, the challengers in states without such bans (Table 4, Panel (a)) benefit more from independent expenditures as they are commonly used to attack the incumbents, while incumbents spend more directly. Therefore, removing restrictions on independent expenditure makes it easier for groups to attack the incumbent, weakens the incumbent's likelihood of winning, and increases the entry of new challengers in the spirit of Osborne and Slivinski (1996) and Besley and Coate (1997) citizen-candidate models of political competition. Political entry should increase competition in judicial elections and increase turnover. I test whether electoral competition increases following the Citizens United ruling in the following section.

Table 4: Summary Statistics: Judge election expenditure (Sample of 13 states due to limited availability of independent expenditures data)

	Panel (a): States without bans			
	(Pre-2010)		(Post-2010)	
	Independent Expenditure (USD MM)	Direct Expenditure (USD MM)	Independent Expenditure (USD MM)	Direct Expenditure (USD MM)
Challenger	0.30	0.15	0.34	0.15
Incumbent	0.17	0.24	0.43	0.57
Open	-	-	0.92	0.97
Total	0.24	0.19	0.59	0.64
	Panel (b): States with bans			
	(Pre-2010)		(Post-2010)	
	Independent Expenditure (USD MM)	Direct Expenditure (USD MM)	Independent Expenditure (USD MM)	Direct Expenditure (USD MM)
Challenger	0.05	0.28	0.27	0.46
Incumbent	0.12	0.68	0.28	0.81
Open	0.25	0.44	0.57	1.08
Total	0.12	0.51	0.34	0.73

3.3 Electoral Competition

The 2010 Supreme Court ruling eased access to indirect expenditure by allowing a broader set of constituents to donate freely and anonymously. In this section, I test if removing constraints on independent expenditures increased entry in judicial elections. Next, I test if the entry of candidates is also associated with more closely competed electoral races. Finally, I test if increased entry and competition lead to higher political turnover for incumbent judges.

I estimate the same regression equation (2) replacing y_{ist} with election level dependent variable in each election i in state s in election cycle t. The dependent variables are the

number of candidates per seat competing in an election, the vote margin of winners, and an indicator for the incumbent winning the race. Since there could be many races in which only one candidate (incumbent) runs for election and some elections where there are no incumbents (elections for open seats), I control for the election type fixed effect to account for such election-specific differences. In Table (5), Columns (1) and (2), when the bans on independent expenditure are removed, more challengers enter the race along the lines of Osborne and Slivinski (1996) and Besley and Coate (1997). In particular, if before 2010, there were, on average, 3 (1.5 candidates per seat) candidates competing for 2 judicial seats, after the removal of bans, there are 2 candidates per seat.

Figure 7: Average Vote Margin in Treated v. Control States

The second piece of evidence in Table (5), Column (3) implies that there is a 15% reduction in the vote margin of the winners. Figure (7) illustrates this finding graphically. I document a clear decline in the average vote margin in treated states relative to the control states after the Citizens United ruling.

The third piece of evidence, included in the appendix, deals with the competitive advantage of incumbents in judicial elections. The incumbency advantage, measured as the likelihood of the incumbent winning a re-election bid, also declines after 2010. In Table (17), (in Appendix C.1), I show that the incumbent's likelihood of winning the re-election declines by 14 pp. from the baseline of 90% in treated states after 2010. Overall, I find

Table 5: Electoral Competition

Note: This table presents the estimation results of Equation (1). Columns (1) and (2) show the results with the number of candidates per seat in judicial elections as the dependent variable. The dependent variable in Columns (3) and (4) is the percentage difference in votes of the winner and the closest losing rival. Variable *Ban* indicates the states that had imposed a ban on independent expenditures by unions or corporations, which were rendered unconstitutional by the Supreme Court in 2010. The specifications in each column vary depending on the inclusion of state and year fixed effects. Standard errors are clustered at the state level.

	(1)	(2)	(3)	(4)
	No. of Candidates	No. of Candidates	Vote Margin	Vote Margin
Ban × Post	0.57**	0.57**	-0.16**	-0.15**
	(0.23)	(0.26)	(0.06)	(0.06)
Election Cycle FE	N	Y	N	Y
State FE	N	Y	N	Y
N	675	675	638	638
R-sq.	0.29	0.41	0.14	0.33

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

evidence consistent with Akey et al. (2022) that the 2010 decision of the Supreme Court had a democratizing effect. To my knowledge, this is the first paper that documents this effect on the competition in judicial elections.

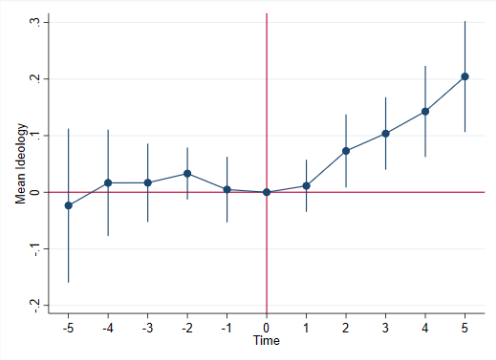
3.4 Effect on Bench Composition

The State Supreme Court cases are decided by a bench of judges, not by the jury or an individual judge. Although judges intend to interpret the state law in its spirit and based on precedent, their personal preferences or interpretation of law frequently affects their final decision as documented by Windett, Harden and Hall (2015), Brace, Langer and Hall (2000). These authors proxy for judge preferences using a spatial ideology measure for each judge. As we have seen, removing restrictions on campaign finance increased the flow of money and competition in judicial elections. It is important to understand the effect of such changes in elections on the ideology of the State Supreme Court benches. In this

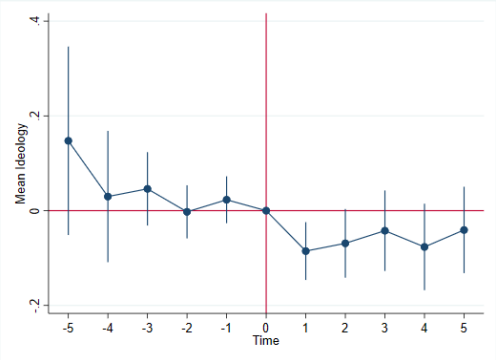
section, I provide evidence that the average ideology of the judicial bench shifts in response to the 2010 Citizens United decision by the Supreme Court.

I restrict attention to the Common Space ideology score (CFScore) from Bonica and Woodruff (2015). This score relies on revealed ideological preferences by assigning an ideological score depending on the political donations by the judicial candidate. Bonica and Woodruff (2015) document that ideology scores constructed using this methodology predict the votes of judges, and therefore, the ideological leaning of the judges affects how cases may be decided.

Note: This figure presents the estimation results of equation (3). The dependent variable is the mean ideology (CFscore) of the judicial bench, which takes values in $[-2, 2]$, with higher values indicating a more right-leaning ideology for a given state s in year t. Panel (a) shows results for states with judicial elections for state Supreme Court judges, and Panel (b) for states that use some form of appointment. The figures indicate the coefficients and 90% confidence intervals that illustrate the dynamic effects on ideology due to the lifting of the bans imposed on independent expenditures by unions or corporations, which were rendered unconstitutional by the Supreme Court in 2010. Event Time, 0 is the year 2010. All estimations include state and year fixed effects. Standard errors are clustered at the state level.



(a) States With Judicial Elections



(b) States Without Judicial Elections

Figure 8: Effect on Mean Judicial Bench Ideology (CFscore) Bonica and Woodruff (2015)

I estimate the specification in Equation (3) within the window of 5 leads and lagged years relative to 2010. Reliable values of the ideology of judges are only available until 2015. The right-shifting pattern of mean bench ideology is illustrated in Figure (8). However, this evidence is suggestive because Bonica and Woodruff (2015) compute these measures for

first time elected judges until 2012. Nevertheless, it is plausible that there is no systematic selection of judges contesting re-elections based on their ideology; the pattern documented suggests that right-leaning judges are more likely to retain their seats on the bench than left-leaning judges in states with judicial elections where the bans on independent expenditure were invalidated by the Citizens United ruling in 2010.

4 Productivity and Judiciary

4.1 Conceptual Framework

Consider a one factor and one good economy. Consumers derive utility from consuming the final good. The final good's production requires the factor f, which can also be considered an intermediate good. The price of the final good is the numeraire. The final good is produced in a perfectly competitive final goods market according to the production function,

$$y = f^{\alpha}$$

The price of the factor is p_f. I assume that the inputs to the final good are relationship-specific and susceptible to hold-up. In other words, the producer of the final good and the supplier of the intermediate good write contracts to overcome the hold-up problem as in Grossman-Hart-Moore. However, contracts are incomplete, and a contractual dispute may arise with probability $\pi \in [0, 1]$. Conditional on a dispute, the final goods producer is at fault with probability $q = 0.5$, and the court's accuracy is $p \in [0, 1]$. A higher p signifies a well-functioning court. I assume that in the benchmark with perfect accuracy, $p = 1$, the court gets rid of any inefficiency, but with inaccurate decisions, there is a dead-weight cost $0.5\pi(1-p)cp_f f > 0$. The supplier also faces an exactly similar cost of $0.5\pi(1-p)cp_f f$. Therefore, the final goods sector chooses the input f to maximize,

$$\Pi = \max_f f^{\alpha} - p_f f \cdot \underbrace{\left(1 + \frac{\pi}{2}(1-p)c\right)}_{\tau}$$

The distortion τ disappears if contracts are complete $\pi \to 0$ or the courts are accurate $p \to 1$. The production of the final good

$$f^* = \left(\frac{\alpha}{p_f \tau}\right)^{\frac{1}{1-\alpha}}$$

Consumers' indirect utility from the consumption of the final good decreases if the distortion τ increases.

$$\alpha \log(f^*) = \frac{\alpha}{1-\alpha}\left(\log\left(\frac{\alpha}{p_f}\right) - \log(\tau)\right) \propto -\log(\tau)$$

4.1.1 Electoral Accountability

The distortion in input choice is due to lower quality courts. Production efficiency will improve if such distortion is lower. Next, I outline the role of elections and campaign finance in the reduction of distortion due to the inferior quality of courts. Prior evidence from Bonneau and Hall (2009), Hall (2007), and Hall (2001) suggests that attack ads and competitive election campaigns increase the voters' scrutiny. I argue that less restrictive campaign finance improves access to information and voters' sensitivity to court conduct, which makes the judges more accountable. This naturally leads to better judicial conduct and reduces distortions in the production process. In this subsection, I demonstrate this accountability mechanism through a simple conceptual framework based on Persson and Tabellini (2002) model of electoral accountability where voters draw an inference about the judge's conduct based on a noisy signal about the incumbent's action who wants to retain the office but at the same time exact rents from holding it.

Consider an incumbent judge I, seeking re-election. The judge has an inherent tendency to judge cases based on his ideological leanings, which decreases accuracy and increases distortion τ. This distortion affects the input choice. I model the voter's preferences using the indirect utility derived earlier. Mainly, voters prefer less distortion. The judge, through his conduct, wants to maximize his utility, which depends on rents from low-effort decision-making $r \leq \overline{r}$ and ego rents from retaining the political office summarized in $R > 0$. There are 3 periods to model the accountability mechanism of elections. The judge has CRRA preferences with risk-aversion parameter $\gamma = 2$, i.e. $u(r) = -1/r$. The judge maximizes

the expected utility,

$$\max_{r_1,r_2} -\frac{1}{r_1} + Pr(I \text{ wins}) \cdot R$$

The timing of the game is as follows:

1. $t = 0$, the judge I chooses r_1.

2. $t = 1$, the political alignment variable η^I is realized, the challenger enters the race, the voters observe a noisy measure of the distortion

   $$\tilde{\tau} = \underbrace{\eta^I r_1}_{\tau} \cdot \underbrace{\nu}_{\text{noise}}.$$

   A lower value of alignment η^I signifies a stronger alignment and lower distortion despite a high r. They vote to maximize their utility, taking the average alignment of the challenger as given.

3. $t = 2$, the election results are out, judges choose r_2, voters earn their utility, and the game ends.

The voters' utility is given by

$$w(\tau) = -\log(\tau).$$

Note that at the time of choosing r_1, the candidate does not know the alignment η^I. However, he anticipates that the voters do not observe η^I but infer the level of rents from the observed distortion $\tilde{\tau}$ and vote. η^I and ν are independent and drawn from the log-normal distribution.

$$\log(\eta^j) \sim \mathcal{N}(\mu_\eta^j, \sigma_\eta^2) \text{ for all } j \in \{I, C\} \ , \ \log(\nu) \sim \mathcal{N}(0, \sigma_\nu^2).$$

I solve the model by backward induction. At $t = 2$, the final period, if the judge retains his seat, he earns R as ego rents, which includes payoff from setting the highest $r_2 = \overline{r}$. The probability that the incumbent wins is,

$$\begin{aligned} Pr(I \text{ wins}) &= Pr(E[w(\tau_2^I|\tilde{\tau}_1)] > E[w(\tau_2^C|\eta^C)]) \\ &= Pr(E[\log(\eta^I)|\tilde{\tau}_1] < E[\log(\eta^C)]) \\ &= Pr(E[\log(\eta^I)|\tilde{\tau}_1] < \mu_\eta^C) \end{aligned}$$

The voters infer the candidate's alignment based on the observed signal $\tilde{\tau}$ and vote for the incumbent if he promises a higher utility than the unconditional expected alignment with the challenger C. Note that the voters update their beliefs about η^I conditional on observing the signal $\tilde{\tau}$. They learn in a Bayesian manner as in DeGroot (1974). Therefore,

$$\log(\eta^I)|\tilde{\tau} \sim \mathcal{N}(\bar{\eta}(\tilde{\tau}_1), \bar{\sigma}^2(\tilde{\tau}_1))$$

where,

$$\bar{\eta}(\tilde{\tau}_1) = (\log(\tilde{\tau}_1) - E[\log(r_1)]) \cdot \frac{\sigma_\eta^2}{\sigma_\eta^2 + \sigma_\nu^2} + \mu_\eta^I \cdot \frac{\sigma_\nu^2}{\sigma_\eta^2 + \sigma_\nu^2}$$

The incumbent takes this belief as given and chooses r_1 to maximize the payoff at $t = 0$. The probability that the incumbent wins conditional on choosing r_1 is

$$\begin{aligned} Pr(I \text{ wins}) &= Pr\left((\log(r_1) + \log(\eta\nu) - E[\log(r_1)] - \mu_\eta^C) < 0\right) \\ &= \Phi\left((\mu_\eta^C - \mu_\eta^I)\frac{\sqrt{\sigma_\eta^2 + \sigma_\nu^2}}{\sigma_\eta^2} + \frac{\log(r_1) - E[\log(r_1)]}{\sqrt{\sigma_\eta^2 + \sigma_\nu^2}}\right) \end{aligned}$$

The incumbent chooses r_1 conditional on the probability of winning. If there is no difference in expected alignment, then $\mu_\eta^C = \mu_\eta^I$. The first order condition with respect to r_1 and the rational expectations, $\log(r_1^*) = E[\log(r_1^*)]$ results

$$r_1^* = \frac{1}{\phi\left(\frac{\log(r_1^*) - E[\log(r_1^*)]}{\sqrt{\sigma_\eta^2 + \sigma_\nu^2}}\right) R} = \frac{\sqrt{2\pi(\sigma_\eta^2 + \sigma_\nu^2)}}{R}$$

Making campaign finance less restrictive increases competition by improving the information of the voters so that σ_ν is lower. This makes the voters more sensitive to the incumbent's choice and induces the incumbent to choose lower rent r_1^*, which in turn improves the expected payoff of voters in equilibrium $\mu_\eta^I - \log(r_1^*)$. Thus, more competitive judicial elections increase the accountability of judges and prevent them from judging cases against the voters' interests.

Greater accountability results in lower distortion as it encourages contracting parties to make more relationship-specific investments, which improves productivity and, in turn, encourages the entry of establishments that were too constrained before. In the next

subsection, I test whether removing restrictions on independent expenditures and the accompanying competition in judicial elections leads to higher productivity, employment, and establishment entry. I also test whether the effects are stronger for sectors where incomplete contract risk is higher, such as more downstream sectors that employ a variety of inputs from different sectors, rely on a more skilled labor force (greater relationship-specific investment), and are more dependent on contract enforcement for production.

4.2 Productivity and Campaign finance

In this section, I examine how more competitive judicial elections affect the legal environment and labor productivity. The effect of changes in the legal environment on labor productivity is important to understand for the following reason. The legal environment within the state affects the labor laws directly, labor responds more flexibly to the easing of contracting frictions on other complementary inputs, and workers constitute the majority of the voting population in judicial elections and their political power has direct implications for their productivity. I measure labor productivity as the total value added in USD per worker. I estimate the following regression specification and highlight how removing restrictions on independent expenditures by firms, affected states with and without judicial elections.

$$\begin{aligned} y_{jst} = {} & \beta_{eb} \cdot (\text{Election}_s \times \text{Post}_t) + \beta_{bp} \cdot (\text{Ban}_s \times \text{Post}_t) + \beta_{ebp} \cdot (\text{Election}_s \times \text{Ban}_s \times \text{Post}_t) \\ & \delta_{sj} + \delta_{jt} + \beta_{ST} \cdot (s \times t) + \varepsilon_{jst} \end{aligned} \tag{4}$$

where y_{jst} is the dependent variable of interest for the 4-digit NAICS sector j in state s at time t. I control for state-sector fixed effects. Therefore, I control for factors such as the suitability of geographic conditions, administrative organization, historical factors that may lead to differences in productivity of a sector in a given state. I also allow for state and sector-specific time trends. β_{bp} and $\beta_{bp} + \beta_{ebp}$ are the coefficients of interest.

Table (6) illustrates the effect of the Citizens United ruling on labor productivity. Column (1) shows that labor productivity increases by $\$13,000$ per worker after bans on independent expenditures were removed. Columns (2) and (3) show the heterogeneous effect in the judicial election and non-election states and that within-sector productivity

increases significantly in states with judicial elections after the removal of bans on independent expenditures. Column (3) tests for the significance of coefficient estimates ($\beta_{bp} + \beta_{ebp}$), which represents the effect on productivity in states with judicial elections. Productivity increases by $\$21,000$, which corresponds to an 8% increase in productivity over the pre-period average (6.6% over the average productivity in 2010). Column (4) shows that the results are robust to controlling for state-by-sector fixed effects. Column (5) illustrates that the effect on productivity is robust to state-specific linear time trends, indicating that the effect on productivity does not pick up differential productivity trends across the states.

Table 6: Effect on Labor Productivity (USD/emp)

Note: This table presents the estimation results of equation (4) The dependent variable is labor productivity, measured as value added in USD 1000s per worker. Variables *Elect* indicates states with judicial elections for state supreme court judges, *Ban* indicates the states that had imposed a ban on independent expenditures by unions or corporations, which were rendered unconstitutional by the Supreme Court in 2010. The specifications in each column vary depending on the inclusion of state-by-sector, and sector-by-year fixed effects. Sector is defined at the 4-digit NAICS code level. Standard errors are clustered at the state level.

	(1)	(2)	(3)	(4)	(5)
	Labor Productivity	Labor Productivity	Labor Productivity	Labor Productivity	Labor Productivity
Ban × Post	11.08*	-7.27			
	(6.21)	(10.58)			
Election × Ban × Post		28.75*	21.46**	19.67**	24.51**
		(14.72)	(10.22)	(8.98)	(10.79)
State FE	-	Y	Y	-	-
State × Sector FE	Y	N	N	Y	Y
Sector ×Year FE	Y	Y	Y	Y	Y
State Time Trend	N	N	N	N	Y
N	36,324	36,348	36,348	36,324	36,324
R-sq.	0.75	0.47	0.47	0.75	0.75

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

I verify that the increase in labor productivity is not driven by the more intensive utilization of the labor force. In Table (7), I show that the increase in productivity measured as value added per hour of labor also increases by 9% which is in line with evidence in Table (6) for value-added per worker.

Table 7: Effect on Labor Productivity (USD/hr)

Note: This table presents the estimation results of equation (4) The dependent variable is labor productivity, measured in USD 1000s value added per hour. Variables *Elect* indicates states with judicial elections for state supreme court judges, *Ban* indicates the states that had imposed a ban on independent expenditures by unions or corporations, which were rendered unconstitutional by the Supreme Court in 2010. The specifications in each column vary depending on the inclusion of state-by-sector, and sector-by-year fixed effects. Sector is defined at the 4-digit NAICS code level. Standard errors are clustered at the state level.

	(1) Labor Productivity	(2) Labor Productivity	(3) Labor Productivity	(4) Labor Productivity	(5) Labor Productivity
Ban × Post	6.62**	-3.00			
	(3.15)	(5.21)			
Election × Ban × Post		15.61**	12.60**	11.13**	12.30**
		(7.65)	(5.58)	(4.79)	(5.29)
State FE	-	Y	Y	-	-
State × Sector FE	Y	N	N	Y	Y
Sector ×Year FE	Y	Y	Y	Y	Y
State Time Trend	N	N	N	N	Y
N	36,670	36,687	36,687	36,670	36,670
R-sq.	0.73	0.46	0.46	0.73	0.73

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

4.2.1 Dynamic Effect on Labor Productivity

The effect on labor productivity could be due to differential trends in the pre-period. The effect of the removal of bans on independent expenditure, estimated in Equation (4), will be biased if there are pre-period differential trends in labor productivity. To test whether there are pre-period trends, I estimate the dynamic event-study specification in (5), where D_t is the indicator for the year relative to 2010, the year of the Citizens United ruling. Figure (9) provides evidence that there are no pre-period trends in labor productivity and the difference between the productivity across states where the bans were lifted and where the ruling had no change in campaign finance laws is not significantly different than the difference in the year 2010. Panel (a) illustrates the increase in productivity for states with judicial elections after Citizens United, and Panel (b) shows that there is no effect on labor productivity in states where judges to the high court are not elected. Therefore, although Citizens United affected all kinds of political races, the effect on judicial elections matters significantly for the legal environment and labor productivity.

Note: This figure presents the estimation results of equation (5). The dependent variable is labor productivity, measured as value added in USD 1000 per employee. Panel (a) shows results for states with judicial elections for state Supreme Court judges, and Panel (b) for states that use some form of appointment. The figures indicate the coefficients and 90% confidence intervals that illustrate the dynamic effects on labor productivity due to the lifting of the bans imposed on independent expenditures by unions or corporations, which were rendered unconstitutional by the Supreme Court in 2010. Event Time, 0, is the year 2010. All estimations include state and sector-by-year fixed effects. A sector is defined at the 4-digit NAICS code level. Standard errors are clustered at the state level.

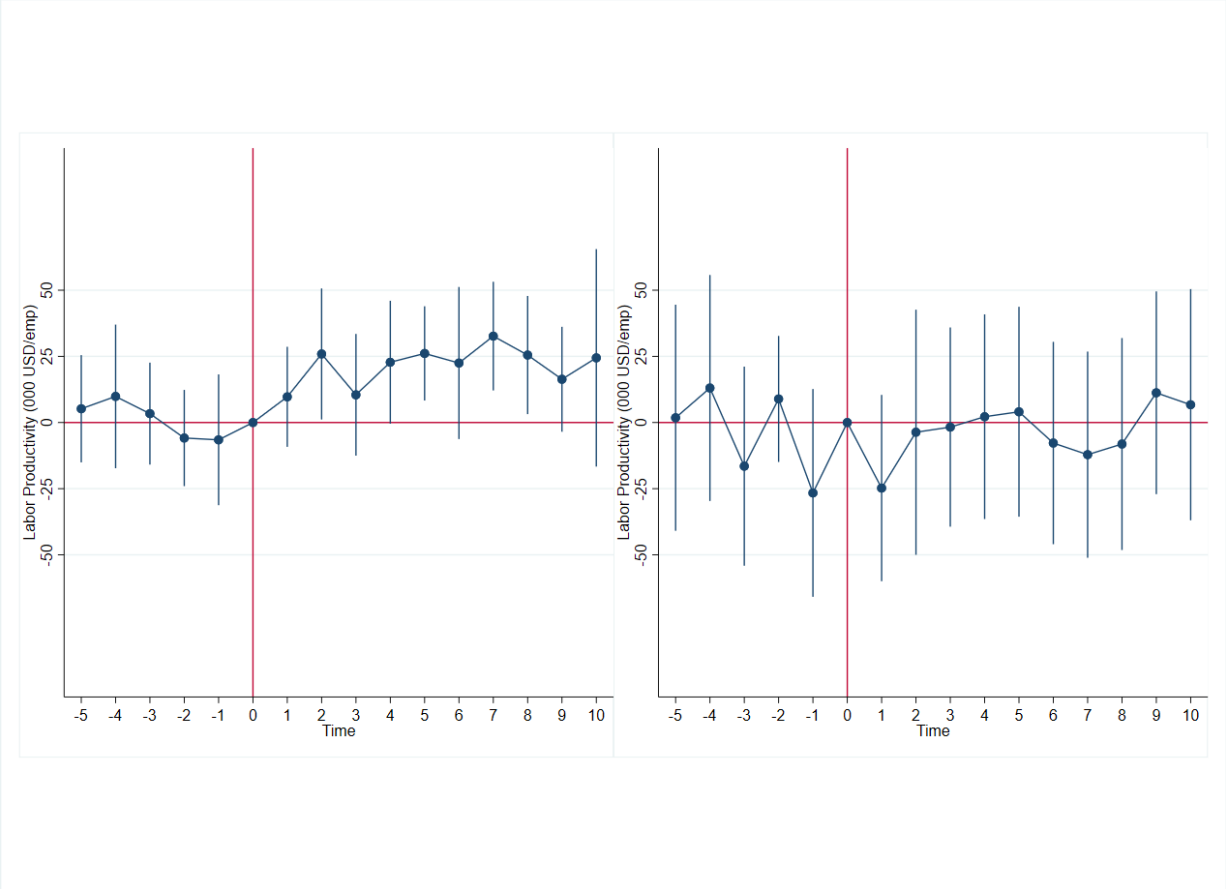


Figure 9: Effect on Labor Productivity in '000 USD /emp: States with Judicial Elections (Left), and without judicial elections (Right)

$$y_{jst} = \delta_{sj} + \delta_{jt} + \sum_{\substack{\tau=-5 \\ \tau \neq 0}}^{T} \beta_\tau \cdot Ban_s \times D_{t+\tau} + \varepsilon_{jst} \tag{5}$$

5 Institutional Reliance: Contract Enforcement

Allowing firms to spend more freely in judicial elections made the races more competitive and increased the threat of getting voted out. The legal environment on average seems to improve as reflected in a more productive labor force. However, if productivity improvements are driven by changes in the legal environment, then the sectors that are more reliant on legal institutions, such as those facing incomplete contracts risk and with under-investment in relationship-specific capital must experience a more pronounced effect on productivity. I test this hypothesis in this section.

Recall from the discussion in section 4.1 that the legal distortion due to low effort and inaccurate decision-making by the judiciary is worse for sectors where a contractual dispute is more likely ($\uparrow \pi$) or where the inputs are relationship-specific and susceptible to hold up. This idea of more reliance on contracts based on relationship-specificity of inputs or product complexity is already explored in the international trade literature, Levchenko (2007) and Nunn (2005) to explain how cross-country quality of legal institutions directly affects the comparative advantage and production choices of firms. The key idea is that if the product is complex, i.e., it requires inputs from several sectors, the producers of this complex good are more exposed to incomplete contracts risk. Such sectors are more susceptible to hold-up than others with fewer inputs or a less complex production process and, therefore, are more reliant on legal institutions for production.

The measure of institutional reliance is the inverse of the Herfindahl-Hirschman Index (HHI) of inputs in the spirit of Levchenko (2007). Reliance on dispersed suppliers indicates a more complex production process. I compute the measure using the input-output matrices compiled by the Bureau of Economic Analysis (BEA) for the year 2000 (before the start of the sample). More details about the measure, its computation, and comparison with Levchenko (2007) are in Appendix D.

$$inputhhi_i = \sum_{j=1}^{N} \left(\frac{E_{ij}}{E_i} \right)^2 \text{ where } E_i = \sum_{j=1}^{N} E_{ij}$$

where E_{ij} is the amount of input sourced by industry i from industry j. The industry distinction is at the 4-digit NAICS level. Higher HHI of inputs corresponds to firms with lower incomplete contracts risk. Therefore, for a measure of institutional reliance, I trans-

form the measure as $contint = -inputthhi$ and an indicator variable for the top tercile of institutional reliance, $Contract = \mathbb{1}(contint > \tau_{\{2/3\}})$ (top tercile) where $\tau_{\{2/3\}}$ denotes the 66-th percentile of *contint*.

To test whether the productivity effects are stronger for institutionally reliant sectors, I estimate the following regression equation,

$$\begin{aligned} y_{jst} = {} & \beta_{bp} \cdot (Ban \times Post) + \beta_{ebp} \cdot (Election \times Ban \times Post) \\ & + \beta_{bhp} \cdot (Ban \times Contract \times Post) + \beta_{ebhp} \cdot (Election \times Ban \times Contract \times Post) \\ & + \mathcal{I}(Election, Ban, Contract, Post) + \delta_{sj} + \delta_{jt} + \varepsilon_{jst} \end{aligned} \tag{6}$$

where $\mathcal{I}(Election, Ban, Contract, Post)$ includes all the 2 and 3 term interactions between the variables, except for those already specified in Equation (6). The coefficients of the variables (and different combinations of their sums), $\{Ban \times Post,\ Election \times Ban \times Post,\ Ban \times Post \times Contract,\ Election \times Ban \times Post \times Contract\}$ allow us to quantify the heterogeneous effects on productivity depending on whether the sector is more or less institutionally-reliant. Sectors with greater and smaller reliance on legal institutions may follow different time trends. However, the regression specification estimates the heterogeneous effects of relaxing campaign finance laws on different sectors in a single estimation.

Table (21) in the Appendix (D) provides the estimation results for the above specification. However, it is more informative to compute the treatment effects by summing coefficients on the variables of interest. First, I define the different quantities of interest, and in Table (8), I test whether Citizen United had heterogeneous effects on sectors with more or less reliance on legal institutions.

I am interested in the effect conditional on the selection procedure and the degree of institutional reliance of the sector, $\boldsymbol{X} = (Elect, Contract)$,

$$\begin{aligned} D(\boldsymbol{X}) = {} & (E[y_{kst}|Ban = 1, Post = 1, \boldsymbol{X}] - E[y_{kst}|Ban = 1, Post = 0, \boldsymbol{X}]) \\ & - (E[y_{kst}|Ban = 0, Post = 0, \boldsymbol{X}] - E[y_{kst}|Ban = 0, Post = 0, \boldsymbol{X}]) \end{aligned}$$

For example, the average effect of removing bans on independent expenditures on industries

with higher reliance on institutions ($Contract = 1$) in states without judicial elections is

$$D(\text{no election, Institutionally Reliant}) = D(Election = 0, Contract = 1) = \beta_{bhp} + \beta_{bp}$$

Table 8: Treatment Effect Heterogeneity due to reliance on Contract Enforcement

Note: This table presents the estimation results of equation (6) and the corresponding treatment effects for different sub-populations. Columns (1)-(4) show results with Labor Productivity in 1000 USD per worker, logarithm of Capital Expenditure, measured in USD 1000s, logarithm of Employment, and Wage measured in USD 1000 per worker as dependent variables. Variables *Elect* indicates states with judicial elections for state supreme court judges, *Ban* indicates the states that had imposed a ban on independent expenditures by unions or corporations, which were rendered unconstitutional by the Supreme Court in 2010. Variable *Contract* indicates sectors with high reliance on contract enforcement. All regressions include state, sector-by-year fixed effects, and state-specific linear time trends. Sector is defined at the 4-digit NAICS code level. Standard errors are clustered at the state level.

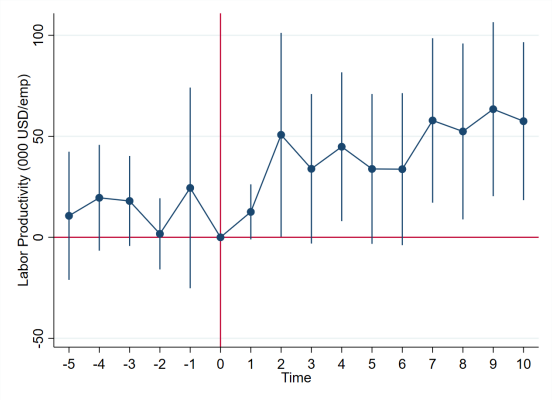
	(1)	(2)	(3)	(4)	(5)
	Labour Productivity	log(CapEx)	log(Emp)	Rev/Mat. Cost	Wage (USD/emp)
D(Contract = 1, Elect = 0)	5.73	-0.03	-0.03	-0.01	-0.15
$\beta_{bhp} + \beta_{bp}$	(0.44)	(0.66)	(0.40)	(0.90)	(0.80)
D(Contract = 0, Elect = 0)	3.04	0.01	0.01	0.00	0.34
β_{bp}	(0.85)	(0.86)	(0.69)	(0.92)	(0.55)
D(Contract = 1, Elect = 1)	32.27***	0.07	0.03	0.13*	-0.03
$\beta_{ebhp} + \beta_{bhp} + \beta_{ebp} + \beta_{bp}$	(0.00)	(0.15)	(0.41)	(0.09)	(0.97)
D(Contract = 0, Elect = 1)	4.90	0.06	0.05**	0.05**	-0.7
$\beta_{ebp} + \beta_{bp}$	(0.66)	(0.13)	(0.04)	(0.04)	(0.30)

p-values in parentheses

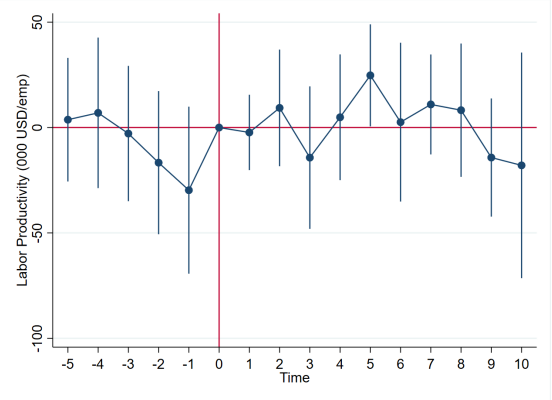
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table (8) illustrates how the labor productivity increase is statistically and economically significant for sectors with greater reliance on legal institutions (or exposure to incomplete contracts risk). Moreover, this increase is only observed for states that hold judicial elections for the State Supreme Court judges. The effects on physical capital and employment growth rates are also higher for more institutionally-reliant sectors. Column (5) estimates of the effect on wages display no such heterogeneous treatment effects for sectors depending on their institutional reliance. This suggests that higher labor productivity is not associated with a higher monetary wage for workers. Figure (10) estimates Equation (5) on two different sub-samples, one with high institutional reliance sectors and the other with low institutional reliance sectors, to highlight the dynamic effect of the change in campaign finance laws on labor productivity. Panels (a) and (b) show the effect on states with judicial

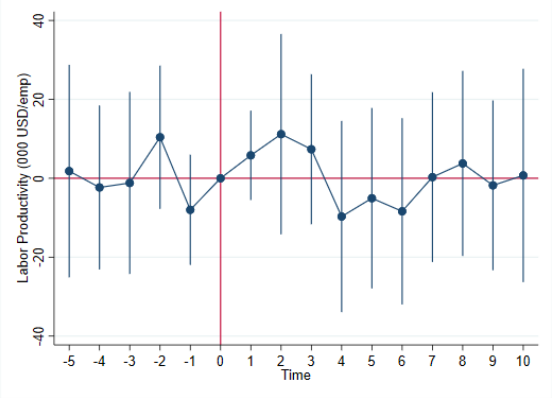
Note: This figure presents the estimation results of equation (5). The dependent variable is labor productivity, measured as USD value added per emp. Panels (a) and (b) show results for states with judicial elections for State Supreme Court judges and Panels (c) and (d) for states without judicial elections of the State Supreme Court. Panels (a) and (c) restrict the sample to sectors with high reliance on institutions, while Panels (b) and (d) restrict the sample to sectors with low reliance on institutions. The figures indicate the coefficients and 90% confidence intervals that illustrate the dynamic effects on labor productivity due to the lifting of the bans imposed on independent expenditures by unions or corporations, which were rendered unconstitutional by the Supreme Court in 2010. Event Time, 0 is the year 2010. All estimations include state and sector-by-year fixed effects. The sector is defined at the 4-digit NAICS code level. Standard errors are clustered at the state level.



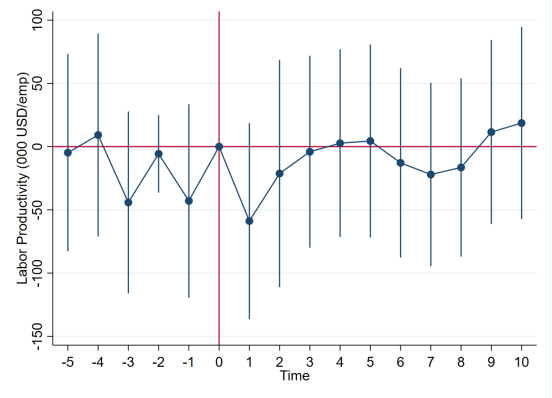
(a) High Incomplete Contracts Risk Sectors in States with Judicial Elections



(b) Low Incomplete Contracts Risk Sectors in States with Judicial Elections



(c) High Incomplete Contracts Risk Sectors in States without Judicial Elections



(d) Low Incomplete Contracts Risk Sectors in States without Judicial Elections

Figure 10: Effect on Labor Productivity in USD /emp

elections. The productivity improvement is concentrated in institutionally-reliant sectors (Panel (a)). Panels (c) and (d) reaffirm the results from previous sections that the effect on labor productivity is mainly driven by states that hold judicial elections for the State Supreme Court with no heterogeneous effect of Citizens United on sectors more or less reliant on the quality of the courts.

5.1 Effect on Investment and Employment

The increase in labor productivity may be due to the firms facing lower employee termination costs, possibly following a decline in the collective bargaining power of workers. This should be reflected in a decline in the wages of workers or lower employment as unproductive workers are fired. On the other hand, the productivity improvement could be due to the reduction in legal friction and more efficient utilization of factors. If such a reduction of legal or contractual frictions is at play, then we should observe a rise in the human and physical capital growth rates, i.e., the growth rate of capital expenditure and production workers should be higher. The revenue per unit cost of material may also be higher, indicating more productive use of inputs. We test for these by estimating the equation (4), and the results are illustrated in Table (9).

The coefficient estimates in Table (9) are for the effect on the dependent variable conditional on the state electing their supreme court judges. In Columns (1) through (3), I provide evidence that the physical and human capital growth rates and the revenue per material cost are higher in states with judicial elections. Moreover, in Column (4) I illustrate the effect on average wage. If the collective bargaining power of the workers is lower, we can expect a significant decline in the wage rates. There is a 1% decline in wages; however, the coefficient estimate is not statistically significant. All results in Table (9) are robust to controlling for state-specific time trends. In Appendix E, I estimate the effect on labor productivity and employment conditional on the state having Right-to-Work (RTW) laws. States with Right-to-Work laws have lower unionization rates and financially constrained labor unions Fortin, Lemieux and Lloyd (2023), i.e., the unions are weaker in states with RTW laws. I find that labor productivity and employment are higher in states with weaker

unions after Citizens United. This suggests that Citizens United did not curtail the bargaining power of unions but allowed firms to take advantage of reduced legal friction in states where unions were weaker ex-ante. Therefore, the evidence seems more consistent with the efficient utilization of factors stemming from a reduction in legal friction than explanations related to a decline in the bargaining power of workers relative to firms. In Appendix (G), I show that after Citizens United, the rate of civil cases (mainly contract-related) from the State Supreme Courts appealed to the United States Supreme Court is lower for states where Citizens United invalidated bans on independent expenditures and who elect their State Supreme Court judges. This suggests that the decision quality improved in the state court system after firms were allowed to spend more freely in judicial elections.

Table 9: Effect on Capital Expenditure, Employment, and Wages

Note: This table presents the estimation results of equation (4) The dependent variable is the Capital Expenditure, measured in USD 1000s, Employment, Revenue per dollar of material input costs and Wage measured in USD 1000 per worker. Variables *Elect* indicates states with judicial elections for state supreme court judges, *Ban* indicates the states that had imposed a ban on independent expenditures by unions or corporations, which were rendered unconstitutional by the Supreme Court in 2010. All regressions include state-by-sector, sector-by-year fixed effects, and state-specific linear time trends. Sector is defined at the 4-digit NAICS code level. Standard errors are clustered at the state level.

	(1) log(CapEx)	(2) log(Emp)	(3) Material Productivity	(4) wage (000 USD)
Elect × Ban × Post	0.07**	0.05*	0.05	-0.43
	(0.03)	(0.03)	(0.03)	(0.47)
State × Sector FE	Y	Y	Y	Y
Sector × Year FE	Y	Y	Y	Y
N	32,743	36,324	33,671	36,324
R-sq.	0.88	0.96	0.73	0.80

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

5.2 Establishment Entry and Reallocation

Do more productive factors translate to entry and exit? For example, does a more conducive legal environment with reduced contractual frictions affect the choices of entry and exit of establishments and the job reallocation rates? In this section, we test whether the changes

in the campaign finance laws affect establishment entry, exit, and job reallocation. I employ a different dataset compiled by the Census Bureau to answer this question. The publicly available sample of the Annual Survey of Manufactures data does not provide the number of establishments or firms at the state-sector level. Hence, I use the business statistics and dynamics data, which provides establishment entry, exit, and job reallocation rates at the 2-digit NAICS level by states at an annual frequency.

Table 10: Effect on Establishment Entry, Exit, and Employment

Note: This table presents the estimation results of equation (4). The dependent variables in Columns(1)-(3) are the logarithm of the number of firms, employees, establishments respectively. Columns (4) and (5) show results for establishment entry and exit rates (in %-age) from the Business Statistics Table of the US Census Bureau. Variables *Elect* indicates states with judicial elections for state supreme court judges, *Ban* indicates the states that had imposed a ban on independent expenditures by unions or corporations, which were rendered unconstitutional by the Supreme Court in 2010. The specifications in each column vary depending on the inclusion of state-by-sector, and sector-by-year fixed effects. Sector is defined at the 2-digit NAICS code level. Standard errors are clustered at the state level.

	(1)	(2)	(3)	(4)	(5)
	log(Firms)	log(Emp.)	log(Estab.)	Estab. Entry Rate	Estab. Exit Rate
Election × Ban × Post	0.03**	0.05***	0.03**	0.54**	0.07
	(0.01)	(0.02)	(0.01)	(0.22)	(0.25)
State FE	Y	Y	Y	Y	Y
Sector ×Year FE	Y	Y	Y	Y	Y
State Time Trend	Y	Y	Y	Y	Y
N	20,900	20,900	20,900	20,714	20,685
R-sq.	0.90	0.90	0.90	0.53	0.70

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

In Table (10), I document a 0.55 pp. increase in establishment entry in states with judicial elections. This represents an approximately 5% increase in establishment entry. On the other hand, there is neither an economically (0.6%) nor statistically significant effect on establishment exit rates. Table (11) illustrates the increase in job reallocation rates of 1.14 pp.(4% over the pre-period mean of 30.3%), mainly driven by job creation rates 0.6 pp. (4% over the pre-period mean of 15.8%). Around 50% of this increase in reallocation is due to the continuing establishments, and the remaining is due to the net effect of new

Table 11: Job Reallocation Rates

Note: This table presents the estimation results of equation (4). The dependent variables in Columns(1)-(3) are the job creation, destruction, and the sum of the creation and destruction rates, the reallocation rate. Columns (4) captures the job reallocation rate from continued establishments. All rates are in %-age. Data comes from the Business Statistics Table of the US Census Bureau. Variables *Elect* indicates states with judicial elections for state supreme court judges, *Ban* indicates the states that had imposed a ban on independent expenditures by unions or corporations, which were rendered unconstitutional by the Supreme Court in 2010. Sector is defined at the 2-digit NAICS code level. Standard errors are clustered at the state level.

	(1)	(2)	(3)	(4)
	Creation Rate	Destruction Rate	Reallocation Rate	Reallocation Rate (Contd. Estab.)
Election × Ban × Post	0.60***	0.53	1.14**	0.55**
	(0.19)	(0.37)	(0.43)	(0.27)
State FE	Y	Y	Y	Y
Sector ×Year FE	Y	Y	Y	Y
N	20,900	20,900	20,900	20,571
R-sq.	0.43	0.43	0.51	0.50

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

entrants and the establishments that die off. The evidence is consistent with improved legal environment and more dynamic product and labor markets.

6 Conclusion

In this paper, I show that removing restrictions on firms' independent spending in elections increases competition and total expenditures in judicial elections. More challengers enter the election races and the incumbents are more likely to get voted out. The State Supreme Court judges influence the legal environment in many ways, particularly through the predictability and consistency in enforcing contract law in their state. Competitive and expensive elections improve the salience of judicial elections and strengthen the accountability mechanism of elections. This in turn improves judicial performance and alleviates legal frictions faced by firms. This improves the labor productivity, exclusively in states that elect their State Supreme Court judges. I establish that productivity improvement is due to the changes in the legal environment. I show that labor productivity improvement is concentrated in sectors more exposed to incomplete contracts risk and hence more

reliant on the quality of legal institutions for production. Overall, this paper provides evidence that allowing firms to donate more freely in elections affects the selection of judges, alleviates legal friction, improves productivity and resource allocation.

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A Appendix: Summary Statistics

A.1 Direct Expenditures: Sources

Table 12: Summary Statistics Judge Direct Expenditures

	N	Mean	SD	25th percentile	Median	75th percentile
Fund (in MM)	1,081	0.45	0.76	0.05	0.21	0.56
Business	1,081	0.11	0.25	0.00	0.02	0.11
Lawyers and Lobbyists	1,081	0.11	0.20	0.00	0.04	0.14
Unassigned	1,081	0.09	0.18	0.01	0.03	0.09
Party and Cand.	1,081	0.08	0.35	0.00	0.01	0.05
Union and other	1,081	0.05	0.17	0.00	0.01	0.04

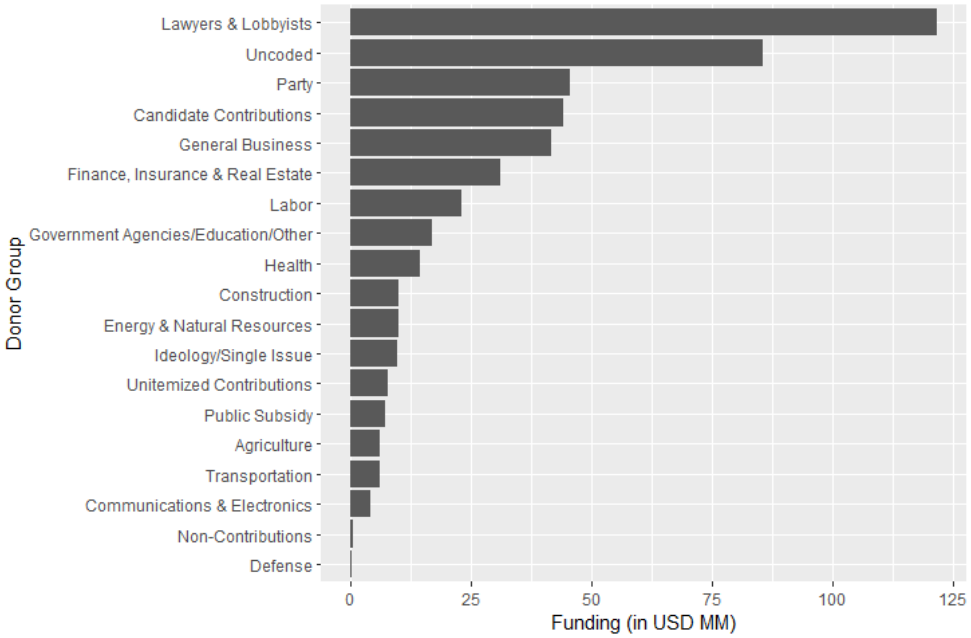


Figure 11: Funding of Judicial Candidates from different Donor Categories during 2000 – 2021

B Appendix: Exogenous Treatment Assignment

Below I document, how the removal of bans is uncorrelated with crucial state-level characteristics and the dependent variables in the pre-period.

Table 13: Pre-Treatment Difference

Note: This table presents the evidence for the absence of pre-treatment selection. The table shows the regression of economic outcome variables on the indicators for states with judicial elections for the state Supreme Court judges, and states with bans on independent expenditure invalidated by the 2010 Citizens United v. FEC ruling and their interaction for the pre-treatment period 2003-2009. All regressions include year fixed effects to account for aggregate economic shocks and 4-digit NAICS sector fixed effects. Standard errors are clustered at the state level.

	(1)	(2)	(3)	(4)	(5)
	log(CapEx)	log(Emp)	wage (USD/emp)	Labor Productivity (USD/emp)	Labor Productivity (USD/hr)
Election	0.19	0.16	-0.16	14.26	5.99
	(0.15)	(0.14)	(0.78)	(17.71)	(7.98)
Ban	0.05	-0.00	0.76	14.47	5.82
	(0.15)	(0.14)	(0.83)	(9.00)	(4.21)
Election × Ban	0.24	0.26	-0.16	-20.91	-8.25
	(0.21)	(0.19)	(1.11)	(20.34)	(9.15)
Year FE	Y	Y	Y	Y	Y
Sector FE	Y	Y	Y	Y	Y
N	12,744	12,744	12,744	12,744	12,701
R-sq.	0.44	0.45	0.61	0.46	0.47

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 14: Covariate balance between states with judicial elections that had imposed bans on independent expenditures (Treated) and those without (Control)

	Mean (Treated)	Mean (Control)	Diff.	p-value
Pres. Total Votes	3,486,586	2,109,254	-1,377,333	(0.14)
Pres. Dem. Vote Share	49.3	48.4	-.98	(0.77)
Gov. Dem. Vote Share	49.3	43.5	-5.8	(0.29)
Median Ideology (PAJID)	32.99	48.06	-15.07	(0.16)
Mean Ideology (PAJID)	40.39	45.71	-5.31	(0.48)
Real GDP (in USD MM)	379,940	235,787	-144,153	(0.27)
Labor Income (in USD MM)	191,610	118,616	-72,994	(0.24)
Mean Income (HH)	60,662	60,593	-70	(0.98)
Median Income (HH)	45,983	45,119	-863	(0.72)
Fraction above 200k	2.55	2.69	.14	(0.70)
Fraction below 10k	8.07	8.82	.75	(0.27)
No. of HH	3,014,342	1,852,805	-1,161,537	(0.19)
Population above 18	6,035,970	3,754,700	-2,281,270	(0.22)
Prcnt HS grad	31.6	29.4	-2.2	(0.21)
Prcnt Bachelors	23.4	22.4	-1.1	(0.51)

C Appendix: Independent and Direct Expenditures in Judicial Elections

First, I present the direct evidence on independent expenditures in Table (15). As is clear, the majority of the increase in independent expenditure is from sources that could not be traced to a particular group such as businesses, parties, etc. This is in line with the fact that disclosures for independent expenditure are relatively more relaxed and it is difficult to trace the source of these expenditures.

Table 15: Effect on Independent Spending (Categorized)

Note: This table presents the estimation results of Equation (2). The dependent variable is the independent expenditure on behalf of a candidate in the judicial elections, measured in USD MM. Different columns show results for estimation with the dependent variable as the political expenditure in an election by a candidate from a particular source, such as businesses, unions, or political parties. Column (3) shows the results for expenditure items that could not be assigned to a particular source. Variable *Ban* indicates the states that had imposed a ban on independent expenditures by unions or corporations, which were rendered unconstitutional by the Supreme Court in 2010. The specifications in each column vary depending on the inclusion of state, and year fixed effects. Standard errors are clustered at the state level.

	(1)	(2)	(3)	(4)	(5)
	Unassigned	Union and other	Ideology	Business	Party
Ban × Post	0.24***	0.01	0.17	0.10	-0.04***
	(0.04)	(0.01)	(0.12)	(0.10)	(0.01)
Election Cycle FE	Y	Y	Y	Y	Y
State FE	Y	Y	Y	Y	Y
Incumbency FE	Y	Y	Y	Y	Y
Observations	214	214	214	214	214
Rsq.	0.43	0.12	0.28	0.15	0.39

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

In Table (16), I dissect the sources of increase in direct expenditure. We estimate (1), with the direct contributions from different funding sources as the dependent variable. The increase in political funding is mainly driven by funding from Business, and political parties

(and unassigned groups). Interestingly, lawyers and lobbyists, one of the prominent sources of financing, were not directly affected by the ruling. The change in direct expenditure is neither economically nor statistically significant for this group. Moreover, unions and other ideological groups do not seem to be affected by the Supreme Court ruling either. This is somewhat puzzling, but this alludes to the fact that restrictions on expenditure were not binding for unions. This may be because they have other means of exerting influence, or they are financially constrained. Figure (6) provides further credible evidence regarding the change in funding from different sources. Again, there is a statistically and economically significant increase in expenditure from Business, however, there is no such increase for Unions. In Appendix A.3, I exploit the heterogeneity in the pre-existing bans, i.e. corporations-only bans vs. corporations and unions bans to show how a higher competition among various interest groups is a likely reason behind the higher political expenditure in judicial elections after the 2010 Supreme Court ruling.

Table 16: Effect on Direct Expenditures (Categorized)

Note: This table presents the estimation results of Equation (2). The dependent variable is the total expenditure by a candidate in the judicial elections, measured in USD MM. Different columns shows results for estimation with the dependent variable as the political expenditure in an election by a candidate from a particular source, such as business, unions, or political parties. Column (5) shows the results for expenditure items that could not be assigned to a particular source. Variable *Ban* indicates the states that had imposed a ban on independent expenditures by unions or corporations, which were rendered unconstitutional by the Supreme Court in 2010. The specifications in each column vary depending on the inclusion of state, and year fixed effects. Standard errors are clustered at the state level.

	(1)	(2)	(3)	(4)	(5)
	Business	Party and Cand.	Union and other	Lawyers and Lobbyists	Unassigned
Ban × Post	0.08*	0.08**	-0.00	-0.04	0.07**
	(0.05)	(0.03)	(0.02)	(0.03)	(0.03)
Election Cycle FE	Y	Y	Y	Y	Y
State FE	Y	Y	Y	Y	Y
N	1,070	1,070	1,070	1,070	1,070
R-sq.	0.21	0.16	0.17	0.21	0.32

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

C.1 Judicial Competition: Incumbency advantage

Using a linear probability model where the dependent variable is an indicator variable that takes a value of 1, if an incumbent emerges as a winner in a race with challengers, I test whether relaxation of campaign finance laws led to a decline in the incumbency advantage and higher turnover for incumbents. The baseline is that in races where there is at least one challenger, an incumbent wins in 90% of the races. However, this advantage declined by 14 pp.(15% decline relative to pre-period) after the Supreme Court ruling in states affected by the lifting of the bans.

Table 17: Likelihood of Incumbent Winning

Note: This table presents the estimation results of Equation (2). The dependent variable in Columns (1) and (2) is an indicator function for an incumbent victory. The sample includes only elections where there was at least one incumbent in the election. Variable *Ban* indicates the states that had imposed a ban on independent expenditures by unions or corporations, which were rendered unconstitutional by the Supreme Court in 2010. The specifications in each column vary depending on the inclusion of state, and year fixed effects. Standard errors are clustered at the state level.

	(1) Incumbent Wins	(2) Incumbent Wins
Ban × Post	-0.14**	-0.14**
	(0.06)	(0.06)
Election Cycle FE	N	Y
State FE	Y	Y
Election type FE	Y	Y
N	445	444
Rsq.	0.16	0.17
E[𝟙{Incumbent Wins}]	0.90	0.90

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

C.2 Judicial Competition: Voter Turnout

There is an increase in electoral expenditure and judicial competition as more candidates enter the election race. However, do the higher expenditure and new challengers mobilize the voters? For example, if advertising expenditures create awareness among the voters then there should be an increase in the voter turnout. I use the voter eligible population at the state-level compiled by the US Elections Project[10]. The source is the Current Population Survey by the Census Bureau. I compute the voter turnout in judicial elections and test whether the higher expenditure translates into the mobilization of voters.

In Table (18), in Columns (1) and (2) I test whether higher expenditure and entry of candidates leads to voter mobilization. I show that voter turnout increases by 5 pp., a significant increase over the average turnout of 28% in judge elections. Next, I test whether the increase in turnout is especially prominent in states where voters have less information about the candidates such as non-partisan elections. I do this by regressing equation (2) interacting each variable with the indicator for partisan elections. The evidence is inconclusive as the voter turnout increase is observed in both, partisan and non-partisan states. Finally, it is natural to ask whether voter mobilization is associated with more competitive judicial elections. In Column (4), I estimate the equation (2) and interact all dependent variables with log(Voter Turnout). The coefficient of interest is the interaction between Ban × Post × log(Voter Turnout). Note that the regression does not have a causal interpretation, because voter turnout is determined simultaneously with the dependent variable. However, the interaction allows me to provide suggestive evidence that voter turnout is higher in competitive elections. Therefore, I find evidence that electoral expenditure directly affects voter mobilization, and voter mobilization is higher in more competitive judicial elections.

C.3 Bench Composition

$$\begin{aligned} y_{st} = \delta_s + \delta_t + \beta_{ep} \cdot (Election_s \times Post_t) + \beta_{bp} \cdot (Ban_s \times Post_t) \\ + \beta_{ebp} \cdot (Election_s \times Ban_s \times Post_t) + \varepsilon_{st} \end{aligned} \tag{7}$$

[10](https://www.electproject.org/election-data/voter-turnout-data

Table 18: Voter Turnout in Judicial Elections

Note: This table presents the estimation results of Equation (2). The dependent variable in Columns (1) and (2) is the voter turnout, calculated as total votes divided by the eligible voter population in the state. Column(3) tests whether the turnout differs across partisan and non-partisan states. Columns (4) tests if the vote margin is lower when voter turnout is higher. Variable *Ban* indicates the states that had imposed a ban on independent expenditures by unions or corporations, which were rendered unconstitutional by the Supreme Court in 2010. *Partisan* indicates a state where the political affiliation of the judge is on the ballot. The specifications in each column vary depending on the inclusion of state, and year fixed effects. Standard errors are clustered at the state level.

	(1)	(2)	(3)	(4)
	Voter Turnout	Voter Turnout	Voter Turnout	vote margin
# of Seats	0.30***	0.28***	0.33***	-0.14***
	(0.07)	(0.02)	(0.01)	(0.03)
Ban × Post	0.05*	0.05**	0.06	-0.15***
	(0.03)	(0.02)	(0.04)	(0.05)
Partisan			0.00	
			(.)	
Partisan × # of Seats			-0.08***	
			(0.02)	
Ban × Post × Partisan			-0.01	
			(0.04)	
Ban × Post × log(Voter Turnout)				-0.07***
				(0.02)
log(Voter Turnout)				0.04
				(0.03)
# of Seats × log(Voter Turnout)				-0.06***
				(0.02)
				(.)
Cycle FE	N	Y	Y	Y
State FE	N	Y	Y	Y
Elect. type FE	Y	Y	Y	Y
Observations	480	480	480	480
Rsq.	0.43	0.77	0.77	0.13

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

I estimate the regression specification in Equation (7) with mean bench ideology and the standard deviation of the bench ideology (a measure of diversity) as the dependent variable. The ideology score lies in the range of $[-2, 2]$, with a higher number associated with more right-leaning or business-friendly judges. The results are in Table (19). There is a shift in the ideology of the bench, with both the mean and the standard deviation of ideology increasing for the states with ex-ante bans and judicial elections. An opposite pattern holds for states without judicial elections. A right-ward shift in the average ideology without a concomitant change in the standard deviation indicates that the polarization on the bench is not significantly increasing.

Table 19: Effect on Ideology (Common Space CFscore)

Note: This table presents the estimation results of equation (1). Columns (1)-(2) show results with median ideology (CFscore) of the judicial bench, which takes values in $(-2, 2)$, with higher values indicating a more liberal ideology of a given state s in year t as the dependent variables. Columns (3)-(4) show results with the standard deviation of the ideology (CFscore) of the judicial bench, which takes values in $(-2, 2)$, with higher values indicating a more liberal ideology of a given state s in year t as the dependent variable. Variables *Elect* indicates states with judicial elections for state supreme court judges, *Ban* indicates the states that had imposed a ban on independent expenditures by unions or corporations, which were rendered unconstitutional by the Supreme Court in 2010. Variable *Contract* indicates sectors with high reliance on contract enforcement. All regressions include state and year fixed effects. Standard errors are clustered at the state level.

	(1) Mean Ideology	(2) Mean Ideology	(3) SD Ideology	(4) SD Ideology
Ban × Post	-0.16	-0.15	0.00	-0.00
	(0.10)	(0.10)	(0.08)	(0.08)
Election × Ban × Post	0.25**	0.25**	0.04	0.04
	(0.12)	(0.12)	(0.10)	(0.10)
State FE	Y	Y	Y	Y
Year FE	N	Y	N	Y
N	793	793	793	793
R-sq.	0.90	0.90	0.77	0.77

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

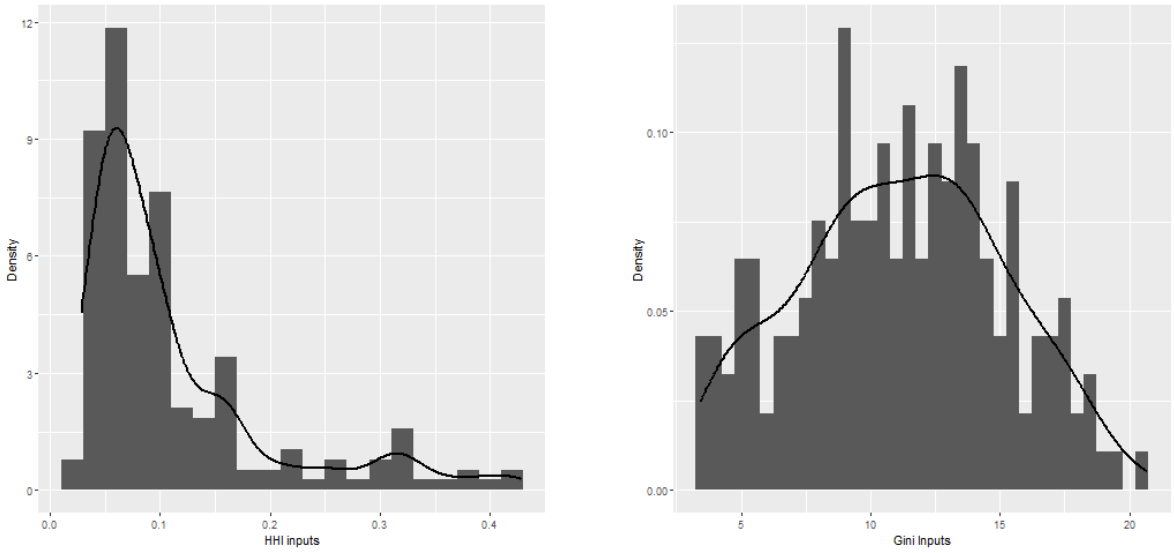
D Appendix: Contract Reliance

In this section, I show the results of the computations of the contract reliance measure described in the main text. I supplement the measure with another measure, the input Gini. All the results in the main text are robust to both measures. The *inputgini* is defined as,

$$inputgini_i = \frac{2}{N+1} \sum_{j=1}^{N} \sum_{k=1}^{j} \frac{E_{ik}}{E_i}$$

where E_{ik} are arranged in an ascending order and $E_i = \sum_{k=1}^{N} E_{ik}$. The higher the gini, the higher is the input specificity.

Most Contract Intensive			Least Contract Intensive		
Sr.No	Input HHI	Industry	Sr.No	Input HHI	Industry
1	0.04	Medical equipment and supplies manufacturing	1	0.43	Resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing
2	0.04	Commercial and service industry machinery manufacturing, including digital camera manufacturing	2	0.41	Iron and steel mills and ferroalloy manufacturing
3	0.04	Lime, gypsum and other nonmetallic mineral product manufacturing	3	0.34	Foundries
4	0.05	Printing and related support activities	4	0.33	Dairy product manufacturing
5	0.05	Clay product and refractory manufacturing	5	0.33	Basic chemical manufacturing
6	0.05	Electric lighting equipment manufacturing	6	0.31	Alumina and aluminum production and processing
7	0.05	Machine shops; turned product; and screw, nut, and bolt manufacturing	7	0.31	Seafood product preparation and packaging
8	0.05	Household and institutional furniture and kitchen cabinet manufacturing	8	0.31	Nonferrous metal (except aluminum) production and processing
9	0.05	Industrial machinery manufacturing	9	0.31	Converted paper product manufacturing
10	0.05	Ship and boat building	10	0.29	Grain and oilseed milling



(a) Density HHI inputs

(b) Density Gini inputs

Figure 12: Density of Contract intensity measures

	Mean	SD	Median	ρ_{gini}
Input HHI	0.136	0.107	0.096	-0.780
Levchenko (2007)	0.133	0.093		-0.742

Table 20: Summary Statistics of Input HHI

Table 21: Heterogeneous Effect due to reliance on Contract Enforcement

Note: This table presents the estimation results of equation (6). Columns (1)-(4) show results with Labor Productivity in 1000 USD per worker, logarithm of Capital Expenditure, measured in USD 1000s, logarithm of Employment, and Wage measured in USD 1000 per worker as dependent variables. Variables *Elect* indicates states with judicial elections for state supreme court judges, *Ban* indicates the states that had imposed a ban on independent expenditures by unions or corporations, which were rendered unconstitutional by the Supreme Court in 2010. Variable *Contract* indicates sectors with high reliance on contract enforcement. All regressions include state, sector-by-year fixed effects, and state-specific linear time trends. Sector is defined at the 4-digit NAICS code level. Standard errors are clustered at the state level.

	(1)	(2)	(3)	(4)	(5)
	Lab Prod (USD/emp)	log(CapEx)	log(Emp)	Rev/Mat Cost	wage (USD/emp)
Ban × Post	3.04	0.01	0.01	0.00	0.35
	(15.65)	(0.05)	(0.03)	(0.04)	(0.58)
Elect × Ban × Post	1.86	0.05	0.04	0.04	-1.04
	(19.06)	(0.06)	(0.04)	(0.05)	(0.88)
Ban × Post × Contract	2.69	-0.04	-0.04	-0.01	-0.49
	(16.82)	(0.07)	(0.03)	(0.07)	(0.58)
Elect × Ban × Post × Contract	24.69	0.05	0.02	0.09	1.16
	(22.07)	(0.08)	(0.04)	(0.10)	(0.99)
State × Sector FE	Y	Y	Y	Y	Y
Sector × Year FE	Y	Y	Y	Y	Y
N	31,928	29,066	31,968	29,740	31,968
R-sq.	0.73	0.87	0.96	0.69	0.77

6nlStandard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

E Unionization and Labor Productivity

To test whether the relative bargaining power of the unions is driving the results, I exploit the heterogeneity in state laws that directly affect unionization rates. Some states adopt right-to-work laws that free workers from the responsibility to pay union dues. Such a provision exacerbates the free-riding problem common with collective action, hurts unions' finances, and lowers unionization rates. This generally reduces the unions' bargaining power Fortin, Lemieux and Lloyd (2023).

I restrict attention to states with judicial elections. If the labor productivity improvements are due to the declining bargaining power of unions after the Citizens United ruling, then we would expect the productivity improvements to be more pronounced for states where unions were ex-ante more powerful, i.e. in states without right-to-work laws. However, in Table (22), we find that labor productivity (Column (3)) and employment growth (Column(4)) are higher for states with right-to-work laws. Therefore, the productivity improvements after the Citizens United ruling do not stem from the reduced bargaining power of unions relative to employers. It seems more plausible that the changes in legal environment reduced non-labor-related distortions, the firms responded by increasing production, hiring more workers, particularly in states where labor adjustment costs are lower, which translates to an increase in average labor productivity in states with right-to-work laws.

Table 22: Effect of Unionization in Judicial Election States

Note: This table presents the estimation results of equation (4) restricted to the sample of states with judicial elections. The dependent variable is labor productivity, measured as value added in USD 1000s per worker. Variables *Elect* indicates states with judicial elections for state supreme court judges, *Ban* indicates the states that had imposed a ban on independent expenditures by unions or corporations, which were rendered unconstitutional by the Supreme Court in 2010. $\mathbb{1}\{\text{Right To Work}\}$ indicates states with Right to Work laws and lower unionization rates. The specifications in each column includes state-by-sector, and sector-by-year fixed effects. Sector is defined at the 4-digit NAICS code level. Standard errors are clustered at the state level.

	(1)	(2)	(3)	(4)
	Labor Productivity (USD/emp)	Labor Productivity (USD/emp)	log(Emp)	log(Emp)
Ban × Post	14.34		0.02	
	(14.12)		(0.04)	
$\mathbb{1}\{\text{Right To Work}\}$ × Ban × Post	18.26	32.48**	0.05	0.06*
	(19.15)	(13.58)	(0.05)	(0.03)
State × Sector FE	Y	Y	Y	Y
Sector × Year FE	Y	Y	Y	Y
N	17,802	17,802	17,820	17,820
R-sq.	0.78	0.78	0.96	0.96

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

F Robustness

robustThe Citizens United ruling affected all the states with bans at the same time. Therefore, the difference-in-differences estimates may be biased due to confounding events occurring around the event time 2010. The first among such concerns is the Global Financial Crisis of 2008-09. The second is the boost in production of Shale gas following the improved viability of hydraulic fracturing or fracking. I address both of these concerns using a battery of robustness checks and find that the labor productivity increase is not driven by these confounding events.

F.1 Robustness: Global Financial Crisis

The post-period in the difference-in-differences research design is the period after 2010. However, in response to the Global Financial Crisis (GFC) of 2008, the US Treasury and Federal Reserve eased the monetary policy significantly starting in 2010. We control for year fixed effects which accounts for such year-specific aggregate policy shocks. However,

to the extent different states were affected heterogeneously during the financial crisis, the federal policies will have differential impact on the real outcomes in these states. To alleviate such concerns I construct a measure of crisis shock which measures the percentage decline in state output between 2007 and 2009. Then within the regression specification (4), I allow for the labor productivity in different states depending on this shock variable to evolve differentially over time. If the coefficient estimates of the effect on labor productivity remain statistically significant then the labor productivity differences across states with differential campaign finance restrictions are not due to the extent to which these states were negatively affected during the crisis or the federal fiscal and monetary policy response that followed.

In Table (23), in Columns(2)-(4) we control for state-specific linear time trends, the shock to state output during the crisis, and the state output in 2010 to allow for the labor productivity in states with different baseline output to evolve according to differential trends. The tests conclusively suggest that the pre-period differences in state output or the shock during the financial crisis are not responsible for the observed productivity improvements in states where the Citizens United ruling removed the bans on independent expenditure.

Table 23: State Output Differences and Labor Productivity

Note: This table presents the estimation results of equation (4) and displays the effect of treatment on states with judicial elections. The dependent variable is labor productivity, measured as value added in USD 1000s per worker. Variables *Elect* indicates states with judicial elections for state supreme court judges, *Ban* indicates the states that had imposed a ban on independent expenditures by unions or corporations, which were rendered unconstitutional by the Supreme Court in 2010. The specifications in each column includes state-by-sector, and sector-by-year fixed effects. Columns differ based on the state-specific time trend, the shock to state output during the global financial crisis, and state-specific trends depending on the state output in 2010. Sector is defined at the 4-digit NAICS code level. Standard errors are clustered at the state level.

	(1)	(2)	(3)	(4)
	Labor Productivity (USD/emp)	Labor Productivity (USD/emp)	Labor Productivity (USD/emp)	Labor Productivity (USD/emp)
Election × Ban × Post	19.67**	24.51**	19.19**	16.64**
	(8.98)	(10.79)	(9.09)	(7.88)
State × Sector FE	Y	Y	Y	Y
Sector × Year FE	Y	Y	Y	Y
State Time Trend	N	Y	N	N
GDP shock × Year	N	N	Y	N
GDP 2010 × Year	N	N	N	Y
N	36,324	36,324	36,324	36,324
R-sq.	0.75	0.75	0.75	0.75

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

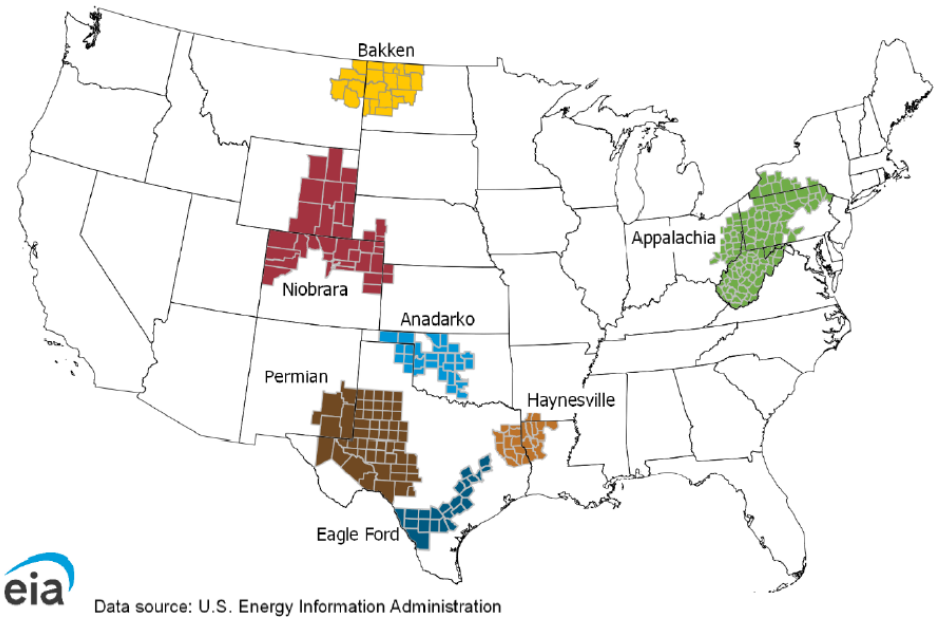


Figure 13: Shale Producing States. Data from Energy Information Administration.

F.2 Shale Boom

One possible identification concern is the concurrence of the Citizens United ruling with the boost in Shale gas production. Only certain states are endowed with Shale reserves. Interestingly, the top 5 states produce 70% of the shale output. Figure (13) illustrates the prominent Shale producing states.

I consider two robustness checks. First, I remove the top 5 and 10 Shale producing states. This list includes Texas, Pennsylvania, Louisiana, West Virginia, Ohio, New Mexico, Oklahoma, North Dakota, Arkansas, and Colorado. Note that among these states, Texas, Pennsylvania, Louisiana, West Virginia, Ohio, and North Dakota (6 out of 10) elect their state supreme court judges. Therefore, a mix of selection procedures across the states was retained in the sample. If the labor productivity results continue to hold on the restricted sample, then the labor productivity improvement is not exclusively driven by the Shale production boom. I test for this hypothesis in Columns (2) and (3) of Table (24). The estimate of the coefficient of interest declines slightly. However, it is still economically and statistically significant, indicating that the shale production boom is not the main driving

force behind productivity differences between states with and without bans on independent expenditure after the Citizens United ruling.

Second, I removed the NAICS code 324, which represents the Petroleum and Coal Products Manufacturing sector. The effect on labor productivity is robust even when we restrict the sample to sectors not directly related to the petroleum manufacturing sector (Column (4)). Therefore, the Shale boom that coincides with the Citizens United ruling does not seem to be the driving force behind the observed improvement in labor productivity in states where the campaign finance laws were made less restrictive.

Table 24: Shale Boom and Labor Productivity

Note: This table presents the estimation results of equation (4) and displays the effect of treatment on states with judicial elections. The dependent variable is labor productivity, measured as value added in USD 1000s per worker. Variables *Election* indicates states with judicial elections for state supreme court judges, *Ban* indicates the states that had imposed a ban on independent expenditures by unions or corporations, which were rendered unconstitutional by the Supreme Court in 2010. The specifications in each column includes state-by-sector, and sector-by-year fixed effects. Columns differ based on the exclusion of Top 5 and 10 Shale producing states and the NAICS sector 324 corresponding to the Petroleum and Coal Products Manufacturing. Sector is defined at the 4-digit NAICS code level. Standard errors are clustered at the state level.

	(1)	(2)	(3)	(4)
	Labor Productivity	Labor Productivity	Labor Productivity	Labor Productivity
Election × Ban × Post	19.67**	17.76*	16.38*	21.12**
	(8.98)	(8.82)	(9.64)	(9.63)
State × Sector FE	Y	Y	Y	Y
Sector × Year FE	Y	Y	Y	Y
Remove Top 5 Shale Producers	N	Y	Y	N
Remove Top 10 Shale Producers	N	N	Y	N
Remove NAICS 324	N	N	N	Y
N	36,324	31,307	28,926	35,857
R-sq.	0.75	0.73	0.74	0.74

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

G Cases Appealed to the US Supreme Court

We evaluate the quality of decision-making at state courts by examining the cases that were appealed to the Supreme Court of the United States. There are a few key things to

note. As shown in Figure (14), very few cases from the State Supreme Courts are appealed to the US Supreme Court. Second, among the states with elections, no case from the State Supreme Court was appealed from the treated states in the post-period. Therefore, in the following discussion, we evaluate the bias in decision-making at the lower courts. Figure (14) illustrates that most cases heard in the US Supreme Court originate in a state trial or appellate court and Figure (15) suggests that most of these cases are either related to Due Process (procedural concerns) or economic activity. Therefore, the 8% decline in the rate of cases heard in the US Supreme Court provides suggestive evidence regarding the better functioning of the state court system.

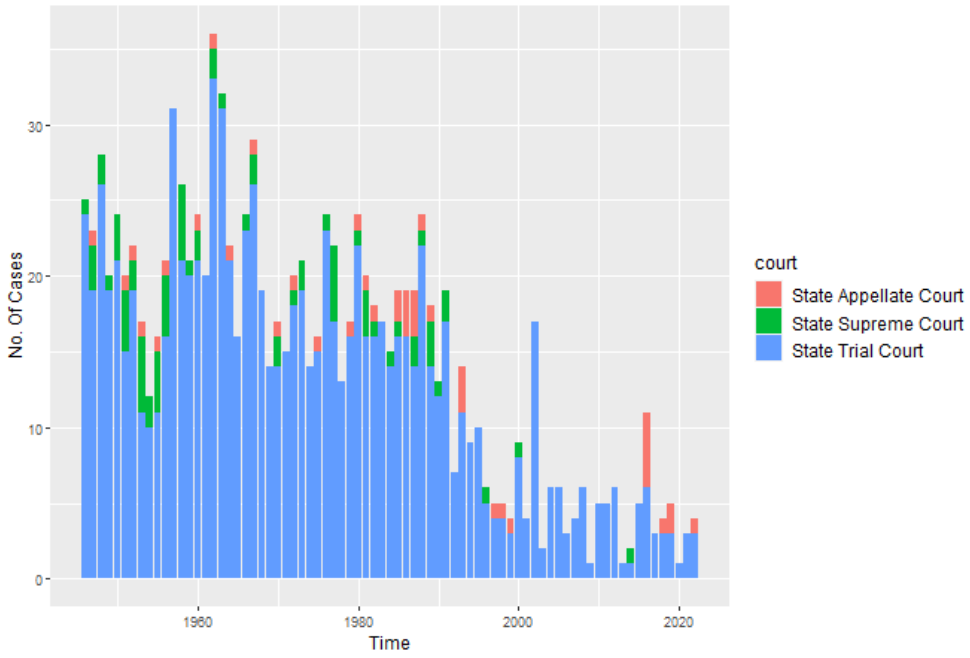
Table 25: Number of Cases argued in the US Supreme Court

Note: This table presents the estimation results of equation (4) The dependent variable is the logarithm of the number of cases appealed to the US Supreme Court after the decision in the state court system. Variables *Elect* indicates states with judicial elections for state supreme court judges, and *Ban* indicates the states that had imposed a ban on independent expenditures by unions or corporations, which were rendered unconstitutional by the Supreme Court in 2010. All regressions include state, year, case issue area fixed effects. Standard errors are clustered at the state level.

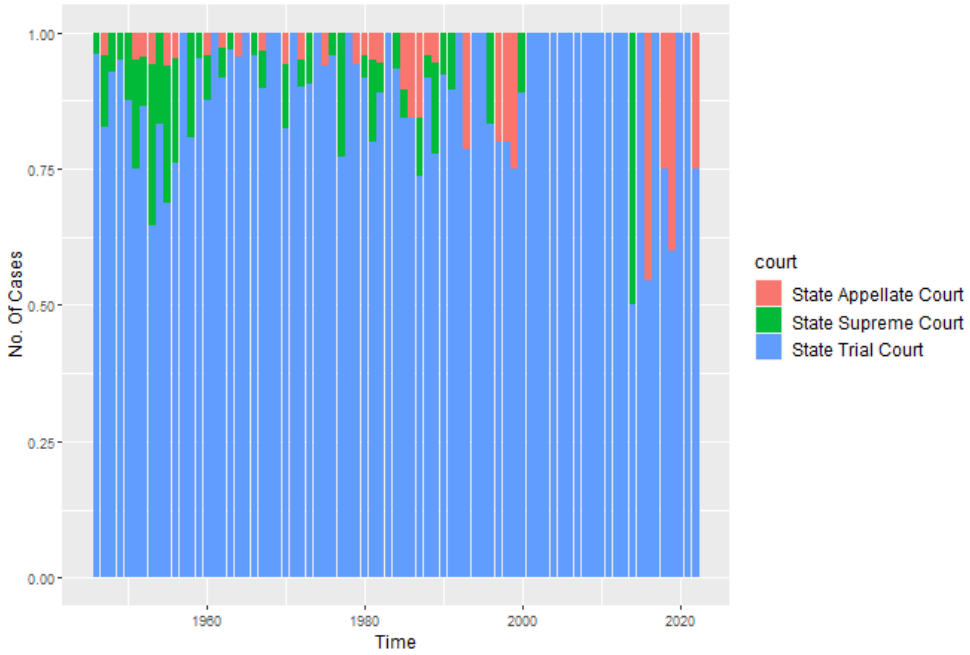
	(1)	(2)	(3)	(4)	(5)
	log(No. of Cases)	log(No. of Cases)	log(No. of Cases)	log(No. of Cases)	log(No. of Cases)
Ban × Post	0.03	0.01		0.11**	
	(0.05)	(0.04)		(0.04)	
Elect × Ban × Post	-0.04	-0.06	-0.06*	-0.19***	-0.08***
	(0.07)	(0.05)	(0.03)	(0.06)	(0.03)
State FE	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y
Issue Area FE	Y	Y	Y	Y	Y
Excl. Criminal Cases	N	Y	Y	Y	Y
Excl. Civil and First Amendmt.	N	N	N	Y	Y
N	1,710	1,204	1,204	770	770
R-sq.	0.17	0.14	0.14	0.18	0.18

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

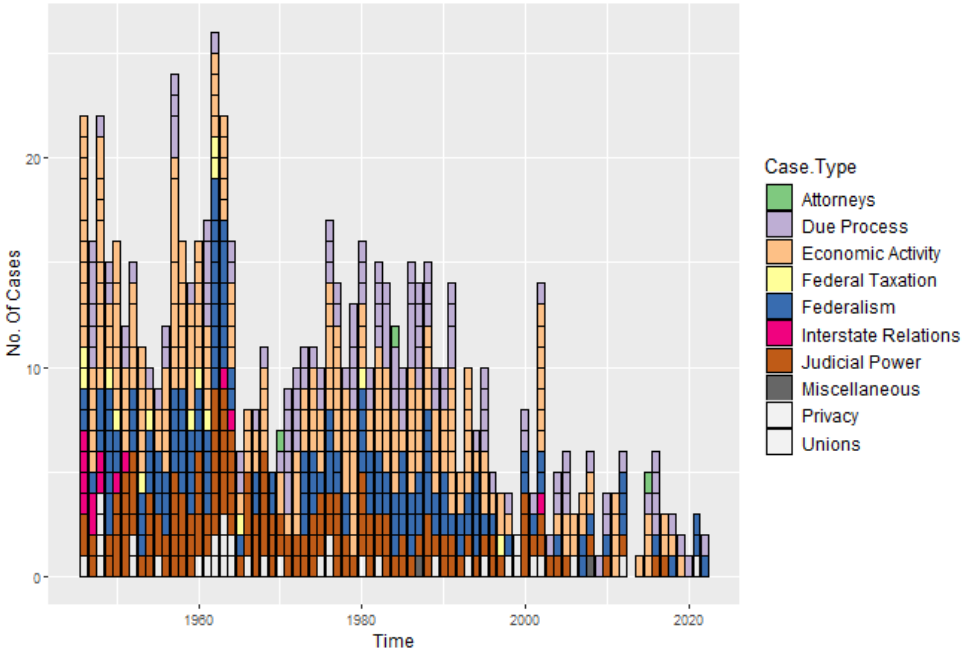


(a) No. of Cases appealed to the SCOTUS

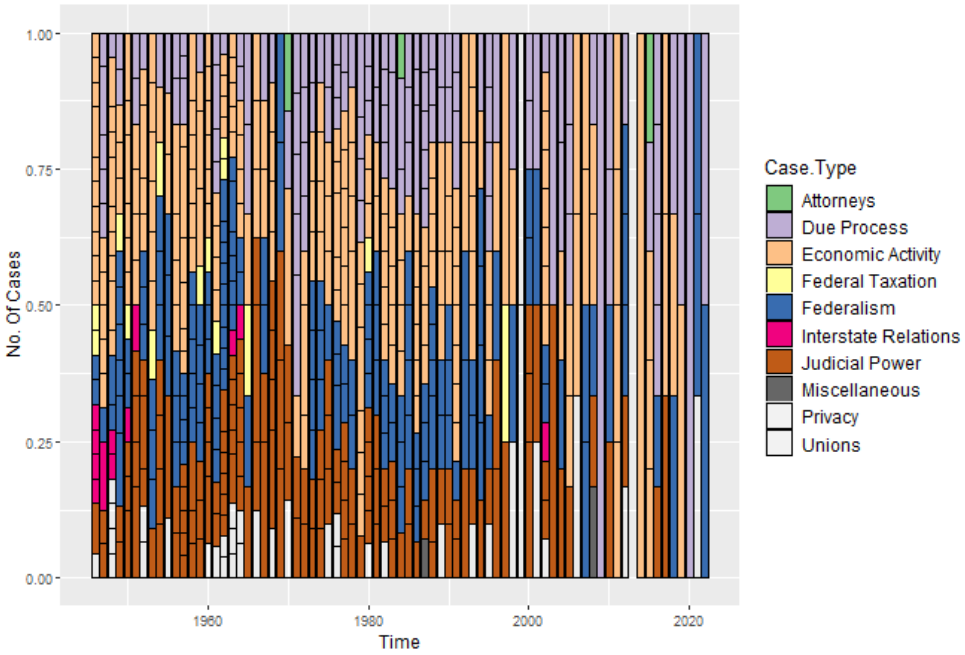


(b) Percentage Split of Cases appealed to the SCOTUS

Figure 14: Cases appealed to the SCOTUS



(a) No. of Cases appealed to the SCOTUS



(b) Percentage Split of Cases appealed to the SCOTUS

Figure 15: Cases appealed to the SCOTUS by Issue Area

A Online Appendix

A.1 Judicial Selection

In Figure (16), I illustrate an advertisement made through indirect expenditures on behalf of Judge Protasiewicz in the Wisconsin State Supreme Court elections of 2023. The total expenditure in this election was USD 44 million, and it was the most expensive judicial election race till date.

Figure 16: Illustration of an advertisement for Judge Janet Protasiewicz (indirect Expenditure)

Table (26) are reproduced from Kang and Shepherd (2015) and illustrate the heterogeneity in election procedures across different states. In this paper, however, we focus on the dichotomy of election v. appointment. Therefore, I classify all states with merit plans, gubernatorial, and legislative appointment as homogeneous because the focus of this paper is on the effect of campaign finance laws, and when it comes to campaign finance the donations will generally be made not directly in the election of the judge but to some person (or group of people) responsible for appointment among other things.

Table 26: State Supreme Court Judge Selection Procedures

State	**Selection Method**	**Details**	**Latest Change**	**Details of Latest Change**	**Tenure**	**Independent Expenditure Ban**	**Year Introduced**
Alabama	Partisan Election	Judges are elected through partisan elections.	1994	Nonpartisan to partisan election	6 years	No ban	-
Alaska	Merit Selection	Judicial Council nominates candidates; the governor appoints; judges face retention elections.	1970	Introduced merit selection	10 years	Ban	1996
Arizona	Merit Selection	Commission nominates candidates; the governor appoints; judges face retention elections.	1974	Introduced merit selection	6 years	Ban	1978
Arkansas	Nonpartisan Election	Judges are elected through nonpartisan elections.	2000	Partisan to nonpartisan election	8 years	No ban	-

California	Nonpartisan Election	Governor appoints; confirmation by Commission on Judicial Appointments; judges face retention elections.	1934	Introduced retention elections	12 years	No Ban	-
Colorado	Merit Selection	Judicial Nominating Commission nominates candidates; governor appoints; judges face retention elections.	1966	Introduced merit selection	10 years	Ban	2002
Connecticut	Appointment	Governor appoints; confirmed by General Assembly; judges serve eight-year terms.	1986	Increased term length	8 years	Ban	1987
Delaware	Appointment	Governor appoints; confirmed by State Senate; judges serve 12-year terms.	1897	Codified current appointment system	12 years	No ban	-

Florida	Merit Selection	Judicial Nominating Commission nominates candidates; governor appoints; judges face retention elections.	1976	Introduced merit selection	6 years	No Ban	-
Georgia	Nonpartisan Election	Judges are elected through nonpartisan elections.	1983	Partisan to nonpartisan election	6 years	No ban	-
Hawaii	Merit Selection	Judicial Selection Commission nominates; governor appoints; confirmed by State Senate.	1978	Introduced merit selection	10 years	No Ban	-
Idaho	Nonpartisan Election	Judges are elected through nonpartisan elections.	1934	Changed to nonpartisan elections	6 years	No ban	-
Illinois	Partisan Election	Judges are elected through partisan elections; subsequent retention elections.	1962	Introduced retention elections	10 years	No ban	-

Indiana	Merit Selection	Judicial Nominating Commission nominates; governor appoints; judges face retention elections.	1970	Introduced merit selection	10 years	No ban	-
Iowa	Merit Selection	Judicial Nominating Commission nominates; governor appoints; judges face retention elections.	1962	Introduced merit selection	8 years	Ban	1975
Kansas	Merit Selection (Supreme Court Nominating Commission)	Nominating Commission nominates; governor appoints; judges face retention elections.	1958	Introduced merit selection	6 years	No ban	-
Kentucky	Nonpartisan Election	Judges are elected through nonpartisan elections.	1975	Changed to nonpartisan elections	8 years	Ban	1974
Louisiana	Partisan Election	Judges are elected through partisan elections.	1974	Changed to partisan elections	10 years	No ban	-

Maine	Appointment	Governor appoints; confirmed by State Senate; judges serve seven-year terms.	1839	Established current appointment system	7 years	No ban	-
Maryland	Merit Selection	Judicial Nominating Commission nominates; governor appoints; confirmed by State Senate; judges face retention elections.	1970	Introduced merit selection	10 years	No ban	-
Massachusetts	Appointment	Governor appoints; confirmed by Governor's Council; judges serve until age 70.	1780	Established current appointment system	Until age 70	Ban	1975
Michigan	Nonpartisan Election	Judges are elected through nonpartisan elections.	1964	Partisan to nonpartisan election	8 years	Ban	1976
Minnesota	Nonpartisan Election	Judges are elected through nonpartisan elections.	1912	Changed to nonpartisan elections	6 years	Ban	1988

Mississippi	Nonpartisan Election	Judges are elected through nonpartisan elections.	1994	Partisan to nonpartisan election	8 years	No ban	-
Missouri	Merit Selection (Missouri Plan)	Appellate Judicial Commission nominates; governor appoints; judges face retention elections.	1940	Introduced merit selection (Missouri Plan)	12 years	No ban	-
Montana	Nonpartisan Election	Judges are elected through nonpartisan elections.	1935	Changed to nonpartisan elections	8 years	Ban	1912
Nebraska	Merit Selection	Judicial Nominating Commission nominates; governor appoints; judges face retention elections.	1962	Introduced merit selection	6 years	No ban	-
Nevada	Nonpartisan Election	Judges are elected through nonpartisan elections.	1976	Partisan to nonpartisan election	6 years	No ban	-

New Hampshire	Appointment	Governor appoints; confirmed by Executive Council; judges serve until age 70.	1784	Established current appointment system	Until age 70	Ban	1979
New Jersey	Appointment	Governor appoints; confirmed by State Senate; judges serve initial seven-year term; reappointed until age 70.	1947	Established current appointment system	7 years, renewable until age 70	No ban	-
New Mexico	Merit Selection	Judicial Nominating Commission nominates; governor appoints; judges face partisan retention elections.	1988	Introduced merit selection	8 years	No ban	-
New York	Appointment	Governor appoints; confirmed by State Senate; judges serve 14-year terms.	1977	Changed to gubernatorial appointment with confirmation	14 years	No ban	-

North Carolina	Partisan Election	Judges are elected through partisan elections.	2017	Nonpartisan to partisan election	8 years	Ban	1975
North Dakota	Nonpartisan Election	Judges are elected through nonpartisan elections.	1910	Changed to nonpartisan elections	10 years	Ban	1981
Ohio	Nonpartisan Election	Judges are elected through nonpartisan elections.	1911	Changed to nonpartisan elections	6 years	Ban	1995
Oklahoma	Merit Selection	Judicial Nominating Commission nominates; governor appoints; judges face retention elections.	1967	Introduced merit selection	6 years	Ban	1994
Oregon	Nonpartisan Election	Judges are elected through nonpartisan elections.	1931	Changed to nonpartisan elections	6 years	No ban	-
Pennsylvania	Partisan Election	Judges are elected through partisan elections; subsequent retention elections.	1968	Introduced retention elections	10 years	Ban	1937

Rhode Island	Merit Selection	Judicial Nominating Commission nominates; governor appoints; confirmed by General Assembly.	1994	Introduced merit selection	Lifetime	Ban	1998
South Carolina	Legislative Election	Judges are elected by the General Assembly.	1895	Codified current legislative election system	10 years	No ban	-
South Dakota	Merit Selection	Judicial Qualifications Commission nominates; governor appoints; judges face retention elections.	1980	Introduced merit selection	8 years	Ban	2007
Tennessee	Merit Selection	Judicial Nominating Commission nominates; governor appoints; judges face retention elections.	1971	Introduced merit selection	8 years	Ban	1972

Texas	Partisan Election	Judges are elected through partisan elections.	1876	Established current partisan election system	6 years	Ban	1987
Utah	Merit Selection	Judicial Nominating Commission nominates; governor appoints; confirmed by State Senate; judges face retention elections.	1985	Introduced merit selection	10 years	No Ban	-
Vermont	Merit Selection	Judicial Nominating Board nominates; governor appoints; confirmed by General Assembly.	1971	Introduced merit selection	6 years	No ban	-
Virginia	Legislative Election	Judges are elected by the General Assembly.	1779	Established current legislative election system	12 years	No ban	-

Washington	Nonpartisan Election	Judges are elected through nonpartisan elections.	1912	Changed to nonpartisan elections	6 years	No ban	-
West Virginia	Nonpartisan Election	Judges are elected through nonpartisan elections.	2015	Partisan to nonpartisan election	12 years	Ban	1908
Wisconsin	Nonpartisan Election	Judges are elected through nonpartisan elections.	1913	Changed to nonpartisan elections	10 years	Ban	1973
Wyoming	Merit Selection	Judicial Nominating Commission nominates; governor appoints; judges face retention elections.	1972	Introduced merit selection	8 years	Ban	1977

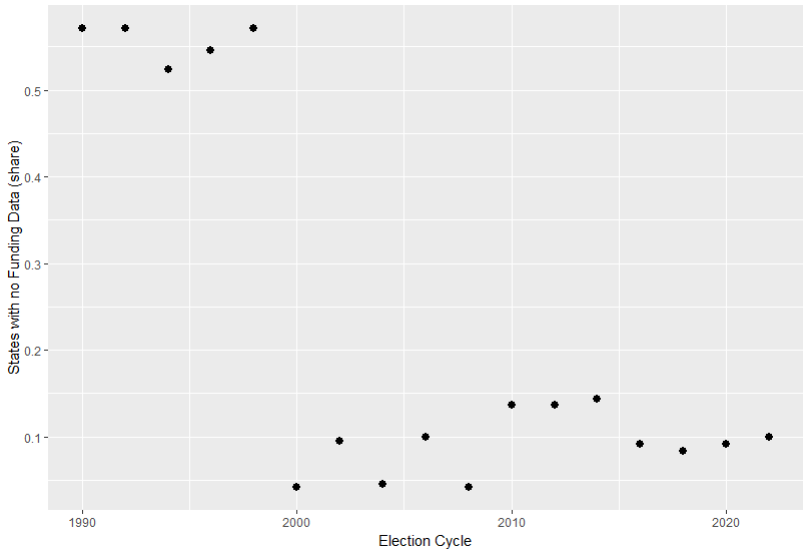


Figure 17: Judges Political Funding data coverage

A.2 Data Coverage: Direct Contributions

This section provides details about data coverage. As can be seen in Figure (17), the coverage of the direct expenditure (or contributions) from NIMSP is scant for the pre-2000 period. Therefore, for direct expenditures we focus on the period starting in 2000.

A.3 Effect of Union vs. Corporate

Some states banned independent expenditures from corporations, while some states banned independent expenditures from both unions and corporations. I can test whether the corporation ban has a stronger effect relative to the union ban. Note that these tests are for the subset of states with judicial elections. In Table (27), the coefficient on $Corp.Ban \times Post$ captures the additional funding in states that imposed a corporation-only ban, relative to states with no bans. Similarly, the coefficient on $Corp + Union\ Ban \times Post$ captures the additional funding in states that imposed a ban on both, $corp + unions$. The difference between the two coefficients, allows us to compute the differential effect of union bans.

The candidate funding is not affected by the corporations-only ban being lifted. Moreover, the difference between the two coefficients is significant at the 10% confidence level.

Table 27: Effect due to Corporations and Union bans

	(1)	(2)	(3)	(4)
	Direct Expenditures (in MM)	Direct Expenditures (in MM)	Indendent Expenditures (in MM)	Independent Expenditures (in MM)
Ban × Post	0.22**		0.30**	
	(0.10)		(0.13)	
Corp ban (β_c)		0.07		0.22*
		(0.08)		(0.12)
Corp + Union Ban (β_{cu})		0.31**		0.31**
		(0.11)		(0.13)
F [H_0: $\beta_{cu} - \beta_c = 0$]		6.69		0.34
p-value		0.02		0.57
Election Cycle FE	Y	Y	Y	Y
State FE	Y	Y	Y	Y
Incumbency FE	Y	Y	Y	Y
Observations	1,227	1,227	251	251
Rsq.	0.27	0.27	0.36	0.36

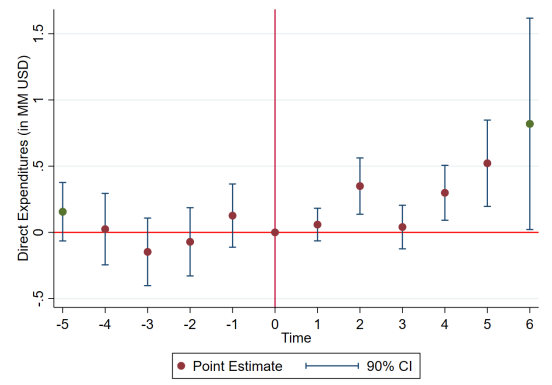
Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

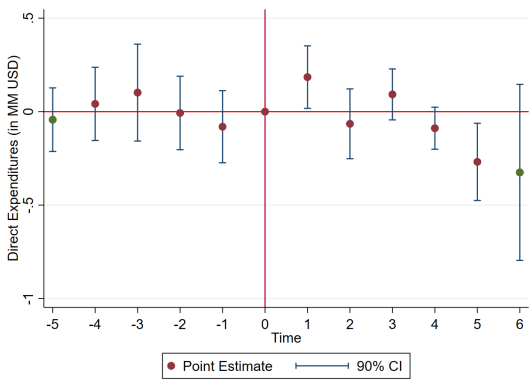
Therefore, this evidence points to higher funding of candidates in states where there is a higher increase in competition for electoral funding. These results are mainly driven by uncoded funding contributions. For business, or union spending this difference is insignificant. That is, only for uncoded funding I observe that the union + corporate ban has a higher funding effect than the corporate ban alone which is consistent with greater outside spending in competitive elections. On the other hand, when I perform a similar exercise for independent expenditures, I find that the independent expenditures are higher for bans of both kinds (Corporations only and Unions and Corporations). The difference between the coefficients that captures the effect of the union ban being lifted, is not statistically significant at the 10% level (p-value = 0.68). This evidence suggests that independent expenditures increase, mainly driven by contributions from Corporations.

A.4 Pre Trends: Contract Reliant vs. Non-contract Reliant industries

In this subsection, I document the pre-trends in capital expenditure, employment, and wages during the pre-period 2005-2009 for treated states with judicial elections across sectors with high contract reliance and low contract reliance.

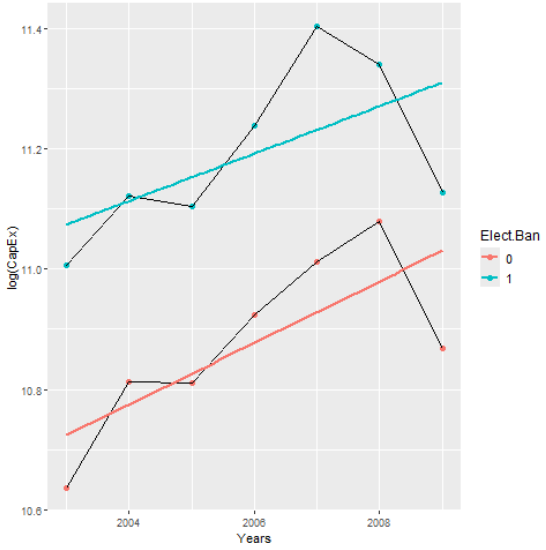


(a) Direct expenditure in states with bans on Corporations and Unions

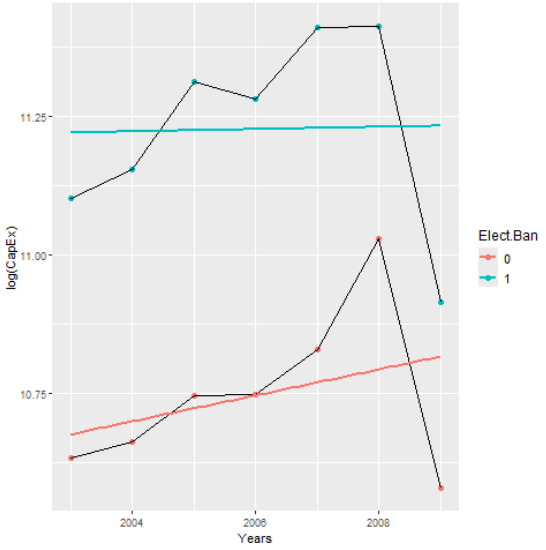


(b) Direct expenditures in corporations only ban states

Figure 18: Event study plots. Event time is the 2010-2011 election cycle.

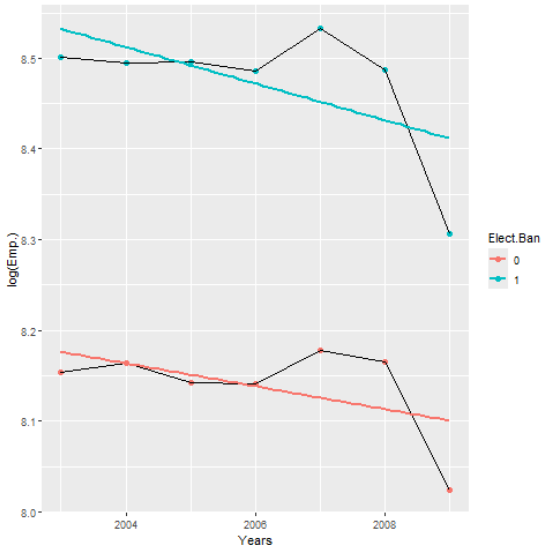


(a) Non-contract reliant Capex Pre-Trends

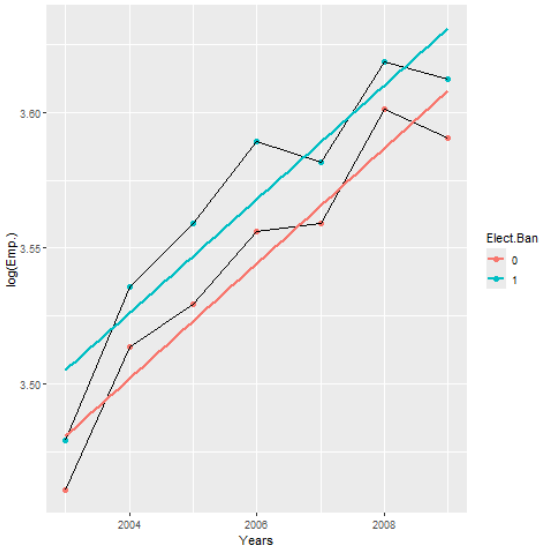


(b) Contract Reliant Capex Pre-Trends

Figure 19: Pre-Trends Capex

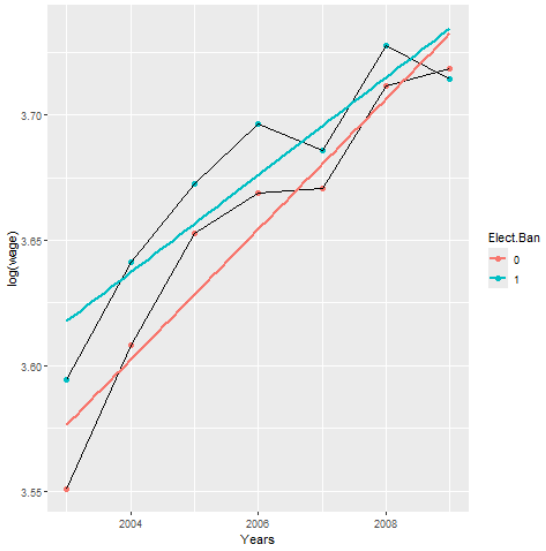


(a) Non-contract reliant Employment Pre-Trends

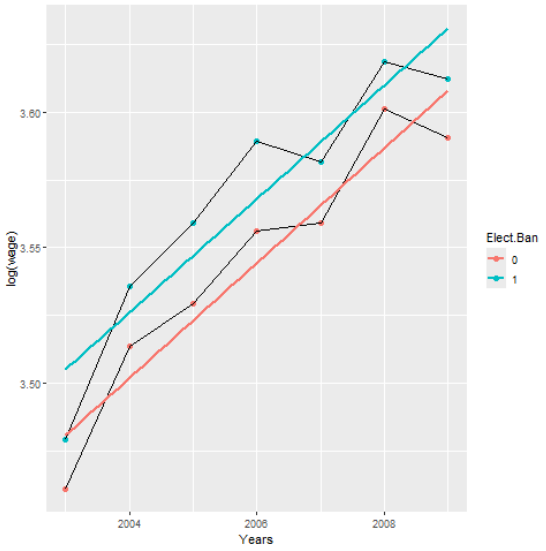


(b) Contract Reliant Employment Pre-Trends

Figure 20: Pre-Trends Employment



(a) Non-contract reliant Wage Pre-Trends



(b) Contract Reliant Wage Pre-Trends

Figure 21: Pre-Trends Wages

A.5 Effect on Establishment Productivity and Misallocation

The sector-level aggregates of the real variables capture the average effect on productivity, which is less noisy than individual establishment-level estimates of productivity. To establish that the results are robust, I estimate the effects on productivity using establishment-level data from the National Establishments Time-Series (NETS) database. This database is compiled by Wall & Associates through Dun & Bradstreet survey data collection. The data provides the sales and number of employees for a representative sample at the establishment level. However, the NETS data suffers from a few limitations, such as imputation of sales and employment as documented in Barnatchez, Crane and Decker (2017). The authors also provide prescriptions to overcome some of these limitations. The establishment-level sample also allows us to test whether the productivity improvements are associated with factor misallocation captured by the variance of the marginal revenue product of labor. I follow Sraer and Thesmar (2023) to test if factor misallocation increases.

I create a sample of establishments following the recommendations in Barnatchez, Crane and Decker (2017). I focus on establishments with more than 10 employees and fewer than 1000 employees to avoid the effect of imputation in employment. I compute the average productivity measured as revenue per employee or labor productivity. The sales for branches of multi-establishment firms are imputed. To avoid the imputation of local sales, I restrict the sample to standalone firms without such imputation concerns. I discard the 1% tails of labor productivity at the 4-digit NAICS-year level to avoid the effect of outliers in our computations. This results in $152,198$ sector $\times$ state $\times$ year observations. Finally, I drop all the sector $\times$ state $\times$ year cells with fewer than 8 establishments to reduce the noise in the computation of the first and second moments.[11] I end up with $39,446$ sector, state, time (in years) observations. Following Sraer and Thesmar (2023), I focus on 3 dependent variables, $E[\log(Labor\ Productivity)]$ the average labor productivity, $V(\log(LaborProductivity))$ the dispersion of productivity, and $C(\log(LaborProductivity, \log(Revenue))$ the covariance of productivity with size. The dispersion of labor productivity is indicative of factor misallo-

[11] The result is robust to restricting attention to more than 8 establishments per cell. In a separate subsection in this appendix, I replicate the results on average productivity without this restriction of a minimum number of establishments in a state, sector, or year cell, and the average treatment effect is robust and equal to USD $18,000$.

cation within the economy.

Table 28: Effect on Average Productivity and Dispersion

Note: This table presents the estimation results of equation (4). The dependent variable in Column(1) is labor productivity, measured as revenue in USD 1000s per worker from the NETS data sample 1990-2021. Columns(2)-(3) are the mean and variance of labor productivity within state-sector-year cell, and Column(4) is the covariance of labor productivity and revenue within state-sector-year cell. Variables *Elect* indicates states with judicial elections for state supreme court judges, *Ban* indicates the states that had imposed a ban on independent expenditures by unions or corporations, which were rendered unconstitutional by the Supreme Court in 2010. The specifications in each column vary depending on the inclusion of state-by-sector, and sector-by-year fixed effects. Sector is defined at the 4-digit NAICS code level. Standard errors are clustered at the state level.

	(1)	(2)	(3)	(4)
	Labor Productivity (000 USD/emp)	E[log(Labor Productivity)]	V(log(Labor Productivity))	C(log(Labor Productivity),log(Revenue))
Ban × Post	-7.45	-0.00	-0.01	-0.02
	(7.66)	(0.02)	(0.03)	(0.04)
Election × Ban × Post	19.47**	0.02	0.04	0.09*
	(9.62)	(0.03)	(0.04)	(0.05)
State × Sector FE	Y	Y	Y	Y
Sector ×Year FE	Y	Y	Y	Y
N	39,446	39,446	39,446	39,446
R-sq.	0.84	0.89	0.72	0.70

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table (28) illustrates how the average labor productivity is higher for the states where bans on independent expenditure were invalidated following Citizens United. This evidence is in line with the evidence on average productivity presented earlier in the paper. Interestingly, it is plausible that the average productivity increase is associated with higher dispersion in productivity, a measure of factor misallocation along the lines of Hsieh and Klenow (2009). Column (3) shows that the dispersion in productivity does not increase. The increase in productivity is stronger for larger firms, as shown in Column (4), where the dependent variable is the covariance between labor productivity and revenue. Columns (3) and (4) show that the increased labor productivity is not at the expense of increased misallocation within the economy.

A.6 Robustness: Aggregation

In this section, we verify whether the productivity improvements, as documented in the main paper, are robust to the aggregation performed under the annual survey of manufacturers. We take the NETS sample and aggregate the revenue and employment at the

state-sector-year level. The sector is defined at the 4-digit NAICS level. Column (1)-(3) in Table (29) and (30) confirm our findings from the annual survey of manufacturers. There is a 6% improvement in labor productivity measured as revenue per worker. Moreover, this improvement in productivity growth is robust to the inclusion of firm fixed effects. In Section 5.2, we test for this hypothesis.

Table 29: Effect on Establishment Productivity

Note: This table presents the estimation results of equation (4). The dependent variable is labor productivity, measured as revenue in USD 1000s per worker from the NETS data sample 1990-2021. Variables *Elect* indicates states with judicial elections for state supreme court judges, *Ban* indicates the states that had imposed a ban on independent expenditures by unions or corporations, which were rendered unconstitutional by the Supreme Court in 2010. The specifications in each column vary depending on the inclusion of state-by-sector, and sector-by-year fixed effects. Sector is defined at the 4-digit NAICS code level. Standard errors are clustered at the state level.

	(1)	(2)	(3)	(4)
	Lab. Prod (000 USD/emp)	Lab. Prod (000 USD/emp)	Lab. Prod (000 USD/emp)	Lab. Prod (000 USD/emp)
Ban × Post	-3.52			
	(7.73)			
Elect × Ban × Post	20.30**	16.79**	12.24**	4.31
	(9.87)	(6.78)	(6.09)	(4.42)
State FE	Y	Y	-	Y
State × Sector FE	N	N	Y	N
Sector ×Year FE	Y	Y	Y	Y
Estab. FE	N	N	N	Y
N	267,369	267,369	267,316	267,090
R-sq.	0.24	0.24	0.45	0.86

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 30: Effect on Establishment Productivity

Note: This table presents the estimation results of equation (4). The dependent variable is the logarithm of labor productivity, measured as revenue in USD 1000s per worker from the NETS data sample 1990-2021. Variables *Election* indicates states with judicial elections for state supreme court judges, *Ban* indicates the states that had imposed a ban on independent expenditures by unions or corporations, which were rendered unconstitutional by the Supreme Court in 2010. The specifications in each column vary depending on the inclusion of state-by-sector, and sector-by-year fixed effects. Sector is defined at the 4-digit NAICS code level. Standard errors are clustered at the state level.

	(1)	(2)	(3)	(4)
	log(Lab Prod.)	log(Lab Prod.)	log(Lab Prod.)	log(Lab Prod.)
Ban × Post	-0.00			
	(0.02)			
Election × Ban × Post	0.06**	0.06***	0.04***	0.02**
	(0.02)	(0.02)	(0.02)	(0.01)
State FE	Y	Y	-	Y
State × Sector FE	N	N	Y	N
Sector ×Year FE	Y	Y	Y	Y
Estab. FE	N	N	N	Y
N	267,369	267,369	267,316	267,090
R-sq.	0.32	0.32	0.49	0.84

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$