The Effect of Transparency on Political Behavior: Evidence from the U.S. Congressional Press Galleries

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Abstract

I create a novel dataset that tracks newspaper membership in the Press Galleries of the United States Congress from 1875 through 1939. This dataset allows me to track whether or not legislators could be monitored by reporters from their constituency while giving speeches on the floor. I find that press gallery membership meaningfully changes content of newspapers, validating its use as a measurement of transparency. I use a changes-in-changes model to estimate the effect of monitoring by the press on various speech outcomes that quantify legislative action, partisanship, and the amount of attention the politician pays to their constituency. I apply the same model to voting outcomes that measure the degree of herding in ideology. I find no evidence of effects on these outcomes, and confidence intervals for these estimates indicate reasonable precision. In addition to these empirical findings, I formalize a brief signaling game to describe the manifestation of reputational concerns of a legislator due to the transparency enforced by a reporter. This model shows that as transparency increases, legislators become more likely to send signals to their constituency that are likely to lead to re-election.

Keywords: Political economy, transparency, accountability mechanisms, speech, partisanship

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1 Introduction

The press is critical for a functioning democracy because it is a primary mechanism for political accountability. The press reports the actions of politicians to the public, and since politicians care about their prospects of reelection (Mayhew 1974), they are incentivized to act in a way that leads to favorable coverage, increasing their chances of reelection. This argument relies crucially on the assumption that the presence of the press, which I call transparency, affects the way that congresspeople act. Therefore, it is interesting to consider how the presence of the press affects political behavior, the medium that politicians use to disseminate their actions and intentions to the media and the public.

Whether or not there are observable changes in the behavior of politicians when they are monitored by the press is an empirical question. There are a variety of hypothesized mechanisms under which monitoring affects politicians' actions. We may expect politicians to posture or pander in the presence of media to gain favor with their constituency (Levy 2004; Maskin and Tirole 2004). Agenda-setting theory hypothesizes that the selectivity of news coverage signals the importance of issues in the eyes of the public which then drives politicians to reinforce the talking points that are covered by media (McCombs and Shaw 1972).

To further understand what effects seem likely in this setting, I develop a simple signaling game that formalizes the relationships between legislator, reporter, and constituent. The model provides the legislator with an incentive to lie as transparency increases. The model predicts that as transparency increases, it is more likely that the legislator sends signals that are likely to lead to his re-election. This helps highlight that theory predicts legislators will respond to public transparency.

In order to estimate causal effects of coverage, an econometrician must observe some variation in coverage unrelated to unobserved determinants of the outcome of interest. Political behavior and coverage are endogenous, because politicians may choose to behave in a way that is effective in attracting media. Similarly, the media may identify certain behaviors that are newsworthy and subject politicians who act in this way to greater transparency by monitoring them more closely.

Using data on membership in the press galleries of the House of Representatives and the Senate of the United States Congress from the 1870s through the 1930s, I analyze how transparency affects political behavior. I present a novel measurement of transparency, membership in the press galleries after the creation of the Standing Committee of Correspondents, and validate that it is both related to a meaningful change in the content of news about Congress and that it is unrelated to characteristics of politicians, like party affiliation and absences from voting. This paper is the first to analyze the content of papers that enter the galleries. Using data from the Library of Congress, I find that access to the galleries does not affect the quantity of coverage about Congress, but that it does affect the language that correspondents use to write about Congress. Language becomes more focused on details and outcomes of legislation when papers enter the press galleries, which is a form of transparency. This verifies that entry into the galleries affects transparency, which is crucial for my identification strategy. I then exploit an assumption of parallel trends in the speech and voting outcomes of politicians who are monitored and those who are not to conclude that the presence of the press does not affect the fraction of times a politician talks about cities from their constituency, the fraction of legislative days an average politician speaks on, various measures of the partisanship of language, and the distance from the average NOMINATE score.

This paper primarily relies on the creation of press galleries – physical spaces for reporters to reside and observe speeches – in the United States Congress, as well as rules that govern their membership. In the late 1870s, about 30 years after the creation of the press galleries, complaints about the integrity of the press reached a climax – reporters were frequently lobbyists in disguise and clerked for politicians quid pro quo. These conflicts of interest prompted the creation of the Standing Committee of Correspondents – a group of journalists who reviewed applications (jointly with the Speaker of the House) from correspondents who wished for access to the press galleries. Admission came under the conditions that the correspondent represented a daily newspaper, communicated stories by telegraph, and had no conflicts of interest (approved conflicts had to be publicly named). These changes in the organization of the press in Congress provide a mechanism for political accountability.[1]

Using data from the United States *Congressional Directory* from 1868 to 1939, I track newspaper membership in the press galleries by state and congressional district. Since the directories are only available as scans of books, I use optical character recognition (OCR) to convert the scans to plain text. This allows me to extract the names of newspapers and reporters that were present in the galleries in a given session of Congress. I match newspapers to their home states using the United States Newspaper Panel (Gentzkow, Shapiro, and Sinkinson 2011). This allows me to analyze temporal and spatial variation in newspaper membership in the galleries across the United States. I match these papers to data from the Library of Congress to analyze how the content of newspapers change when they enter the press galleries. I also make use of data on Congressional Districts to match newspapers to districts in order to complete this analysis at the district level. I merge processed text from the *Congressional Record* (Gentzkow, Shapiro, and Taddy 2019) with data on gallery membership to estimate the effect of transparency on various speech and voting outcomes.

I estimate how the presence of a reporter, a form of public transparency, affects political behavior. The data has a variety of instances in which there are no newspapers in the galleries from a given constituency in session t and some non-zero number of newspapers from the constituency in session $t+1$. I define these constituencies as treated in period $t+1$ and analyze changes in speech and voting from periods t to $t+1$. I utilize a changes-in-changes model (Athey and Imbens 2006) to estimate the effect of monitoring on outcomes that quantify legislative action, partisanship, proximity to party, the amount of attention paid to a congressperson's constituency, and ideology. The model allows me to estimate and

[1] In this new era of reporting the *Evening Star* notes that "honesty was a prerequisite," "courage and independence essentials, and a love of fair play and a devotion to truth a marked characteristic" of the press galleries.

perform inference on the entire counterfactual distribution of outcomes for treated entities.

The most crucial identifying assumption is the time invariance of unobservables within groups. This assumption requires that the population of agents within a given group (i.e. treatment or control) remain constant over time and is therefore very strong and central to any changes-in-changes and difference-in-differences identification strategy. This implies that any differences in the trends of the outcome variable of interest be stable over time (i.e., parallel trends). This assumption is not directly testable, but there are some reasons why it may hold in this context. First, unobservables that determine the outcomes I consider pertain to their legislative expertise and the characteristics of their constituency. These either seem unlikely to change at all, or very little over time. In particular, demography is slow to change in a district or state. Legislative expertise may change over time, but between two adjacent sessions, it seems unlikely that these changes will be large, if they exist. I test for selection on observables by comparing the means of observables across groups and find no selection when considering characteristics of newspapers and politicians, like circulation, elections, party, and rank. I find no differences in the distributions of pre-treatment changes in the outcomes I consider across treatment and control groups, validating parallel trends in distributions.

Speech outcomes that quantify the attention paid to a constituency include: the fraction of times a politician mentions cities and modal occupations and industries in their constituency out of all words spoken. I find null effects. Specifically, for the average politician the treatment effect on the fraction of words spoken that are cities in a congressperson's constituency is 0.0045 percentage points with a standard error of 0.016 percentage points where the standard deviation of the outcome is 0.3 percentage points. This means we can eliminate treatment effects larger than one more mention of a city, indicating that our estimate of the average treatment effect is virtually zero. I find similarly precise null effects for occupations and industries. I primarily measure legislative action with the fraction of days on which a congressperson speaks. Alternatively, I consider the overall number of words a politician speaks, the average speech length, and the fraction of voting days where the politician speaks at least once. I find precise null effects for all these outcomes. To measure partisanship and proximity to party language, I use the share of bigrams spoken by Democrats and Republicans in a certain session to calculate the posterior probability that a speaker is Republican given that they spoke certain bigrams. This allows me to see whether or not politicians use language that agrees with their party upon treatment. Again, I find precise null effects. To validate that there are not ideology changes that these speech outcomes fail to detect, I use the distance to the average NOMINATE score, and find similarly precise null effects.[2]

A variety of economists and political scientists have studied how media affects political behavior in the United States. As mentioned earlier, finding a source of random or quasi-random variation in media coverage is the most challenging aspect of this literature. Notably, Snyder and Strömberg (2010) use geographic variation in the overlap between newspaper markets and congressional districts to study the effect coverage has on voters and political behavior. They find that congresspeople from districts with greater transparency respond to their constituency more than those congresspeople with less transparency and that voters are more knowledgeable about their elected officials in districts with greater transparency.[3] Ash, Morelli, and Weelden (2017) use Synder and Strömberg's (2010) measurement of transparency to find that politicians spend more time on divisive issues when subjected to greater news transparency. I contribute to this literature by providing a novel way to measure transparency with newspaper membership in the Congressional Press Galleries. I validate that access to the Congressional Press Galleries meaningfully changes the content of articles about Congress.

A related literature specifically studies how transparency and accountability mechanisms affect political behavior. Datta (2008) finds that in India, television coverage did not make

[2]NOMINATE scores are a way to measure political ideology with roll-call voting. Specifically, the NOMINATE method uses multidimensional scaling techniques on roll-call voting to estimate political ideology. See Poole and Rosenthal (2000) for details.

[3]Similarly, Cohen, Noll, and Zaller (n.d.) find that when voters have more information, roll call voting represents the ideology of the constituency more.

members of Parliament more likely to represent the concerns of their constituency, but increases the voice of prominent politicians as well as the interests of elite, urban voters. In a similar study of Parliamentary question time (QT) in the political science literature, Salmond (2014) finds that QT increases partisanship and voter turnout. In Uganda, Humphreys and Weinstein (2012) supply randomly selected voters with detailed information about their members of Parliament (MPs) and they tell the MPs that their constituents will be given this information. Despite voters being receptive to new information about their MPs, these MPs do not respond in terms of performance. I contribute to this literature in finding new evidence that monitoring by politicians does not affect political behavior. In particular, monitoring does not affect speech outcomes that measure the attention paid to a constituency, legislative action, partisanship, and the proximity to party language.[4]

This paper also touches on literature that studies the ways in which lying and deception can be incorporated into signaling games. The model developed in this paper uses an intrinsic cost to lying that does not depend on the lie being observed or how the lie affects other agents. Sobel (2020) discusses this sort of lying and provides a framework for studying both lies and deception in signaling games.

This paper proceeds as follows: in Section 2 I describe the data, in Section 3 I present a signaling game that formalizes the manifestation of the reputational concerns of legislators in the presence of transparency, in Section 4 I provide anecdotal evidence on what effects seem likely as well as outline the history that the setting of this paper relies on, in Section 5 I present results on the effects of gallery membership on content and coverage of Congress, in Section 6 I outline my empirical strategy, in Section 7 I present my results, and in Section 8 I conclude.

[4]Additionally, there is a literature that studies the effect of coverage on the electorate's behavior in the United States and abroad. Gentzkow, Shapiro, and Sinkinson (2011) use data on newspaper entry and exit from 1869 through 1928 to conclude that newspaper entry increases voter participation in congressional and presidential elections. See also Drago, Nannicini, and Sobbrio (2014).

2 Data

In this paper I draw on a variety of data sources to investigate the effect of public transparency on political behavior. There are three arms of this data: (1) data that allows me to measure temporal and spatial heterogeneity in gallery membership, (2) data that allows me to measure political behavior and other characteristics of politicians, and (3) text data from the Library of Congress that allows me to understand how the quantity and content of coverage of Congress changes over time.

The first consists of the *Congressional Directory*, the U.S. Newspaper Panel (Gentzkow, Shapiro and Sinkinson 2011), and data on the cities and counties in historical congressional districts (Clubb, Flaningan, and Zingale 2006). In brief, scans of the *Congressional Directory* allow me to collect the names of newspapers and correspondents who were approved by the Standing Committee of Correspondents and the Speaker of the House to enter the galleries of the House and Senate. I then match these papers to the U.S. Newspaper Panel and the Clubb, Flaningan, and Zingale data (2006) to ascertain the locations of these papers. This is all the data I need to create treatment and control groups.

The second arm is primarily dependent on processed text from the *Congressional Record* (Gentzkow, Shapiro, and Taddy 2019). To analyze the discussion of local industries and occupations I make use of data from IPUMS to understand what industries and occupations are common in a given region of the country.

The last arm only relies on data from the Library of Congress' Chronicling America project which actively digitizes historical newspapers. The Library of Congress makes the plain text of these newspapers available for download. This allows me to quantitatively understand how content changes. It also develops historical anecdotes that are helpful for understanding what effects seem plausible.

2.1 Press Gallery Membership Data

2.1.1 The Congressional Directory

With every session of Congress comes a new *Congressional Directory*, which provides readers with information on the members of Congress and crucially the names of the reporters and newspapers who were approved to access the galleries by the Speaker of the House and the Standing Committee of Correspondents. The Hathi Trust Digital Library has fairly complete records of these directories starting with very early sessions of Congress. I collected scans of the *Congressional Directory* starting in the 44th Congress and ending in the 69th Congress. Using optical character recognition (OCR), I am able to convert the portions of the directories with information on the members of the press galleries to plain text. This yields data on newspaper membership in the press galleries across sessions of Congress.

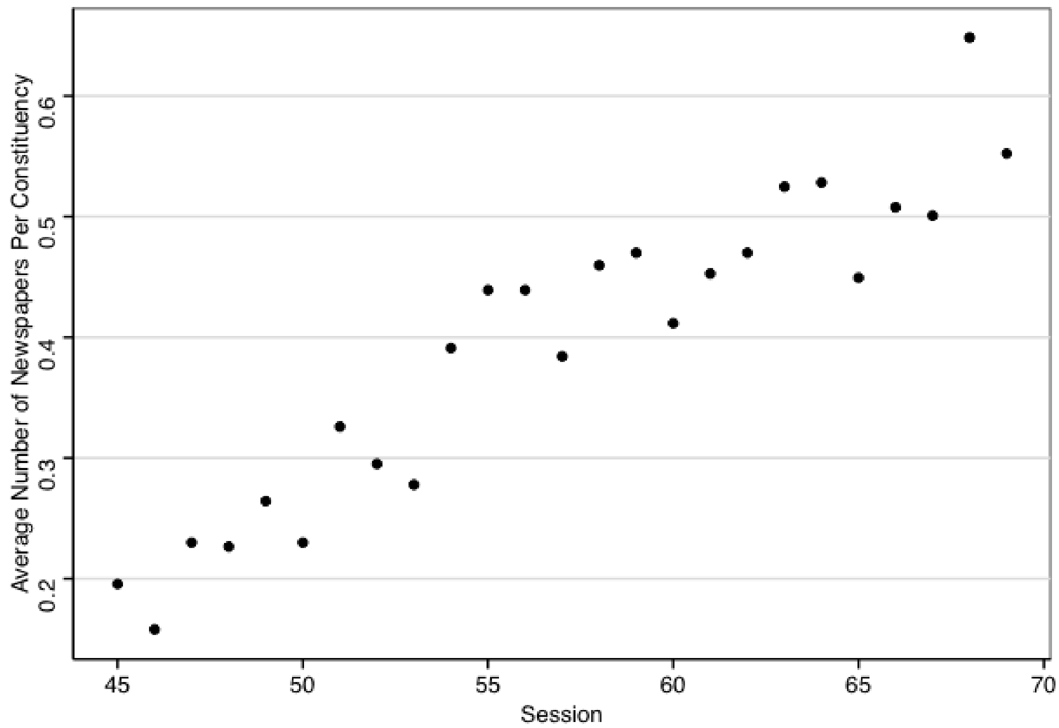
2.1.2 The United States Newspaper Panel, 1869-2004

The United States Newspaper Panel (Gentzkow, Shapiro, and Sinkinson 2011) provides data on static and dynamic characteristics of historical newspapers in the United States from 1869 through 2004. The Panel includes the cities and states of the newspapers. I am able to match the plain text names of newspapers from the directories to data in the Panel by name and year. This matched data permits analysis of membership in the press gallery of the Senate. To analyze membership in the House, I need to match newspapers to their Congressional Districts which requires additional data.

2.1.3 Electoral Data for Counties in the United States: Presidential and Congressional Races, 1840-1972

Clubb, Flaningan, and Zingale (2006) published data on the membership of cities and counties in Congressional Districts over time. This allows me to match newspapers to their corresponding congressional districts. These data allow me to create a comprehensive panel of state and congressional district newspaper membership in the galleries. Figure 1 shows the average number of newspapers per constituency. This number increases over time.

Figure 1: Average Number of Gallery Newspapers per Constituency Over Time



Notes: This demonstrates the results of matching the plain text from the Congressional directories to the United States Newspaper Panel. The y-axis gives the average number of newspapers in the galleries per constituency.

2.2 Speech and Constituency Data

2.2.1 The Congressional Record

In order to study the speech of politicians, I use the *Congressional Record*. Beginning in 1873, the speeches made by congresspeople on the floor of the House and Senate were recorded and published in the *Congressional Record*. This allows me to measure various speech outcomes for politicians who speak on the floor and in committees. Gentzkow, Shapiro, and Taddy (2019) provide processed text from the *Record* starting with the 43rd Congress and ending with the 113th Congress. This data also provides demographic information on the speakers and allows me to test for selection on observables.

2.2.2 Census data from IPUMS

I use data from IPUMS to quantify the popularity of various occupations and industries at the state level. IPUMS offers U.S. Census microdata. I use the 1% samples of the United States Censuses for each decade starting with 1870 and concluding with 1930. Congressional sessions are matched to the most recent decadal Census. The variables I include in my data extract are state codes, occupation identifiers for the household (1950 basis), and industry identifiers for the household (1950 basis). I determine popular industries and occupations by calculating the modal industry and occupation in a state and year. For these modal occupations and industries, I construct a dictionary of relevant terms based on my readings of how these occupations and industries were discussed in historical newspapers and speeches of legislators. Examples of these terms are included in Appendix Tables A.1 and A.2. This data is only available at the state level prior to 1950 so this can only be matched to the Senate sample.

2.3 The Library of Congress: Chronicling America

The Library of Congress actively digitizes issues of historical newspapers. These are published online under the Chronicling America project. These digitized newspapers are organized by issue, which allows me to understand how coverage of politicians changes over time. I create data based on all articles that mention "congress" in the time period the *Directory* data span. This search term is a good measure for the quantity and content of coverage that correspondents use to cover Congress which is shown in Appendix Figure A.1. I match newspaper names and locations from this data to the United States Newspaper Panel as well as the *Congressional Directory*, allowing me to understand if coverage changes in response to access to the press galleries. I retrieve the text of articles from newspapers that are in the galleries from this data. This allows me to understand how the content and quantity of coverage of Congress changes over time in these papers. This data also provides historical evidence that I use in Section 4.

3 Model

When a reporter enters the press galleries from some congressperson's constituency, the congressperson's actions (e.g., his votes) and speeches will be reported to his constituency. Given that the constituency has preferences for policies and that the reports of the congressperson's speeches and actions in Congress reveal his stance on these policies, the signals the congressperson sends to the constituency (via the reporter) shape the constituency's beliefs about the policy agenda the congressperson is likely to enact. Since his constituency makes the choice to elect the congressperson in the future based on his perceived policy agenda, the congressperson will want to send signals that maximize his chance of re-election, given that holding office is desirable.

Consider a constituency with a politician P, a reporter R, and a constituent C. The politician has a type $p \in \{0,1\}$ corresponding to a policy perspective that matters to C. p is drawn from some non-degenerate distribution by nature and is only known to P. C has a prior belief that π is the distribution of p, so p takes the value 1 with probability π and 0 with probability $1-\pi$, where $\pi \in (0,1)$. P is required to send a signal $s \in \{0,1\}$, where s can be though of as either a vote or a speech that signals a policy perspective. R monitors the actions and speeches of P with probability q. When R monitors P he reports s to C truthfully. With probability $1-q$, R sends a report drawn from π. After observing the report, C faces a voting decision. C chooses an action $a \in \{0,1\}$, where $a=1$ corresponds to voting for the incumbent P and $a=0$ corresponds to voting for P's challenger. After the voting decision is made, the payoffs of P and C, u^P and u^C respectively, are realized. These payoffs are common knowledge. To elucidate the structure of the game, the extensive form is drawn in Appendix Figure A.2.

$$u^P(s, a, p) = -\alpha|s - p| + a \tag{1}$$

$$u^C(a, p) = a(-|1 - p| + \delta) \tag{2}$$

P faces an intrinsic lying cost $\alpha \in \mathbb{R}_+$ which he incurs when sending a signal that differs from p.[5] C faces a cost to voting for P when $p = 0$, which is normalized to 1. The likability of P relative to his opponent is $\delta \in (1 - \pi, q + (1 - \pi)(1 - q))$.

The bounds on δ correspond to a specific strategic scenario for C. When $\delta = (1 - \pi)$ we have that C is indifferent between $a = 1$ and $a = 0$ if and only if her belief that P is type one conditional on observing a speech s, $\mu(1|s)$, satisfies $\mu(1|s) = \pi$. Hence, in this scenario C makes her voting decision under her prior, π. When $\delta = q + (1 - \pi)(1 - q)$, C is indifferent between $a = 1$ and $a = 0$ upon seeing s if and only if $\mu(1|s) = \pi(1 - q)$ which is the probability that C observes $s = 1$ by chance due to R's choice of signal. This belief arises in information set zero when all agents send their true type, but the report is 0. Given the strategy $s = p$,

$$\begin{aligned}\mu(1|0) &= \frac{\pi(1-q)(1-\pi)}{\pi(1-q)(1-\pi) + (1-\pi)(q + (1-q)(1-\pi)} \\ &= \pi(1-q)\end{aligned}$$

Therefore, we can think of $\delta < q + (1 - \pi)(1 - q)$ as C voting for the challenger if all agents send their true type and the report is 0. This gives a clear incentive for P of type 0 to lie about his type.

Lying can only be advantageous if $\alpha \in (0, 1)$, since winning the election gives a payoff of 1 while losing gives 0. Further, we constrain $\alpha < q$. Intuitively, the cost of lying has to be less than the benefit of winning times the chance that the speech is monitored, q.

[5] Sobel (2020) describes lying and deception in games of this sort, including what aspects of games lead to lies, and how we think about the costs of lies, including intrinsic costs.

The type of equilibria I characterize in this game are weak Perfect Bayesian Equilibria.

Definition 1 *Consider a strategy* $\sigma = (\sigma_P, \sigma_C)$ *along with beliefs of* C μ*.* $\sigma_P : \{0,1\} \to \Delta(\{0,1\})$ *is a map from types to a probability distribution over signals and* $\sigma_C : \{0,1\} \to \Delta(\{0,1\})$ *is a map from information sets to a probability distribution over actions.* $\mu(p|H)$ *tells us the probability* C *assigns to* P *being of type* p *given she is at information set* H*. This strategy and beliefs constitute a weak perfect Bayesian equilibrium (PBE) if*

1. σ *is sequentially rational given* μ *at all information sets*

2. μ *is derived with Bayes' rule where possible*

Proposition 1 *Now suppose that* $0 < \alpha < q$ *and* $1 - \pi < \delta < q + (1-\pi)(1-q)$*. Then the strategy* $\sigma_P(1) = (0,1), \sigma_P(0) = (1-c, c)$*, where* $1 - c = \frac{-(1-q)(1-\pi)+\delta(1-q)}{(1-\delta)q}$*,* $\sigma_C(1) = (0,1)$*,* $\sigma_C(0) = (\frac{\alpha}{q}, 1 - \frac{\alpha}{q})$*, along with beliefs of* C $\mu(1|0) = 1 - \delta$ *and* $\mu(1|1) = \frac{(1-\delta)\pi(q+(1-q)\pi)}{\pi+(1-\pi)q+(1-q)(1-\pi)^2-\delta}$ *is a PBE.*

Proof. We must first check that all players are sequentially rational. For P to randomize when he's type 0 we require that his expected utility of playing $s = 1$ equal his expected utility of $s = 0$, $Eu_0(1) - Eu_0(0) = 0$.

$$
\begin{aligned}
Eu_0(1) - Eu_0(0) &= -\alpha + q(1 - \pi - (1-\pi)(1 - \frac{\alpha}{q})) + \pi + (1-\pi)(1 - \frac{\alpha}{q}) \\
&- (q(\frac{\alpha}{q} - \pi - (1-\pi)\frac{\alpha}{q}) + \pi - (1 - \pi(1 - \frac{\alpha}{q}))) \\
&= 0
\end{aligned}
$$

Hence, C's strategy, $\sigma_C(0) = (1 - \frac{\alpha}{q}, \frac{\alpha}{q})$ induces P to randomize when he's type 0. Since the probability that C plays $a = 1$ in information set 1 is 1, and $1 > \frac{\alpha}{q}$, $\sigma_P(1) = (0,1)$ is optimal. Now we must check that the beliefs induced by P's strategy lead to C to randomize in the information set where C observes $s = 0$.

$$\mu(1|0) = \frac{\pi(1-q)(1-\pi)}{\pi(1-q)(1-\pi) + (1-\pi)((1-q)(1-\pi) + q(\frac{-(1-q)(1-\pi)+\delta(1-q)}{(1-\delta)q}))}$$
$$= 1 - \delta$$

Notice that C's expected utility of playing $a = 1$ upon observing $s = 0$ is

$$\mu(1|0)\delta + (1 - \mu(1|1))(\delta - 1) = \delta - 1 + \mu(1|1)$$
$$= 0$$

When see plays $a = 0$, she gets 0 with probability 1. Hence, C randomizes when she sees $s = 0$.

$$\mu(1|1) = \frac{\pi(q + (1-q)\pi)}{\pi(q + (1-q)\pi) + (1-\pi)(qc + (1-q)\pi}$$
$$> \frac{(1-\delta)\pi}{1 - 1 + \pi}$$
$$= 1 - \delta$$

Hence C plays $a = 1$ with probability 1 upon observing $s = 1$. Thus, C's strategy is optimal given P's strategy and beliefs are derived with Bayes' rule. We have a PBE. ■

The PBE in Proposition 1 leads to the following comparative static.

Corollary 1 *Suppose that* $1 - \pi < \delta < q + (1-q)(1-\pi)$. *As* $q \to 1$, $c \to 1$, *where* $\sigma_P(0) = (1 - c, c)$. *Furthermore,* c *is increasing in* q.

Proof. For this formulation of the model with this fixed value of δ, the PBE outlined in Proposition 1 is indeed a PBE as $q \to 1$. This is the case because as q increases, the interval that δ must lie in gets bigger. Knowing this, we can consider how c changes as $q \to 1$.

$$\begin{aligned}\lim_{q \to 1} &= \lim_{q \to 1}(1 + \frac{(1-q)(1-\pi) - \delta(1-q)}{(1-\delta)q}) \\ &= 1\end{aligned}$$

Specifically, for any increase in q, c increases.

$$\begin{aligned}\frac{\partial c}{\partial q} &= \frac{\partial}{\partial q}(1 + \frac{(1-q)(1-\pi) - \delta(1-q)}{(1-\delta)q}) \\ &= \frac{q(\delta - 1(1-\pi)) - (1-q)(1(1-\pi) - \delta))}{(1-\delta)q^2}\end{aligned}$$

Recall that $\delta > (1 - \pi)$ so the numerator is positive and the denominator is positive since $1 > \delta$. Thus, c is increasing in q. ■

Proposition 1 and Corollary 1 highlight that the manifestation of the reputational concerns of P, due to the transparency R enforces, leads him to send signals that are likely to ensure his re-election. We see that the probability of sending C's preferred type is increasing in q. If we think of q as the probability that R is in the galleries, this indicates that the more likely it is R is in the galleries, the more likely it is that P will send a signal s that is likely to lead to re-election, even though it involves lying about his true type. This finding is robust to different constraints on δ. The appendix outlines all PBE's in this model by exhaustive and exclusive cases that constrain the parameter space, which allows us to conclude that Corollary 1 generalizes in the sense that c is weakly increasing in q for all PBE's that arise in this sort of signaling game.

4 Historical Context

In 1841, the Senate decided to set aside physical space in the the Chamber for reporters to watch the proceedings as they unfolded on the floor. These galleries were regulated by politics and not any sort of independent body. For the aforementioned reason, the integrity of those who made up the galleries was called into question. The creation of the Standing Committee of Correspondents in the 1870s was seen as a move toward objectivity in coverage and a means of diminishing the influence politicians themselves had on the press (Ritchie 2009). When reporting on the gallery after the Committee was formed, Robert Graves writes that the tendency among correspondents is "toward independence as between political parties." The correspondents vetted by the Committee are no longer bound by the former quid pro quo that ensured favorable coverage for politicians who could hire journalists. This new movement in reporting on Congress came with the standard that reporters speculated very little and only reported what they knew to be true. Graves says "if public men and public measures were discussed as fearlessly" by correspondents in their work as they were in private, reputations of prominent figures "would be undone," demonstrating a standard of reporting that was meant to cover politics and not gossip. It seems plausible that politicians would respond to correspondents who had such evident power (Graves 1890).[6]

4.1 Anecdotal Evidence on the Influence of the Press

In the face of correspondents from their constituencies, congresspeople had very clear reputational concerns and they used speech to ensure favorable coverage and reelection. Such behavior is notable in a speech by Felix Walker, a Representative of Buncome County, North Carolina, who, while giving an elaborate speech, cautioned his fellow Representatives that this speech was just for the folks back home in Buncome, taking advantage of the presence of the press to signal attention to his constituency (Freeman 2018). Most members of Congress walked out on Walker's speech, but reporters from Washington and North Carolina listened to the speech and wrote about it in stories to Walker's constituency. Long winded speeches that were just for show were later called "bunkum" because of Walker (Freeman 2018).[7]

[6]Graves also opines that for Washington correspondents to listen to any speech the politician must "indeed be an orator of renown and genuine eloquence," again portraying the idea that politicians actively had to use particular language to cater to the press.

[7]This gives us the word "bunk" (and naturally "debunk").

The example of Walker highlights the plausibility of the hypothesis that the presence of the press may affect political behavior. Congresspeople have always been known to pay close attention to the press.[8]

Senator Zebulon Vance of North Carolina gives us another example. He gave a speech on the Tariff Act of 1890 in order to address the concerns of farmers in his state whose votes and support were critical for his reelection.[9] The response to his speech was mixed. One newspaper writes that Vance "tried to 'pull the wool over the eyes' of the farmers by making a bunkum speech in the senate" (*The Monitor* 1890). Calling a speech "bunkum" is the way in which correspondents flagged grandiose speech that was meant to signal attention to a congressperson's constituency, but was absent of genuine legislative intent. This sort of speech would only be given around people who could communicate with the constituency (in this case, the correspondents). If this method of speech consistently failed politicians, we'd expect them to stop. It did not fail in Vance's case. In other papers, the speech was called "amusing" and Vance was praised for his advanced understanding of the tariff and its effects on the farmers of North Carolina (*The Charlotte Democract* 1890).

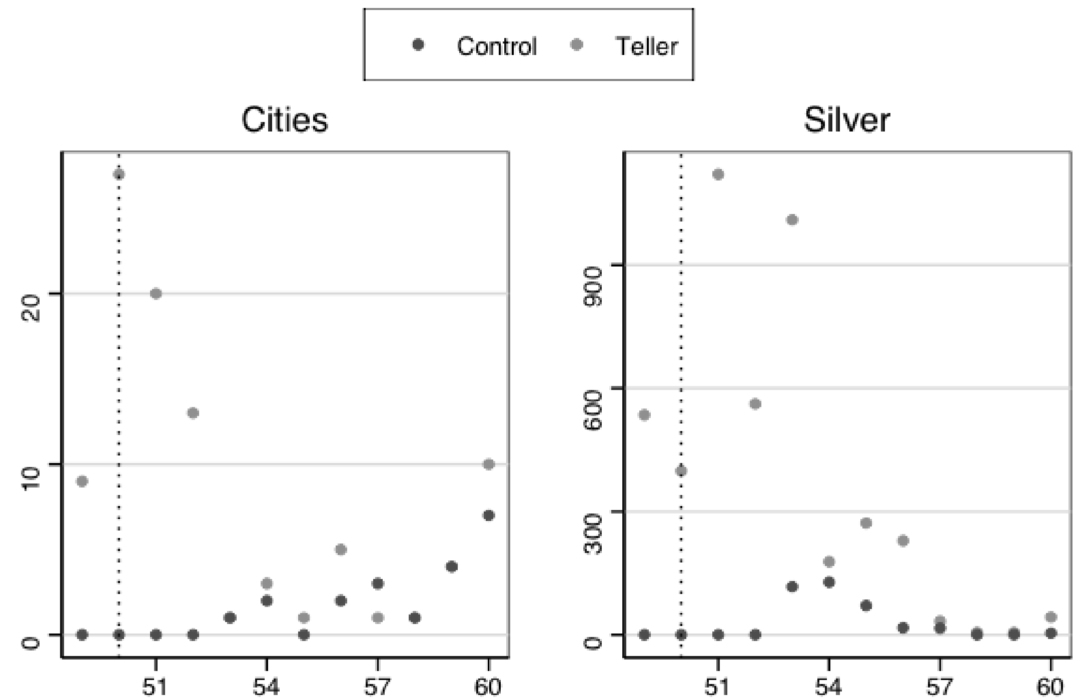
Another example akin to that of Walker and Vance comes from Senator Henry Teller of Colorado. Teller was a notable Silver Republican who later joined the Democratic Party. The Silver Republicans emerged in the 1890s as states with prevalent mining industries pushed for legislation on bimetallism – a policy that would ensure that certain quantities of both silver and gold would serve as monetary units. Newspapers from Colorado that were present in the galleries described the work Teller did on legislation to support bimetallism. One paper writes that he "has withdrawn from the caucus committee on silver legislation and

[8]Politicians were known to threaten violence against one another and ramble on for long periods to supposedly get the attention of the press who communicated to their locales in letters about the newsworthy speeches of the House and Senate (Freeman 2018). Additionally, being one of the first Congresspeople to have his speech recorded after the Senate voted to allow reporters into the galleries, Senator Gouvernor Morris wrote in his diary that the presence of the press and their detailed publications on the workings of legislators was "the beginning of mischief" (Ritchie 2009). The private language of Senator Morris highlights the existence of the reputational concerns congresspeople face in the presence of the press.

[9]Also known as the McKinley Tariff. This was no well received by the electorate since duties on imports were raised by nearly 50%. Vance faced pressures from farmers in his state to vote against the Tariff.

without regard to political ties has taken an admirable and decided stand in favor of silver, the largest and most valuable product of the state, that there shall be free and unlimited coinage of the same" (*Lamar Register* 1890). Teller even walked out of the Republican National Convention when it was decided that there would be a gold standard (*Lamar Register* 1890). One interesting question to ask is how the presence of newspapers from Colorado affected Teller's speech on the floor of the Senate. Figure 2 demonstrates how Teller's language changed when newspapers from Colorado entered the Senate press gallery. We can see that there is a clear increase in mentions of cities from Colorado in the 50th session and a delayed increase in mentions of silver. The effects diminish over time. To see whether or not these trends could possibly be the result of monitoring, I plot a control series using data from Senators from Utah, who had similar interests in silver, but were not observed by correspondents from their constituency during the time period I consider.

Figure 2: Senator Henry Teller's Response to Transparency



Notes: The y-axis gives the number of times cities from Colorado and silver are mentioned by Senator Henry Teller of Colorado and control Senators from Utah. The session of Congress is on the x-axis. The dotted vertical lines corresponds to when newspapers from Colorado enter the Senate Press Gallery.

4.2 Determinants of Press Gallery Membership

There is limited information on why newspapers made the choice to enter the galleries. One obvious constraint on entry is the ability to afford to send a correspondent to Washington. Presumably, correspondents would not apply to the Standing Committee unless they wanted to report on their representatives and active legislation. Ritchie (2009) notes that wealthier papers entered the galleries first.

Some historical evidence points to national trends in the popularity of having correspondents in the press galleries of Congress. Smith D. Fry, a correspondent for the *Bottineau Courant*, writes that around the time of the American Civil War it became increasingly popular for newspapers to send correspondents to the galleries because of John Fremont's nomination to run for the presidency and later the inauguration of Buchanan.[10] Fry says that up until this point in time the galleries could not "hold half" of the newspaper men now coming to Washington. Although this is prior to the creation of the Committee, it may be that national trends originally drove the popularity of sending correspondents and once the institutional structure of the galleries changed, papers who became accustomed to this ideal, applied to the galleries and joined as they were accepted by the Speaker and the Committee.

5 Gallery Membership and Coverage

To validate that gallery membership is a form of transparency, we must first investigate how gallery membership changes the coverage of legislators. One clear way to investigate this is to ask whether or not the language of stories about Congress changes when a newspaper enters the press galleries in a constituency where no newspapers previously occupied the galleries. Understanding how the content of articles about Congress changes when papers enter the galleries is a text classification problem. Binomial logistic regression with regularization can be applied to a sparse matrix of n-grams to select n-grams that are important in predicting whether or not an article comes from papers in the galleries.

5.1 Binomial Logistic Regression with Regularization

Consider a set of articles A. For each $a \in A$ there is an associated session, $t(a)$, and a newspaper, $q(a)$, that a was published in. Let L be the set of newspapers, $\{q(a) : a \in A\}$. Let W be a set of tokens (e.g. one-word, two-word, or three-word phrases). Let $x_a \in \mathbb{N}^{|W|}$ be a vector that represents the counts of tokens in a that are in vocabulary W. We can model the probability that a comes from a treated newspaper in its treatment period using

[10] This was the case because Fremont's nomination was taken as a major objection to Slave Power (Richards 2008).

these counts. A logistic regression model specifies this probability as follows.

$$\mathbb{P}(V_{q(a),t(a)} = 1|x_a) = \frac{1}{1 + e^{(\beta_0 + x_a'\beta + \gamma_{q(a)})}} \tag{3}$$

where $\gamma_{q(a)}$ is a newspaper fixed effect. We can then estimate (β_0, β, γ) as $(\hat{\beta}_0, \hat{\beta}, \hat{\gamma})$ by regularized maximum likelihood

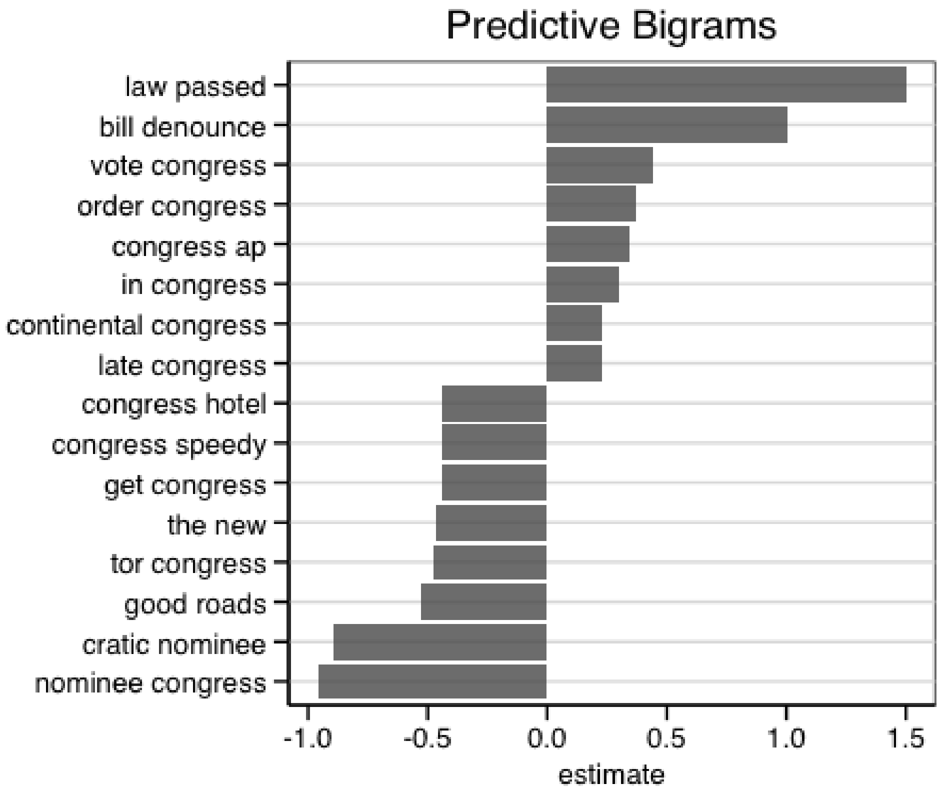
$$\max_{(\beta_0,\beta,\gamma)\in\mathbb{R}^{|W|+|L|+1}} \Big[\frac{1}{|A|}\sum_{a\in A}(V_{q(a),t(a)} \log \mathbb{P}(V_{q(a),t(a)} = 1|x_a) \tag{4}$$
$$+(1 - V_{q(a),t(a)}) \log \mathbb{P}(V_{q(a),t(a)} = 0|x_a)) - \lambda P_\alpha(\beta)\Big]$$

where $P_\alpha(\beta) = (1-\alpha)\|\beta\|_{l_2}^2 + \alpha\|\beta\|_{l_1}$ is the elastic-net penalty and λ is a parameter value that is optimized with a coordinate descent algorithm. The values of α and λ that are used are chosen by 10-fold cross validation. When $\alpha = 0$ this corresponds to the penalty used in ridge regression. On the other hand, when $\alpha = 1$ this corresponds to the lasso penalty. $\|\cdot\|_{l_2}$ and $\|\cdot\|_{l_1}$ are the l_2 and l_1 norms, respectively. Friedman, Hastie, and Tibshirani (2017) develop an algorithm to compute these estimates efficiently that builds upon the Newton algorithm of Lee et al. (2007).

5.2 The Effect of Press Gallery Membership on Coverage

I find evidence that press gallery membership affects the content of articles written about Congress. Figure 3 presents coefficients from Equation 3 that have the largest coefficients in magnitude for both classes of articles. Positive coefficients indicate that the the presence of the specific phrase increases the probability that the paper is in the press galleries, while negative coefficients decrease this probability.

Figure 3: The First Stage: The Effect of Gallery Accession on Newspaper Content



Notes: This figure demonstrates some of the most predictive bigrams of gallery membership. The x-axis provides the estimate of the coefficient for the specific bigram indicated on the y-axis. Positive coefficients correspond to bigrams whose presence in an article increase the probability of that the article comes from a paper in the galleries. Negative coefficients indicate the opposite. This estimate is calculated by regularized maximum likelihood as in equation 4. Plots for unigrams and trigrams are included in the Appendix and they indicate similar findings in terms of changes in language. Note that 'tor' is an OCR misspelling of 'for'.

The bigrams in Figure 3 indicate that articles about Congress from papers in the galleries use language that focuses on the outcomes and details of active legislation. Articles about Congress from papers that are not in the galleries focus on the specific individuals who are running for Congress in that constituency, as well as pubic opinion about politics. To elucidate this finding consider the bigram "law passed." It frequently appears in articles that discuss newly enacted laws. Papers write something like "the law passed by Congress." The bigram "congress enact" is used similarly.[11] When using the bigram "vote congress," papers in the galleries focus on voting outcomes.[12] The bigram "members congress" is used to discuss the work of Congress.[13] Now let's consider the bigrams that indicate that it is more likely that a paper is not in the galleries. One of these bigrams is "nominee congress." This bigram is used to refer to individuals running for Congress.[14] The bigram "get congress" is used to express public opinion to members of Congress.[15]

Appendix Figure A.1 validates that articles that mention Congress are a good proxy for coverage of Congress in general. I find no evidence that gallery membership actually changes the number of articles about Congress as seen in Figure A.4. Congress seems to be heavily written about in general. The way in which gallery membership influences coverage is through content, not quantity.

6 Empirical Strategy

To understand how transparency affects behavior, I employ the changes-in-changes model proposed by Athey and Imbens (2006). This model allows for the estimation of quantile treatment on the treated effects (QTTs). I will first describe the speech and voting outcomes I consider, then I will detail the construction of treatment and control groups, and lastly I

[11] One Delaware paper in the galleries writes, "a Republican congress enacted a merchant marine law" (*The Evening Journal* 1920). The same paper writes "fruit growers should bear in mind that Congress enacted a law that after next July..." (*The Evening Journal* 1913).

[12] For example, one paper in the galleries from Alabama writes the following: "Senator Frye, a member of the committee on foreign relations, said: 'I have no doubt a majority of the members of the committee believe that if the resolution passed by a two-thirds vote in Congress..."' (*Birmingham State Herald* 1896).

[13] For example, a Delaware paper writes "Democratic members of Congress are eager to rush legislation so they may adjourn before July 1 and return to their constituencies for campaigning purposes." (*The Evening Journal* 1914). Similarly, a Georgia paper writes "more members of Congress are in favor of it" when discussing legislation (*Savannah Morning News* 1882).

[14] For example, an Alabama paper not in the galleries writes "H.A. Wilson, a republican nominee from congress from the fourth district" (*Birmingham State Herald* 1897). The same Alabama paper writes, "Hon. Oscar W. Underwood, the democratic nominee for Congress in the Ninth Congressional district of Alabama, will address the people of the district and discuss the issues of the present campaign', giving us another bigram "cratic nominee" (*Birmingham State Herald* 1894). This is cratic rather than democratic because of an OCR misspelling.

[15] For example, a Georgia paper not in the galleries states "the people of the district will have given up all attempts to to get Congress to abolish the flats" (*Savannah Morning News* 1881).

will formalize the changes-in-changes model of Athey and Imbens (2006).

6.1 Speech and Voting Outcomes

In order to proceed with my analysis I define various speech outcomes. These speech outcomes are constructed so that they represent an aspect of language related to congresspeople's incentives which may be influenced by the presence of a reporter. Specifically, I consider outcomes that help quantify appeals to a legislator's constituency, legislative action, partisanship, and proximity to party language.

Firstly, I consider how a politician speaks about their constituency. This includes the share of words spoken that are a city within their constituency and the fraction of words that relate to modal industries and occupations from their constituency. I observe the speech of all congresspeople $i \in I$ for sessions $t \in T = \{44, ..., 69\}$. Let $c_{i,t}$ be the fraction of words spoken by congressperson i that are names of cities that reside in the constituency of the congressperson. Let $o_{i,t,n}$ be the share of words spoken by congressperson i in session t that are words that pertain to the n-th modal occupation in the constituency of the congressperson. $u_{i,t,n}$ takes an analogous definition for words that pertain to the n-th modal industry in the constituency of congressperson i.

Now I turn to outcomes that quantify legislative action in terms of speech. Let $s_{i,t}$ be the fraction of speaking legislative days for congressperson i in session t.

Lastly, I define proximity to party language and the partisanship of political speech in the spirit of Engelberg et al. (2019). Let $D_t \subset I$ and $R_t \subset I$ be sets that include democratic and republican congresspeople in session t. Let P be a set of phrases spoken in congress. Let $f_{p,i,t}$ be the number of times congressperson i says phrase p in session t. Then $q^D_{-i,p,t} = \frac{\sum_{j \in D_t \setminus \{i\}} f_{p,j,t}}{\sum_{j \in D_t \setminus \{i\}} \sum_{s \in P} f_{s,j,t}}$ is the share of phrases spoken by Democrats in session t, excluding congressperson i, that are phrase p. $f^R_{-i,p,t}$ takes an analogous definition, but for Republicans. Let $\rho_{-i,p,t} = \frac{q^R_{-i,p,t}}{q^R_{-i,p,t} + q^D_{-i,p,t}}$. Then $r_{i,t} = \frac{\sum_{p \in P} \rho_{-i,p,t} \cdot f_{p,i,t}}{\sum_{p \in P} f_{p,i,t}}$, which is a measure of how Republican a speaker is given their language. We can define the proximity to congressperson

i's party in session t as

$$e_{i,t} = \left| r_{i,t} - \mathbb{1}(i \in R_t)\frac{\sum_{j \in R_t} r_{j,t}}{|R_t|} - \mathbb{1}(i \in D_t)\frac{\sum_{j \in D_t} r_{j,t}}{|D_t|} \right|.$$

I define partisanship as

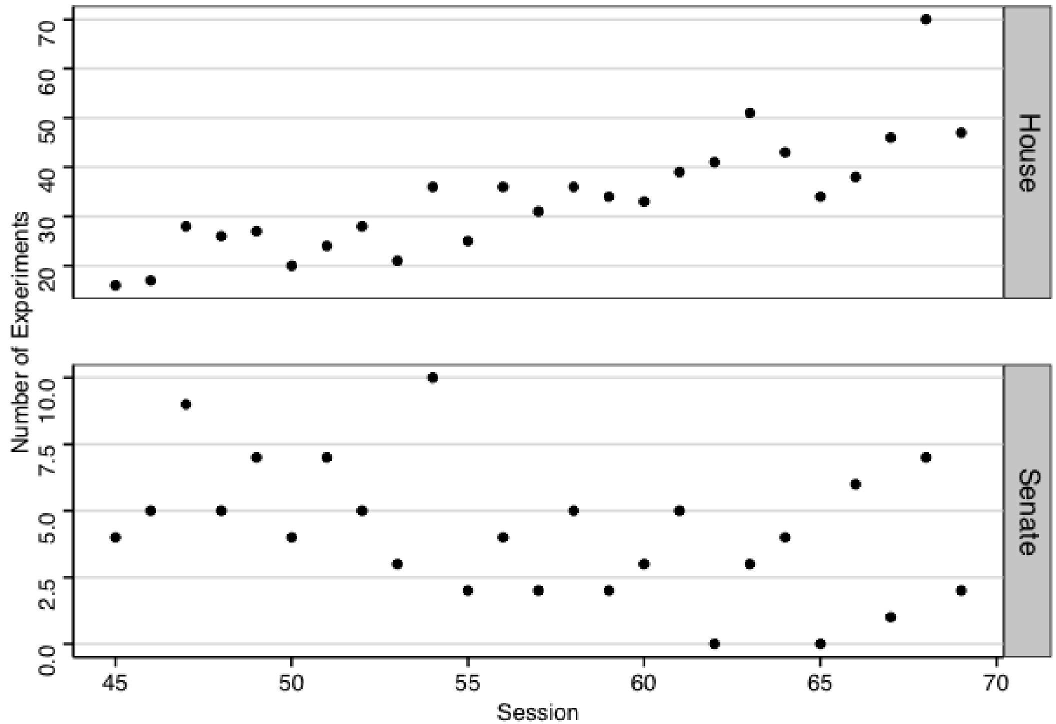
$$l_{i,t} = \left| r_{i,t} - \frac{\sum_{j \in D_t \cup R_t} r_{j,t}}{|D_t \cup R_t|} \right|.$$

To measure other aspects of political behavior, I rely on roll-call voting. In the spirit of Poole and Rosenthal (2000) to estimate political ideology with roll-call voting. I use NOMINATE scores that vary across sessions. The outcome of interest, $n_{i,t}$, is the distance from the NOMINATE score of congressperson i in session t from the average score in this session. This captures the degree of herding in ideology.

6.2 Treatment and Control Groups

Let $Q_{i,t}$ be the set of newspapers in the constituency of congressperson i in session t. Let $N_{i,t} \subseteq Q_{i,t}$ be the set of newspapers with access to the press galleries from congressperson i's constituency in session t. I define treatment as a situation where there are no newspapers in the galleries from a congressperson's constituency in session t and there is at least one newspaper in the galleries in session $t+1$. Let $H_{i,t}$ be an indicator that politician i is treated in period t, meaning that $|N_{i,t}| > 0$ and $|N_{i,t-1}| = 0$, so $H_{i,t} = \mathbb{1}(|N_{i,t}| > 0 \wedge |N_{i,t-1}| = 0)$. Let G_i be an indicator variable for whether congressperson i is ever treated. Specifically, G_i takes the value 1 if there exists $t \in T$ such that $H_{i,t} = 1$. I match each treated politician i to a control politician i' such that if $H_{i,t} = 1$ then, $G_{i'} = 0$ and $|N_{i',t-1}| = |N_{i',t}| = 0$. When there are multiple candidates for i' I choose one at random. Figure 4 shows how these groups vary over time. In total there are 105 treated Senators and 847 treated Representatives. For all $q \in Q_{i,t}$ let $V_{q,t}$ be an indicator variable for treatment in session t. I define a newspaper q as treated if there exists t such that $q \in N_{i,t}$ and $N_{i,t-1} = \varnothing$.

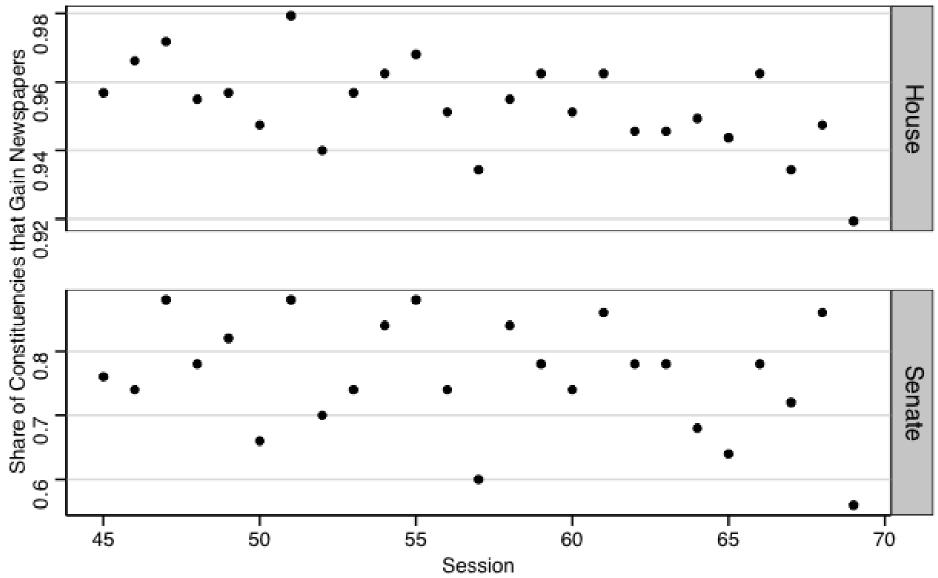
Figure 4: The Number of Treated Constituencies per Session



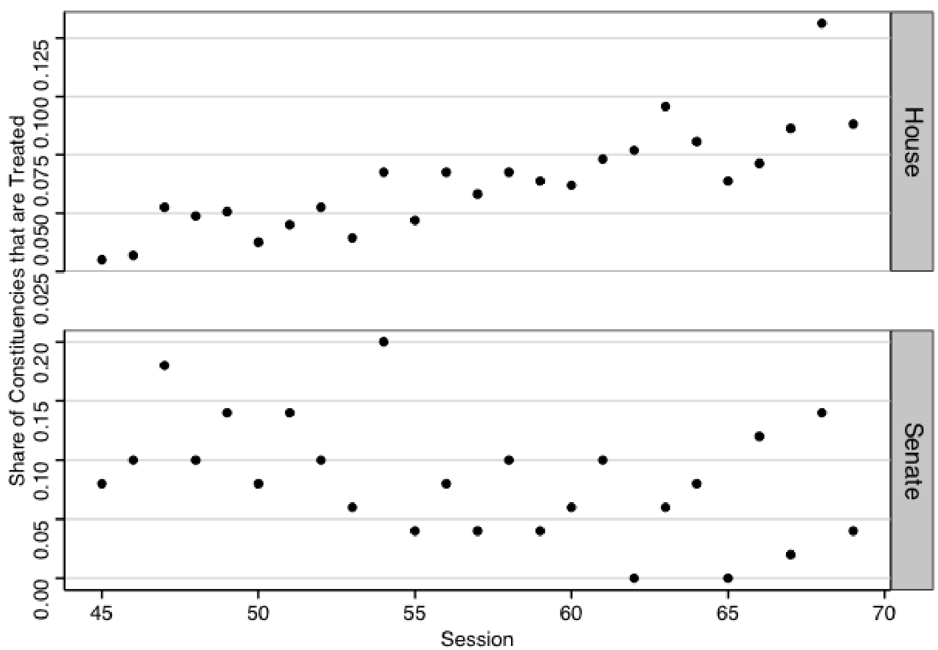
Notes: This figure demonstrates the size of treatment groups over time in both the House and Senate. Specifically for a session t given on the x-axis, the y-axis plots $|\{i : H_{i,t} = 1\}|$, the size of the treatment in group in session t. Across all sessions there are 105 treated Senators and 847 treated Representatives.

Figure 5 presents the zeroth stage, or the within constituency variation in both $H_{i,t}$ and $N_{i,t}$. We care about this variation because it indicates whether or not there is variation in treatment and membership over time which will allow us to estimate the effect of treatment (transparency) on outcomes of interest. There is considerable variation in both these quantities over time. We can also see that that treatment is not absorbing in the sense that newspapers can leave the press galleries.

Figure 5: The Zeroth Stage



(a) Within Constituency Variation in $N_{i,t}$



(b) Within Constituency Variation in $H_{i,t}$

Notes: Panel (a) plots the probability a constituency gains a newspaper in each session for both the House and Senate. Panel (b) plots the probability of treatment in each session for both the House and Senate. These probabilities are estimated via sample proportions and capture within constituency variation in quantities of interest: gallery membership and treatment.

6.3 The Changes-in-Changes Model

Let $\mathcal{X}_i$ be a vector of time-invariant observable characteristics for congressperson i. Let $\mathcal{U}_i$ be time-invariant unobservable characteristics for congressperson i. Consider an indicator variable for treatment and control groups $\mathcal{G}$. This indicator takes the value 1 to represent all $i \in I$ such that $G_i = 1$ and it takes the value 0 to represent all $i \in I$ such that $G_i = 0$ and i was matched to a treated counterpart in the construction of the control group detailed in the previous section. Let $\mathcal{T} \in \{0, 1\}$ indicate the pre-treatment and treatment periods, 1 represents the treatment period and 0 represents the pre-treatment period.

Consider some speech outcome $Y_{i,\mathcal{T}}$ for congressperson i in period $\mathcal{T} \in \{0, 1\}$. Let Y_i^I and Y_i^N be the outcome of interest in the cases that individual i does and does not receive treatment, respectively.

Let $F_{Y^I,\mathcal{G}\mathcal{T}}$, $F_{Y^N,\mathcal{G}\mathcal{T}}$, and $F_{Y,\mathcal{G}\mathcal{T}}$ be the conditional distribution functions for the aforementioned outcomes of interest in counterfactual and realized states of the world for group $\mathcal{G} \in \{0, 1\}$ in period $\mathcal{T} \in \{0, 1\}$. The changes-in-changes model is identified under the following assumptions.

Assumption 1 $Y^N = h(\mathcal{U}, \mathcal{T}, \mathcal{X})$ *in the absence of treatment, where h is a monotone function in U, a random vector of unobservable characteristics.*

Assumption 2 $\mathcal{U} \perp \mathcal{T}|\mathcal{G}, \mathcal{X}$, *meaning that the distribution of $\mathcal{U}$ is constant through time for each group.*

Assumption 3 *supp*$(Y|\mathcal{G} = 1, \mathcal{X}) \subseteq$ *supp*$(Y|\mathcal{G} = 0, \mathcal{X})$. *The support of the outcome for the treatment group is a subset of the support of the outcome for the control group.*

Assumption 4 *The distribution of Y is strictly continuous.*

Let Δ_q be the quantile treatment on the treated effect at quantile q.

$$\Delta_q = F^{-1}_{Y^I,11}(q) - F^{-1}_{Y^N,11}(q) = F^{-1}_{Y^I,11}(q) - F^{-1}_{Y,01}(F_{Y,00}(F^{-1}_{Y,10}(q))) \tag{5}$$

In order to estimate equation 5, we must first estimate the distributions from the data. This can be done by using the empirical distribution as an estimate for the true distribution. Formally,

$$\hat{F}_{Y,gt}(y) = \frac{1}{n_{gt}} \sum_{i=1}^{n_{gt}} \mathbb{1}\{Y_{gt,i} \leq y\} \tag{6}$$

where n_{gt} is the size of group g in period t. Hence we can estimate Δ_q as

$$\hat{\Delta}_q = \hat{F}^{-1}_{Y,11}(q) - \hat{F}^{-1}_{Y,01}(\hat{F}_{Y,00}(\hat{F}^{-1}_{Y,10}(q))) \tag{7}$$

Athey and Imbens (2006) formally derive the asymptotic distribution of the estimator and its variance, proving consistency and asymptotic normality.

7 Results

7.1 Selection on Observables

I find no evidence that there is selection into the galleries on the basis of characteristics of congresspeople and newspapers. To assess the potential for selection, I present balance tests in Table 1. These balance tests present means for changes in pre-treatment characteristics of congresspeople and their constituencies and a p-value for a test that these means are identical across groups.

Table 1: Balance Tests for Treatment and Control Groups

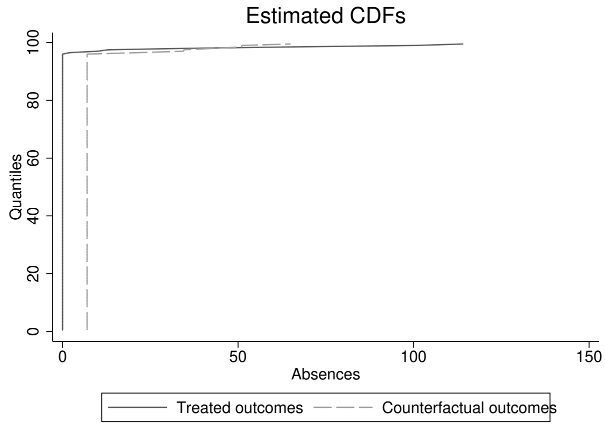
Congressperson Variables	Treatment	Control	P-value
Election	0.43	0.43	0.94
Change in Committee	0.05	0.02	0.06
Change in Rank	0.01	0.01	0.50
Change in Party	0.12	0.17	0.13
Change in Absences	-1.53	0.09	0.10
Newspaper Variables	Treatment	Control	P-value
Change in Circulation	0.002	0.003	0.79
Change in Independent Circulation	0.001	0.002	0.50
Change in Republican Circulation	0.004	0.002	0.20
Change in Democratic Circulation	0.001	0.004	0.13
Change in Non-political Circulation	0.0001	0.0001	0.73

Notes: This table provides the means of the observable characteristics of congresspeople and the newspaper markets that exist in their constituencies for both treatment and control groups. I also provide a p-value for a t-test with a null hypothesis that the means are the same across groups. This table uses the House sample. I present a similar balance table for the Senate in Appendix Table A.3.

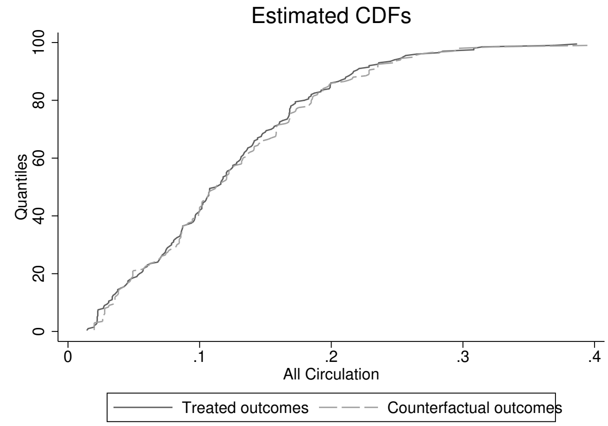
Table 1 demonstrates that there is no observable selection in the treatment group relative to the control group. Specifically, elections, committee changes, rank changes, changes in absences, and changes in circulation (stratified by party and in aggregate) do not lead newspapers to enter the galleries. This along with the discussion in Section 4 may suggest that entry into the galleries was dependent on national trends in politics and the ubiquitous desire to report the workings of congresspeople to constituents. The analogous table for the Senate sample is included in Appendix Table A.3.

In addition to testing selection on average, I test for selection at all quantiles using quantile treatment on the treated effects estimated with a changes-in-changes model. Some of the outcomes in Table 1 are binary so the mean summarizes all outcomes. Figure 6 plots the estimated cumulative distribution functions that correspond to the estimators described in section 3. In most cases, the estimated counterfactual distribution for the treatment group closely approximates the empirical density we observe for treated outcomes. Visually, this validates that for most politicians there is no selection into the treatment group across all quantiles of the distribution of outcomes. More concretely, Figure 7 plots the estimated QTTs from equation 7. For a given quantile q, this estimate is simply the horizontal distance between the empirical distribution we observe and the estimated counterfactual distribution in Figure 6. In the language of section 6 at a given quantile q, the y-axis gives $\hat{\Delta}_q$.

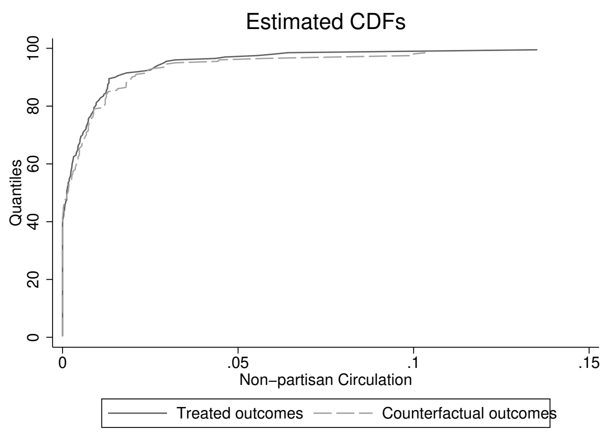
Figure 6: Estimated CDFs for Observables



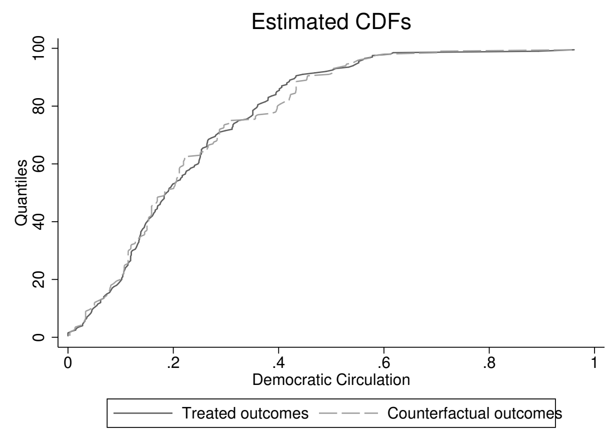
(a) Absences



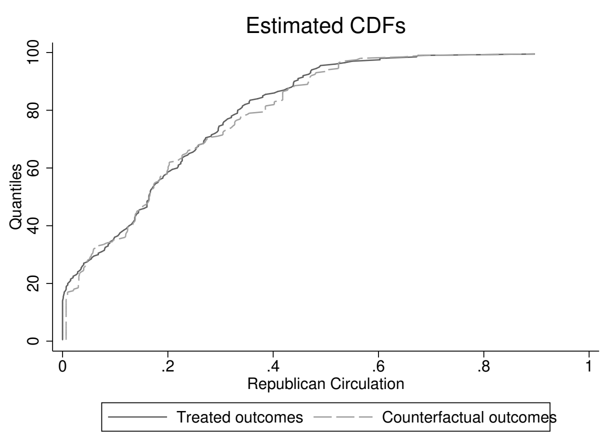
(b) All Circulation



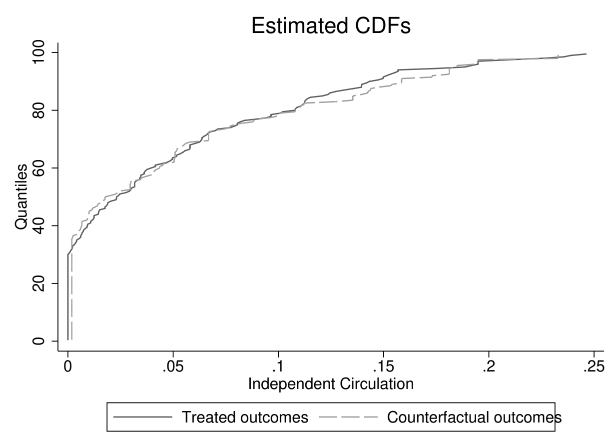
(c) Non-partisan Circulation



(d) Democratic Circulation



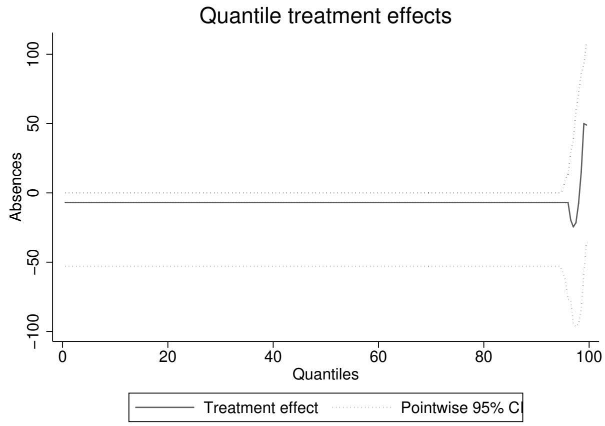
(e) Republican Circulation



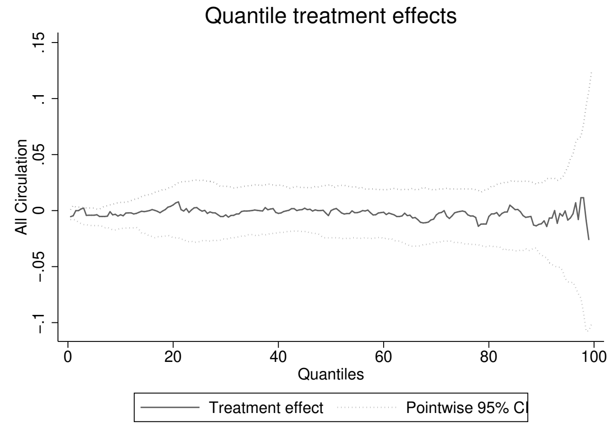
(f) Independent Circulation

This figure depicts the treated CDFs and the counterfactual CDFs for the treatment group if untreated. Panel (a) presents the estimated CDFs for absences. Panels (b), (c), (d), (e), and (f) present the CDFs for all circulation, nonpartisan circulation, Democrat circulation, Republican circulation, and Independent circulation respectively.

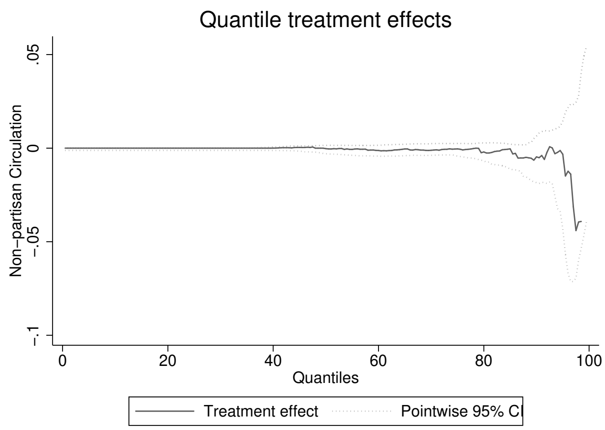
Figure 7: Quantile Treatment on the Treated Effects for Observables



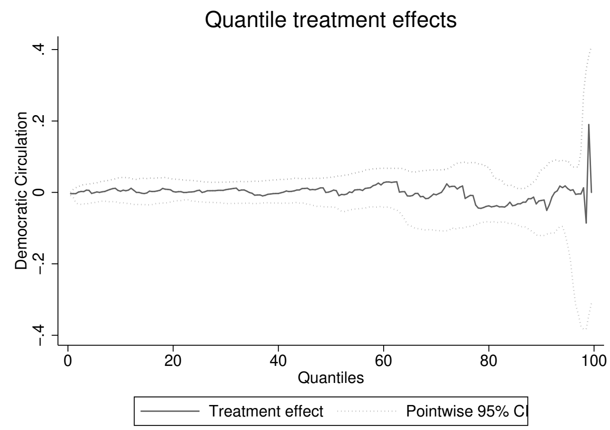
(a) Absences



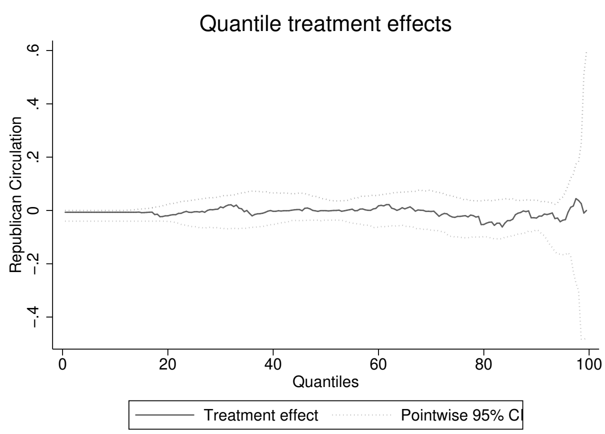
(b) All Circulation



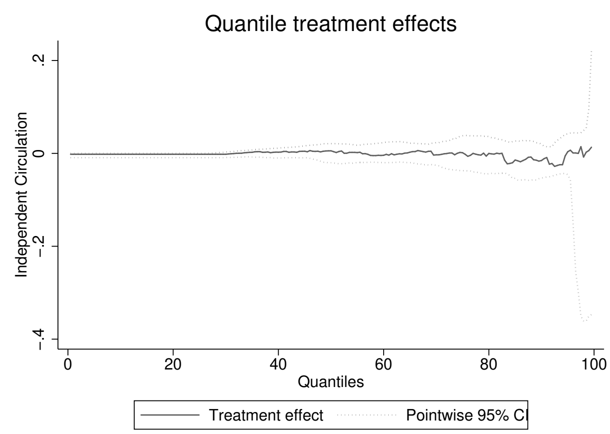
(c) Non-partisan Circulation



(d) Democratic Circulation



(e) Republican Circulation



(f) Independent Circulation

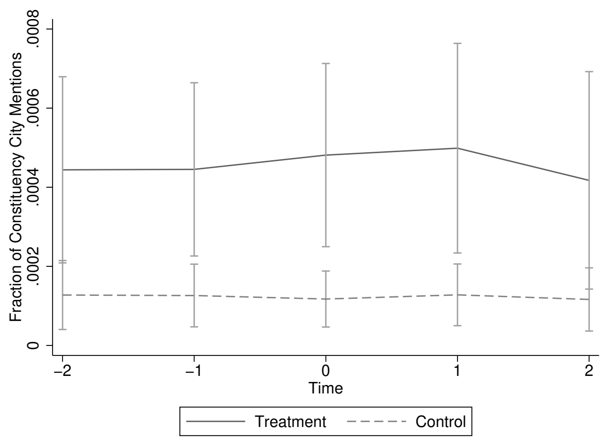
Notes: Panel (a) presents the QTTs for absences. Panels (b), (c), (d), (e), and (f) present the results for all circulation, nonpartisan circulation, Democrat circulation, Republican circulation, and Independent circulation respectively. The dotted line is a bootstrapped pointwise 95% confidence interval.

Figure 7 verifies that there is no selection on observables across all quantile of the distribution of an outcome. These estimates are also fairly precise – the bootstrapped pointwise 95% confidence interval is tight around zero, indicating that the point estimate at any quantile is virtually zero. These balance tests, both in means and distributions, confirm that the entry of newspapers in the galleries is unrelated to the observable characteristics of both newspapers and the politicians these papers serve to monitor. The analogous tests for selection across quantiles of the distribution of observables for the Senate sample are included in Appendix Figures A.5 and A.6.

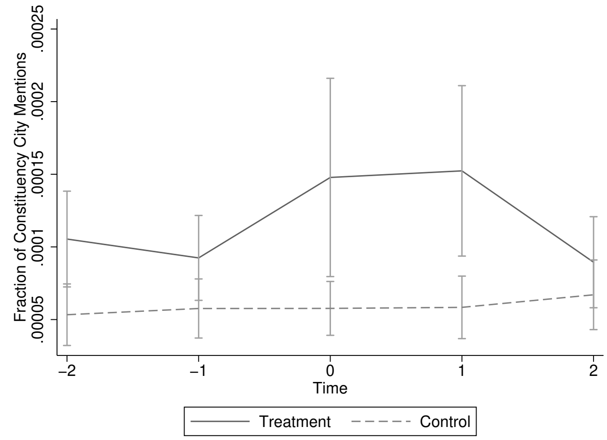
7.2 Evidence on Parallel Trends

I test for both parallel trends in means and distributions. To test for parallel trends in means, I visualize pre-trends in means of the speech outcomes I consider. To test for parallel trends in distributions I estimate QTTs with a changes-in-changes model, where both the pre-treatment and treatment periods are lagged by 1 session. Any evidence of effects here would indicate that parallel trends does not hold in distributions. Precise evidence of null effects would support the parallel trends assumption. Figure 8 plots the average outcomes over time in both treatment and control groups and in both the House and Senate. The treatment and control groups seem to behave similarly prior to treatment, providing evidence that the changes-in-changes model seems appropriate and that the time invariance assumption described in section 6 may hold. Furthermore, the trends at treatment and in the post-treatment period seem to be fairly similar across treatment and control groups, providing us a glimpse at what will likely be null effects for the average congressperson. The analogous parallel trends in means plots for the other outcomes I consider are included in Appendix Figures A.7 and A.8.

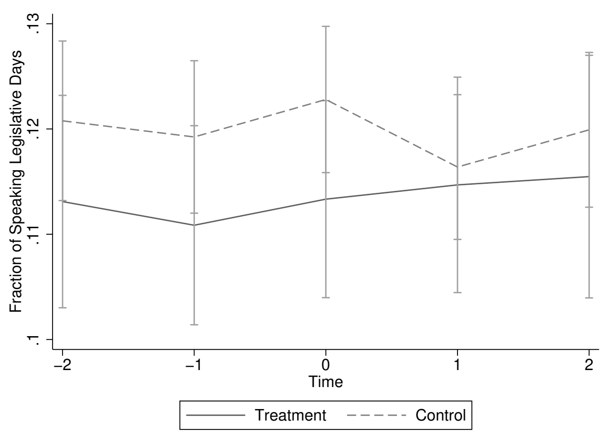
Figure 8: Parallel Trends in Means



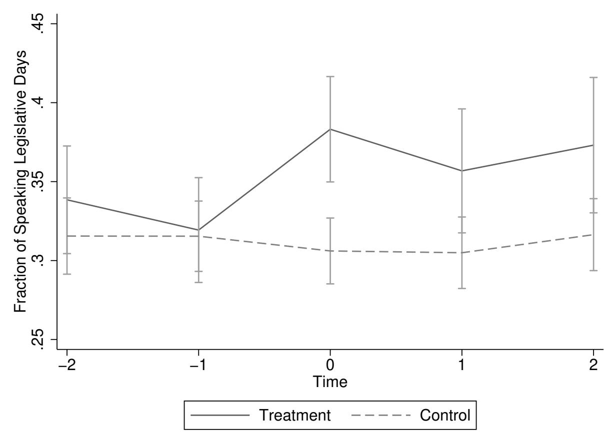
(a) Means of $c_{i,t}$ over time – House



(b) Means of $c_{i,t}$ over time – Senate



(c) Means of $s_{i,t}$ over time – House

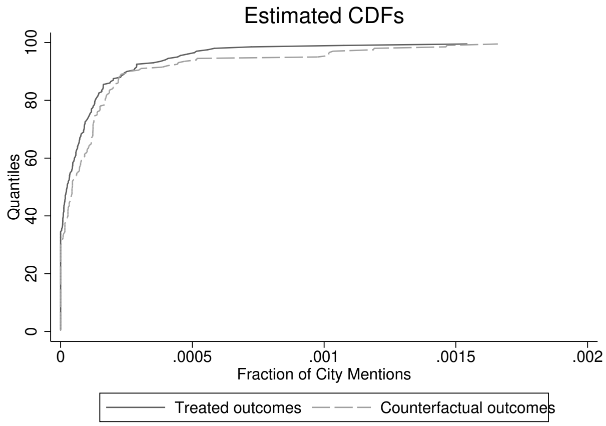


(d) Means of $s_{i,t}$ over time – Senate

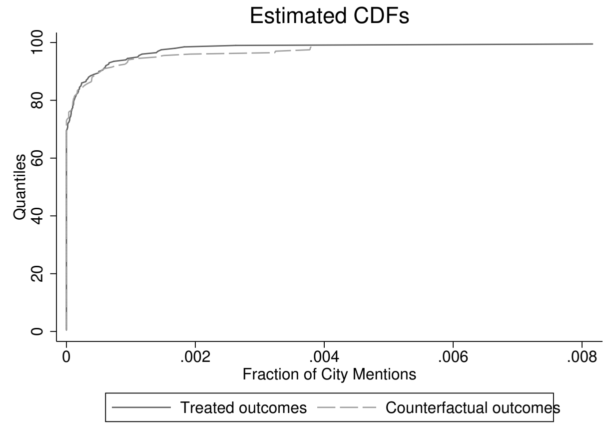
Notes: This figure presents time trends in the means of outcomes of interest for both treatment and control groups in both the House and the Senate. Panels (a) and (b) present the time trends in means of the fraction of city mentions, $c_{i,t}$, in the House and Senate, respectively. Panels (c) and (d) present the time trends in means of the fraction of speaking legislative days, $s_{i,t}$, in the House and Senate, respectively. The y-axis is the average of the outcome and the x-axis is time. Treatment occurs at time 0. Time is relative to the treatment session at 0. Error bars are 95% confidence intervals.

Figure 9 demonstrates the estimated CDFs for some of the outcomes I consider and Figure 10 plots the corresponding quantile treatment on the treated effects for pre-treatment period. If we were to find effects at some quantiles it would mean that there were some significant pre-trends in the treatment group at these quantiles. I find null effects at all quantiles of the distribution, and bootstrapped confidence interval indicates that for most outcomes these null effects are reasonably precise at all quantiles of the distribution. This verifies that parallel trends hold across the entire distribution of outcomes. Hence, using a changes-in-changes model to perform inference on the entire distribution of these outcomes seems reasonable. The analogues of Figures 9 and 10 for the other outcomes I consider are included in Appendix Figures A.9 and A.10.

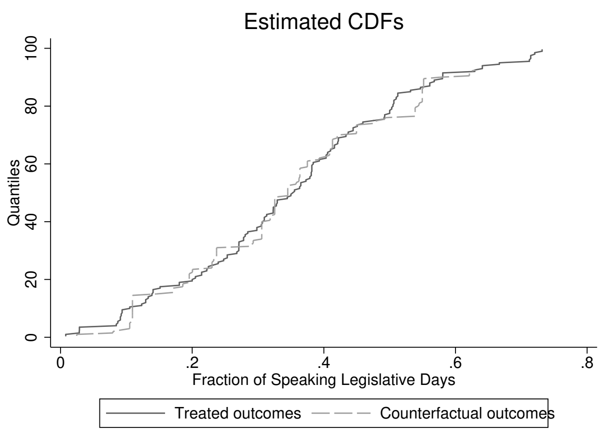
Figure 9: Estimated CDFs of Speech Outcomes Prior to Treatment



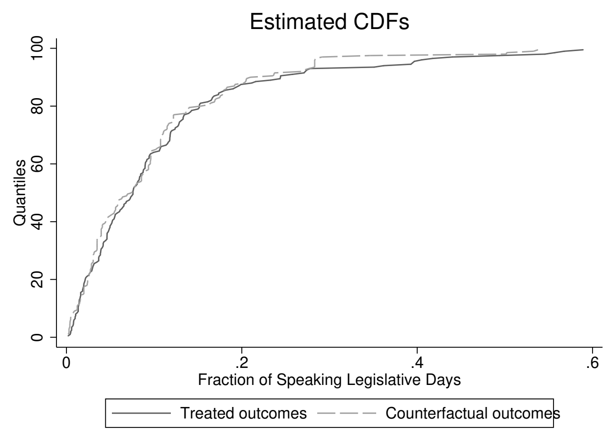
(a) CDFs for $c_{i,t}$ – Senate



(b) CDFs for $c_{i,t}$ – House



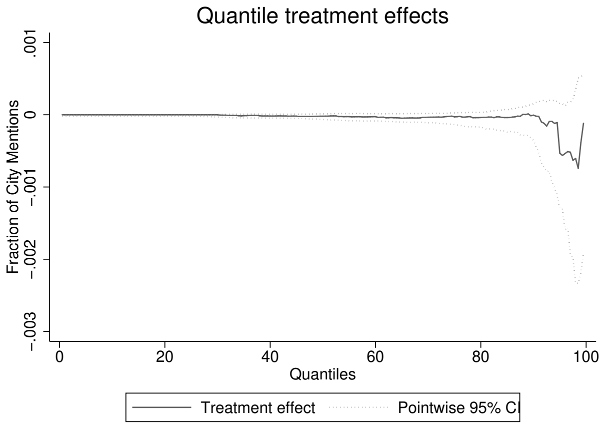
(c) CDFs for $s_{i,t}$ – Senate



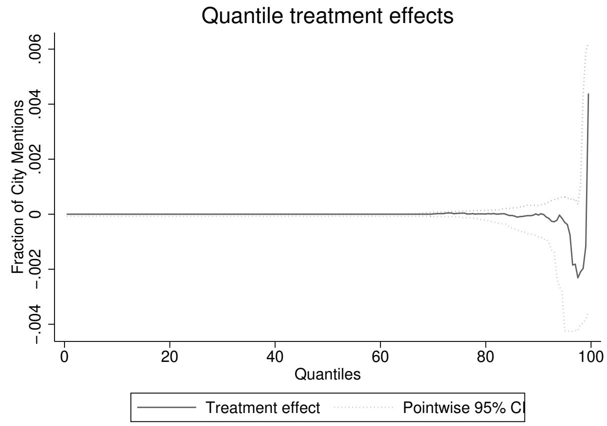
(d) CDFs for $s_{i,t}$ – House

Notes: This demonstrates the estimated cumulative distribution functions for speech outcomes in the pre-treatment period. This tests parallel trends for the whole distribution. This figure is analogous to Figure 11 but it uses pre-treatment data. Panels (a) and (c) use the Senate sample, while panels (b) and (d) use the House. Panels (a) and (b) display the CDFs for the fraction of cities mentioned, $c_{i,t}$, and panels C and D display the CDFs for the fraction of speaking legislative days, $s_{i,t}$.

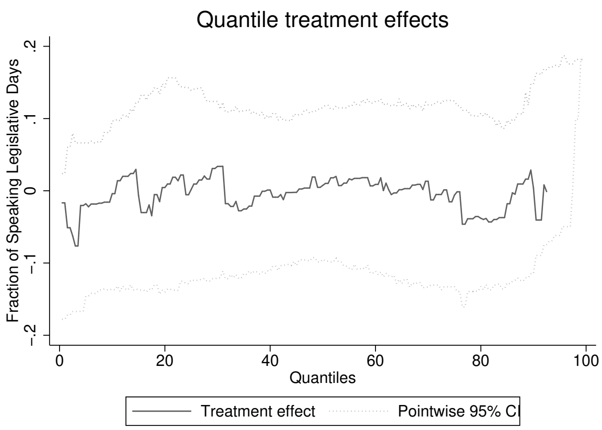
Figure 10: Parallel Trends in Distributions



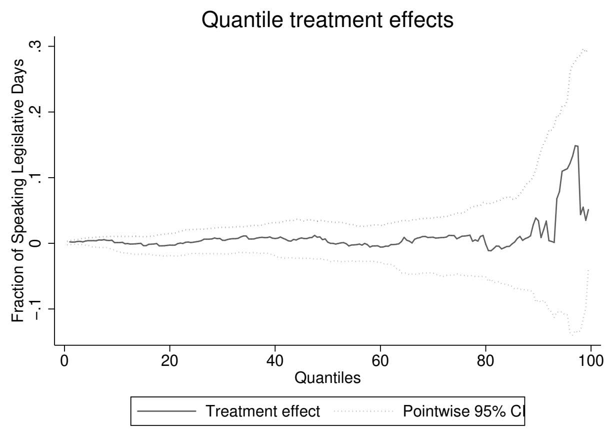
(a) QTTs for $c_{i,t}$ – Senate



(b) QTTs for $c_{i,t}$ – House



(c) QTTs for $s_{i,t}$ – Senate



(d) QTTs for $s_{i,t}$ – House

Notes: This figure demonstrates the estimated quantile treatment on the treated effects for speech outcomes in the pre-treatment period, testing parallel trends across the whole distribution of outcomes. This figure is analogous to Figure 12 but it uses pre-treatment data. Panels (a) and (c) use the Senate sample, while panels (b) and (d) use the House. Note that these estimates correspond to equation 7. Panels (a) and (b) display the QTTs where the outcome is the number of cities mentioned, $c_{i,t}$ and panels (c) and (d) display the QTTs where the outcome is the fraction of speaking legislative days, $s_{i,t}$. The dotted line is a bootstrapped pointwise 95% confidence interval.

7.3 Estimated Effects on Means of Outcomes

Using the framework for the changes-in-changes model (Athey and Imbens 2006) we can estimate the average treatment on the treated effects. These are presented in Table 2.

Table 2: Average Treatment on the Treated Effects for Speech Outcomes

Outcome:	Cities $c_{i,t}$	Legislative Days $s_{i,t}$	Partisanship $l_{i,t}$	NOMINATE $n_{i,t}$
	0.000045	0.005	0.004	0.006
House	(0.00016)	(0.02)	(0.004)	(0.014)
	{0.003}	{0.12}	{0.03}	{0.09}
	-0.000031	0.044	0.010	0.044
Senate	(0.000041)	(0.04)	(0.014)	(0.032)
	{0.00038}	{0.18}	{0.05}	{0.15}

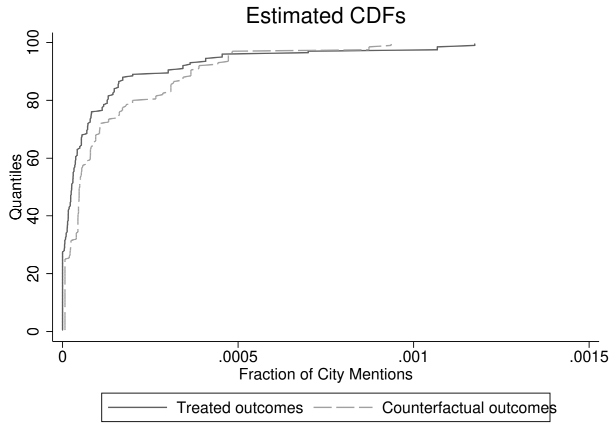
Notes: This table represents the average effects from the changes-in-changes model with standard errors in parentheses. Standard deviations of the outcomes of interest in the treatment period are presented in curly brackets to help readers evaluate precision of these estimates.

Table 2 presents the point estimate and standard error for the average treatment on the treated effects using a changes-in-changes model. Recall that these point estimates reflect the average effect of transparency (the presence of constituency newspapers in the galleries) on various speech outcomes which quantify the level of attention paid to a constituency, legislative action, and proximity to party. The treatment effects for fraction of cities mentioned in both the House and Senate are virtually zero. Consider the House point estimate of 0.000045 with a standard error of 0.00016. The 95% confidence interval is [-0.00027, 0.00036], ruling out effects larger than a 0.036 percentage point increase (0.12 standard deviations) in the fraction of cities mentioned. To put this into context, the average congressperson in my sample speaks a total of 2040 words. So the largest possible treatment effect is saying $0.00036 \times 2040 = 0.73$ city names in this congressperson's constituency. Thus we can eliminate anything larger than a small treatment effect. Consider legislative days in the House. The standard error is 0.02, the standard deviation of speaking legislative days in the House in the treatment period is 0.12. This is precise in the sense that the effect is bounded within ± 0.33 standard deviations, meaning we can rule out effects larger than a relatively small lower bound. Similar conclusions apply for the other outcomes reported in Table 2. This tells us that for the average politician there is a precise null effect of treatment on the various outcomes we've considered.

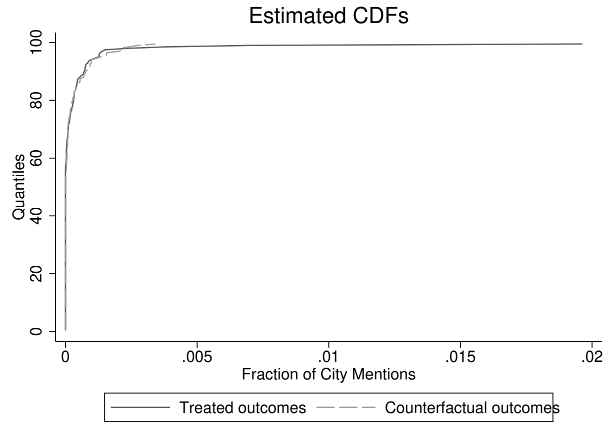
7.4 Estimated Effects on the Distribution of Outcomes

Figure 11 plots the estimated cumulative distribution functions that correspond to the estimators described in section 6. In most cases, the estimated counterfactual distribution for the treatment group closely approximates the empirical density we observe for treated outcomes. Visually, this validates, that for most politicians, the effect of treatment is null. More concretely, Figure 12 plots the estimated QTTs from equation (3). For a given quantile q, this estimate is simply the horizontal distance between the empirical distribution we observe and the estimated counterfactual distribution in Figure 11. For most quantiles, the bootstrapped confidence intervals are small and we can conclude that the effects are precisely null. The estimates become noisier at higher quantiles of the distribution. The results for partisanship, proximity to party, occupations, and industries are very similar – the effects are precisely null for almost all quantiles. Figure A.11, Figure A.12 and Figure A.13 in the Appendix include plots of the quantile treatment on the treated effects for partisanship, proximity to party, and occupations and industries, respectively. Furthermore, the results for alternative speech outcomes that intend to measure legislative action on the floor are presented in Appendix Figure A.14. The results are null for these outcomes as well. Testing different specifications for measuring legislative action proves the robustness of the null results. I also test the robustness of these results by investigating the effect of transparency on non-speech outcomes. One primary example is using the distance from the average NOMINATE score to measure herding in ideology. If these were not null it would suggest that the speech outcomes I use may serve as poor measurements of the political behaviors I claim they quantify. Figures A.8 and A.15 demonstrate parallel trends and that the results are precisely null for NOMINATE scores as well.

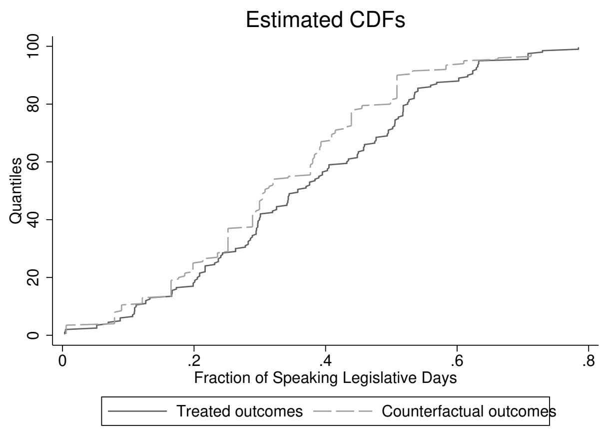
Figure 11: Estimated CDFs of Treated and Counterfactual Outcomes



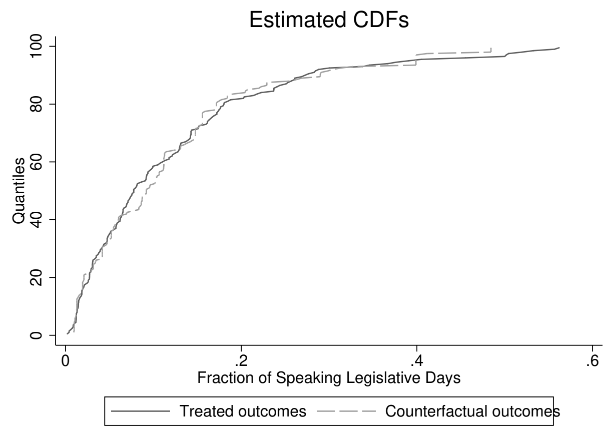
(a) CDFs for $c_{i,t}$ – Senate



(b) CDFs for $c_{i,t}$ – House



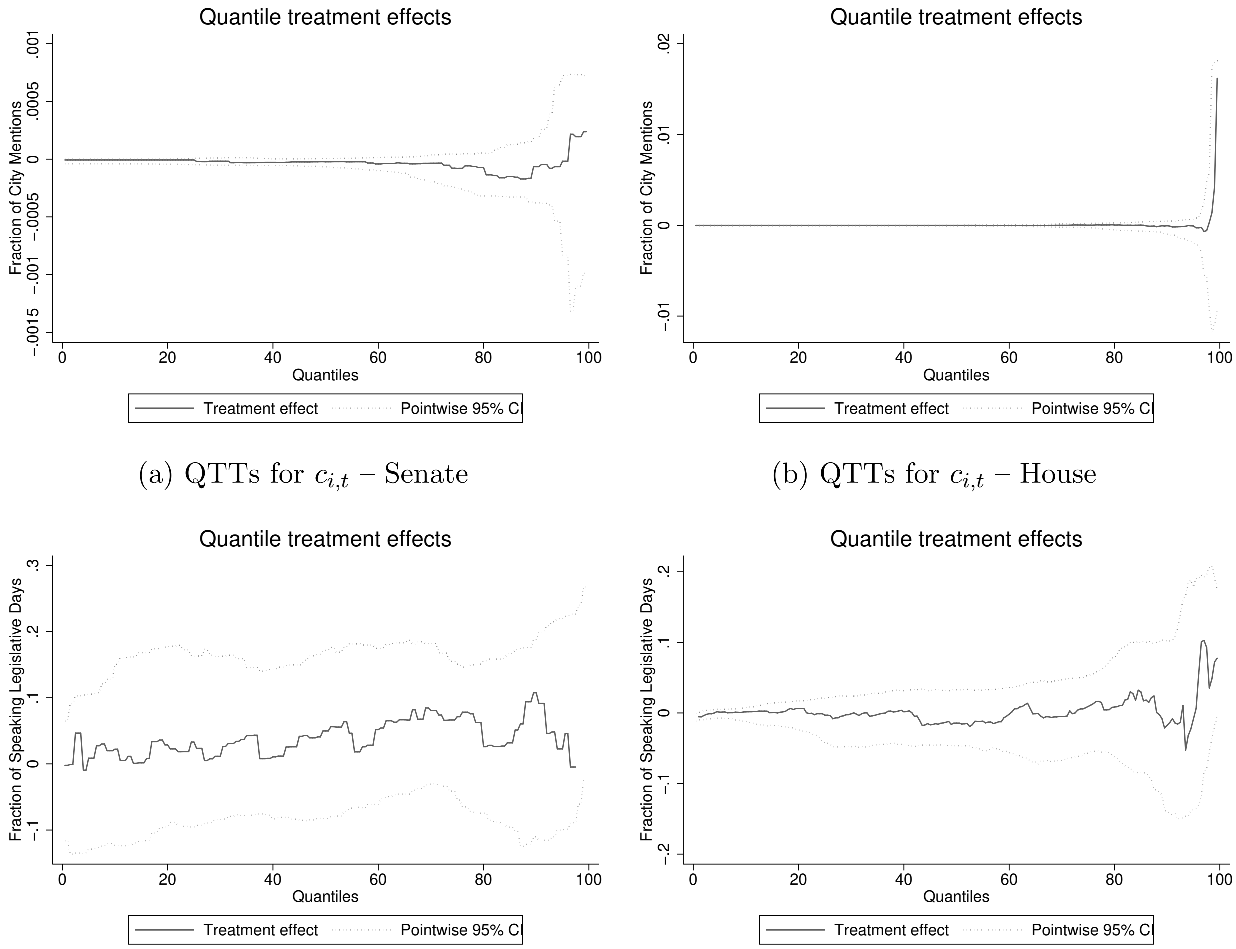
(c) CDFs $s_{i,t}$ – Senate



(d) CDFs for $s_{i,t}$ – House

Notes: This figure displays the estimated CDFs for speech outcomes using the methodology of Athey and Imbens (2006) with treatment period data. This helps us test for potential treatment effects at all quantiles of the distribution of the outcome variable of inters. Panels (a) and (c) use the Senate sample, while panels (b) and (d) use the House. Panels (a) and (b) display the CDFs for the fraction of cities mentioned, $c_{i,t}$, and panels (c) and (d) display the CDFs for the fraction of speaking legislative days, $s_{i,t}$.

Figure 12: Quantile Treatment on the Treated Effects for Speech Outcomes



(a) QTTs for $c_{i,t}$ – Senate

(b) QTTs for $c_{i,t}$ – House

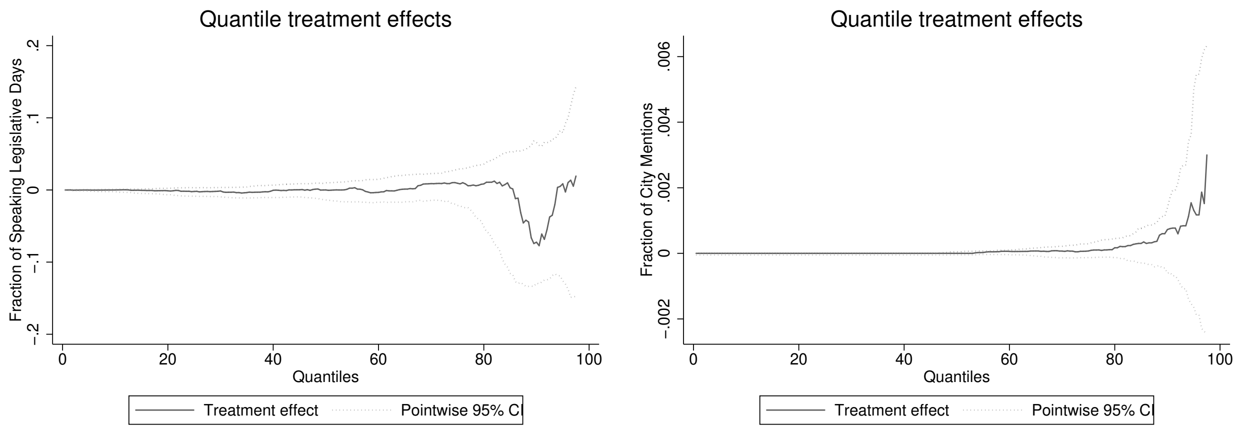
(c) QTTs for $s_{i,t}$ – Senate

(d) QTTs for $s_{i,t}$ – House

Notes: This figure displays the estimated quantile treatment on the treated effects (QTTs) using the methodology of Athey and Imbens (2006). Panels (a) and (c) use the Senate sample, while panels (b) and (d) use the House. Note that these estimates correspond to equation (3). Panels (a) and (b) display the QTTs where the outcome is the number of cities mentioned, $c_{i,t}$ and panels (c) and (d) display the QTTs where the outcome is the fraction of speaking legislative days, $s_{i,t}$. The dotted line is a bootstrapped pointwise 95% confidence interval for the QTTs.

I also test to see if there are effects in the long-run. One argument that supports this hypothesis is that congresspeople may need time to learn from reports of their actions in Congress to adjust their speech accordingly. I use a changes-in-changes model to test for the long-run effects where the pre-treatment period remains unchanged, but the treatment period is is moved to a future session. If we detected effects here it would suggest the existence of long-run effects of gallery membership on political behavior. Figure 13 indicates that there is no evidence of long-run effects. The QTTs look almost identical to those presented in Figure 12.

Figure 13: Long Run Quantile Treatment on the Treated Effects for Speech Outcomes



(a) QTTs for $s_{i,t}$ – Session +1 House

(b) QTTs for $c_{i,t}$ – Session +1 House

Notes: This figure demonstrates the QTTs for long run treatment effects in the House. The treatment session is moved 1 session after the actual treatment session to test for long run effects. The dotted line is a bootstrapped pointwise 95% confidence interval. Panel (a) gives QTTs the fraction of speaking legislative days days, $s_{i,t}$, (b) gives QTTs for the fraction of city mentions, $c_{i,t}$, and (c) gives QTTs for partisanship, $l_{i,t}$.

To further interrogate the null effects I find, I vary the definition of treatment. One way in which I do this is by defining treatment to be the situation where $N_{i,t} = 0$ and $N_{i,t+1} = x$ for some $x \in \mathbb{N}$. The QTTs for various levels of x are presented in Figures A.18, A.19, and A.20. We find similarly precise null effects and the QTTs don't vary much with x. I also investigate the importance of circulation by defining treatment to be the situation where $N_{i,t} = 0$, $N_{i,t+1} > 0$, and in session $t + 1$ the share of constituency circulation that has access to the gallery is x for some $x \in (0, 1)$. Figures A.21, A.22, and A.23 present the QTTs for this definition of treatment and we can see they are still precisely null and don't seem to vary much wiith x.

8 Conclusion

Using historical documents, I created a new dataset of newspaper membership in the press galleries of the United States Congress from the 45th session through the 69th session. This dataset gives insight into temporal and spatial variation in newspaper membership, which allows me to study the effect of transparency on political behavior. I also gather text data from historical newspapers made available by the Library of Congress. Although this data is incomplete in the sense that not all historical newspapers have been digitized to date, I find that the entry of a newspaper into the press galleries meaningfully changes the content of articles written about Congress. Language becomes more focused on legislation and the proceedings of Congress when compared to newspapers that are not in the galleries. This illustrates that institutional access to the proceedings of a governing body allows the press to report on their elected officials, holding them accountable. Given that press gallery membership measures transparency in the form of the language of reports, I primarily investigate how this transparency affects a politician's discussion of their constituency, legislative action, and use of partisan language. Using a changes-in-changes model (Athey and Imbens 2006), I am able to estimate precise null effects at almost all quantiles of the distribution of outcomes. This suggests that the presence of a local reporter does not affect the way in which politicians signal their intentions with their speech and that they don't cater to the interests of their party more. As a whole I take these results to tell us that the presence of a reporter does not affect aspects of speech that we may have expected to change based on historical anecdotes.

I am the first to demonstrate that membership in the press galleries is a meaningful measurement of transparency in the form of language. An avenue for future research is to consider transparency in language in the way I do rather than just transparency in terms of the quantity of coverage. As text becomes more easily accessible from historical newspapers and as natural language processing becomes increasingly part of the empirical economist's toolkit, such research will be fruitful and feasible.

Additionally, someone may argue that there are no effects present because the press still wasn't taken seriously in the time that my data span. However, this does not seem to be the case based on historical accounts of a more objective press gallery starting with the creation of the Standing Committee of Correspondents (Ritchie 2009). Another interpretation of my findings may be that one session of Congress may not be long enough for politicians to learn how to adjust their speech to gain favorable coverage. I use legislators who remain in Congress for multiple sessions to dismiss this argument.

I also develop a model to better understand what effects seem likely in this setting. Using a signaling game, I conclude that in a world with a politician, a reporter, and a constituent, increasing transparency increases the chances that the politician sends signals that are likely to lead to his re-election. This behavior persists despite the politician facing an intrinsic cost from lying about his true policy agenda. This model helps illustrate that theory predicts that a politician's realization of reputational concerns in the face of transparency will lead him to send signals that lead to re-election.

This paper makes advances in political economy and history. Aspects of history that are challenging to understand from an anecdotal perspective, like changes in the content of papers, are much easier to study with computational techniques. This gives room for quantitative social scientists to not only validate or refute the theories of historians, but to create new historical theories themselves. The press galleries are poorly understood in the sense that historians are unsure of how their creation changed politics. This paper finds that speech does not change in response to access, but that access itself had meaningful effects on the way that newspapers reported about Congress.

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A Appendix

A.1 Proofs

Proposition A.1 *Suppose that* $0 < \alpha < q$*,* $0 < q < 1$ *and that* $1 - \pi(1-q) < \delta < 1$*. Then* $\sigma_P(1) = (0,1)$*,* $\sigma_P(0) = (1,0)$*,* $\sigma_C(1) = (0,1)$*,* $\sigma_C(0) = (0,1)$ *along with beliefs* $\mu(1|1) = q + \pi(1-q)$ *and* $\mu(1|0) = \pi(1-q)$ *is a PBE.*

Proof. Given μ it's clear that in the information set where C observes $s = 1$ we have that

$$\begin{aligned}
\mu(1|s=1)\delta + (1-\mu(1|s=1))(\delta-1) &= (q+(1-q)\pi)\delta. + (1-q-(1-q)\pi)(\delta-1) \\
&= \delta - (1-q-(1-q)\pi) \\
&> \delta - (1-\pi+\pi q) \\
&> 0
\end{aligned}$$

Hence $\sigma_C(1) = (0,1)$ is optimal. Similarly, $\sigma_C(0) = (0,1)$ is optimal since

$$\begin{aligned}
\mu(1|s=0)\delta + (1-\mu(1|s=0))(\delta-1) &= \pi(1-q)\delta + (1-\pi(1-q))(\delta-) \\
&= \delta - (1-\pi(1-q)) \\
&> 0
\end{aligned}$$

Since C always votes for the incumbent, it is clear that σ_P is optimal, since regardless of type P is elected, he should never lie. Beliefs are clearly derived from Bayes' rule, since

$$\begin{aligned}
\mu(1|1) &= \frac{\pi(q+(1-q)\pi)}{\pi(q+(1-q)\pi)+(1-\pi)(1-q)\pi} \\
&= q + (1-q)\pi
\end{aligned}$$

and

$$\mu(1|0) = \frac{\pi(1-q)(1-\pi)}{\pi(1-q)(1-\pi) + (1-\pi)(q + (1-q)(1-\pi))}$$
$$= \pi(1-q)$$

Since, all players are sequentially rational given μ and μ is derived from Bayes' rule where possible, this is a PBE and the proposition is true. ■

Proposition A.2 *Suppose that $0 < \alpha < q$, $0 < q < 1$ and that $(1-q)(1-\pi) > \delta$. Then $\sigma_P(1) = (0,1)$, $\sigma_P(0) = \delta(0)$, $\sigma_C(1) = (1,0)$, $\sigma_C(0) = (1,0)$ along with beliefs $\mu(1|1) = q + \pi(1-q)$ and $\mu(1|0) = \pi(1-q)$ is a PBE.*

Proof. This is easily deduced from proposition 1. Since δ is smaller than necessary to induce C to always vote for the incumbent, she always votes against the incumbent. Clearly the optimal strategy of P is to always reveal his type. Beliefs come from Bayes' rule as in Proposition 1. ■

Proposition A.3 *Now suppose that $0 < \alpha < q$ and $\delta = 1 - \pi$. Then the strategy $\sigma_P(1) = (0,1), \sigma_P(0) = (0,1)$, $\sigma_C(1) = (1-y, y)$ $\sigma_C(0) = (1-x, x)$, where $y > x + \frac{\alpha}{q}$, $x, y \in (0,1)$, along with beliefs of C $\mu(1|1) = \mu(1|0) = 1 - \frac{\delta}{\beta} = \pi$ is a PBE.*

Proof. We must first verify that P's strategy is optimal given C's strategy. P's expected utility of playing $s = 1$ when he is type $k \in \{0,1\}$ is denoted by $Eu_k(1)$. It suffices to check that $Eu_0(1) - Eu_0(0) > 0$ to see that randomizing is optimal.

$$Eu_0(1) - Eu_0(0) = -\alpha + q(y - \pi y - (1-\pi)x) + \pi y + (1-\pi)x$$
$$- (q(x - \pi y - (1-\pi)x) + \pi y - (1 - \pi x))$$
$$= -\alpha + q(y - x)$$

So if $y > x + \frac{\alpha}{q}$ $(0,1)$ is a best response. Notice that $\sigma_P(1) = (0,1)$ is also optimal since $y > x$ implies that $Eu_1(1) > Eu_1(0)$. Now we must check that P's strategy induces beliefs of C, μ, that allow her to mix in both information sets. By Bayes rule we have

$$\mu(1|1) = \frac{\pi(q + (1-q)\pi)}{\pi(q + (1-q)\pi) + (1-\pi)(q + (1-q)\pi)}$$
$$= \pi$$

Notice that this belief of π means that C's expected utility of $a = 1$ conditional on $s = 1$ is

$$\delta\mu(1|1) + (\delta - 1)(1 - \mu(1|1)) = \delta\pi + \delta(1-\pi) - (1-\pi)$$
$$= 0$$

Since $a = 0$ yields a payoff of 0 with probability 1 we know that C is indifferent between voting for the incumbent and voting against the incumbent when she observes $s = 1$. Notice that by Bayes' rule we have

$$\mu(1|0) = \frac{\pi(1-q)(1-\pi)}{\pi(1-q)(1-\pi) + (1-\pi)(1-q)(1-\pi)}$$
$$= \pi$$

Notice that this belief of π means that $C's$ expected utility of $a = 1$ conditional on $s = 0$ is

$$\delta\mu(1|1) + (\delta - 1)(1 - \mu(1|1)) = \delta\pi + \delta(1-\pi) - (1-\pi)$$
$$= 0$$

Hence C is willing to randomize in the information set that corresponds to observing $s = 0$.

■

Proposition A.4 *Now suppose that* $0 < \alpha < q$ *and* $\delta = 1 - \pi$*. Then the strategy* $\sigma_P(1) = (1, 0), \sigma_P(0) = (1, 0)$*,* $\sigma_C(1) = (1 - y, y)$ $\sigma_C(0) = (1 - x, x)$*, where* $x > y + \frac{\alpha}{q}$*,* $x, y \in (0, 1)$*,* *along with beliefs of C* $\mu(1|1) = \mu(1|0) = 1-\delta = \pi$ *is a PBE.*

Proof. This proof is analogous to the proof of the previous proposition. ■

Proposition A.5 *Now suppose that* $0 < \alpha < q$ *and* $(1-q)(1-\pi) < \delta < 1-\pi$*. Then the strategy* $\sigma_P(1) = (0,1), \sigma_P(0) = (1-c, c)$*, where* $c = \frac{\pi q + \pi^2(1-q) - \pi + \delta\pi}{(1-\delta)(1-\pi)q}$*,* $\sigma_C(1) = (1-y, y)$*,* $\sigma_C(0) = (1-x, x)$*, where* $y = \frac{\alpha}{q}$*,* $y \in (0,1)$*,* $x = 0$*, along with beliefs of C* $\mu(1|0) = \frac{\pi(1-q)(1-\pi)(1-\delta)}{1-\delta-\pi q-\pi^2(1-q)}$ *and* $\mu(1|1) = 1-\delta$ *is a PBE.*

Proof. Similarly, we must check that P's strategy is optimal. For P to randomize when he's type 0 we require that $y = x + \frac{\alpha}{q}$ as seen in the previous proposition. This holds. Hence, C's strategy induces P to randomize when he's type 0. Since $x = 0$, $\sigma_P(1) = (0,1)$ is optimal. Now we must check that the beliefs induced by P's strategy lead to C to randomize in the information set where C observes $s = 1$.

$$\begin{aligned}\mu(1|1) &= \frac{\pi(q+(1-q)\pi)}{\pi(q+(1-q)\pi)+(1-\pi)(qc+(1-q)\pi} \\ &= 1-\delta\end{aligned}$$

Hence, C randomizes when she sees $s = 1$.

$$\begin{aligned}\mu(1|0) &= \frac{\pi(1-q)(1-\pi)}{\pi(1-q)(1-\pi)+(1-\pi)(q(1-c)+(1-q)(1-\pi)} \\ &= \frac{\pi(1-q)(1-\pi)(1-\delta)}{1-\delta-\pi q-\pi^2(1-q)}\end{aligned}$$

It's clear that $\mu(1|0) < 1-\delta$. So C plays $a = 0$ when she sees $s = 0$. So $x = 0$ and $y = \frac{\alpha}{q}$ is C's strategy. This is a PBE. ■

Proposition A.6 *For any PBE where* $0 < \delta < 1$*, the probability that P sends* $s = 1$ *is weakly increasing in q.*

Proof. For any pure strategy PBE this probability is constant in q. The only other PBE in mixed strategies other than the one outlined in Proposition 1 is outlined in the previous proposition. Clearly we have that

$$\begin{aligned}
\frac{\partial c}{\partial q} &= \frac{q(\pi - \pi^2) - (\pi q + \pi^2(1-q) - \pi + \delta\pi)}{(1-\delta)(1-\pi)q^2} \\
&= \frac{\pi - \pi^2 - \delta\pi}{(1-\delta)(1-\pi)q^2} \\
&> \frac{\pi - \pi^2 - (1-\pi)\pi}{(1-\delta)(1-\pi)q^2} \\
&= 0
\end{aligned}$$

Hence, c is increasing in q, so the probability that P sends $s = 1$ is increasing in q in this PBE. Therefore, since all other PBEs are in pure strategies, c is weakly increasing in q for all $\delta \in (0, 1)$. ■

A.2 Tables and Figures

Table A.1: Occupation Search Terms

Occupation	Search Terms
Operative and kindred worker	sheet rock taper, operative, kindred
Farmers (owners and tenants)	farmers, farm owner
Farm laborers, wage workers	farm worker, farmer
Members of the armed services	soldier, troops, armed forces
Mine operatives and laborers	mine operator, miner
Private household workers	private household
Laborers	laborer
Clerical and kindred workers	clerical, kindred
Farm laborers, unpaid family workers	farm labor
Managers, officials, and proprietors	manager
Fishermen and oystermen	fishermen, oystermen

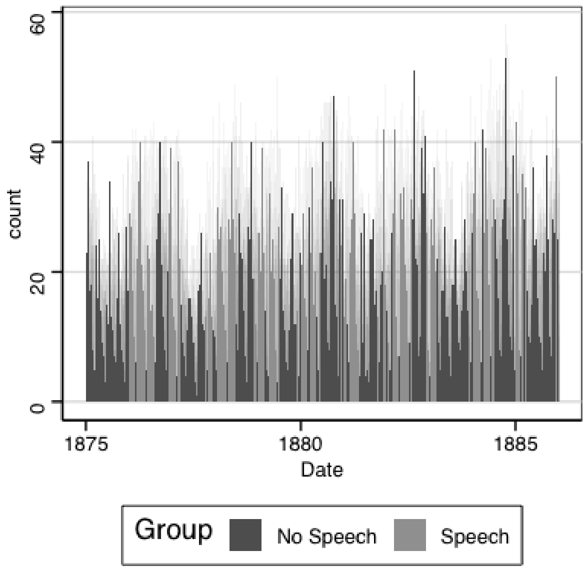
Notes: This table presents the search terms used to calculate the share of words spoken by a congressperson that relate to modal occupations in their constituency. The terms were created by reviewing historical articles from the Library of Congress and speeches from the *Congressional Record* that pertain to the occupations.

Table A.2: Industry Search Terms

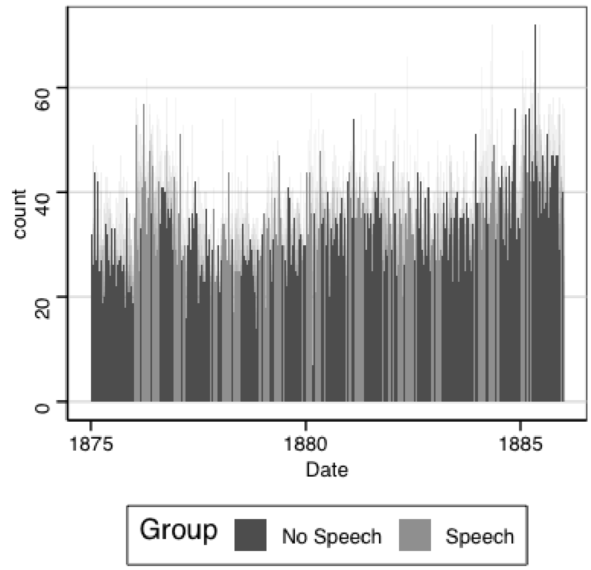
Industry	Search Terms
Agriculture	agriculture, farm, crop, harvest, land, daylight savings
Yarn, thread, and fabric	textile, yarn, thread, fabric, knit
Federal public administration	federal public administration, government employee
Metal mining	metal, mining, silver, gold
Mining, not specified	mining, silver, gold, ore, mines, coal, black lung
Fisheries	fisheries, fishing, fish
Construction	construction, building, cement, infrastructure
Fabricated steel products	steel
Coal mining	coal, mining, coal mines, black lung
Motor vehicles and motor vehicle equipment	car, truck, vehicle, gasoline, engine

Notes: This table presents the search terms used to calculate the share of words spoken by a congressperson that relate to modal industries in their constituency. The terms were created by reviewing historical articles from the Library of Congress and speeches from the *Congressional Record* that pertain to the industries.

Figure A.1: Newspaper Articles about Congress and the President



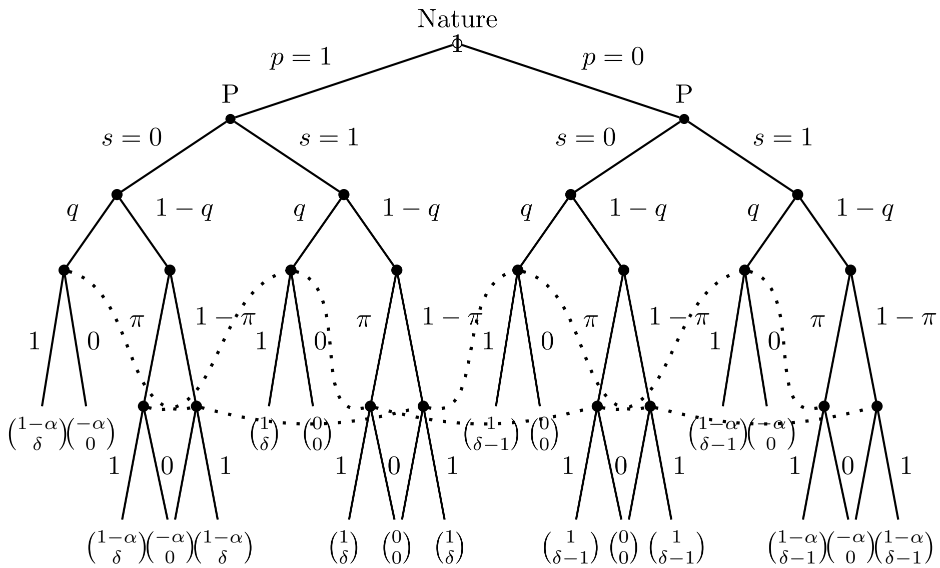
(a) "Congress" Search Results



(b) "President" Search Results

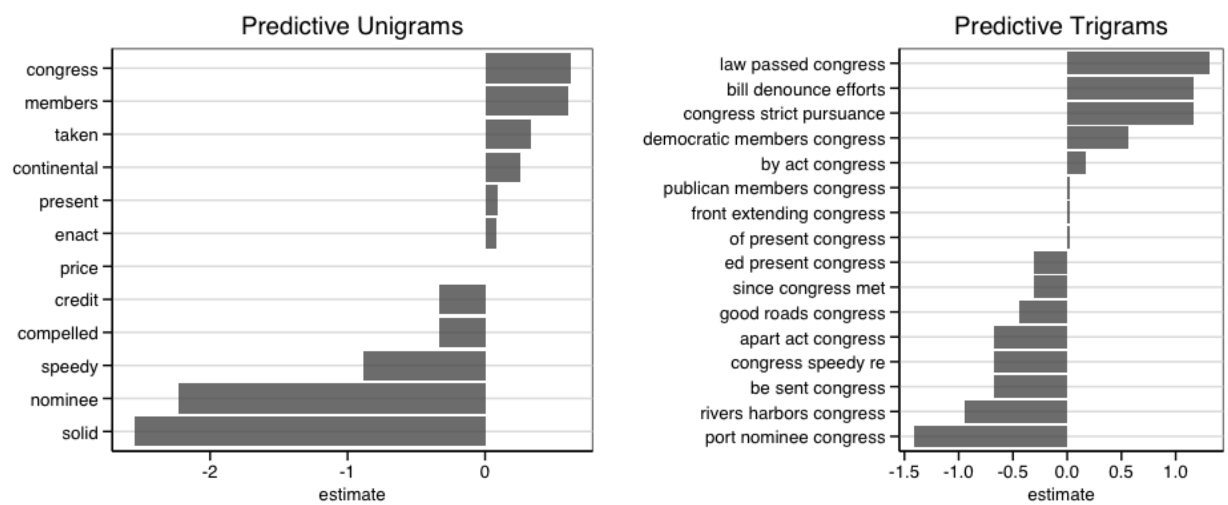
Notes: This figure plots the count of articles that mention "congress" (a) and "president" (b) over time on days that speeches are made on the floor and on days when no speech is made on the floor of the House or Senate. The "congress" results indicate clear increases on days when speeches are made. There are is also a clear cyclical nature to the congress results with clearly lulls in reporting in summer months when congress is not in session. These patterns are not present in the "president" search, indicating that using "congress" as a search term picks up coverage of congress.

Figure A.2: The Extensive Form



Notes: This figure depicts the extensive form of the signaling game I outline in Section 3. Payoffs are given in the form $\binom{u^P}{u^C}$ at terminal nodes. The dotted lines indicate C's information sets.

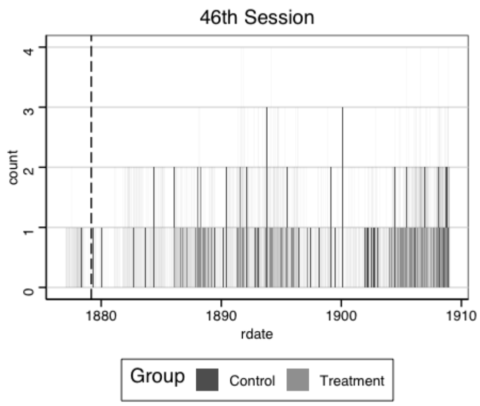
Figure A.3: Effect of Gallery Membership on Newspaper Content



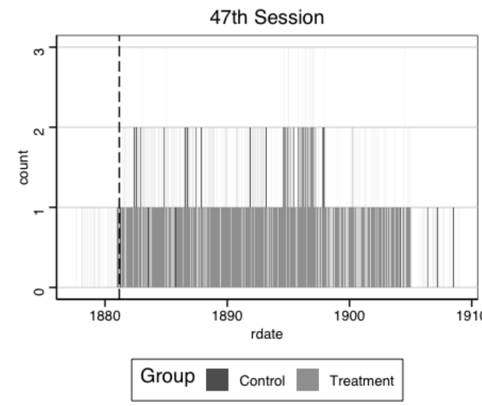
(a) Unigrams (b) Trigrams

Notes: This figure is the analogue of Figure 3 but instead of using bigrams, it presents results for unigrams and trigrams. The x-axis provides the estimate of the coefficient for the specific phrase indicated on the y-axis. Positive coefficients correspond to phrases whose presence in an article increase the probability of that the article comes from a paper in the galleries. Negative coefficients indicate the opposite. The estimates are calculated with regularized maximum likelihood in the spirit of equation 4.

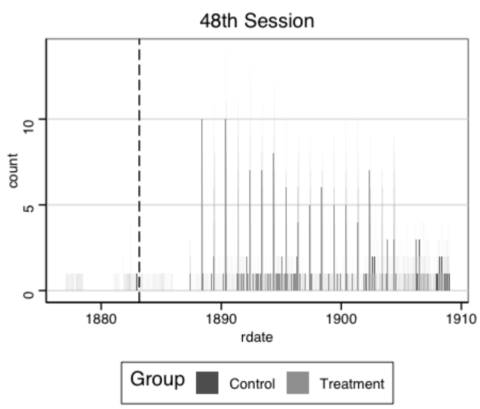
Figure A.4: The Effect of Gallery Membership on the Quantity of Congressional News Coverage



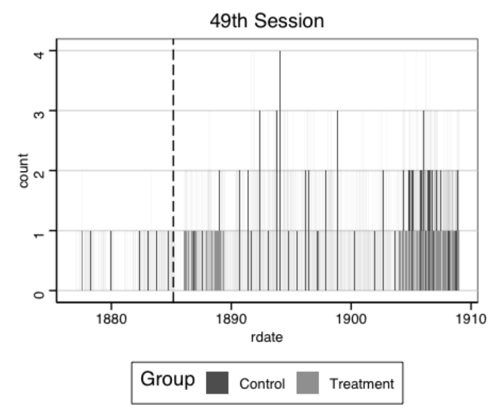
(a) 46th session cohort



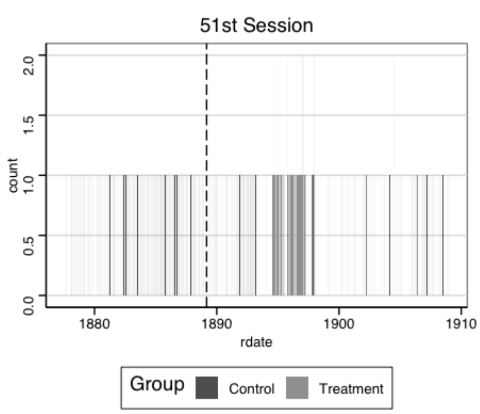
(b) 47th session cohort



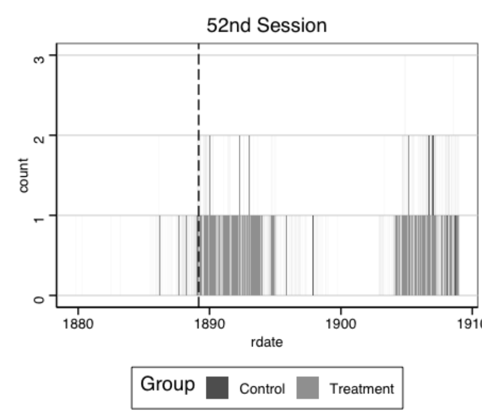
(c) 48th session cohort



(d) 49th session cohort



(e) 51st session cohort



(f) 52nd session cohort

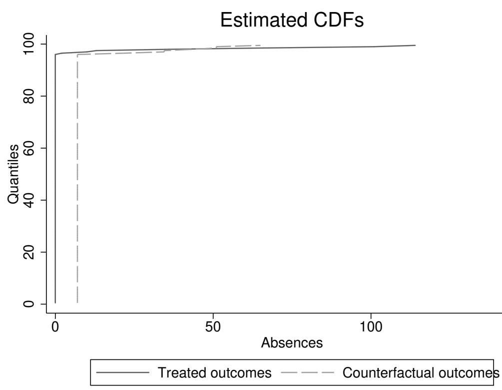
Notes: This figure breaks up treated newspapers into cohorts based on when these newspapers enter the galleries. The y-axis of each subfigure plots the count of articles observed on a specific date, given on the x-aixs. The dotted vertical line corresponds to the start of the treatment session.

Table A.3: Balance Tests for Treatment and Control Groups in the Senate

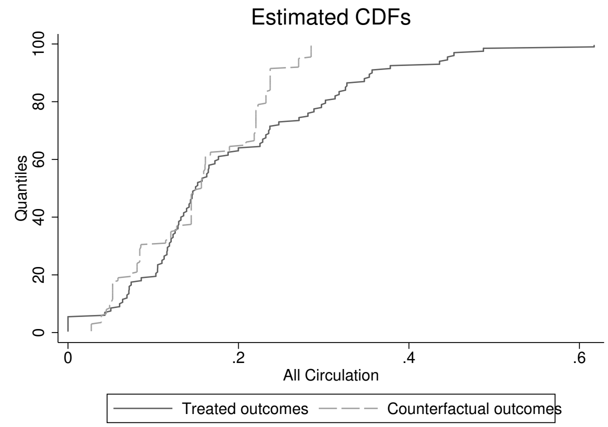
Congressperson Variables	Treatment	Control	P-value
Election	0.43	0.39	0.57
Change in Committee	0.09	0.06	0.42
Change in Rank	0.04	0.02	0.41
Change in Party	0.12	0.02	0.006
Change in Absences	-1.53	-1.28	0.89
Newspaper Variables	**Treatment**	**Control**	**P-value**
Change in Circulation	0.002	0.003	0.79
Change in Independent Circulation	0.001	0.002	0.50
Change in Republican Circulation	0.004	0.002	0.20
Change in Democratic Circulation	0.001	0.004	0.13
Change in Non-political Circulation	0.0001	0.0001	0.73

Notes: This table demonstrates the mean of variables in the treatment and control groups as well as a p-value for a t-test that these means are different across groups. This relies on the Senate sample. I also present a p-value for a t-test that the means are the same across groups. The house sample balance test is presented in Table 1

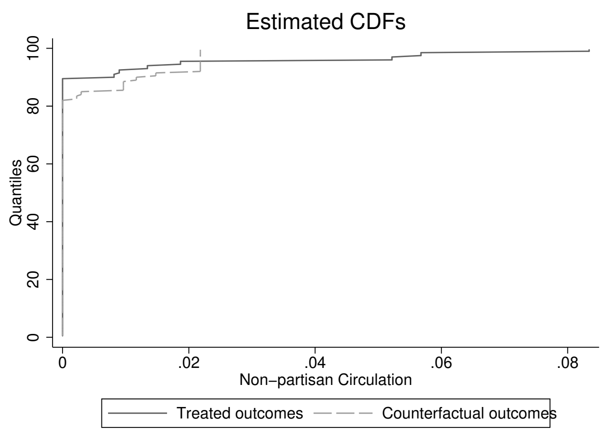
Figure A.5: Estimated CDFs for Observables in the Senate



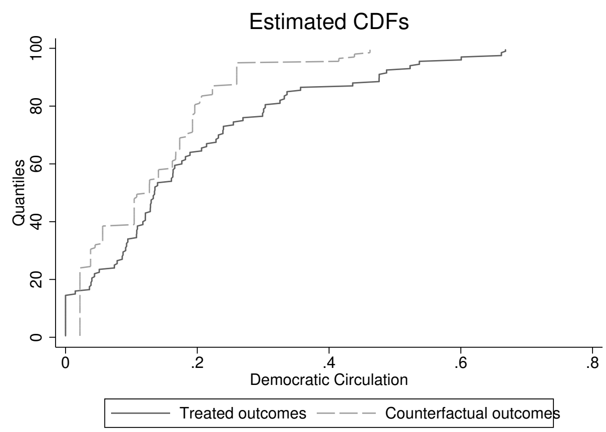
(a) Absences



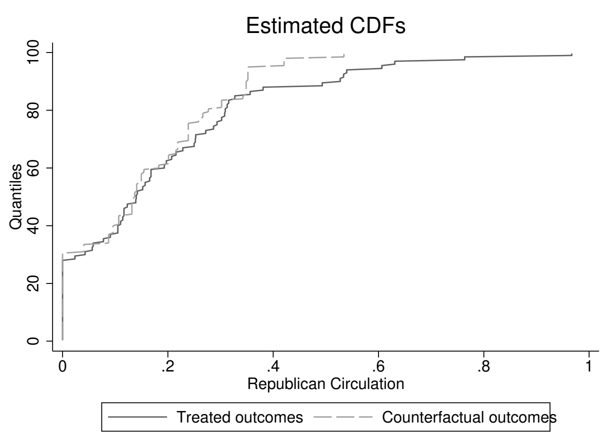
(b) All Circulation



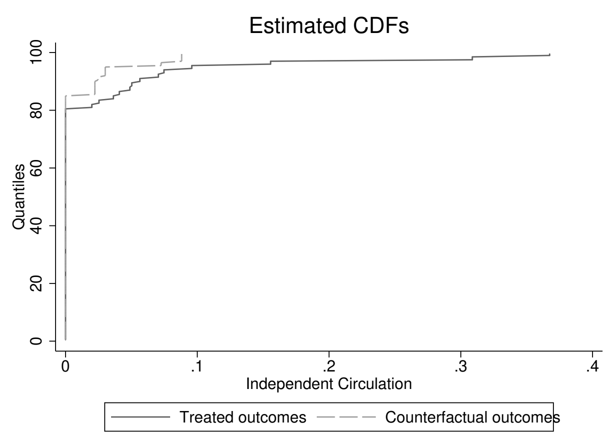
(c) Non-partisan Circulation



(d) Democratic Circulation



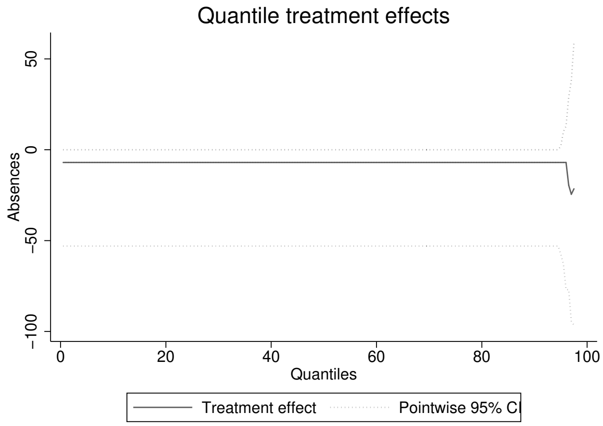
(e) Republican Circulation



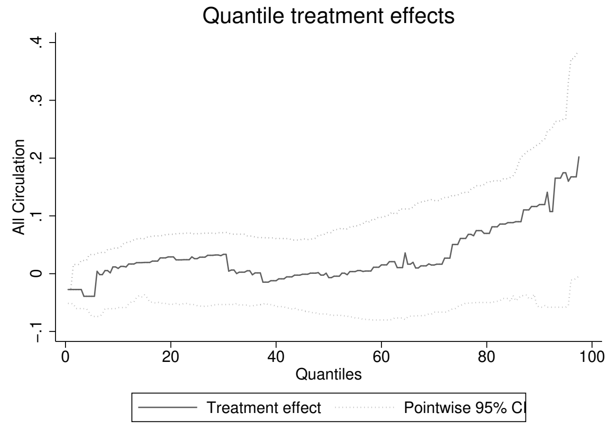
(f) Independent Circulation

Notes: This is the analogue of Figure 6 for the Senate sample. This figure depicts the treated CDFs and the counterfactual CDFs for the treatment group if untreated. Panel (a) presents the estimated CDFs for absences. Panels (b), (c), (d), (e), and (f) present the CDFs for all circulation, nonpartisan circulation, Democrat circulation, Republican circulation, and Independent circulation respectively.

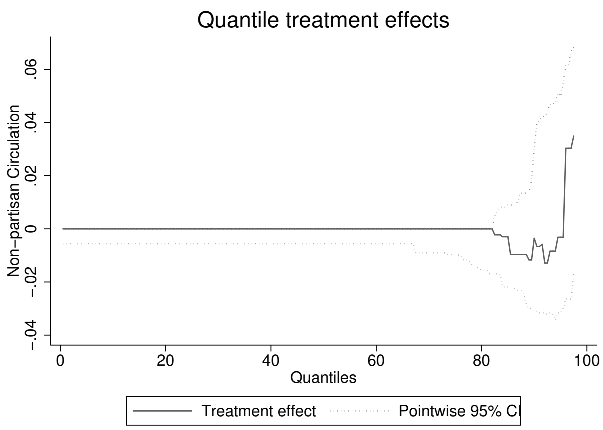
Figure A.6: Quantile Treatment on the Treated Effects for Observables in the Senate



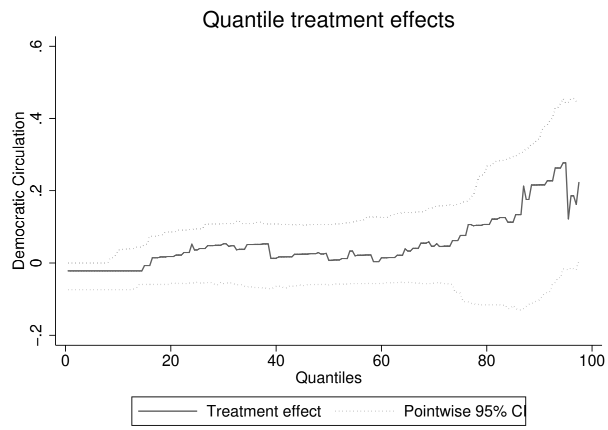
(a) Absences



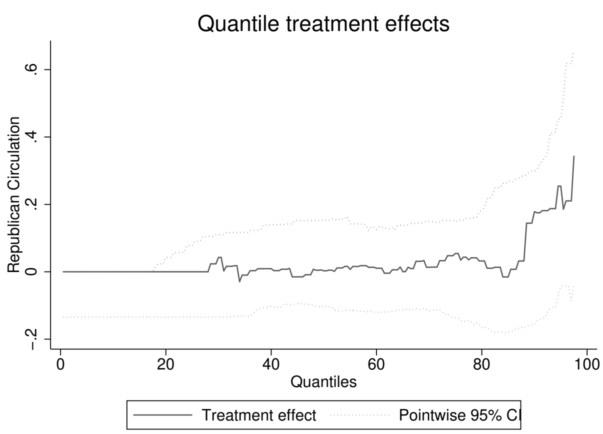
(b) All Circulation



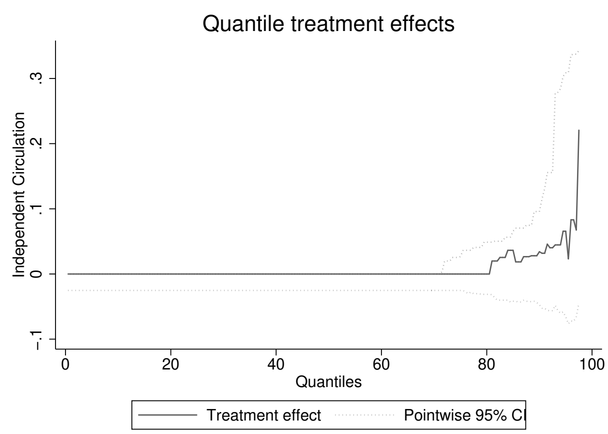
(c) Non-partisan Circulation



(d) Democratic Circulation



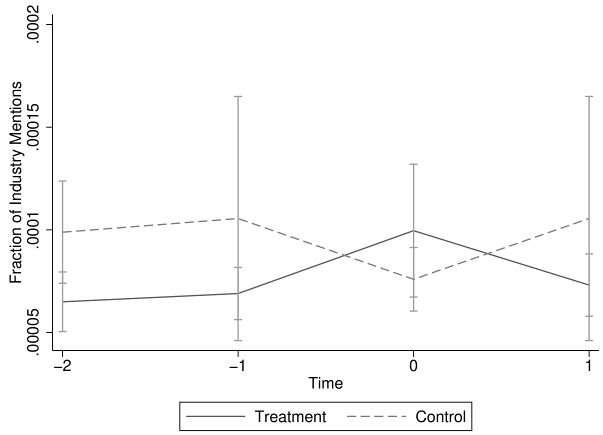
(e) Republican Circulation



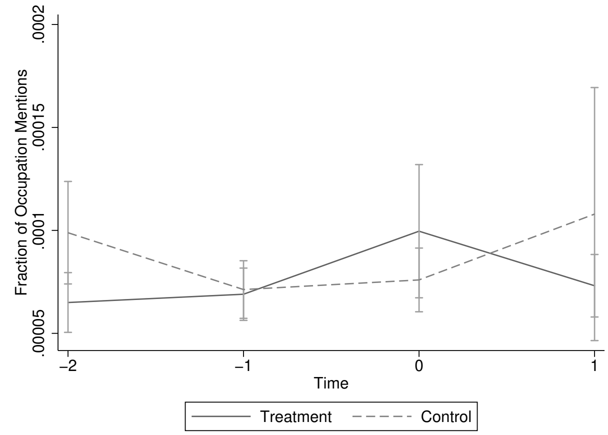
(f) Independent Circulation

Notes: This is the analogue of Figure 7 for the Senate sample. Panel (a) presents the QTTs for absences. Panels (b), (c), (d), (e), and (f) present the results for all circulation, nonpartisan circulation, Democrat circulation, Republican circulation, and Independent circulation respectively. The dotted line is a bootstrapped 95% confidence interval.

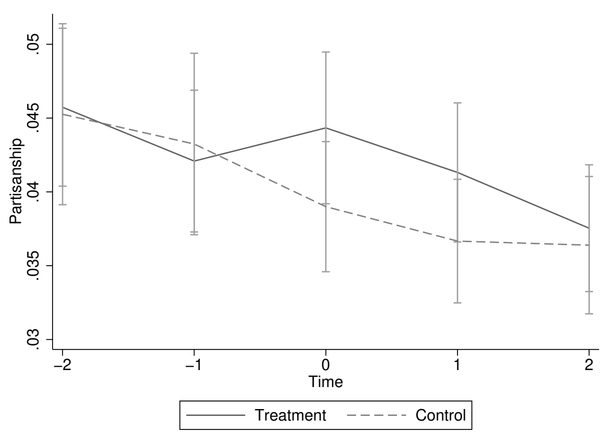
Figure A.7: Parallel Trends in Means



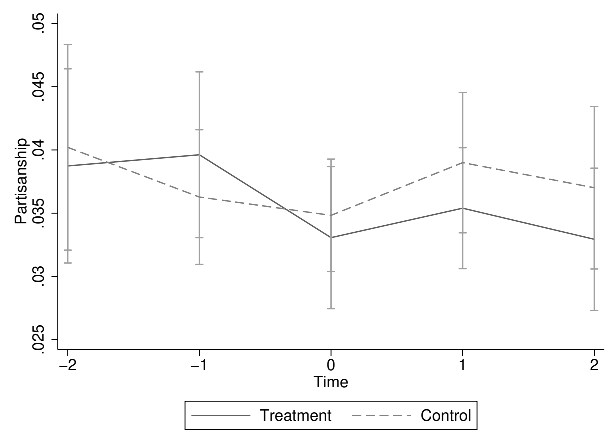
(a) Industry



(b) Occupation



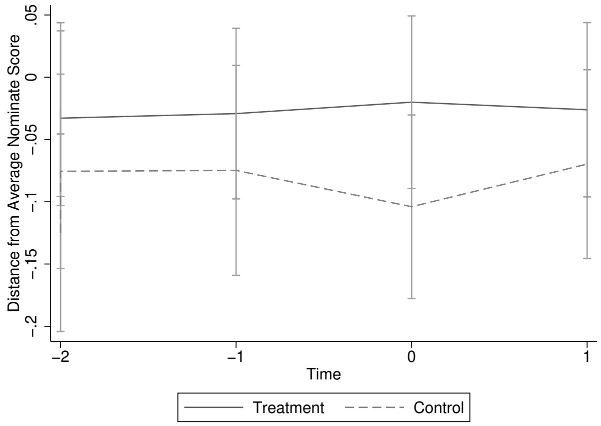
(c) Partisanship – House



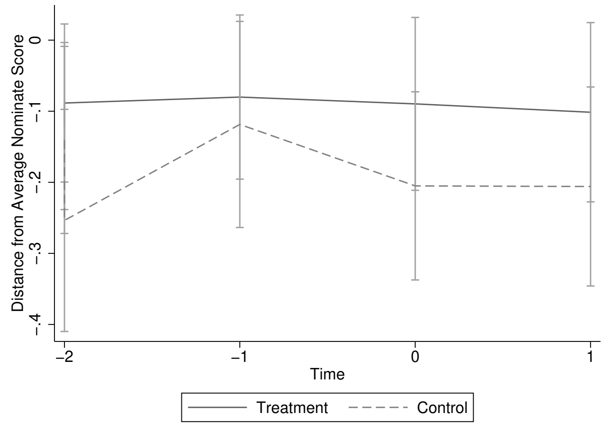
(d) Partisanship – Senate

Notes: This figure tests for parallel trends in means for mentions of industries and occupations. Parallel trends are clearly exhibited for industry but they may be violated for occupation. This also shows parallel trends for partisanship.

Figure A.8: Parallel Trends in Means for NOMINATE Scores



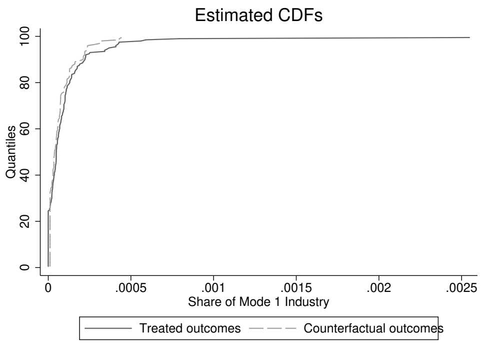
(a) Parallel Trends in Means – House



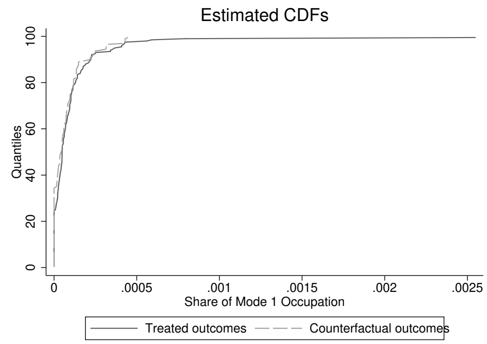
(b) Parallel Trends in Means – Senate

Notes: This figure presents parallel trends in means for the House and Senate in NOMINATE scores. Error bars are 95% confidence intervals.

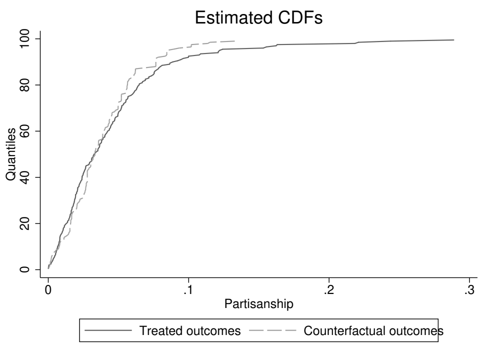
Figure A.9: Estimated CDFs of Speech Outcomes Prior to Treatment



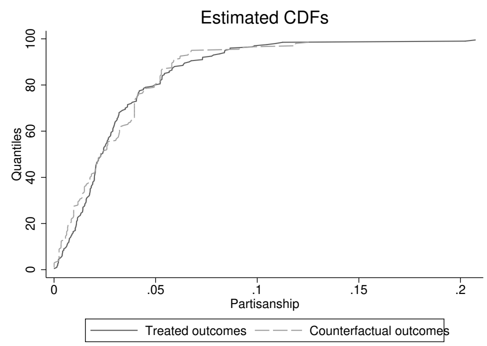
(a) Industry – Senate



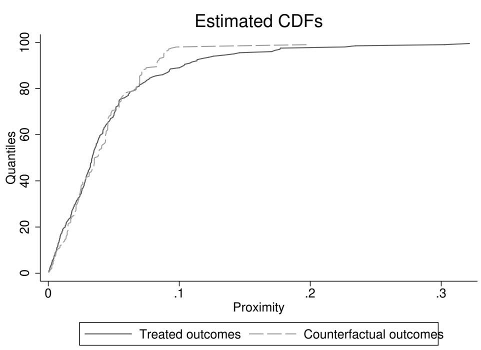
(b) Occupation – Senate



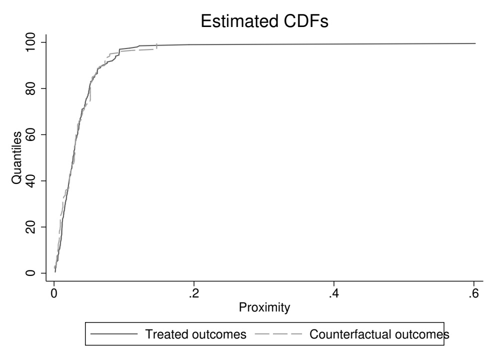
(c) Partisanship – House



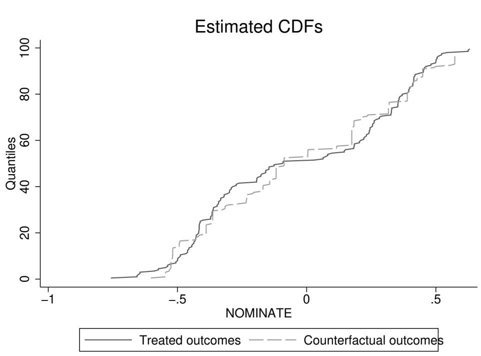
(d) Partisanship – Senate



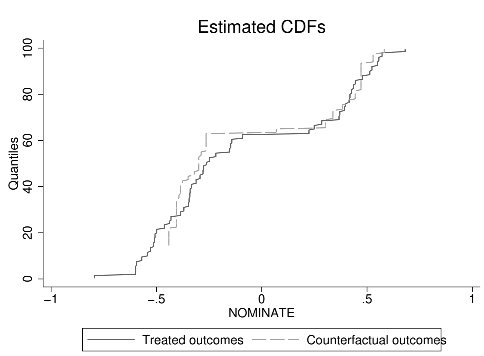
(e) Proximity – House



(f) Proximity – Senate



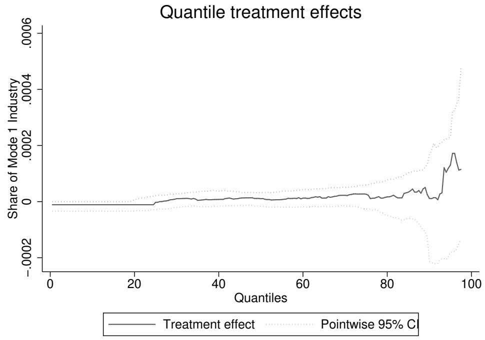
(g) NOMINATE – House



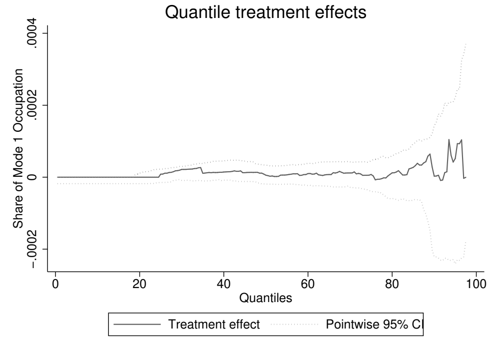
(h) NOMINATE – Senate

Notes: This demonstrates the estimated CDFs for outcomes in the pre-treatment period. (a) and (b) depict CDFs for industries and occupations, (c) and (d) depict CDFs for Partisanship, (e) and (f) depict CDFs for proximity, and (g) and (h) for NOMINATE.

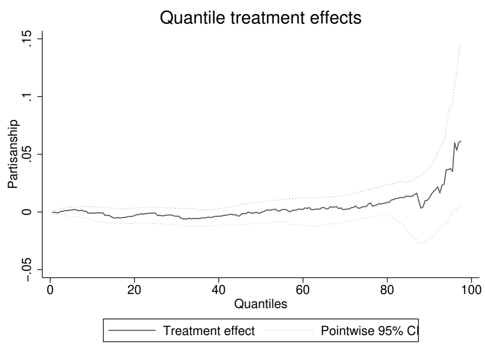
Figure A.10: Parallel Trends in Distributions



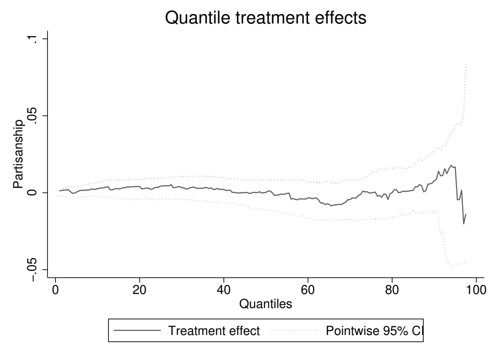
(a) Industry – Senate



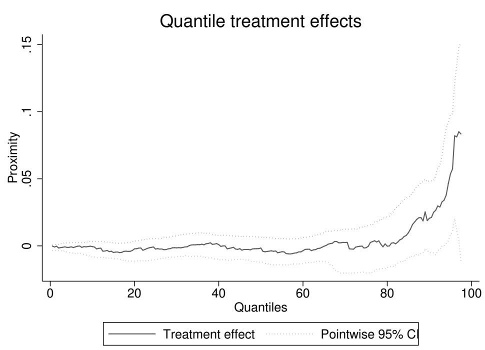
(b) Occupation – Senate



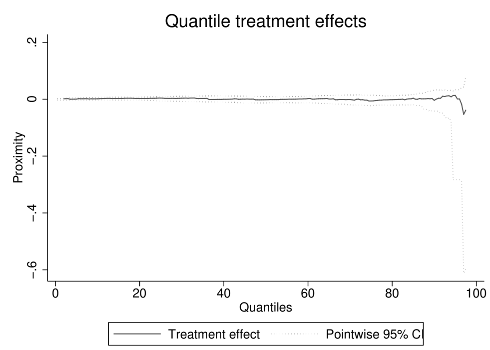
(c) Partisanship – House



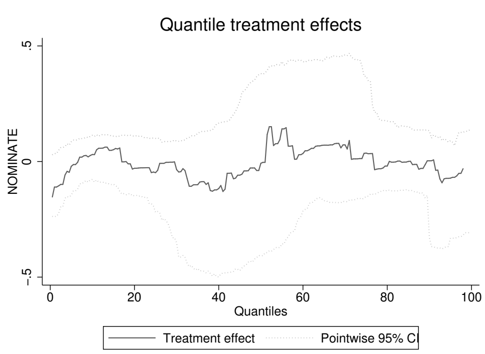
(d) Partisanship – Senate



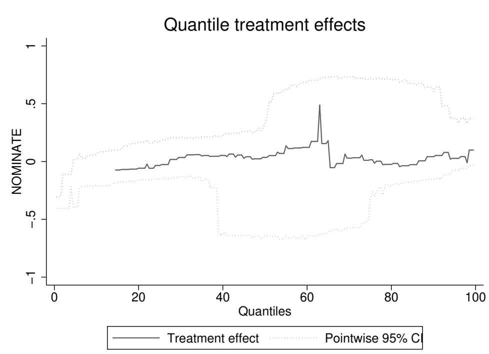
(e) Proximity – House



(f) Proximity – Senate



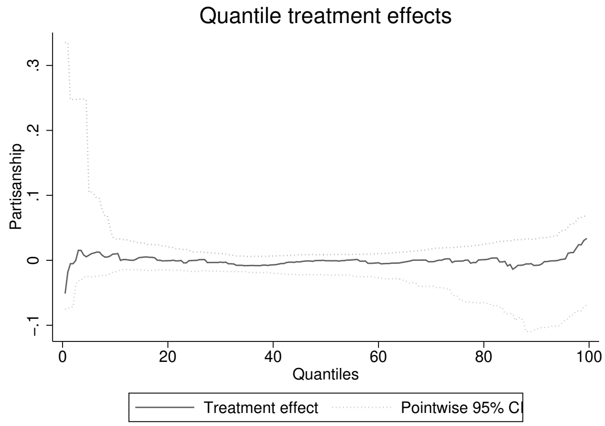
(g) NOMINATE – House



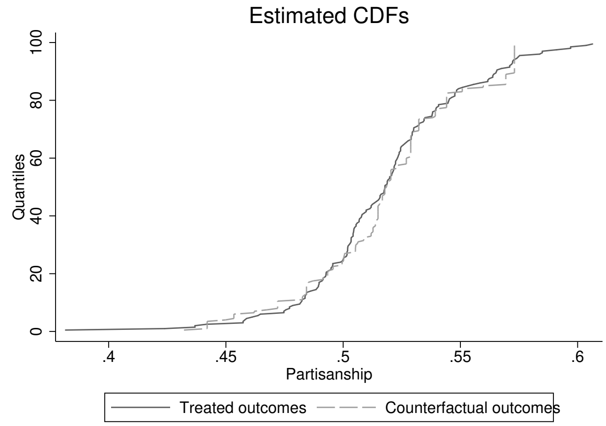
(h) NOMINATE – Senate

Notes: This demonstrates the estimated QTTs prior to treatment. (a) and (b) depict QTTs for industries and occupations, (c) and (d) for Partisanship, (e) and (f) for proximity, and (g) and (h) for NOMINATE. The dotted line is bootstrapped pointwise 95% confidence interval.

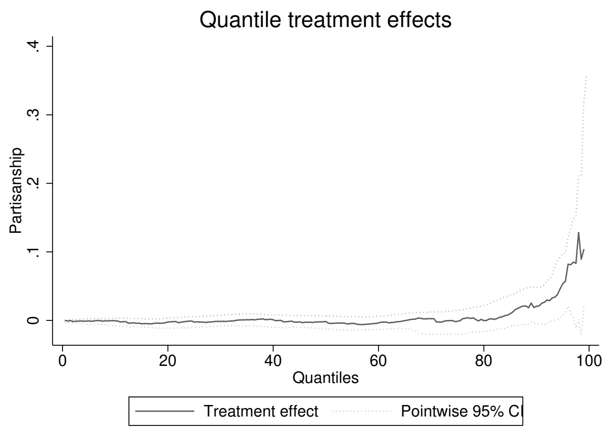
Figure A.11: Quantile Treatment on the Treated Effects for Partisanship



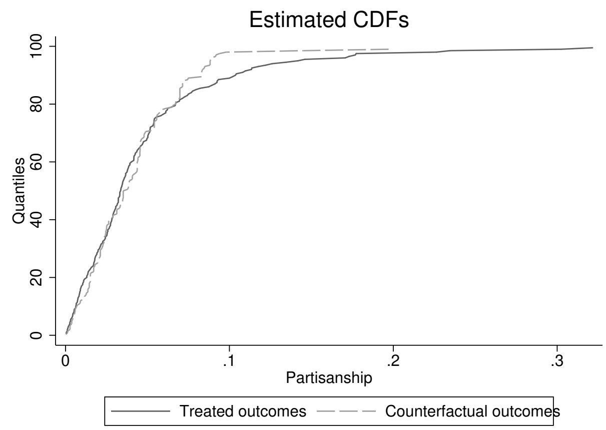
(a) Partisanship QTTs – Senate



(b) Partisanship CDFs – Senate



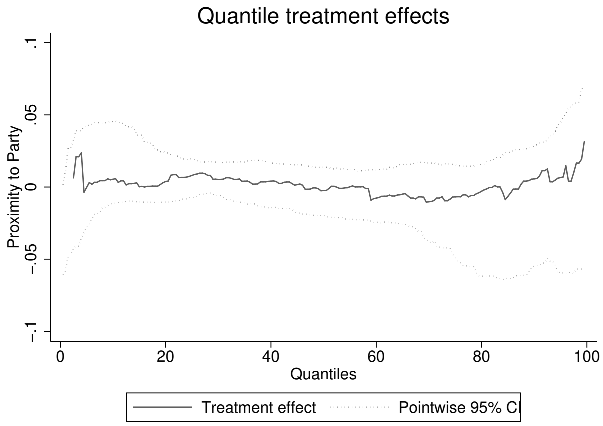
(c) Partisanship – House



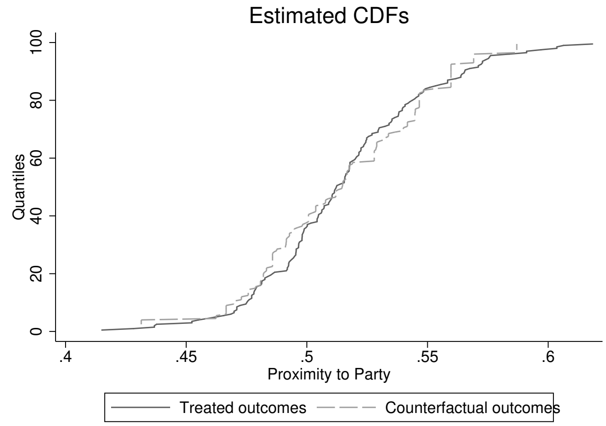
(d) Partisanship – House

Notes: Panels (a) and (b) present QTTs and CDFs for partisanship using the Senate sample. Panels (c) and (d) use the house sample. Partisanship is calculated in the spirit of Engelberg et al. (2019). The dotted line in (a) and (c) is a bootstrapped pointwise 95% confidence interval.

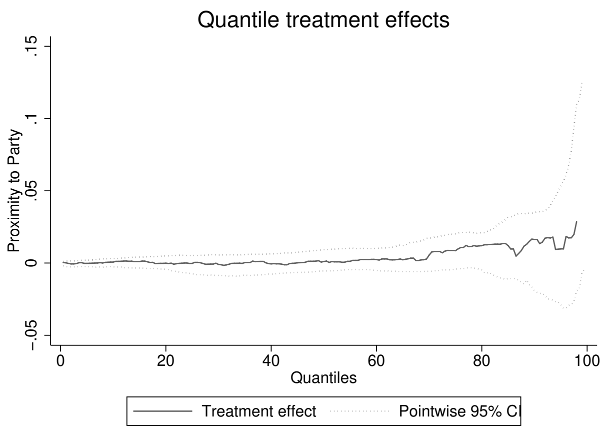
Figure A.12: Quantile Treatment on the Treated Effects for Proximity



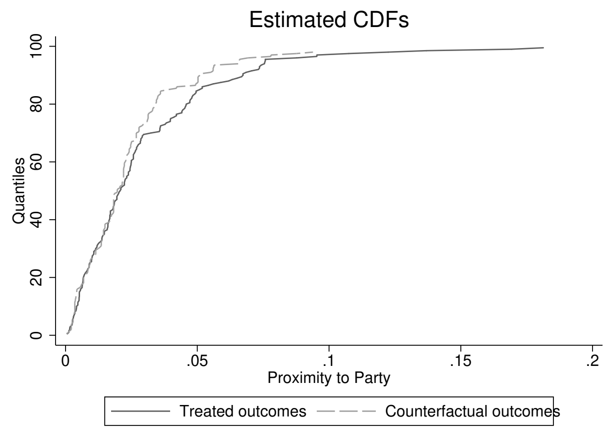
(a) Proximity to Party QTTs – Senate



(b) Proximity to Party CDFs – Senate



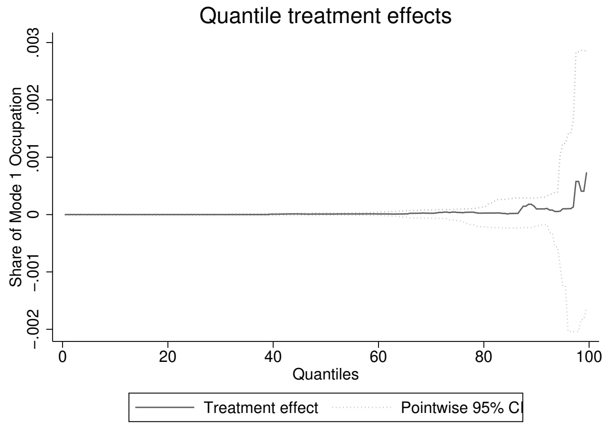
(c) Proximity to Party QTTs – House



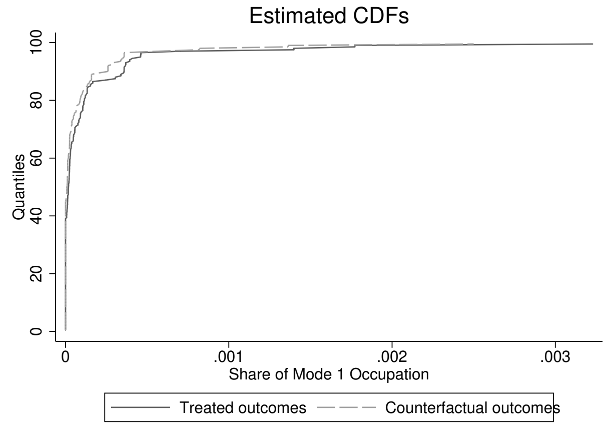
(d) Proximity to Party CDFs – House

Notes: Panel (a) and (b) uses the Senate sample and panel (c) and (d) uses the house sample. The are quantile treatment on the treated effects of monitoring on proximity to party language. The dotted line in (a) and (c) is a bootstrapped 95% pointwise confidence interval.

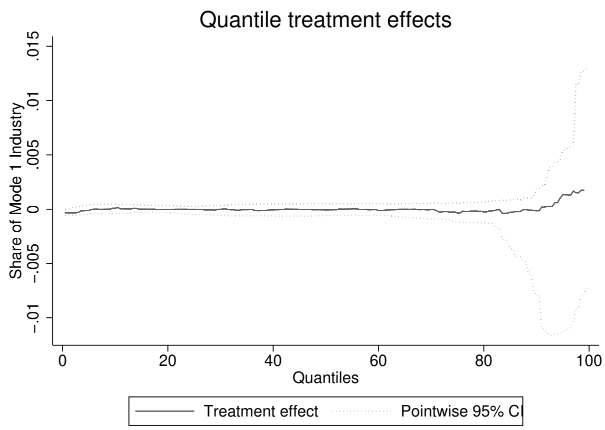
Figure A.13: Quantile Treatment on the Treated Effects for Occupations and Industries



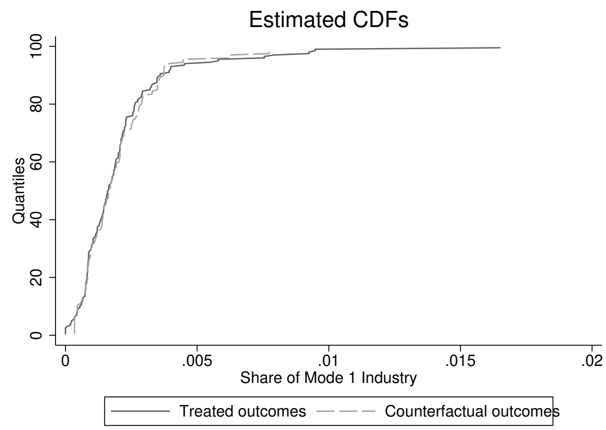
(a) Occupations QTTs



(b) Occupations CDFs



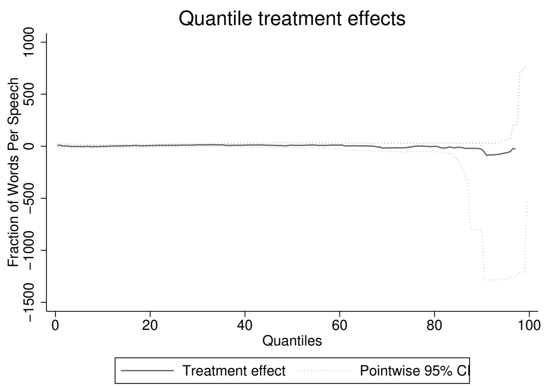
(c) Industries QTTs



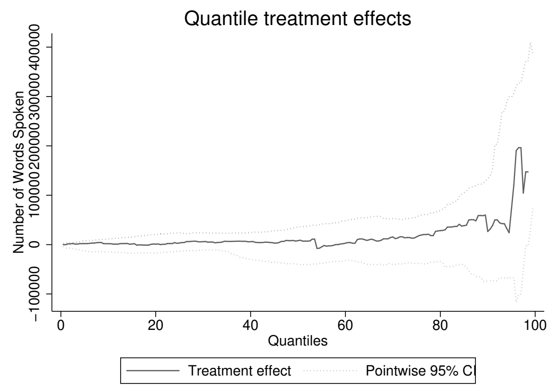
(d) Industries CDFs

Notes: Panels (a) and (b) present QTTs and CDFs for mentions of occupations and panels (c) and (d) present the same information for mentions of industries. These occupations and industries are the modes in the IPUMS data for the relevant constituency. Search terms are created to match the occupations and industries. The outcomes here are the share of words that are these occupation and industry specific search terms. These effects are precisely null for almost all quantiles of the distribution. The dotted line is a bootstrapped pointwise 95% confidence interval.

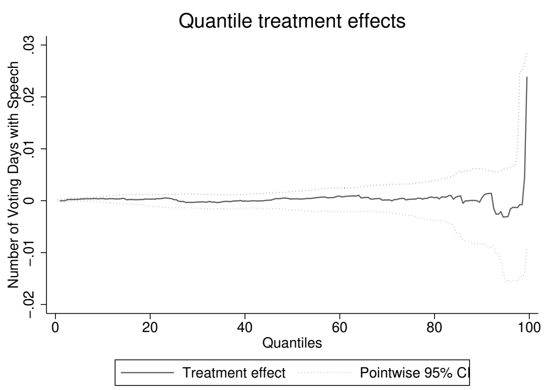
Figure A.14: Quantile Treatment on the Treated Effects for Alternative Measurements of Legislative Action



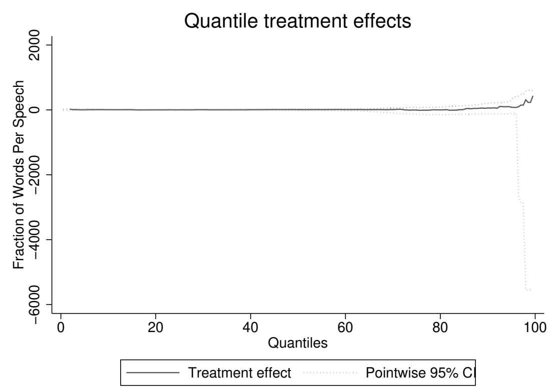
(a) Average number of words per speech – Senate



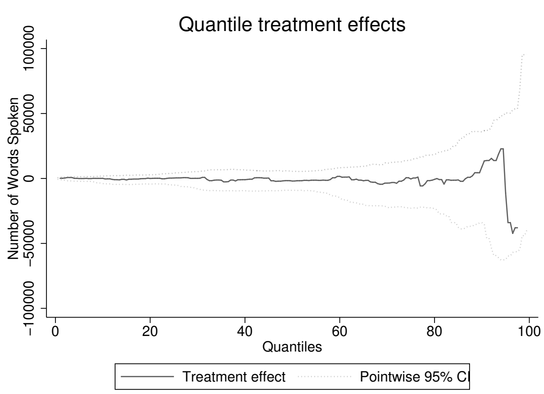
(b) Number of words spoken – Senate



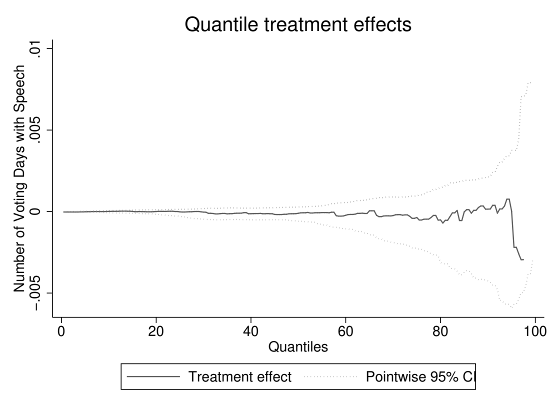
(c) Number of voting days with speech – Senate



(d) Average number of words per speech – House



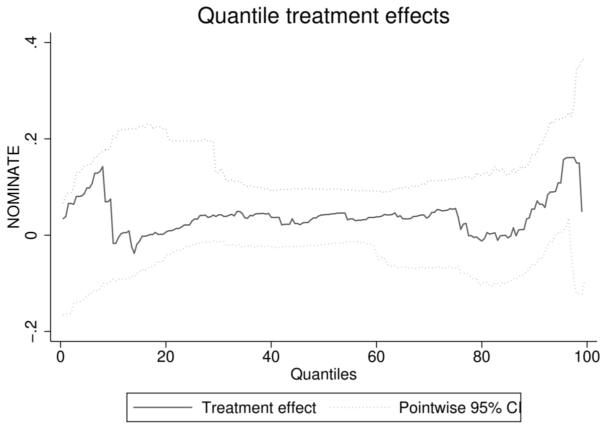
(e) Number of words spoken – House



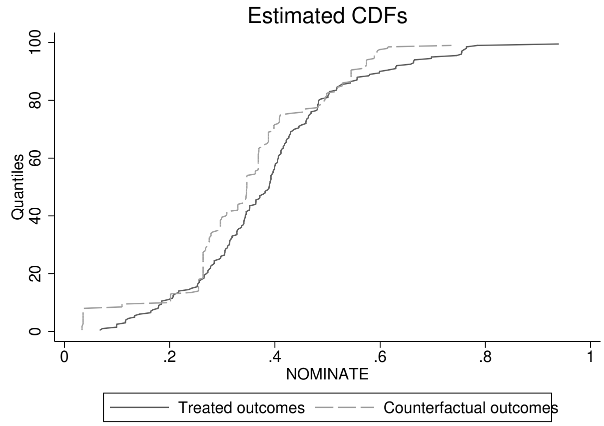
(f) Number of voting days with speech – House

Notes: This figure includes the QTTs for alternative outcome variables that are meant to quantify the degree of legislative action by politicians with their speech. These outcomes include: the number of words spoken, the average number of words per speech, and the fraction of voting days where a politician speaks. The dotted line is a bootstrapped pointwise 95% confidence interval.

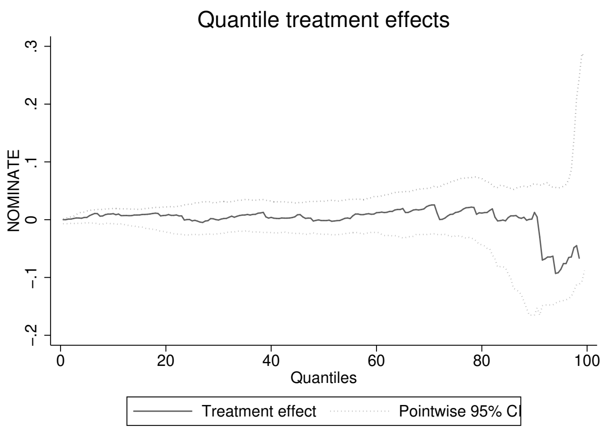
Figure A.15: Quantile Treatment on the Treated Effects for NOMINATE scores



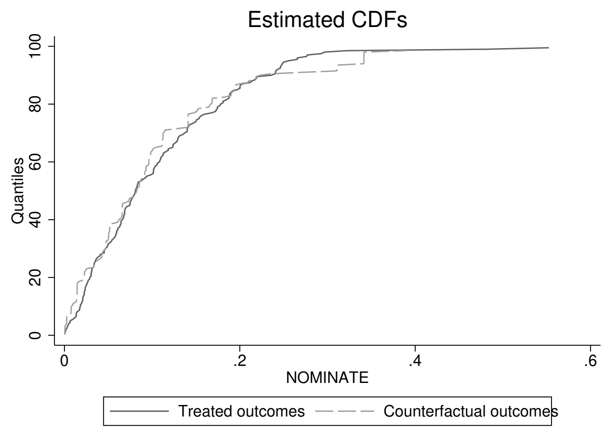
(a) NOMINATE QTTs – Senate



(b) NOMINATE CDFs – Senate



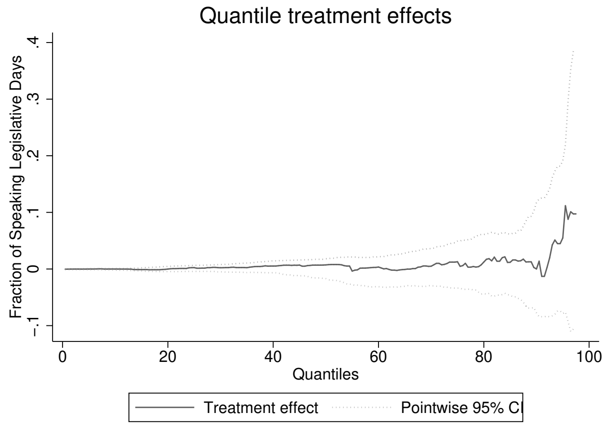
(c) NOMINATE QTTs – House



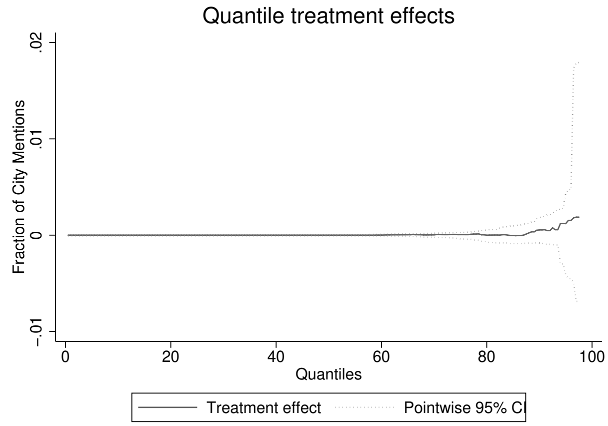
(d) NOMINATE CDFs – House

Notes: This figure presents the QTTs and CDFs for NOMINATE scores. These scores measure ideology with roll call voting. Panels (a) and (b) use the Senate sample and panels (c) and (d) use the House sample. The effects are similarly null. The dotted line is a bootstrapped pointwise 95% confidence interval.

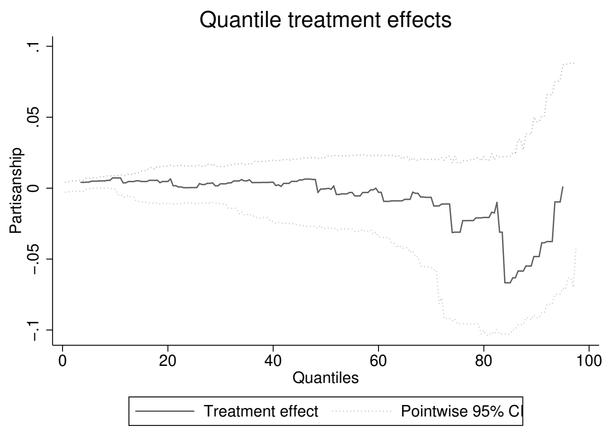
Figure A.16: Long Run Quantile Treatment on the Treated Effects in the House



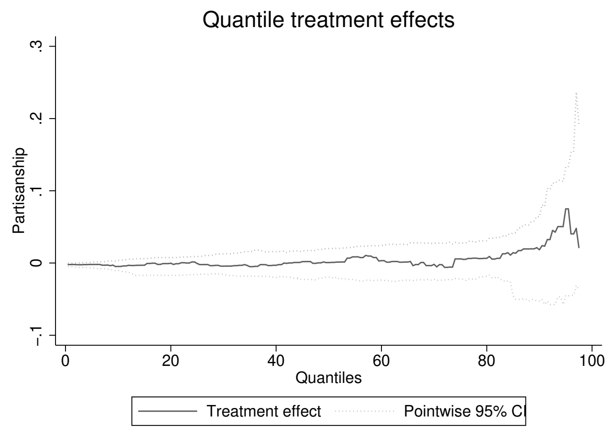
(a) QTTs for $s_{i,t}$ – Session +2 House



(b) QTTs for $c_{i,t}$ – Session +2 House



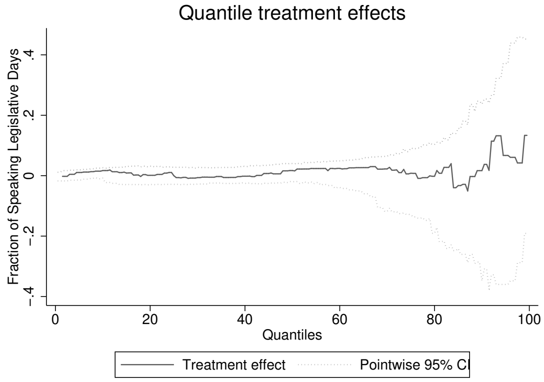
(c) QTTs for $l_{i,t}$ – Session +2 House



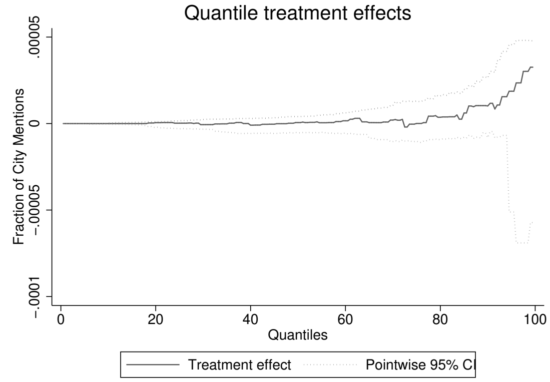
(d) QTTs for $l_{i,t}$ – Session +1 House

Notes: This figure demonstrates the QTTs for long run treatment effects in the House. The treatment session is moved 1 or 2 sessions after the actual treatment session to test for long run effects. The dotted line is a bootstrapped pointwise 95% confidence interval. Panel (a) gives QTTs the fraction of speaking legislative days days, (b) gives QTTs for the fraction of city mentions, and (c) and (d) give QTTs for partisanship.

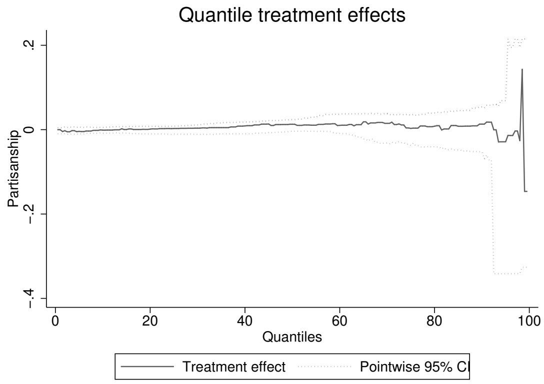
Figure A.17: Long Run Quantile Treatment on the Treated Effects for the Senate



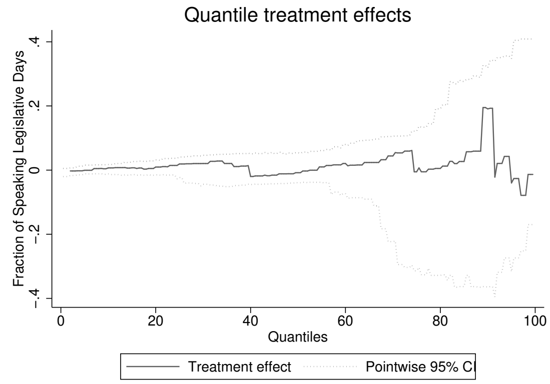
(a) QTTs for $s_{i,t}$ – Session +1 Senate



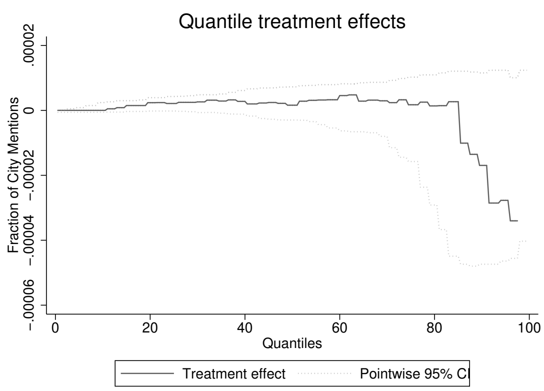
(b) QTTs for $c_{i,t}$ – Session +1 Senate



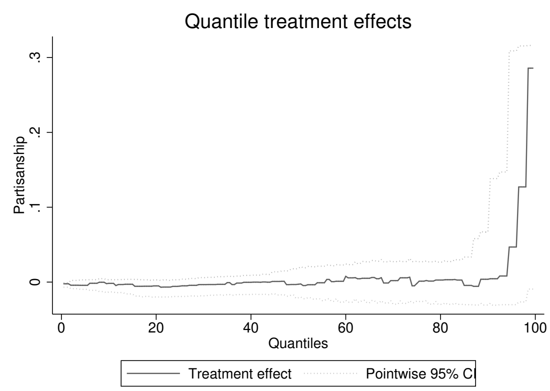
(c) QTTs for $l_{i,t}$ – Session +1 Senate



(d) QTTs for $s_{i,t}$ – Session +2 Senate



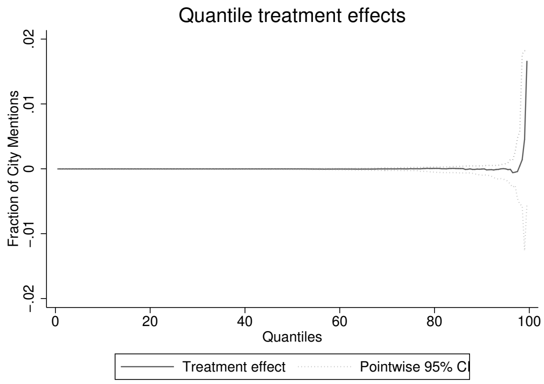
(e) QTTs for $c_{i,t}$ – Session +2 Senate



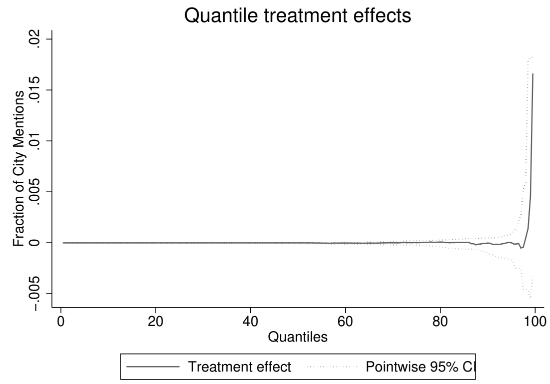
(f) QTTs for $l_{i,t}$ – Session +2 Senate

Notes: This figure demonstrates the QTTs for long run treatment effects in the Senate. The treatment session is moved either 1 or 2 sessions after the actual treatment session to test for long run effects. The dotted line is a bootstrapped pointwise 95% confidence interval. Panels (a) and (d) give QTTs the fraction of speaking legislative days days, (b) and (e) give QTTs for the fraction of city mentions, and (c) and (f) give QTTs for partisanship.

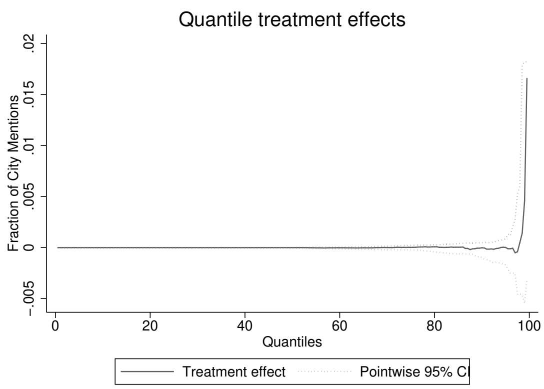
Figure A.18: Quantile Treatment on the Treated Effects for $c_{i,t}$: Treatment Definition in Levels of $N_{i,t}$



(a) QTTs for $c_{i,t} - x = 1$



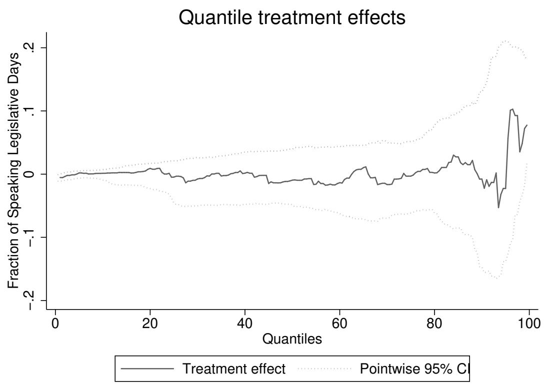
(b) QTTs for $c_{i,t} - x = 2$



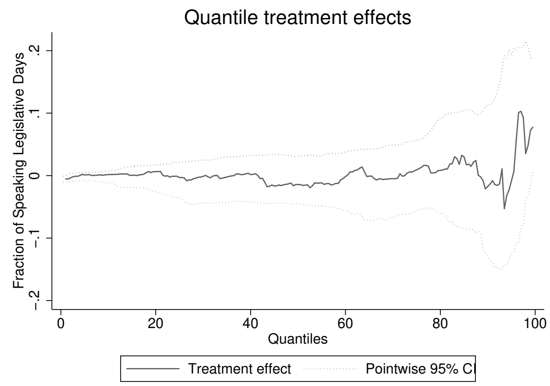
(c) QTTs for $c_{i,t} - x = 3$

Notes: This figure demonstrates QTTs for $c_{i,t}$ where treatment is defined as the situation where $N_{i,t} = 0$ and $N_{i,t+1} = x$. The panels vary x from 1 to 3 in increments of 1. The dotted lines are bootstrapped pointwise 95% confidence intervals.

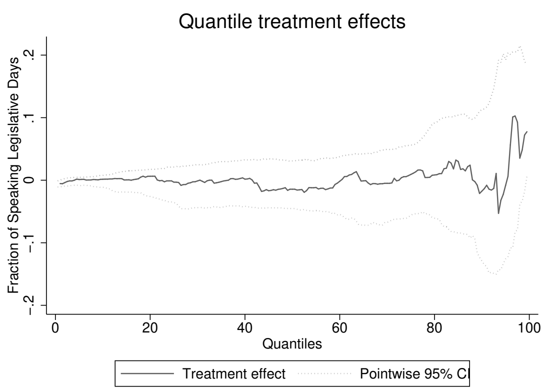
Figure A.19: Quantile Treatment on the Treated Effects for $s_{i,t}$: Treatment Definition in Levels of $N_{i,t}$



(a) QTTs for $s_{i,t} - x = 1$



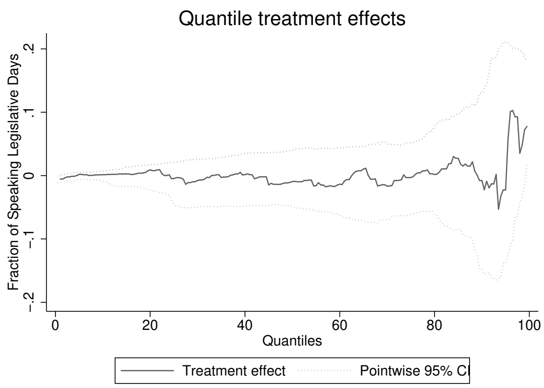
(b) QTTs for $s_{i,t} - x = 2$



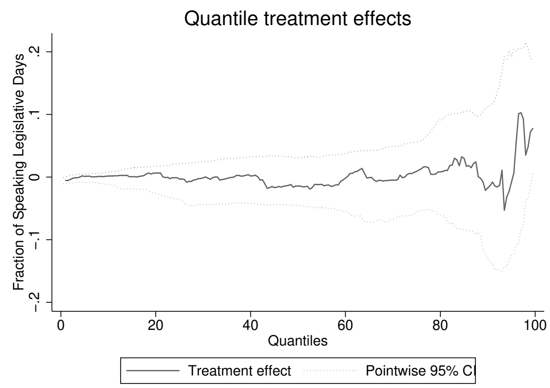
(c) QTTs for $s_{i,t} - x = 3$

Notes: This figure demonstrates QTTs for $s_{i,t}$ where treatment is defined as the situation where $N_{i,t} = 0$ and $N_{i,t+1} = x$. The panels vary x from 1 to 3 in increments of 1. The dotted lines are bootstrapped pointwise 95% confidence intervals.

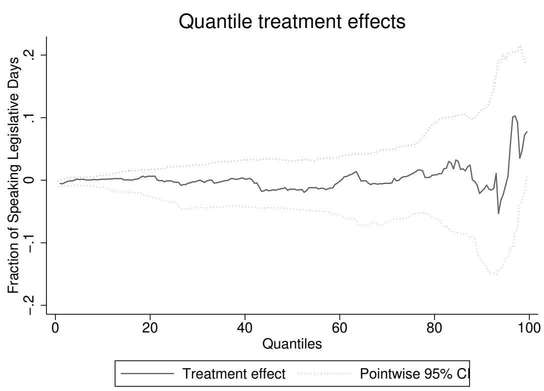
Figure A.20: Quantile Treatment on the Treated Effects for $l_{i,t}$: Treatment Definition in Levels of $N_{i,t}$



(a) QTTs for $l_{i,t} - x = 1$



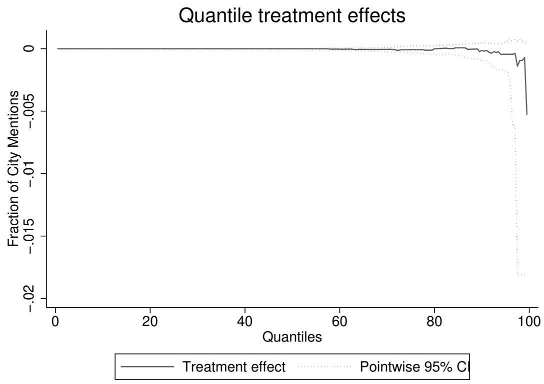
(b) QTTs for $l_{i,t} - x = 2$



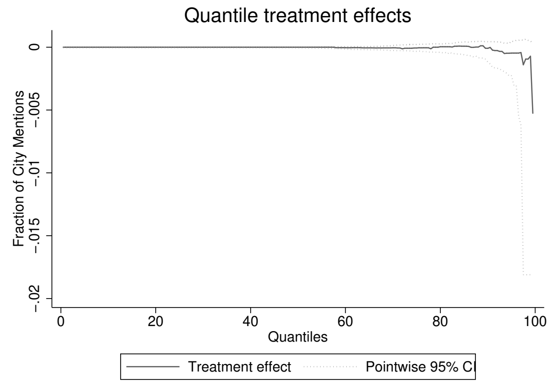
(c) QTTs for $l_{i,t} - x = 3$

Notes: This figure demonstrates QTTs for $l_{i,t}$ where treatment is defined as the situation where $N_{i,t} = 0$ and $N_{i,t+1} = x$. The panels vary x from 1 to 3 in increments of 1. The dotted lines are bootstrapped pointwise 95% confidence intervals.

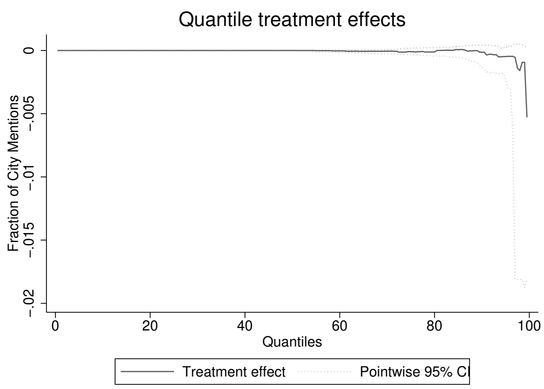
Figure A.21: Quantile Treatment on the Treated Effects for $c_{i,t}$: Treatment Definition in Share of Circulation



(a) QTTs for $c_{i,t} - x$ = 25th percentile



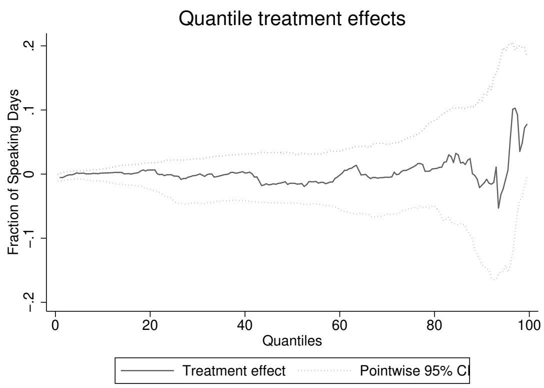
(b) QTTs for $c_{i,t} - x$ = 50th percentile



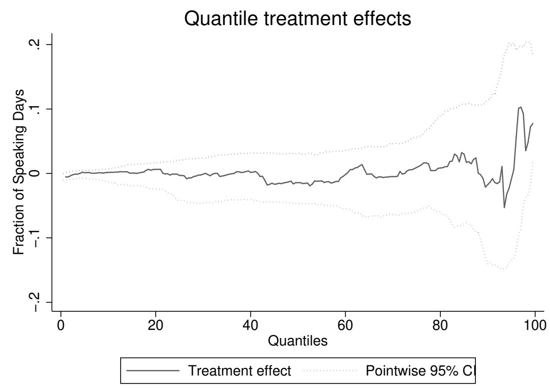
(c) QTTs for $c_{i,t} - x$ = 75th percentile

Notes: This figure demonstrates QTTs for $c_{i,t}$ where treatment is defined as the situation where $N_{i,t} = 0$ and $N_{i,t+1} > 0$ and the share of circulation in the galleries is at least x. The panels vary x from the 25th percentile of the gallery circulation share to the 75th percentile of the gallery circulation share. The dotted lines are bootstrapped pointwise 95% confidence intervals.

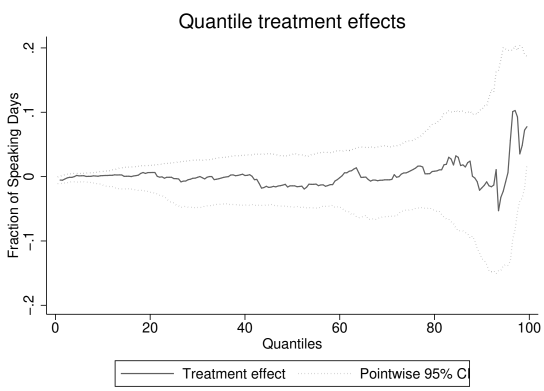
Figure A.22: Quantile Treatment on the Treated Effects for $s_{i,t}$: Treatment Definition in Share of Circulation



(a) QTTs for $s_{i,t} - x$ = 25th percentile



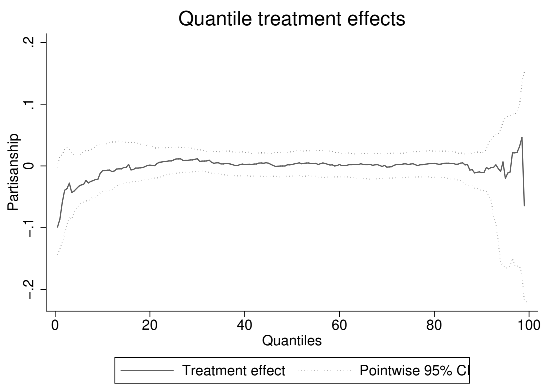
(b) QTTs for $s_{i,t} - x$ = 50th percentile



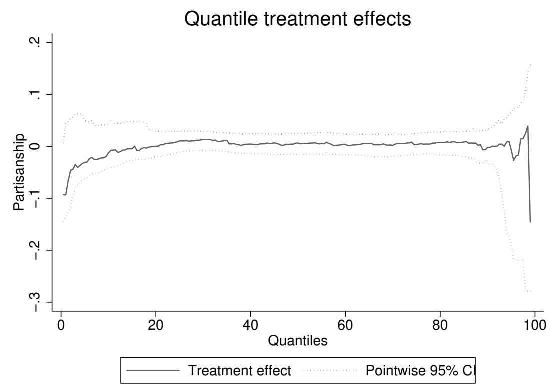
(c) QTTs for $s_{i,t} - x$ = 75th percentile

Notes: This figure demonstrates QTTs for $s_{i,t}$ where treatment is defined as the situation where $N_{i,t} = 0$ and $N_{i,t+1} > 0$ and the share of circulation in the galleries is at least x. The panels vary x from the 25th percentile of the gallery circulation share to the 75th percentile of the gallery circulation share. The dotted lines are bootstrapped pointwise 95% confidence intervals.

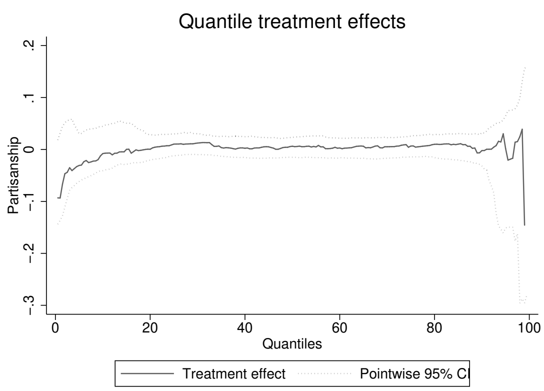
Figure A.23: Quantile Treatment on the Treated Effects for $l_{i,t}$: Treatment Definition in Share of Circulation



(a) QTTs for $l_{i,t} - x = 25$th percentile



(b) QTTs for $l_{i,t} - x = 50$th percentile



(c) QTTs for $l_{i,t} - x = 75$th percentile

Notes: This figure demonstrates QTTs for $l_{i,t}$ where treatment is defined as the situation where $N_{i,t} = 0$ and $N_{i,t+1} > 0$ and the share of circulation in the galleries is at least x. The panels vary x from the 25th percentile of the gallery circulation share to the 75th percentile of the gallery circulation share. The dotted lines are bootstrapped pointwise 95% confidence intervals.