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ABSTRACT

We study the causal effects of increasing the transparency of parliamentary speeches on polarization and other types of MP behavior. Our research design utilizes the 1989 introduction of TV broadcasting to those Finnish government's parliamentary question hours held on the first Thursday of every month. In contrast, the question hours held on other Thursdays of the month were not televised until 2007, allowing us to use difference-in-differences to estimate causal effects on political divides and MP behavior. We find a positive effect on government-opposition divides but no evidence that the TV broadcasting of question hours would affect left-right polarization, differences between individual parties, or within-party group differences. Regarding other types of MP responses, we observe an increase in attendance and a negative effect on the number of speeches but no effects on topics discussed, speech length, or interruptions. Our results suggest there is no trade-off between increased transparency and left-right polarization but that the presence of TV cameras can fuel other political divides and behavior. Our results regarding higher attendance suggest that transparency may increase politicians' effort.

JEL Classification: D72, L82, P00

Keywords: media, polarization, transparency, text analysis, difference-in-differences

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1 Introduction

Televised debates and parliamentary proceedings reach large numbers of viewers in many countries.[1] Increased transparency offered by TV broadcasting may have beneficial effects, such as increased accountability of politicians (Ferejohn, 1986; Ashworth, 2012). However, some observers have feared the consequences of TV broadcasting to be detrimental to democracy.[2] These concerns are often based on the idea that TV broadcasting may fuel political polarization, e.g., through increasing returns to using divisive language. Although the relationship between mass media and political polarization is a widely studied topic.[3], and the effects of TV on polarization have been studied among voters.[4], there is not much empirical work on the effects of media presence on how politicians express their views in the Parliament. There is some causal evidence suggesting media presence through televised debates changes the behavior of politicians, e.g., towards using more emotional language (Gennaro and Ash, 2022), shifting constituency-focus to the televised sessions (Yildirim, 2020), and lowering participation (Cloléry, 2023), as well as descriptive evidence on the association with filibustering (see Mixon et al. (2001, 2003)). There is, however, no causal evidence on whether TV cameras have a *polarizing* effect either between or within parties.

In this paper, we utilize a Finnish natural experiment to offer the first causal evidence on the effects of TV broadcasting on political divides in parliamentary speech. The main divides we are interested in include polarization on the left-right axis and government-opposition divides. The reason to choose the left-right divide is that many papers on polarization, such as Gentzkow et al. (2019), whose method we utilize, have focused on this dimension.

[1] For example, in the United States, 24 % of households, or 47 million adults, watch the C-SPAN network every week (TVNewser, 2022).

[2] Journalist Matthew Matejowsky argued that *"If compromise is the grease in the engine of a democracy, then television in the Senate chamber would be the rust"*, a quote from Frantzich and Sullivan (1996).

[3] Media has been found to contribute to increasing polarization, e.g., via partisan TV channels (see Dellavigna and Kaplan (2007) and Martin and Yurukoglu (2017)) and social media (Kubin and von Sikorski, 2021). For a review on media and polarization, see Prior (2013).

[4] See, e.g., Campante and Hojman (2013), Gerbner et al. (1980), and Melki and Pickering (2014), for studies on the effects of TV on voter polarization and Snyder and Strömberg (2010) for work on the effects of TV on accountability

The government-opposition divide, on the other hand, is also central to our context as the question hours we study are primarily centered on government-opposition tensions, as the format of the question hours is that MPs ask government ministers questions. Moreover, earlier research has found that both left-right polarization and government-opposition speech differences are relatively large in the Finnish Parliament (Simola et al., 2023). In addition to studying left-right and government-opposition divides in speech, we also study within-party group differences by various MP characteristics.[5]

These estimates on political divides measure whether speech differences between various groups, such as parties or within-party groups, are affected. Thus, they can also be thought of as group responses to increased transparency. Using speech data is better suited to analyze polarization compared to voting data as parliamentary speech may be less constrained by party discipline (Schwarz et al., 2017). It is also potentially more reliable than surveys since it shows what politicians actually do as opposed to what they state they would do. In addition to these group-level polarization estimates, we also estimate the causal effects of TV cameras on other individual-level (MP level) outcomes, such as attendance (absences), speech length, number of speeches, the number of interruptions MPs make to other MPs, and the topics discussed.

The causes of political polarization are important to study as high levels of polarization are associated with adverse effects, such as legislative gridlock (Jones, 2001) and democratic decline (Arbatli and Rosenberg, 2021). Therefore, it is crucial to understand which factors are contributing to the rising levels of polarization observed during the latest decades in many countries (Autor et al., 2020; Boxell et al., 2022; Gentzkow et al., 2019). Our paper aims to assess the role of one factor, increased transparency through televised parliamentary sittings, on polarization. Transparency is a relevant factor to study, because parliamentary sittings

[5]Within-party divides have previously been examined in Proksch and Slapin (2012) who suggest that if a party has members who target a specific segment of voters (e.g., women), there is a trade-off between getting more votes vs. appearing less cohesive. The Finnish question hours are not perhaps that party-centric as individuals do not necessarily need the party permission to speak. What we refer to as "within-party group differences" just means group differences in the parliament, controlling for party affiliation.

are televised in many countries and they attract many viewers. In Finland, government question hours can have as much as 400,000 viewers - a large number given a country of 5.5 million inhabitants. It has also been hypothesized in the earlier literature and speculated in the public debate that televised parliamentary debates may have contributed to increased polarization.[6]

To study the causal effect of TV broadcasting on political divides and MP behavior, we leverage the introduction of TV broadcasting in specific government question hours in Finland and use text data covering all speeches in the Finnish Parliament. The broadcasting of government question hours held during the first Thursdays every month began in 1989, while question hours during other Thursdays were not televised up until 2007. In our empirical approach, we compare question hours on first Thursdays to those on other Thursdays instead of comparing them to sittings on other weekdays because only Thursday sittings contain the question hour.

We find no evidence that the presence of TV cameras would have affected left-right polarization or within-party group differences, but we find a positive effect on government-opposition divides. Many Finnish politicians have attributed the changes in the climate of parliamentary discussion to the presence of TV cameras[7], and perhaps the effect we observe on government-opposition divides is consistent with those perceptions. It is also possible that speech changes in similar ways for both left-wing and right-wing politicians, e.g., if more emotional language is used in televised sittings like previous findings suggest (see Gennaro and Ash (2022)). We cannot measure the emotionality of speech directly using the Gennaro and Ash (2022) method because the method would require a validated list of emotional words in Finnish, which does not exist. We can, however, indirectly measure the heatedness of

[6]Frantzich and Sullivan (1996) offer a discussion about this theme. In a paper investigating partisanship in the U.S., Gentzkow et al. (2019) speculate that televised debates could have contributed to the high partisanship they observe. They do not attempt to answer the question causally. They, however, interpret their descriptive findings to be inconsistent with C-SPAN being the driving force behind increased levels of polarization. Regarding public perceptions on how the presence of TV cameras affects parliamentary discussions in Finland, see Online Appendix C.

[7]See Online Appendix C for captures of public perceptions regarding the effects of TV cameras

the discussion by estimating the effect on the number of times politicians interrupt other politicians' speeches. We find no effects on the number of interruptions, suggesting that discussions in the Parliament have not become more heated due to TV broadcasting.

The effects on speech differences may measure both strategic party responses as well as the responses of individual MPs to increased polarization. However, we can also study individual MP responses more directly. Regarding individual MP-level outcomes, we observe that TV cameras have a negative effect on the number of absences, meaning that attandance, and thus, perhaps the effort of MPs, increases. This highlights there are potential benefits from increased transparency. We observe no effects on how often different groups of MPs got to speak in the Parliament. We find a relatively small negative effect on the number of speeches MPs give during a year, no effects on speech length (measured in words) and no effect on the number of interruptions MPs make to each other. Overall our results suggest that while there does not seem to be a trade-off between transparency and left-right polarization in Finland, the transparency of question hours did increase some tensions (i.e., the government-opposition divide). As government coalitions can include very different parties – even the most leftist and the most economically right-wing party may be in the same government sometimes – it is not clear that government opposition divides would have the same type of partisan nature, and thus, we argue it is not *polarization* in the same sense as the left-right divide is.

Our paper contributes to the extensive literature on media and politics by providing the first causal evidence on the effects of TV cameras on left-right polarization, government-opposition divide, and within-party group differences in parliamentary speech. Previous research on the effect of televised sittings has focused on other outcomes: for example, TV cameras have been found to increase the use of emotional words in the U.S. Congress (Gennaro and Ash, 2022), and many other empirical studies have found that emotional language is more common in sittings that have high media coverage.[8] Regarding outcomes other than emotionality, Mixon et al. (2001) find that the presence of TV cameras is associated with an

[8]see Osnabrügge et al. (2021), Gross (2008), Brader et al. (2008), Webster and Albertson (2022)

increase in the length of parliamentary sittings, and Mixon et al. (2003) that the presence of TV is associated with an increase in the filibuster counts, and thus, lengthier discussions, in the U.S. Senate.

The paper proceeds as follows. Section 2 describes the institutional background. Section 3 describes the data. Section 4 explains how we estimate our outcome variable, political polarization, and how we estimate the effects using difference-in-differences. Section 5 presents our results and discusses robustness and validity. Section 6 concludes.

2 Institutional setting

2.1 Finnish political system

Finland is a multi-party system with an unicameral parliament which has 200 seats. Currently, there are nine parties represented in the parliament, of which eight have existed during the whole time period we use in this paper. Traditionally there have been two larger 'bourgeois' parties – the National Coalition and the Centre Party – and two left-leaning parties (Social Democrats and Left Alliance). In the latest decades, also the Greens and the Finns Party have gained larger seat shares in the Finnish Parliament. Other parties (Swedish People's Party, Christian Democrats) have small, smaller than 10 % seat shares. After elections, the largest party attempts to form a coalition government with other parties. Parties do not form blocks before elections but instead the government formation talks can lead to a wide variety of different coalitions depending on election results.

There are 12 polling districts in mainland Finland and 1 in Åland. There are two large districts (Uusimaa with 36 seats, Helsinki with 22 seats), seven medium-sized districts with 15-19 seats, and three small districts with 7-10 seats (Finnish Ministry of Justice, 2024). The election system is an open-list, proportional representation system, and the D'Hondt method is used. Both intra-party and inter-party race matters in the Finnish election system. Because of an open list election system, there are incentives for politicians to try to appeal to

their own voters instead of adhering to the party line. This is also why we might expect that increased transparency could affect divisiveness and, thus, polarization in Finland. Party discipline in voting is very high in Finland, which is also why studying speech divergence between groups is more informative than studying changes in parliamentary voting patterns.

Plenary sittings in the Finnish Parliament are usually organized 4 times a week on Tuesdays, Wednesdays, Thursdays, and Fridays, although sometimes also on other days. During the plenary sittings, MPs have an opportunity to express their views and ideology to their voters more flexibly than with parliamentary voting, which is constrained due to party discipline. Who gets to speak during plenary sittings is decided by the Speaker of the Parliament. Speaker slots requested in advance are allocated based on that list. Committee memberships, leadership positions, and term length affect who gets to speak first or more easily. The parliamentary group decides who gives group speeches.

2.2 The natural experiment

Plenary sittings on Thursdays include a *government question hour*, lasting 1 hour, during which MPs can ask government ministers questions. These question hours, unlike the name might suggest, are often not informational in nature, but more often a stage to publicly challenge the government on topical issues. Questions asked during question hours are required to last less than 1 minute.

While parts of government question hours have been occasionally shown on cable news since the 1950s, televising these question hours became more regular in the late 1980s. On 6 April 1989, the Finnish Public Broadcasting Company (YLE) began to broadcast the whole government question hour during the first Thursday plenary sitting every month. Other question hours were not televised up until late 2000s. In 2007, the broadcasting became even more regular as YLE started broadcasting all question hours.[9] These broadcast sittings reach

[9]We have data on which question hours have been televised (See Online Appendix D, Figure D2). This data suggests that the expansion from 1 televised question hour per month to more than 3 per month on average happened in 2007. Simultaneously when this happened, YLE also started online broadcasting of all

hundreds of thousands of individuals every week; see Figure 1 for average viewership figures in the last decades. The figures in this paper have lines that mark the period between years 1989 and 2007, i.e., the period during which only the first Thursdays were televised. While the number of question hours held on first Thursdays is quite stable at around less than 10 question hours a year, the number of question hours held on other Thursdays has fluctuated more (see Online Appendix D). shows how many treated and control question hours have been held in different years.

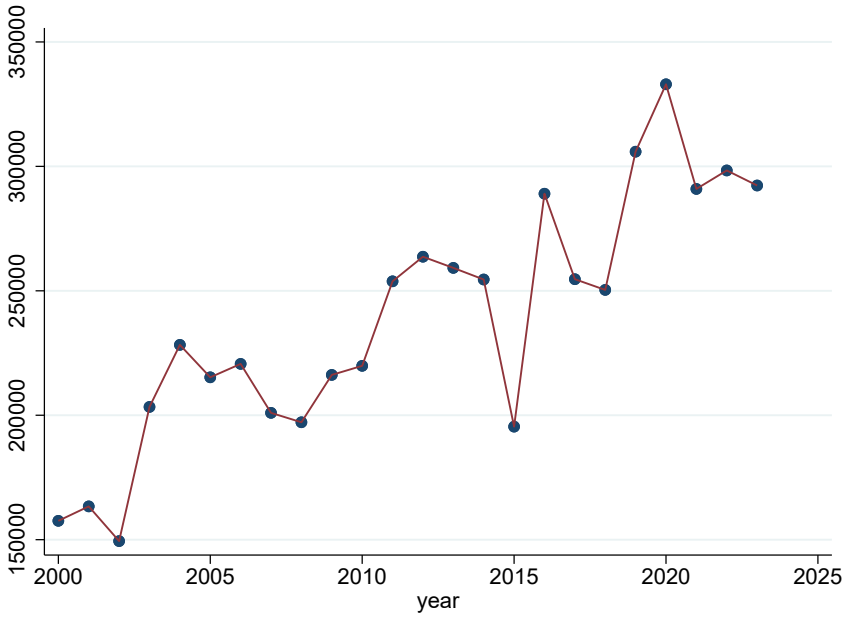


Figure 1: Average number of viewers of the televised question hours

Notes. The figure shows how many viewers the televised question hours have had on average during different years.

One possible limitation is the introduction of online broadcasting, which began in 2007. This does not confound are polarization estimates (as 1989-2007 is a clean comparison period when only the first question hour is televised), but for attendance estimates (which are "inverse DiD" estimates) we need to acknowledge that the 2007 reform may affect the estimates. However, both reforms increase transparency, and TV broadcasting reaches more viewers than online broadcasting, so we do not think this is a large problem regarding the

sessions.

interpretation of the attendance estimates.

3 Theoretical background

Increased transparency offered by the introduction of televised sittings is thought to increase accountability in politics because TV broadcasting makes voters able to see which issues the legislators discuss in the Parliament. This conclusion has been reached in the literature both by using principal-agent models where transparency lowers monitoring costs (Ashworth, 2012) and by using political agency models (Ferejohn, 1986). Increased accountability is a potentially favorable consequence of increased transparency as it would lead politicians to increase their effort to act on behalf of their voters (Ashworth, 2012), although it could also be argued that accountability itself may sometimes have distortionary consequences.[10] Increased accountability is the main advantage that theory in economics and political science would predict for the introduction of TV broadcasting. We are able to test the prediction regarding the effort of MPs by studying whether attendance increases when TV cameras are present.

Theoretical work on transparency also highlights possible negative impacts of increased transparency.[11] To assess whether televised sittings are overall harmful or beneficial to the functioning of a democracy, it is important to know how big different trade-offs are and if they exist empirically. One potentially harmful consequence of increased transparency is that it may increase partisanship and political polarization, as has been speculated by many commentators and authors (Frantzich and Sullivan, 1996).

The theoretical basis for whether we should expect there to be a trade-off between transparency and polarization is less clear, especially in a multi-party setting, and there

[10] The expectation of increased accountability through increased transparency may affect political selection, if different types of politicians have different costs for effort (Downs, 1957).

[11] For example, transparency in the decision-making process may not always be desirable, even if transparency of political outcomes would be desirable: if politicians' behavior in the decision-making process is transparent, politicians may want to stick to the status quo instead of utilizing possible private information that they may possess (see Prat (2005) and Stasavage (2007)).

are potential mechanisms that may work to different directions. A basic argument for why increased transparency of question hours could increase polarization is that the *returns* to using more polarized language are higher under transparency. It would be plausible that MPs with more extreme positions would have less to gain from giving extreme speeches if voters cannot see the speeches those MPs give. This is especially true if we consider that MPs may have reputational concerns as in Cloléry (2023), as in that case, taking extreme positions without voters hearing the speeches could have even negative returns. This idea was also suggested by Gentzkow et al. (2019), who speculated that televised debates may have increased the return to "carefully crafted language", and thus, increase partisanship. Since Finland has an open-list election system, there is an incentive for politicians to divert from the party line in order to signal to voters.

This question has also been addressed using formal theoretical models in a bipartisan setting. These previous theoretical results by Ash et al. (2017) suggest that transparency may increase the incentives to signal to voters by choosing divisive policy positions, which could then increase polarization. However, the Ash et al. (2017) model focuses on a setting that uses majority elections, i.e., only one politician is elected from each district. Moreover, when Ash et al. (2017) discuss implications for polarization, their analysis is based on a bipartisan system. It would, therefore, not be possible to generalize the method to a Finnish setting in a straightforward manner. Instead, the setup would need to be rethought completely, and thus, it is outside the scope of this paper. It is not clear if a similar theoretical result would hold if modeled in a multi-party setting. However, due to the open list system used in Finland, similar incentives to use language that attracts a politician's own voters and to "mobilize the core" are still present in the Finnish system.

If polarization increases divisiveness through increased returns to take divisive positions, it is unclear what kind of divisions would be most affected. However, as left-right polarization is the most examined form of polarization, and because left-right polarization has increased in Finland during the last decades (Simola et al., 2023), we consider the left-right divide to

be one of the most central political divides to study. Our study can therefore help assess whether the increasing trend in polarization in recent decades in Finland, observed by Simola et al. (2023), can be attributed to increased media coverage. Left-right polarization is also interesting as it has been argued that focusing on core voters may increase mobilization (Baker et al., 2014), and thus, transparency could be used to appeal to more extreme voters. The government-opposition divide is also central to study because the question hours are centered on MPs asking government ministers questions.

If transparency increased divisiveness, it could also lead to increases in other types of group differences, as political cleavages often go beyond ideological divides – large differences in political views may exist along dimensions other than party affiliation (McCoy and Somer, 2019; Nieminen et al., 2023). Moreover, party systems are often based on cleavages such as social class or urban/rural divides (Lipset Seymour Martin and Rokkan Stein, 1967), or gender (Sass and Kuhnle, 2023). Thus, we also want to examine whether other political divides such as within party divides (e.g., the urban-rural divide), are affected. Because polarization is linked to topics discussed, an effect on polarization would likely also be reflected in changes in topics MPs choose to talk about.

Using a similar argument as for polarization, if emotional rhetoric appeals to voters, returns to giving emotional speeches may also be higher under transparency (see Gennaro and Ash (2022)). Although we are not able to measure these directly, we can measure something related to this: interruptions MPs make during other politicians' speeches. These interruptions can indirectly measure the heatedness of the debate. Based on the previous empirical literature and public perceptions of televised sittings in Finland (see Online Appendix C), it could be expected that TV cameras could increase the number of interruptions MPs make to each other.

It has been hypothesized that introducing TV cameras could lead to lengthier parliamentary discussions (Frantzich and Sullivan, 1996). Lengthier discussions could mean either lengthier speeches or an increased number of speeches. In the Finnish context, question hour

speeches have a 1 minute time limit, and the question hour lasts only 1 hour. Thus, an increase in speech length would mean a decrease in the number of speeches – and an increase in the number of speeches would mean shorter speeches as the time slot is 1 hour. Because MPs generally use the whole 1 minute during question hours, we hypothesize that there likely are no effects on either the number of speeches or speech length due to this. If the number of speeches was affected, we could expect the effect to be negative, as there is no room for the number of speeches to increase if time is limited and everyone uses the whole 1 minute.

4 Data

We use a dataset on parliamentary speeches in the Finnish Parliament constructed by Simola et al. (2023) who constructed the dataset by extracting the speeches from the transcripts of plenary sittings using optical character recognition (OCR). After OCR, the data is linked to MP data from the publicly available MP register. Details on the construction and preprocessing of the data can be found in Simola et al. (2023). The dataset covers the years 1907-2018, except for when the parliament did not gather (1915, 1916). We only use years 1980-2014 because the policy change was introduced in 1988 and limiting the time period allows us to include only contemporary parties (or their predecessors) in the analysis.

We add dates to the data to identify whether a speech is given during a treated or a control sitting. We add dates from the same raw text data used by Simola et al. (2023). We first go through all raw text documents and extract dates for each page of transcribed speeches from those documents using regular expressions. Specifically, we extract day numbers and months for all speeches.[12] We only want to capture the dates that are located in the header of the page, not those that are included in speeches. We are able to capture the header dates because in the headers, the first letter of the weekday is capitalized, while weekdays are not capitalized in Finnish when they are inside the text. All dates where the first letter

[12]We do not capture years because we already know the session (parliamentary years) for the speeches. In order to be able to distinguish between the first Thursdays and other Thursdays in a month, we need a calendar year, which we are able to identify later by sorting the speeches by filename and month.

of the weekday is capitalized are captured. Then, we match dates to speeches based on the document number and page number.

When estimating polarization, we collapse speeches to two separate speaker-year level analysis datasets, one for treated and one for control sittings. Both datasets consist of phrase counts for different bigrams (two-word phrases) for each MP and each year. We use bigrams instead of unigrams to allow better comparability to those papers. In Finnish, compound words usually do not contain the same information as a bigram would. Bigrams are usually necessary to capture framing. For example, consider a bigram 'ystavyys.avunanto' where the first part 'ystavyys' means friendship, and 'avunanto' means help. The bigram, however, relates to the co-operation pact made between Finland and the Soviet Union during the Cold War. Another example could be 'vihrea.talous' (green economy). Moreover, in the alternative approach utilizing word embeddings, we only use unigrams, as that is the way in which that method usually seems to be applied.

5 Methods

5.1 Measuring group differences in parliamentary speech data

5.1.1 Main approach

Our main outcome variables are 1.) left-right polarization in parliamentary speech, 2.) government-opposition differences, and 3.) within-party group differences by various MPO characteristics (e.g., urban/rural). All of these three are defined using the recent *average partisanship* measure introduced by Gentzkow et al. (2019). This polarization measure is based on the probability of a neutral observer correctly deducing the group, e.g., left-wing or right-wing, to which an MP belongs to after hearing just one phrase. This measure of polarization is based on the LASSO-penalized multinomial regression method introduced in Gentzkow et al. (2019). Following Gentzkow et al. (2019) and the notation of Fiva et al.

(2023), we model the choice of phrases MPs make in the following way:

$$q_{jt}^{D_i(x_{it})} = \frac{e^{u_{ijt}}}{\sum e^{u_{ijt}}} \tag{1}$$

$$u_{ijt} = \alpha_{jt} + x'_{it}\gamma_{jt} + \phi_{jt} 1_{i \in \{D_t = 1\}} \tag{2}$$

In equation (1), $q_{jt}^{D_i(x_{it})}$ means the phrase count for phrase j in year t and for group D_{it}, where the indicator D_{it} is a dummy variable getting value 1 if an individual belongs to a particular block (e.g., left parties when we are interested in left-right polarization) and 0 otherwise. As we estimate the effect of TV broadcasting also on polarization by characteristics other than political block affiliation, D_{it} can also indicate another politician characteristic. Equation (1) includes the u_{ijt} terms which is the utility for speaker i from speaking a phrase j in time t. The experession for the utility is shown in equation (2), in which ϕ_{jt} is the coefficient for an indicator for belonging to the group of interest (e.g., left-wing when we measure partisanship on the left-right axis). Thus the coefficient ϕ_{jt} is the difference in how often phrase j is used in sitting t by the group by which we look at polarization, i.e., for whom $D_{it} = 1$. Following Gentzkow et al. (2019) and Fiva et al. (2023), polarization in time t at covariates x is then defined as

$$\boldsymbol{\pi}_t(x) = \frac{1}{2}\boldsymbol{q}^{D_i=1}(\boldsymbol{x})\boldsymbol{\rho}_t(x) + \frac{1}{2}\boldsymbol{q}^{D_i=0}(\boldsymbol{x})(1 - \boldsymbol{\rho}_t(\boldsymbol{x})) \tag{3}$$

where

$$\rho_{jt} = \frac{q_{jt}^{D_{it}=0}(x)}{q_{jt}^{D_{it}=0}(x) + q_{jt}^{D_{it}=1}(x)} \tag{4}$$

The covariates x include any covariates we may add, such as gender, region, or party. These controls include gender, region, and government/opposition status for main left-right polarization estimates. When estimating speech differences between government and opposition parties, we include controls for gender and region. Finally, when estimating what we call "within-party speech differences" (by gender, education, etc.) we include a party fixed effect as a control. The partisanship measure is the average of the expression in (3):

$$\bar{\pi_t} = \frac{1}{\mid L_t \cup R_t \mid} \sum i \in \mid L_t \cup R_t \mid \tag{5}$$

This average polarization measure tells the probability of a neutral observer correctly deducing the bivariate group (e.g., left/right, or gender) to which the MP belongs. The model described above is estimated with R using the *distrom* package developed in Gentzkow et al. (2019). Since it would be infeasible to estimate the multinomial logistic model directly due to computational reasons, the *distrom* package uses K-independent Poisson regressions to approximate the multinomial logit model. The method also adds a LASSO penalty to mitigate the small sample bias arising from the fact that many phrases are spoken very infrequently, making it plausible that some phrases are spoken more often by a specific group purely by chance. The estimator with the LASSO penalty is given by minimizing the following negative likelihood function:

$$\sum_j \{ \sum_t \sum_i [m_{it} exp(\alpha_{jt} + x_{it}\gamma_{jt} + \phi_{jt} 1_{i \in \{L_t\}} + \psi(|\alpha_{jt}| + ||\gamma_{jt}||_1) + \lambda_j |\phi_{jt}| \} \tag{6}$$

The levels of polarization are shown in Online Appendices B and E for 4-year-level and year-level figures, respectively. In those Appendix Figures, we show confidence intervals calculated using subsampling, similarly as in Gentzkow et al. (2019) and Simola et al. (2023). The subsampling procedure for the levels of polarization uses the distance of each yearly subsample estimate from the mean over all 100 yearly subsample estimates to approximate the variability of the yearly polarization estimate. We draw 100 subsamples without replacement using subsample size 40 % and re-estimate the polarization series for each subsample k to get $\hat{\pi}_{t,k}$. Following the notation of Simola et al. (2023), the formula for the 95 % nominal coverage CIs (for the polarization levels) is:

$$0.5 + \exp[\log(\widehat{\pi}_t - 0.5) - Q^k_{t(3)}/\sqrt{N}], 0.5 + \exp[\log(\widehat{\pi}_t - 0.5) - Q^k_{t(97)}/\sqrt{N}] \tag{7}$$

where $Q^k_{t(p)}$ is the p'th quantile of the distribution for $Q^k_t = \sqrt{N_k} * [\log(\widehat{\pi}_{t,k} - 0.5) - \log(\overline{\widehat{\pi}}_t - 0.5)]$. $\overline{\widehat{\pi}}_t$ is the average of $\widehat{\pi}_{t,k}$ over subsamples $k = 1, \ldots, 100$. Note that these CIs are for the polarization levels, not for the DiD estimates. The CIs for the DiD estimates are calculated using a different subsampling procedure that is described in the next subsection.

There are, of course, various text analysis methods that could be utilized to measure polarization. These include, for example, the one used by Peterson and Spirling (2018), who train an encoder to predict the party from speech features and then use the accuracy of the classifier as a measure of polarization. We choose to use the Gentzkow et al. (2019) method as it has been proven to be very robust in distinguishing the signal, i.e., real speech differences, from random noise (see Gentzkow et al. (2019) for discussion on this). Another alternative would be to calculate cosine distances between the embeddings of speeches given by different groups. We conduct this kind of analysis based on word embeddings (using SentenceTransformers) in the Robustness section, see subsection 6.4.2.

The Gentzkow et al. (2019) method uses structural assumptions required for the multinomial logit model. The method assumes that if a phrase is excluded from the choice set, the

relative frequencies of other phrases do not change (Gentzkow et al., 2019). This is plausible because the number of phrases is very large.

5.1.2 Estimating the effect on polarization and within-party group differences: manually calculated difference-in-difference estimates

We estimate the effects on polarization and within-party group differences manually. This means we first calculate yearly differences between the polarization series in treated and control sittings and the standard errors of those differences. After that, we calculate the difference between the difference in year t and the difference in the year preceding the start of treatment (1988). This gives us our estimate of interest.

In order to be able to conduct statistical inference, we use subsampling. We estimate the DiD estimate series 100 times for subsamples of the data and calculate confidence intervals based on the subsampled estimates. The subsample size in our main specifications is 40 % of the original sample. We test robustness to increasing subsampling size to 50 % or decreasing it to 30 % (see Online Appendix B). We maintain using subsampling for the DiD estimate also, as (Gentzkow et al., 2019) recommend it for the polarization estimates.

The subsampled CIs DiD estimates (95 % nominal coverage) are calculated using the following formula:

$$\widehat{\pi}_t - Q^k_{t(3)}/\sqrt{N}, \widehat{\pi}_t - Q^k_{t(97)}/\sqrt{N} \tag{8}$$

where now $\widehat{\pi}_t$ denotes the DiD estimate instead of the polarization estimate, and $Q^k_t = \sqrt{N_k} * [\widehat{\pi}_{t,k} - \overline{\widehat{\pi}}_t]$.

5.1.3 An alternative approach utilizing word embeddings

For each year, we categorized speeches by political orientation and treatment-control. This resulted in four groups: left and right-wing in both treated and control sittings. After discarding incomplete speeches, they were converted into numpy arrays and encoded using SentenceTransformers. We then computed the mean embeddings for each group yearly. Using these, we calculated cosine distances to measure semantic differences between left and right speeches in both treated and control sittings:

$$D_{\cos} = 1 - \cos(\theta) = 1 - \frac{\sum_{i=1}^{n} A_i B_i}{\sqrt{\sum_{i=1}^{n} (A_i)^2} \sqrt{\sum_{i=1}^{n} (B_i)^2}} \tag{9}$$

Finally, we manually calculate a difference-in-differences (DiD) estimate for each year, with the reference year being 1988. To construct confidence intervals for the estimates based on word embeddings, we apply nonparametric bootstrap. We show these results in Appendix A.

5.2 Estimating the effects on other outcomes

We also study the effects of TV broadcasting on some other outcomes measuring the behavior of the legislators. These include, e.g., the number and length of speeches. We estimate the effects on these outcomes using a difference-in-differences regression model where speeches on first Thursdays belong to the treatment group and speeches on other Thursdays belong to the control group. The basic DiD regression model used in the estimation in Table 1 is as follows:

$$Y_{its} = \alpha + \beta_1 treat_s + \beta_2 post_t + \delta(treat_s * post_t) + X_{it}^{'}\beta + \epsilon_{its} \tag{10}$$

where the subscript i indicates the speaker, t indicates the year, and s indicates the sitting. The variable $treat_s$ gets a value of 1 if the observation contains speech from the treated sittings (first Thursday every month) and zero if it contains speech from other Thursdays. The variable $post_t$ gets a value of 1 if the year is greater or equal to 1989. The event study specification used can be written as

$$Y_{its} = \alpha + \beta_1 treat_s + \beta_2 year_t + \sum_{k=1980}^{2014} \delta_k D_{ts}^k + X_{it}'\beta + \epsilon_{its} \tag{11}$$

where the dummy variables D_{ts}^k get value 1 if the observations contains speech from a treated sitting and $t = k$.

6 Results

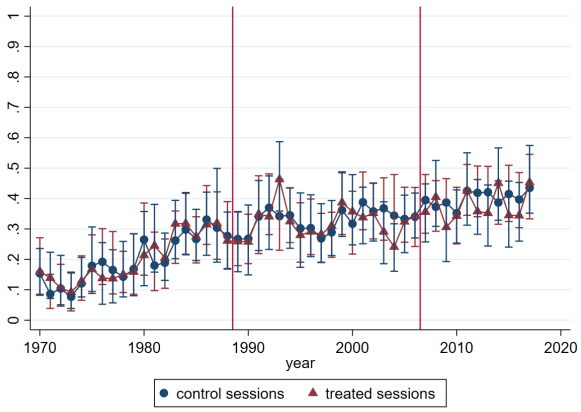
6.1 Who speaks when TV cameras are present?

Earlier research has found that the shares of speech by different demographic groups do not always correspond to the seat shares of the groups (Bäck et al., 2014). Although speaker slots in question hours should not be decided by parties.[13], there have been instances that suggest parties may have some control over who speaks. For example, Finland's largest newspaper, Helsingin Sanomat, reported in 2016 that the parliamentary group leader of the Social Democratic Party of Finland had a list of preferred question hour speakers that he had given to the Speaker of the Parliament.[14] If they have power over who gets to speak, parties could try to allocate the most visible speech slots to specific types of politicians, such as more experienced politicians.

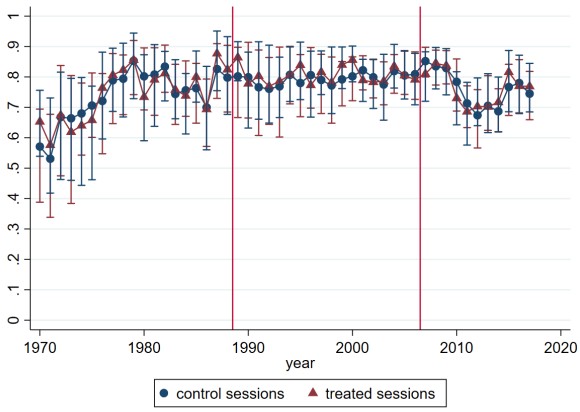
Figure 2 presents plots showing shares of question hour speeches in treated and control sittings for 6 different groups in the Parliament: women, university-educated MPs, young

[13] See the institutional setting section for more information on how speaker slots are allocated.
[14] See https://www.hs.fi/kotimaa/art-2000002927628.html

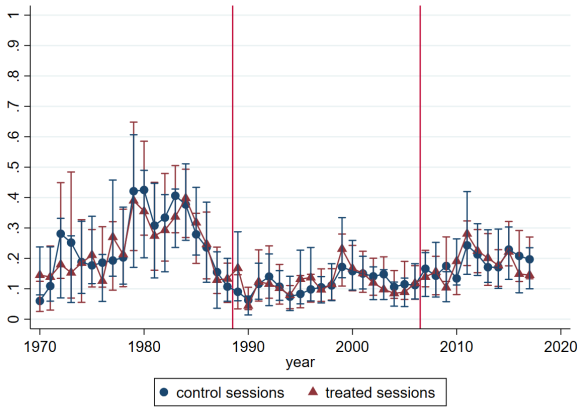
MPs, white-collar MPs, capital region MPs, and first-term MPs. The figure suggests that the introduction of TV broadcasting does not affect how often different groups of MPs get to speak in the Parliament.



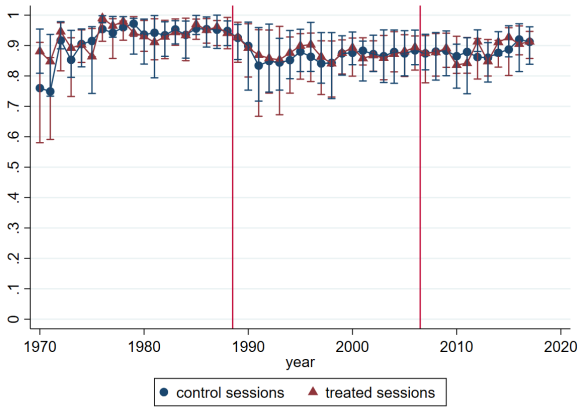
(a) Share women



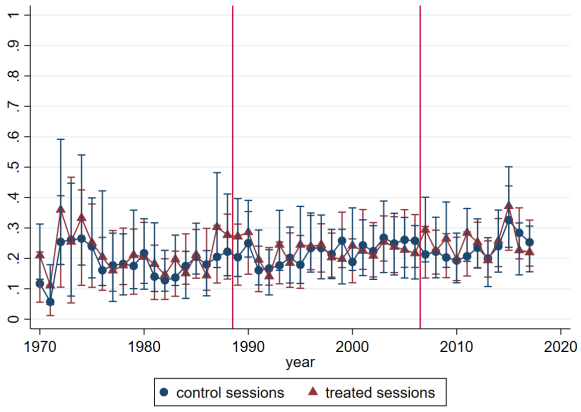
(b) Share university-educated



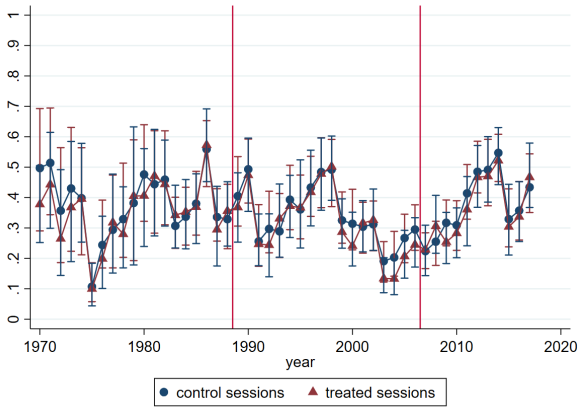
(c) Share under 40 years old



(d) Share in white-collar job



(e) Share from most urban region



(f) Share first-term MPs

Figure 2: MP characteristics and share of question hour speeches

Notes. The figure presents different demographic groups' shares of all speeches given during treated and control question hours.

6.2 Effects on political divides between and within parties

6.2.1 Left-right polarization

Figure 3 presents yearly treatment effects, i.e., difference-in-differences estimates on the effect of TV broadcasting on left-right polarization in parliamentary speech. The point estimates in the figure are calculated by comparing the estimated polarization for each year in treated sittings to that in control sittings and then comparing the difference in each year to the difference in the year preceding the beginning of treatment. The CIs for the DiD estimate is calculated using subsampling. When TV broadcasting is introduced in 1989, we observe no effect on polarization. The estimates remain zero for the whole treatment period and are quite stable. The expansion of TV broadcasting to cover all question hours in 2007 also does not seem to affect the difference in polarization between the sittings in our treatment and control groups. Estimates using an alternative approach (cosine distance between word embeddings) are shown in Appendix A. No effects are observed using that approach either.

The subsampled confidence intervals for the DD estimates in Figure 3 are relatively large. We test the robustness of the null effect interpretation to aggregating data to 4-year level, and the robustness to not including controls in the estimation of speech differences. Results regarding left-right differences in levels (with and without controls) are presented results presented in Figure B1), and manual DiD estimates in Figure B2. These analyses give us estimates that are also close to zero and stable but with somewhat narrower confidence intervals, which allow us to rule out moderate increases in polarization. Therefore, we are confident in concluding that there is no meaningful effect. Moreover, the confidence intervals become even narrower if in addition to aggregating our phrase count data to 4-year level, we also use a larger (50 %) subsample size as opposed to the 40 & subsample size used in main estimations. As it is hard to determine the right subsample size, see Online Appendix B for analyzes where larger (50 %) and smaller (30 %) subsample sizes are used. Appendix B also presents estimation results without controls.

The yearly levels of left-right polarization during treated question hours and control question hours are shown in Online Appendix E. The observed levels of polarization during question hours are high relative to the general level of left-right polarization observed in previous research. While the general levels of left-right polarization, according to Simola et al. (2023), are less than 0.505, we observe much higher levels of left-right polarization both for treated and control question hours. The levels of polarization during question hours are in the ballpark of 0.51 during most years (see Appendix E for yearly levels and Appendix B for levels using data aggregated to 4-year periods). When assessing the magnitudes of the point estimates shown in Figure 3 and in the Panel B of Figure B1, one needs to take into account that the baseline (0.51) observed in question hours - both treated and control ones - is much higher than the general level of polarization (0.505) in other sittings. The baseline of 0.51 is more comparable to the current levels of polarization in the U.S. Congress (see Gentzkow et al. (2019)).

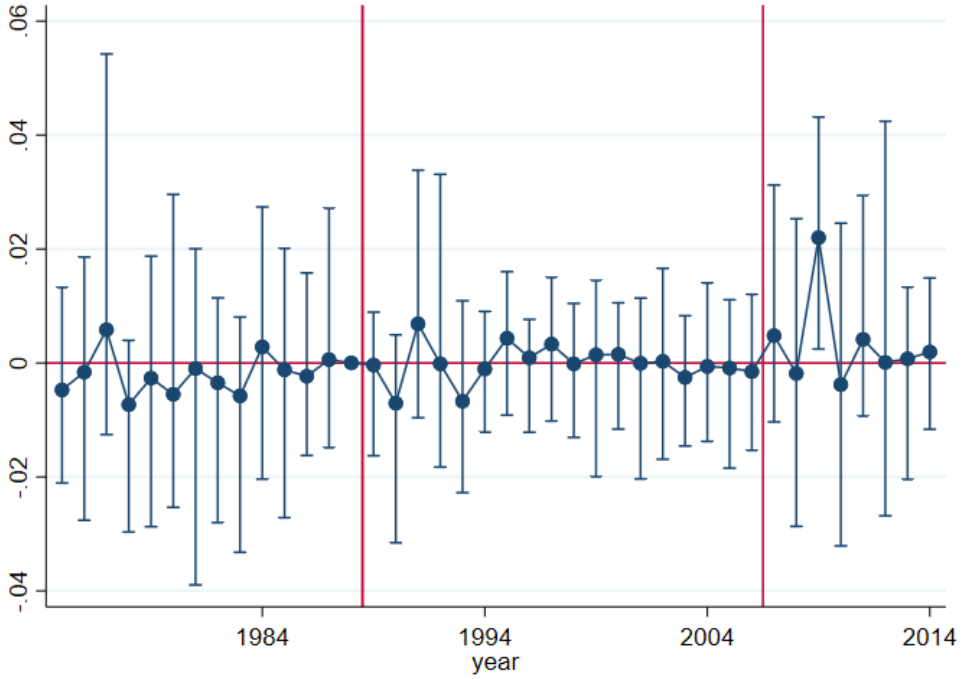


Figure 3: DiD estimates: left-right polarization, yearly level

Notes. The figure presents difference-in-differences estimates on the effect of TV broadcasting on the polarization between left-wing and right-wing parties. Red lines indicate the period during which only the treated sittings were televised. Confidence intervals are not necessarily exactly symmetric as we use subsampling to construct the CIs. CIs are as follows: $\widehat{\pi}_t - Q^k_{t(3)}/\sqrt{N}, \widehat{\pi}_t - Q^k_{t(97)}/\sqrt{N}$, where now $\widehat{\pi}_t$ denotes the DiD estimate instead of the polarization estimate, and $Q^k_t = \sqrt{N_k} * [\widehat{\pi}_{t,k} - \overline{\widehat{\pi}}_t]$.

6.2.2 The government-opposition divide

Figure 4 shows the manually calculated yearly treatment effects on the speech differences between government and opposition parties. Based on the Figure, the speech differences by government/opposition status began to increase after TV cameras were introduced in 1989. The effect then goes towards zero on average after the TV broadcasting is extended to all Thursday sittings, as would be expected. However, the alternative approach using word embeddings (shown in Appendix A) is not able to pick up the increase in government-opposition divides, which could be due to it being based on unigrams, while our main analyses focus on bigrams, which capture the context better.

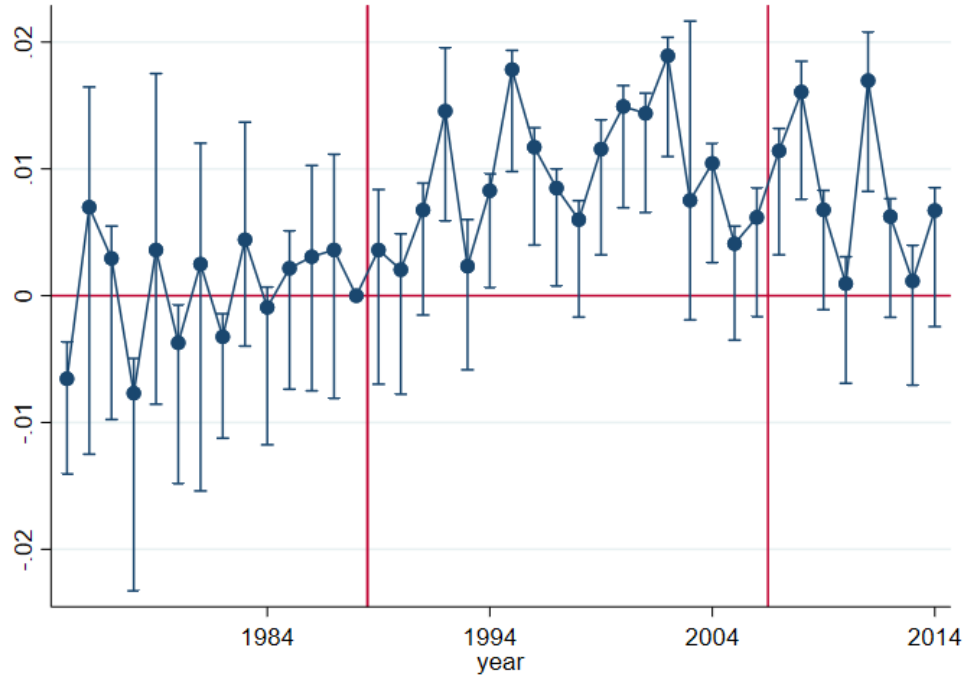


Figure 4: DiD estimates: government vs. opposition speech differences

Notes. The figure presents manually calculated difference-in-differences estimates (with CIs computed using subsampling) on the effect of TV broadcasting on the speech differences between government and opposition MPs. Red lines indicate the period during which only the treated sittings were televised. Confidence intervals are not necessarily exactly symmetric as we use subsampling to construct the CIs. CIs are as follows: $\widehat{\pi}_t - Q^k_{t(3)}/\sqrt{N}, \widehat{\pi}_t - Q^k_{t(97)}/\sqrt{N}$, where now $\widehat{\pi}_t$ denotes the DiD estimate instead of the polarization estimate, and $Q^k_t = \sqrt{N_k} * [\widehat{\pi}_{t,k} - \overline{\widehat{\pi}}_t]$.

6.2.3 Speech differences between individual parties

As Finland is a multi-party system, a simple left-right comparison may not be sufficient to analyze polarization. To mitigate this problem, we also analyze polarization between individual parties to try to capture any possible divergence between any specific parties. In this subsection, we examine the differences between the 4 "main" parties that have existed during the whole period we examine. These parties include the Social Democrats, the National Coalition, the Centre Party, and the Left Alliance. Similar to the analyses on left-right polarization, we include all relevant controls, such as gender and dialect, also here. A higher

subsample size (65 %) is used in these analyses, because the sample is smaller.

6.2.4 Within-party speech differences by gender, education, age, and urbanicity

As within-party speech differences, especially along gender and education, are sizable in the Finnish Parliament (Nieminen et al. (2023)), it is interesting to know if these differences increase further when TV cameras are present. Effects on intra-party group divides by gender, education, urbanicity, and age are presented in Figure A2. Similarly to the left-right polarization results, we do not observe any effects on speech differences inside parties either. Thus, media presence does not seem to affect the behavior of these demographic groups of MPs in a way that would divert their speech patterns from those of the opposing group.

6.3 MP-level estimates on other legislative behavior

Finding no effects on polarization does not preclude that media presence could affect parliamentary speech in other ways. Regarding these other outcomes, we estimate the effects of TV broadcasting on the number of speeches per sitting, average speech length in words, the number of interruptions MPs make to other MPs, and topics discussed.

6.3.1 Attendance

As we only have attendance data since 2004, we cannot utilize the 1989 introduction of TV cameras. Instead, we can utilize the 2007 expansion of televised question hours in an "inverse DiD" setting, where treatment and control groups are the other way around compared to our other analysis where we study the effects of the 1988 introduction of TV cameras. The effects on absences are presented in Table 1. The results indicated that TV cameras decreases absences in other Thursdays (treated in this inverse DiD setup) by approximately 0.7 absences per year per MP.

Table 1: Estimation Results: Attendance (inverse DiD)

	Dependent variable:			
	Number of absences from sittings			
	(1)	(2)	(3)	(4)
Post	-0.484***	-0.927***	-0.318***	-1.473***
	(0.070)	(0.170)	(0.067)	(0.166)
Treatment	2.258***	2.258***	2.036***	2.040***
	(0.114)	(0.114)	(0.115)	(0.115)
Post # Treatment	-0.748***	-0.748***	-0.719***	-0.685***
	(0.122)	(0.122)	(0.123)	(0.123)
Constant	1.453***	1.479***	2.079***	2.130***
	(0.069)	(0.120)	(0.066)	(0.132)
Sample	All MPs, 2004-2018	All MPs, 2004-2018	MPs with absences, 2004-2023	MPs with absences, 2004-2023
Outcome mean	1.88	1.88	2.65	2.65
Outcome sd	2.30	2.30	2.28	2.28
Observations	6,584	6,584	5,578	5,578
R-squared	0.15	0.22	0.11	0.17
Year FE	No	Yes	No	Yes

Notes. Standard errors clustered on MP level in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

6.3.2 Other outcomes: number of speeches, speech length, interruptions, and topics

The estimation results for the number of speeches, speech length, and interruptions are presented in Table 2, while the effects on topics discussed are presented in Online Appendix A.

We find a relatively large negative effect on the number of speeches MPs give per sitting (see columns (1) and (2) of Table 2). The size of this effect is -0.14 speeches per session (-15 % relative to the 1988 mean) and is robust to adding controls for gender, government-opposition status, first-term MP status, higher education, as well as party and district fixed effects.

The results show that there are no effects on the average length of speeches, on the number of interruptions per sitting (see Table 2), or on topics discussed (see Online Appendix A). However, we do find a relatively large negative effect on the number of speeches MPs give per sitting (see columns (1) and (2) of Table 2). The size of this effect is -0.14 speeches per session (-15 % relative to the 1988 mean) and is robust to adding controls for gender, government-opposition status, first-term MP status, higher education, as well as party and district fixed effects. The result suggesting a decrease in the number of speeches would be consistent with decreased participation as in Cloléry (2023), although many other factors (such as increase in disturbances that delay the question hour) could have also caused the decrease in the number of speeches.

Table 2: Number and length of speeches & the number of interruptions, DiD estimates

	(1)	(2)	(3)	(4)	(5)	(6)
	Nr speeches	Nr speeches	Speech length	Speech length	Interruptions	Interruptions
Post	-0.0660	0.0876	80.93***	77.89***	-1.833***	-1.186***
	(0.101)	(0.0816)	(5.892)	(5.421)	(0.416)	(0.382)
Treat	0.254***	0.213***	-5.988***	-6.610***	0.452*	0.423
	(0.0394)	(0.0597)	(1.610)	(1.969)	(0.263)	(0.440)
Post × Treat	-0.137***	-0.114*	-1.977	-0.949	0.384	0.383
	(0.0421)	(0.0675)	(2.488)	(2.774)	(0.301)	(0.467)
Female		-0.156***		-4.400**		-1.378***
		(0.0293)		(1.719)		(0.132)
Government party		0.153***		6.898***		-2.110***
		(0.0328)		(2.004)		(0.253)
First term MP		-0.287***		-2.934*		-1.227***
		(0.0270)		(1.679)		(0.167)
Education		0.209***		-2.118		0.0595
		(0.0337)		(2.068)		(0.252)
Constant	0.660***	0.647***	48.67***	48.23**	1.515***	18.92***
	(0.0882)	(0.118)	(3.077)	(20.44)	(0.375)	(1.479)
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Party FE	No	Yes	No	Yes	No	Yes
District FE	No	Yes	No	Yes	No	Yes
R-squared	0.0617	0.1855	0.2895	0.3051	0.0342	0.1947
Outcome mean in 1988	0.76	0.76	85.95	85.95	1.07	1.07
Observations	5064	4802	5064	4802	5064	4802

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

Notes. Table presents DiD estimates on the number of speeches per sitting (total number of speeches/nr sittings) and the average speech length in words across sittings. Standard errors clustered by speaker in parentheses.

6.4 Validity

Our identification strategy rests on several key assumptions. Because we use the difference-in-differences strategy to estimate the effects of TV broadcasting, the usual assumptions of the difference-in-differences design need to hold. These are that 1) there are no confounding reforms, 2) the trends of the groups would have moved in parallel if no treatment had been conducted, and 3) no spillover effects. Regarding the validity of our assumptions, pre-trends seem to be parallel in our main results, which makes it plausible to believe that the parallel trends assumption would also hold. There are no confounding reforms we are aware of as all format changes related to the question hours would affect both treated and control sittings in similar ways and should, therefore, not be threats to identification. The recent literature highlighting the problems of difference-in-difference research designs is generally targeted at using two-way fixed effects regressions when treatment is staggered (i.e., different units become treated at different times). In our case, treatment begins at one time, meaning that these concerns discussed in the literature do not apply in our case.

There is also no reason to suspect there would be any spillover effects, although one possibility for spillovers would arise if MPs are not aware whether a specific question hour is televised or not. This could then cause MPs to respond by changing their behavior both in treated and in control sittings. Polarization levels, however, do not indicate spillover effects as we do not observe any big changes in polarization levels during the treatment period either in the treatment group or in the control group.

The method has been validated using a permutation test both in a bipartisan system (see Gentzkow et al. (2019)) and in a multi-party setting (see Fiva et al. (2023) and Nieminen et al. (2023))). A limitation of our study is that the method has not been validated with manifesto data, i.e., it would be hard to know to which extent it captures specifically ideological speech as *p*artisan. Thus, a potential future avenue for research regarding the method would include validating it, e.g., using manifesto data.

7 Conclusion

Based on our results, media presence does not have an effect on left-right polarization in the Finnish Parliament, but increases speech differences between the government and opposition parties. Most of the other speech outcomes, such as topics, number of speeches, or the number of interruptions are not affected. Regarding the benefits of transparency, the presence of TV cameras seems to increase attendance.

Our interpretation of the results is that TV cameras do increase general divisiveness in the Parliament (through the increase in government opposition divides), but does not increase ideological or substantive differences between parties' rhetoric.

The reason for not finding any effects on left-right or within-party divides could stem, for example, from parties mitigating polarization (Carey and Shugart, 1995) or from the argument in Carroll and Nalepa (2020) that candidate-centered systems (like Finland) may actually give rise, counter-intuitively, to more cohesive parties, and thus, such systems could maybe be less prone to experience increasing polarization resulting from increased transparency. Fitting to the party line may be part of the selection mechanism (Fiva and Nedregård, 2022; Fiva et al., 2023). If that is the case, we would not necessarily expect legislators to polarize more when transparency is increased. One potential additional reason for not finding an effect could, of course, be the method. We, however, do not think this is a big concern because the method has been able in earlier papers studying polarization in Finland to detect both between-party and within-party divides well (see Simola et al. (2023) and Nieminen et al. (2023)). Moreover, the method is able to find an effect on government-opposition polarization, mitigating the concern that the DiD method combined with the Gentzkow et al. (2019) method and our data would be too imprecise. Taking into account the multi-party system, it also makes sense to compare speech patterns in individual parties. However, if we compare, for example, the very leftist Left Alliance to the most economically right-wing National Coalition Party, differences between these two parties do not seem to be affected either.

If these results are generalized, they would suggest that TV cameras in the parliament

are not the reason behind the large increases in polarization observed around the world in recent decades. As increases in polarization of parliamentary speech may also increase polarization among the electorate if voters' preferences are affected by politicians' behavior (see, e.g., Holcombe (2021)), are findings are reassuring if worried about increased societal polarization in the left-right dimension. Our results thus suggest that empirically there is no *transparency-polarization trade-off* in the left-right axis, but transparency does increase divides between the government and opposition parties. Thus, there is no harm in this dimension if we increase the transparency of parliamentary speeches. However, government-opposition divides seem to widen, which may be the reason why the public perception has been that the question hours have become more polarization.

However, when generalizing our results, one has to be cautious as the Finnish political system is less polarized overall compared to, e.g., the United States. Thus, there is a reason to believe that also the effect of media may be different, and maybe smaller, in Finland compared to many other countries. Our results probably can be generalized at least to other Nordic countries as the levels of polarization in parliamentary speech have been found to be similar in Norway (see Fiva et al. (2023)) compared to the magnitude of polarization in Finland (see Simola et al. (2023)).

There may also be some other speech dimensions we are not able to study that could be affected by increased transparency. It is plausible that instead of deepening the ideological divides between groups, TV broadcasting in Finland could have changed politicians' speeches in other ways. These could include, e.g., making the speeches more emotional or aggressive, as well as increasing hate speech, intentional misunderstandings or other unhealthy conversational practices. Also, nonverbal things like speech volume could be affected. These changes may be similar for different groups, which would make our polarization measure unable to detect any of these changes in speech. Thus, there is room for future research in order to understand more whether TV broadcasting affects parliamentary speech in ways that are not considered in this paper.

References

Arbatli, E. and D. Rosenberg (2021). United we stand, divided we rule: how political polarization erodes democracy. *Democratization 28*(2), 285–307.

Ash, E., M. Morelli, and R. Van Weelden (2017). Elections and divisiveness: Theory and evidence. *Journal of Politics 79*(4), 1268–1285.

Ashworth, S. (2012). Electoral accountability: Recent theoretical and empirical work. *Annual Review of Political Science 15*, 183–201.

Autor, D., D. Dorn, G. Hanson, and K. Majlesi (2020, 10). Importing political polarization? The electoral consequences of rising trade exposure. *American Economic Review 110*(10), 3139–3183.

Bäck, H., M. Debus, and J. Müller (2014). Who Takes the Parliamentary Floor? The Role of Gender in Speech-making in the Swedish Riksdag. *Political Research Quarterly 67*(3), 504–518.

Baker, S. R., N. Bloom, B. Canes-Wrone, S. J. Davis, and J. Rodden (2014). Why has US policy uncertainty risen since 1960? In *American Economic Review*, Volume 104, pp. 56–60. American Economic Association.

Boxell, L., M. Gentzkow, and J. Shapiro (2022). Cross-Country Trends in Affective Polarization. *Review of Economics and Statistics, forthcoming*.

Brader, T., N. A. Valentino, and E. Suhay (2008). What Triggers Public Opposition to Immigration? Anxiety, Group Cues, and Immigration Threat. *American Journal of Political Science 52*(4), 959–978.

Campante, F. R. and D. A. Hojman (2013). Media and polarization. Evidence from the introduction of broadcast TV in the United States. *Journal of Public Economics 100*, 79–92.

Carey, J. M. and M. S. Shugart (1995). Incentives to Cultivate a Personal Vote: a Rank Ordering of Electoral Formulas. *Electoral Studies 14*(4), 417–439.

Carroll, R. and M. Nalepa (2020, 1). The personal vote and party cohesion: Modeling the effects of electoral rules on intraparty politics. *Journal of Theoretical Politics 32*(1), 36–69.

Cloléry, H. (2023, 6). Legislators in the crossfire: Strategic non-voting and the effect of transparency. *European Journal of Political Economy 78*.

Dellavigna, S. and E. Kaplan (2007). The Fox News Effect: Media Bias and Voting. *Quarterly Journal of Economics 122*(3), 1187–1234.

Downs, A. (1957). *An Economic Theory of Democracy*. New York: Harper.

Ferejohn, J. (1986). Incumbent performance and electoral control. *Public Choice 50*, 5–25.

Finnish Ministry of Justice (2024). Vaalit.fi [https://vaalit.fi/eduskuntavaalien-vaalijarjestelman-kehittaminen], searched 27 June 2023.

Fiva, J. H. and O. Nedregård (2022). How Does Party Discipline Affect Legislative Behavior? Evidence from Within-Session Variation in Lame Duck Status. Technical report.

Fiva, J. H., O. Nedregård, and H. Øien (2023). Group Identities and Parliamentary Debates.

Frantzich, S. and J. Sullivan (1996). *The C-SPAN Revolution*. Norman, Oklaholma: University of Oklahoma Press.

Gennaro, G. and E. Ash (2022). Televised Debates and Emotionality in Politics: Evidence from C-SPAN.

Gentzkow, M., J. M. Shapiro, and M. Taddy (2019). Measuring Group Differences in High-Dimensional Choices: Method and Application to Congressional Speech. *Econometrica 87*(4), 1307–1340.

Gerbner, G., L. Gross, M. Morgan, and N. Signorielli (1980, 9). The "Mainstreaming" of America: Violence Profile No. 11. *Journal of Communication*, 10–29.

Gross, K. (2008). Framing Persuasive Appeals: Episodic and Thematic Framing, Emotional Response, and Policy Opinion. *Political Psychology 29*(2).

Holcombe, R. (2021). Elite Influence on General Political Preferences. *Journal of Government and Economics 3*.

Jones, D. R. (2001). Party Polarization and Legislative Gridlock. *Political Research Quarterly 54*(1), 125–141.

Kubin, E. and C. von Sikorski (2021). The role of (social) media in political polarization: a systematic review. *Annals of the International Communication Association 45*(3), 188–206.

Lipset Seymour Martin and Rokkan Stein (1967). *Party systems and voter alignments: cross-national perspectives*. Free Press.

Martin, G. J. and A. Yurukoglu (2017). Bias in cable news: Persuasion and polarization. *American Economic Review 107*(9), 2565–2599.

McCoy, J. and M. Somer (2019). Toward a Theory of Pernicious Polarization and How It Harms Democracies: Comparative Evidence and Possible Remedies. *Annals of the American Academy of Political and Social Science 681*(1), 234–271.

Melki, M. and A. Pickering (2014). Ideological polarization and the media. *Economics Letters 125*(1), 36–39.

Mixon, F. G., M. T. Gibson, and K. P. Upadhyaya (2003). Has legislative television changed legislator behavior?: C-SPAN2 and the frequency of Senate filibustering. *Public Choice 115*, 139–162.

Mixon, F. G., D. L. Hobson, and K. P. Upadhyaya (2001). Gavel-to-gavel congressional television coverage as political advertising: span on legislative sessions. *Economic Inquiry 39*(3), 351–364.

Nieminen, J., S. Simola, and J. Tukiainen (2023). Evolution of within-party group differences: Evidence from 110 years of parliamentary speech.

Osnabrügge, M., S. B. Hobolt, and T. Rodon (2021, 8). Playing to the Gallery: Emotive Rhetoric in Parliaments. *American Political Science Review 115*(3), 885–899.

Peterson, A. and A. Spirling (2018). Classification Accuracy as a Substantive Quantity of Interest: Measuring Polarization in Westminster Systems. *Political Analysis 26*(01), 120–128.

Prat, A. (2005). The Wrong Kind of Transparency. *American Economic Review 95*(3), 862–877.

Prior, M. (2013). Media and political polarization. *Annual Review of Political Science 16*, 101–127.

Proksch, S. O. and J. B. Slapin (2012, 7). Institutional Foundations of Legislative Speech. *American Journal of Political Science 56*(3), 520–537.

Sass, K. and S. Kuhnle (2023, 3). The Gender Cleavage: Updating Rokkanian Theory for the Twenty-First Century. *Social Politics: International Studies in Gender, State & Society 30*(1), 188–210.

Schwarz, D., D. Traber, and K. Benoit (2017). Estimating Intra-Party Preferences: Comparing Speeches to Votes. *Political Science Research and Methods 5*(2), 379–396.

Simola, S., J. Nieminen, and J. Tukiainen (2023). A century of partisanship in Finnish political speech.

Snyder, J. M. and D. Strömberg (2010). Press Coverage and Political Accountability. *Journal of Political Economy 118*(2).

Stasavage, D. (2007). Polarization and Publicity: Rethinking the Benefits of Deliberative Democracy. *Journal of Politics 69*(1), 59–72.

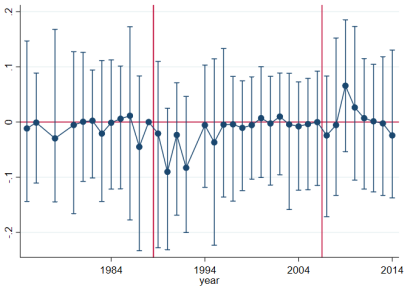
Webster, S. W. and B. Albertson (2022). Emotion and Politics: Noncognitive Psychological Biases in Public Opinion. *Annual Review of Political Science 25*, 401–418.

Yildirim, T. M. (2020, 2). Politics of Constituency Representation and Legislative Ambition under the Glare of Camera Lights. *Legislative Studies Quarterly 45*(1), 101–130.

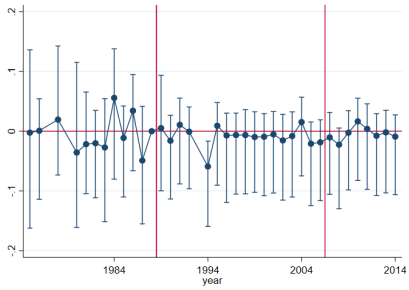
Online Appendix for "Effects of Increased Transparency on Political Divides and MP Behavior: Evidence from Televised Plenary Sittings in Finland"

Online Appendix A: Additional outcomes

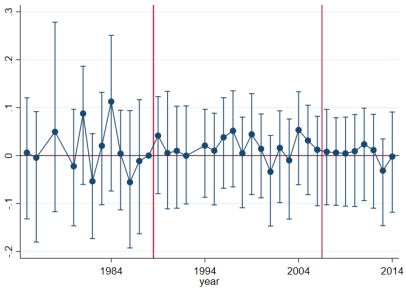
Additional dimensions of polarization



(a) Differences between National Coalition and Left Alliance



(b) Differences between Social Democrats and National Coalition

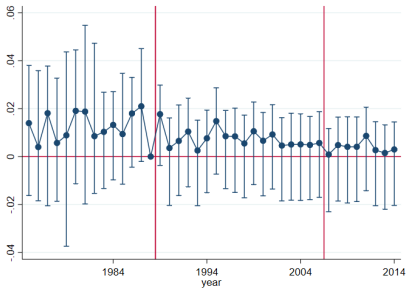


(c) Differences between Centre Party and National Coalition

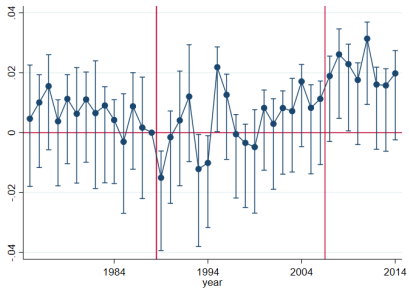
(d) Differences between Social Democrats and Centre Party

Figure A1: DiD estimates: effects on differences between individual parties

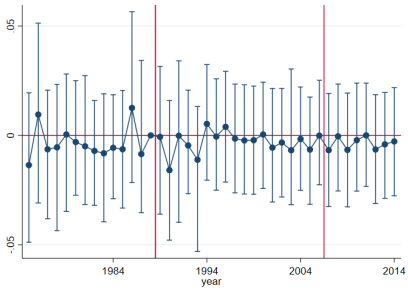
Notes. The figure presents manually calculated difference-in-differences estimates (with CIs computed using subsampling) on the effect of TV broadcasting on the differences between individual parties. Red lines indicate the period during which only the treated sittings were televised. Years where there are less than 10 MPs belonging to one of the groups are excluded. Confidence intervals are not necessarily exactly symmetric as we use subsampling to construct the CIs. CIs are as follows: $\widehat{\pi}_t - Q^k_{t(3)}/\sqrt{N}, \widehat{\pi}_t - Q^k_{t(97)}/\sqrt{N}$, where now $\widehat{\pi}_t$ denotes the DiD estimate instead of the polarization estimate, and $Q^k_t = \sqrt{N_k} * [\widehat{\pi}_{t,k} - \overline{\widehat{\pi}}_t]$.



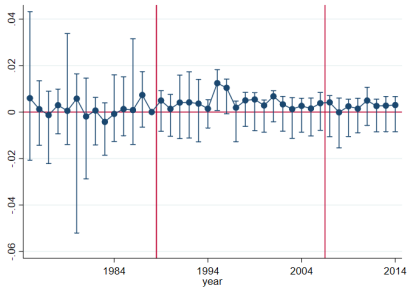
(a) Differences between female and male MPs



(b) Differences by university education status



(c) Differences between young and old



(d) Differences between urban and rural

Figure A2: DiD estimates: within-party group differences, yearly level

Notes. The figure presents manually calculated difference-in-differences estimates (with CIs computed using subsampling). In Panel (a), the outcome variable is within-party speech differences between men and women. In Panel (b), outcome is within-party speech differences between university-educated MPs and other MPs. In Panel (c), outcome is within-party speech differences between young and old. In Panel (d), outcome is within-party differences between urban and rural MPs. Red lines indicate the period during which only the treated sittings were televised. Years with less than 10 MPs belonging to one of the groups are excluded. Confidence intervals are not necessarily exactly symmetric as we use subsampling to construct the CIs. CIs are as follows: $\widehat{\pi}_t - Q^k_{t(3)}/\sqrt{N}, \widehat{\pi}_t - Q^k_{t(97)}/\sqrt{N}$, where now $\widehat{\pi}_t$ denotes the DiD estimate instead of the polarization estimate, and $Q^k_t = \sqrt{N_k} * [\widehat{\pi}_{t,k} - \overline{\widehat{\pi}}_t]$.

Effects on topics discussed

We estimate here the effects on topics discussed in the Parliament. Different bigrams are classified to 18 different topics based on keywords. To classify phrases to topics, we use the same topic classification that is used in Nieminen et al. (2023). The classification is constructed manually, i.e., not using any type of topic model, and is based on finding similar phrases using the core part of specific keywords. After finding all matching phrases from the text, the phrases found are manually screened for errors. We classify phrases to 18 topics:

agriculture, alcohol, children, crime, culture, defence, economy and finance, education, elderly, family, foreign policy, healthcare, labor, law and justice, regions, social policy, transportation, and women. After finding matches based on the keywords, we validated topic phrases by hand. The outcome we look at is the share of topic phrases out of all phrases spoken. Figure A1 presents yearly difference-in-differences/event study estimates.

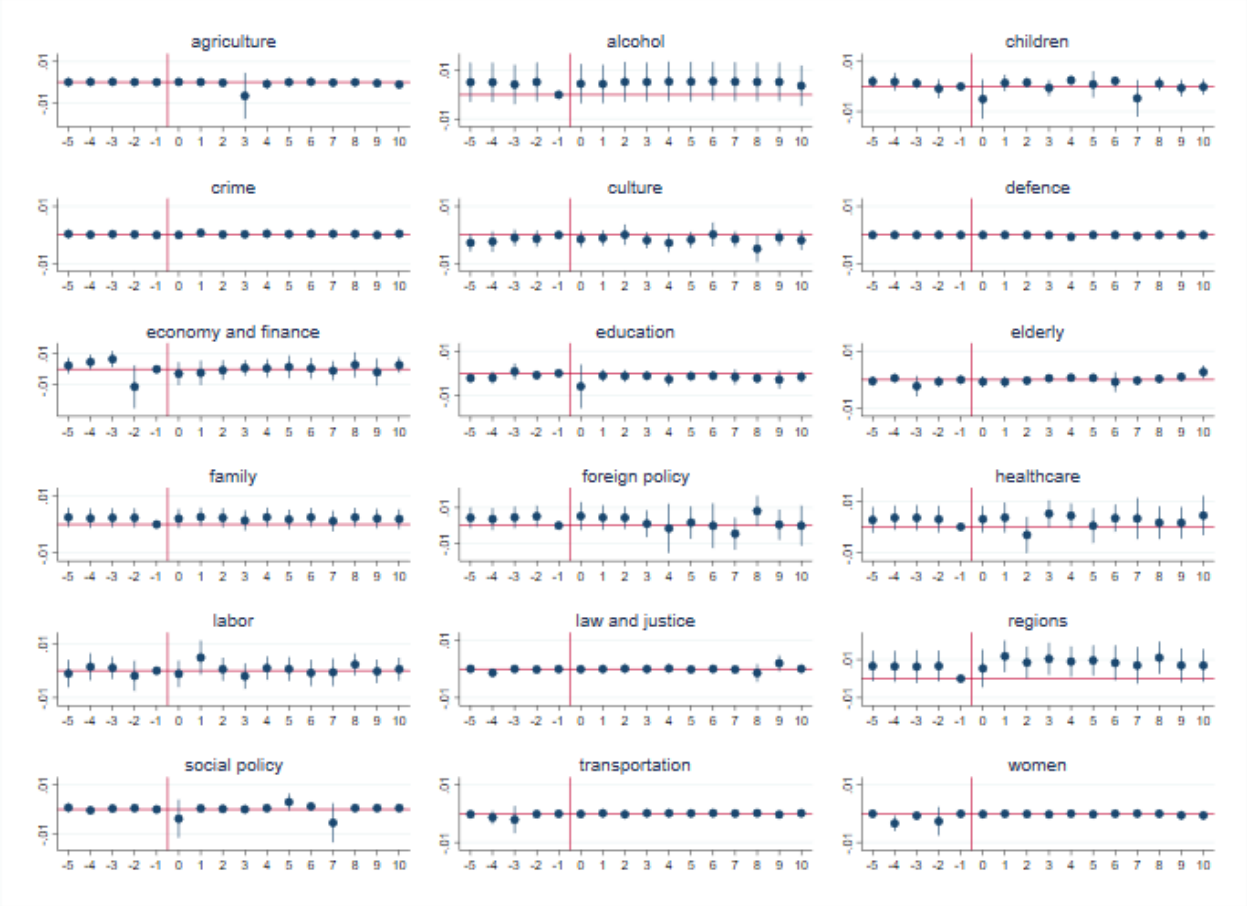
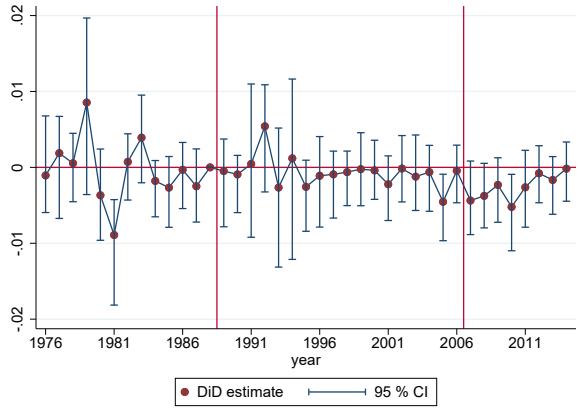


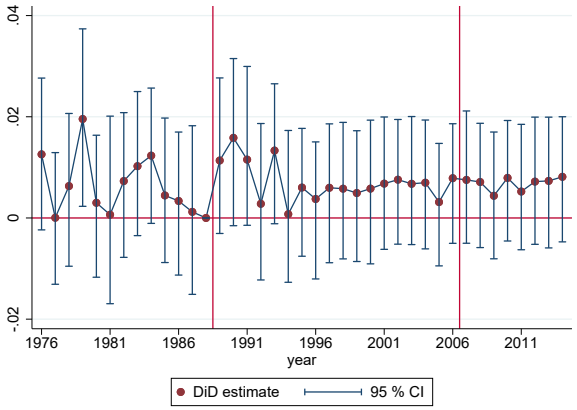
Figure A1: Share of topic phrases out of all question hour speech

Notes. The figure presents difference-in-differences estimates where the outcome variable is a share of different topics of all speech.

Using word embeddings instead of the Gentzkow et al. (2019) approach to measure polarization



(a) DiD, speech differences between left-wing and right-wing parties



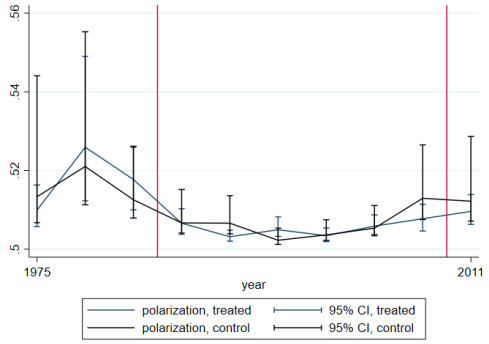
(b) DiD, speech differences between government and opposition parties

Figure A3: DiD using word embeddings and cosine distance between groups

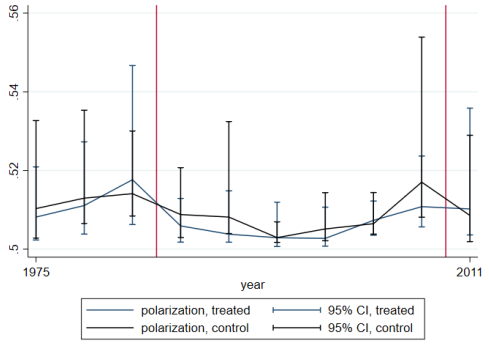
Notes. The figure presents difference-in-differences estimates on the effect of TV broadcasting on left-right polarization and government-opposition speech differences, measured using word embeddings and calculating the cosine distance of speeches between the groups.

Online Appendix B: Robustness of the null result on left/right polarization to aggregating years and changing subsample size

Aggregating phrase count data to 4-year level



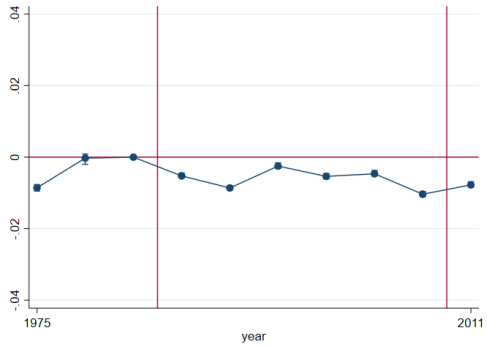
(a) No controls



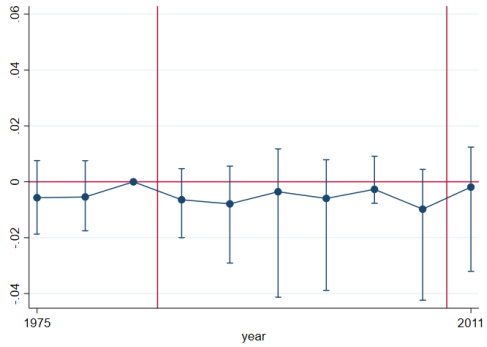
(b) Controls for gender, region, and government/opposition status

Figure B1: Levels of left-right polarization, 4 year level

Notes. The figure presents the levels of left-right polarization on first Thursdays sittings in a month (treated), other Thursday sittings (control).



(a) No controls

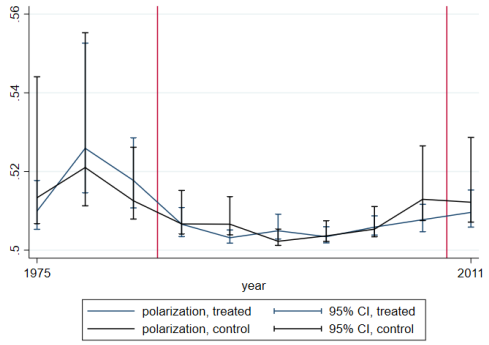


(b) Controls for gender, region, and government/opposition status

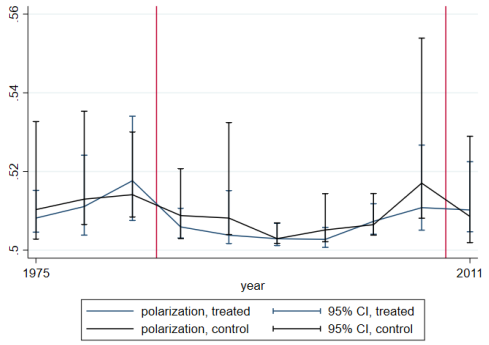
Figure B2: Effect on left-right polarization, 4-year level

Notes. The figure presents difference-in-differences estimates on the effect of TV broadcasting on the polarization between left-wing and right-wing parties. Red lines indicate the period during which only the treated sittings were televised. Confidence intervals are not necessarily exactly symmetric as we use subsampling to construct the CIs. CIs are as follows: $\widehat{\pi}_t - Q^k_{t(3)}/\sqrt{N}, \widehat{\pi}_t - Q^k_{t(97)}/\sqrt{N}$, where now $\widehat{\pi}_t$ denotes the DiD estimate instead of the polarization estimate, and $Q^k_t = \sqrt{N_k} * [\widehat{\pi}_{t,k} - \overline{\widehat{\pi}}_t]$.

Increasing subsample size from 40 % to 50 %, data on 4-year level



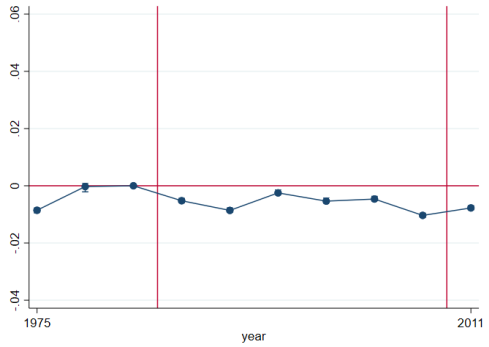
(a) No controls



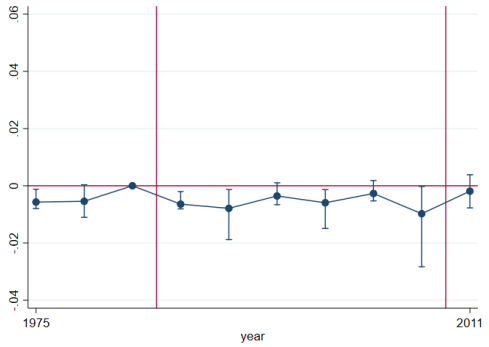
(b) Controls for gender, region, and government/opposition status

Figure B3: Levels of left-right polarization, 4 year level

Notes. The figure presents the levels of left-right polarization in first Thursdays sittings in a month (treated), other Thursday sittings (control).



(a) No controls

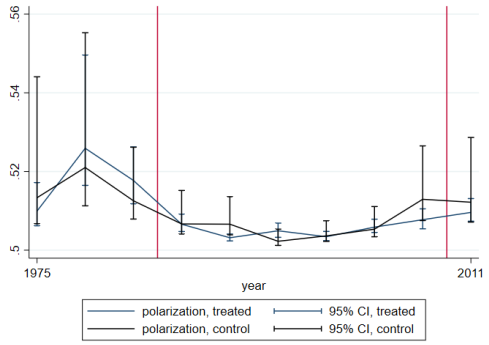


(b) Controls for gender, region, and government/opposition status

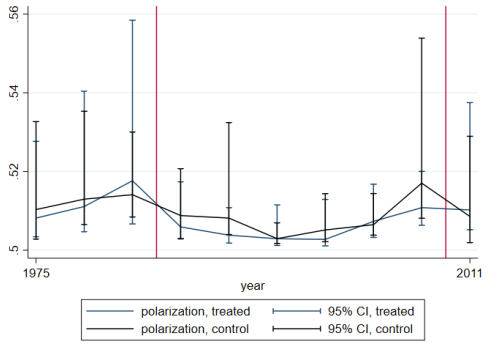
Figure B4: Effect on left-right polarization, 4-year level

Notes. The figure presents difference-in-differences estimates on the effect of TV broadcasting on the polarization between left-wing and right-wing parties. Red lines indicate the period during which only the treated sittings were televised. Confidence intervals are not necessarily exactly symmetric as we use subsampling to construct the CIs. CIs are as follows: $\widehat{\pi}_t - Q^k_{t(3)}/\sqrt{N}, \widehat{\pi}_t - Q^k_{t(97)}/\sqrt{N}$, where now $\widehat{\pi}_t$ denotes the DiD estimate instead of the polarization estimate, and $Q^k_t = \sqrt{N_k} * [\widehat{\pi}_{t,k} - \overline{\widehat{\pi}}_t]$.

Decreasing subsample size to 30 %, data on 4-year level



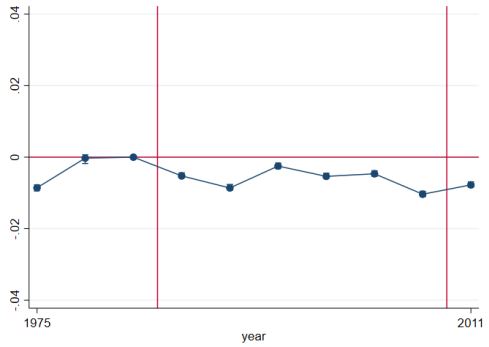
(a) No controls



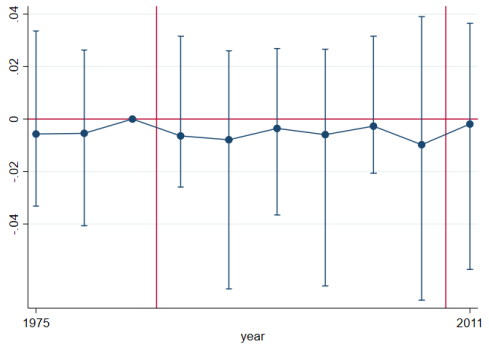
(b) Controls for gender, region, and government/opposition status

Figure B5: Levels of left-right polarization, 4 year level

Notes. The figure presents the levels of left-right polarization in first Thursdays sittings in a month (treated), other Thursday sittings (control).



(a) No controls



(b) Controls for gender, region, and government/opposition status

Figure B6: Effect on left-right polarization, 4-year level

Notes. The figure presents difference-in-differences estimates on the effect of TV broadcasting on the polarization between left-wing and right-wing parties. Red lines indicate the period during which only the treated sittings were televised. Confidence intervals are not necessarily exactly symmetric as we use subsampling to construct the CIs. CIs are as follows: $\widehat{\pi}_t - Q^k_{t(3)}/\sqrt{N}, \widehat{\pi}_t - Q^k_{t(97)}/\sqrt{N}$, where now $\widehat{\pi}_t$ denotes the DiD estimate instead of the polarization estimate, and $Q^k_t = \sqrt{N_k} * [\widehat{\pi}_{t,k} - \overline{\widehat{\pi}}_t]$.

Online Appendix C: Public perceptions regarding the effect of televised parliamentary sittings in Finland

Figure B1: "When TV cameras are present, the climate in the Parliament changes: schadenfreude and misundertandings are common" (translation of the title)

Notes. The figure presents a screen capture of a newspaper article (Lännen Media, 22 September 2018) claiming that the presence of TV cameras change discussion climate in the Finnish Parliament.

"Ilmapiirissä on suuri ero sen mukaan, televisioidaanko istunto. Televisioiduissa istunnoissa, kuten kyselytunnilla, puheenvuoroja saavat pitkälti yhdet ja samat edustajat, jotka käyttävät puheajan enemmän turhaan räksyttämiseen, jankuttamiseen ja otsikoiden hakemiseen kuin asian puhumiseen."

Jani Mäkelä (ps.)

Figure B2: "There is a big difference in climate based on whether the sitting is televised. During televised sittings, such as question hours, only specific MPs get to speak, and they use their time on useless barking and hunting headlines rather than speaking about the issues" (translation)

Notes. The figure presents a screen capture of a quote from MP Jani Mäkelä in a newspaper article (Lännen Media, 22 September 2018)

VANHANEN palasi tiistaina töihin. Hän on seurannut eduskunnan puhekulttuurista käytyä keskustelua myös sairauslomalla ollessaan. Nyt hän sanoo kiinnittäneensä paluuviikollaan edustajien käytökseen erityistä huomiota.

”Tarkkailin oikein, minkälaista käytös oli. Kyllä kyselytunnilla mökä nousi aika kovaksi”, Vanhanen sanoo.

Puhemies Matti Vanhanen KUVA: MARTTI KAINULAINEN / LEHTIKUVA

Hän muistuttaa, että valtaosa eduskunnan keskusteluista on edelleen rauhallisia ja asiallisia. Meluamista vaikuttaa esiintyvän silloin, kun aiheet herättävät tunteita ja tavallista suurempaa mielenkiintoa.

Erityisesti kyselytunneilla, tv-kameroiden pyöriessä, meteli saattaa edustajien puheiden aikana nousta kovaksi.

”Kyllä televisioinnilla on tähän vaikutus, mutta se on myös tärkeä osa keskustelun avoimuutta. Silloin kun möly kasvaa liian suureksi, täytyy keskustelu keskeyttää hetkeksi”, Vanhanen sanoo.

Figure B3: Matti Vanhanen (when acting as a Speaker of the Parliament) argues that TV broadcasting affects speech during the question hour.

Notes. The figure presents a screen capture from a newspaper article (Helsingin Sanomat, 27 October 2019). Link to article: https://www.hs.fi/politiikka/art-2000006287423.html

Ensimmäinen varapuhemies Tuula Haatainen on johtanut alkusyksyn täysistuntoja kahdestaan vuorovedolla varapuhemies Juho Eerolan kanssa. Puhemies Matti Vanhanen palasi sairauslomalta töihin tiistaina. KUVA: HEIDI PIIROINEN / HS

Kurinpalautus

Tuula Haatainen on saanut tarpeekseen mölinästä. Puhe eduskunnassa on jo perustuslain vastaista.

Marko Junkkari HS
27.10.2019 2:00 | Päivitetty 27.10.2019 7:58

EDUSKUNNAN täysistunnoissa on syksyllä ollut levotonta. Välihuutoja, päälle puhumista, puhujille naureskelua ja ihan vain yleistä hälinää. Usein edustajat rupattelevat keskenään, vaikka istunto on käynnissä.

Eikä hyvää kuvaa Suomen eduskunnasta anna sekään, että poliisilla on parhaillaan esitutkinnassa kolmen kansanedustajan sanomiset.

”Tässä eduskunnassa puhetyyli on muuttunut. Puheet ovat koventuneet ja äänenpainot voimistuneet”, **Tuula Haatainen** (sd) sanoo.

Haatainen on eduskunnan ensimmäinen varapuhemies, ja hän onkin saanut alkusyksyn aikana johtaa puhetta oikein urakalla, sillä puhemies **Matti Vanhanen** (kesk) on ollut sairauslomalla. Haatainen ja toinen varapuhemies **Juho Eerola** (ps) ovat vetäneet viime viikot täysistuntoja vuorovedolla kahden tunnin pätkissä. Tilanne kuitenkin helpottui tämän viikon tiistaina, kun Matti Vanhanen palasi taas eduskuntatyöhön.

Figure B4: Tuula Haatainen (then acting as a Vice Speaker) argues that the speech climate in the parliament is so bad that it is unconstitutional.

Notes. The figure presents a screen capture from a newspaper article (Helsingin Sanomat, 27 October 2019). Link to article: https://www.hs.fi/politiikka/art-2000006287423.html

Haatainen kertoo, että puhemiehistö on saanut kansalaisilta paljon palautetta kansanedustajien huonosta käytöksestä.

”Pahinta mölyäminen on aina silloin, kun tv-kamerat ovat päällä”, Haatainen sanoo. Hän harmittelee, että kansalaiset saavat television välityksellä eduskuntatyöstä ja politiikasta huonon kuvan.

Haatainen arvelee, että puhekulttuurin muutoksen taustalla on sosiaalinen media. Somekeskusteluiden ärhäkkyys ja toimintatavat ovat levinneet myös täysistuntoon.

Figure B5: "The worst roaring goes on when TV cameras are on" (translation of the quote in the screen capture)

Notes. The figure presents a screen capture from a newspaper article (Helsingin Sanomat, 27 October 2019). Link to article: https://www.hs.fi/politiikka/art-2000006287423.html

Online Appendix D: Treated and control question hours

Number of treated and control sittings

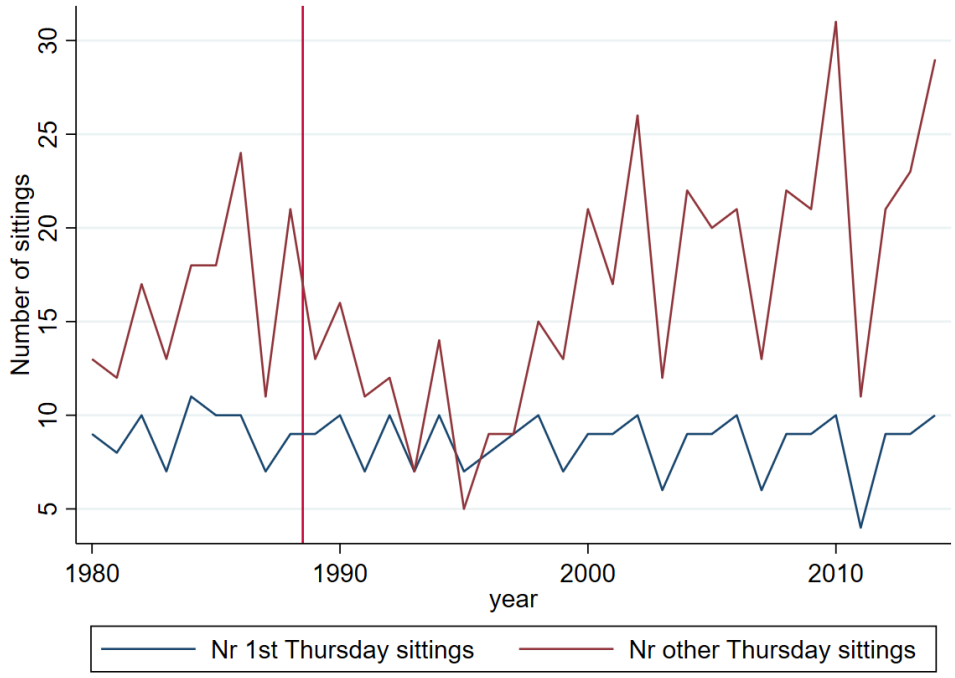


Figure D1: Number of question hours held on first Thursdays and other Thurdays

Notes. The figure presents the numbers of treated and control question hours. The treatment begins in 1988 and the clean treatment period is 1988-2007.

The expansion of TV broadcasting in 2007 to all question hours

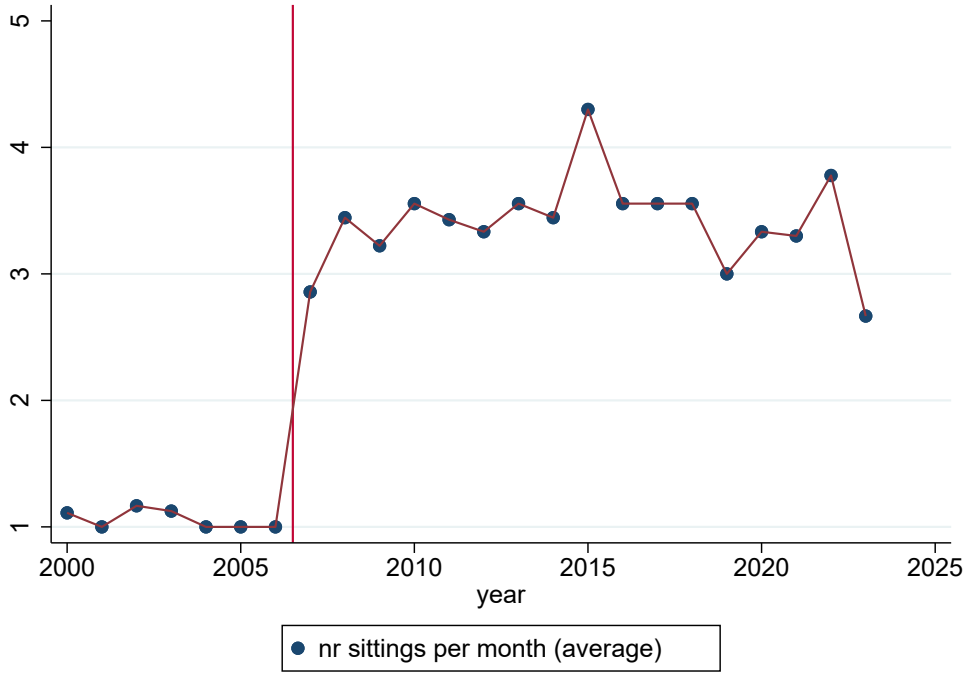


Figure D2: The expansion of TV broadcasting in 2007 to all question hours

Notes. The figure presents the numbers of treated and control question hours. The treatment begins in 1988 and the clean treatment period is 1988-2007.

Online Appendix E: Yearly levels of left-right polarization (the main specification)

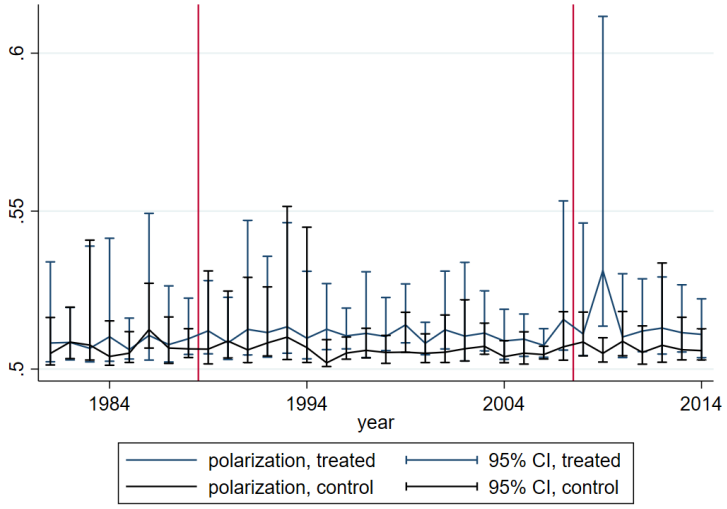


Figure E1: Levels left-right polarization, yearly level

Notes. The figure presents the yearly levels of polarization between left-wing and right-wing parties. Red lines indicate the period during which only the treated sittings were televised.

Online Appendix G: Left-right party classification

In the left-wing party classification, constructed in Simola et al. (2023), the following parties are classified as left-wing: Demokraattinen vaihtoehto (Deva), Eduskuntaryhmä Puhjo, Ruotsalainen vasemmisto (RV/RVP), Sosialidemokraattinen eduskuntaryhmä (SDP), Sosialidemokraattisen opposition eduskuntaryhmä, Sosialistinen eduskuntaryhmä ”kuutoset”, Suomen kansan demokraattisen liiton eduskuntaryhmä (SKDL), Suomen sosialistinen työväenpuolue (SSTP), Työväen ja pienviljelijäin puolue, Työväen ja pienviljelijäin sosialidemokraattinen liitto (TPSL), Työväen ja pienviljelijäin vaaliliitto (STPV), Vasemmistoliiton eduskuntaryhmä, Vasemmistoryhmä and Vasenryhmä eduskuntaryhma (vr).

Online Appendix F: Additional figures

Comparing the effect on government-opposition polarization to election years

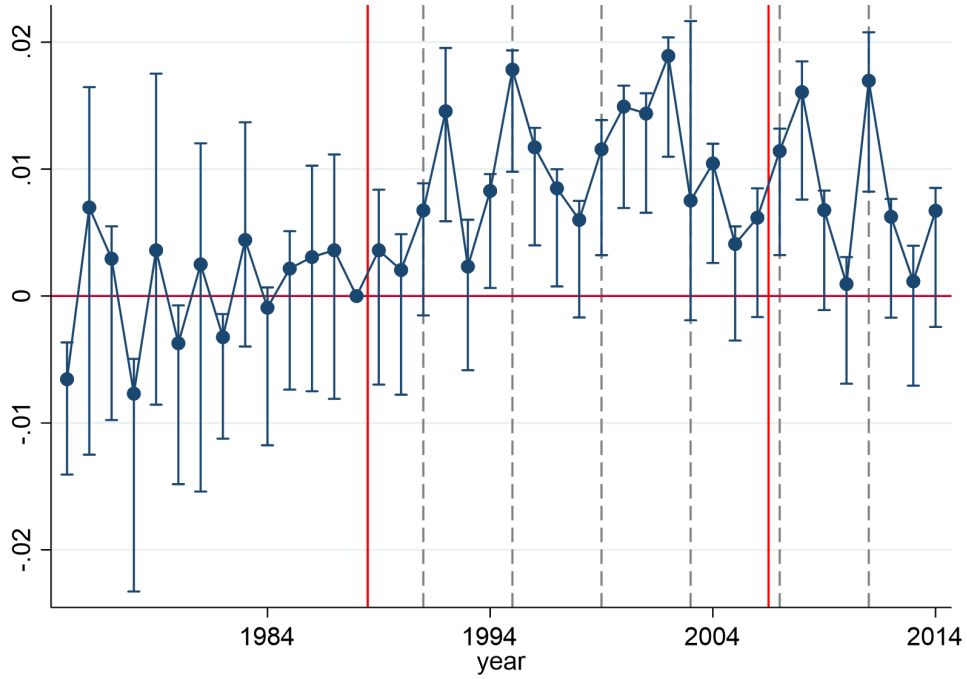


Figure E1: DiD estimates: government vs. opposition speech differences (compared to election years)

Notes. The figure presents manually calculated difference-in-differences estimates (with CIs computed using subsampling) on the effect of TV broadcasting on the speech differences between government and opposition MPs. Red lines indicate the period during which only the treated sittings were televised. Confidence intervals are not necessarily exactly symmetric as we use subsampling to construct the CIs. CIs are as follows: $\widehat{\pi}_t - Q^k_{t(3)}/\sqrt{N}, \widehat{\pi}_t - Q^k_{t(97)}/\sqrt{N}$, where now $\widehat{\pi}_t$ denotes the DiD estimate instead of the polarization estimate, and $Q^k_t = \sqrt{N_k} * [\widehat{\pi}_{t,k} - \overline{\widehat{\pi}}_t]$.

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