

Political Statement Cycle

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Abstract

While re-election motives are essential to control politicians, they may result in words without actions to win elections. Using minutes of assembly meetings, we find that politicians' statements follow election cycles; during the election years, politicians temporarily change their statements (e.g. stated amount of money) in the budget-making process and their stated topics become less consistent with the realized budget. The effects are larger for those who won a narrower election. These changes are associated with a higher probability of winning in the next election. The results imply that politicians lure voters with attractive statements without changing their actual policies.

Keyword: Re-election Motives, Machine Learning, Minutes of Assembly, Political Budget Cycle

JEL Codes: D72, H1

1 Introduction

In democratic countries, people delegate the task of creating and implementing public policy to elected politicians. However, this delegation involves a cost, because voters may not be able to control the political behavior of their elected politicians adequately. For example, even in developed countries, there are many cases where elected politicians change the policies which they declared at the time of the elections, change their partisanship, and even commit acts of corruption.

There is a common view that re-election motives can be a remedy for such problems. In certain types of political economy models, elected politicians will be accountable because voters will elect other politicians in the next election, if the elected politicians do not deliver, or renege on

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their commitments. However, these re-election motives might distort politicians' behavior in undesirable ways such that politicians increase public expenditure for myopic voters. As an extreme case, these re-election motives might induce politicians to use *words without actions*. For example, politicians might propose a bigger public project to attract voters, but may never implement it after being re-elected. If their statements were irresponsible in this way, it would cast doubts on the value of democracy. Such distortion in the policy-making process may not be easily detectable with the data of realized policies, e.g., public expenditure data, and thus we need to investigate it with a different type of data.

In this study, we use the minutes of assembly meetings and deploy text analysis methods such as machine learning. By quantifying their statements in assembly meetings with several measures such as the time horizon mentioned, the budget size proposed, and topics addressed, we look at the electoral cycle of their statements and its heterogeneity based on how close they are to lose in the previous election. This is because re-election motives are the strongest during the election years among politicians who were in the margins during the previous election.

In investigating how re-election motives shape politicians' incentives, text data and machine learning techniques have several advantages over other conventional data analysis methods, such as budget data or effort index. First, unlike government-level outcomes such as budgets, statements in assemblies are individual data from the both of government and opposition parties. Therefore, we can examine the strength of re-election motives of both types of politicians by referring to their share in the votes in the previous election. Also, we can investigate the reliability of such change in statements by looking at consistency with the realized budget. Second, we can look at the different types of political behavior rather than effort which is proxied by attendance or bills submitted. For example, we can quantify how myopic the politicians are by looking at a specific year. For example, a politician in office might say "By the end of 2014, we have to achieve XXX (some target)" in 2011, his first term year. However, he may become myopic in the election year, 2015, saying, "By the end of 2016, we have to achieve YYY (some target)." In this case, his mentioned time horizon becomes two years shorter in the election year. Third, the text data analysis and machine learning techniques handle large volumes of data. In our analysis, we collect 10,372 politicians' statements over 17 years, resulting in a total of 33,213 unique words after excluding stop words. Fourth, machine learning techniques allow us to analyze the latent composition of topics or the similarity between the realized budget and their statements. For example, unlike conventional methods, we can extract topics of documents by summarizing the enormous number of words in a replicable way, without subjective criteria. Finally, the minutes of assembly is an important source to know how policies are made and suggests additional information about the quality of policies to the conventional measure such as budget data.

We collect minutes from 47 prefectural assemblies in Japan, from 2001 to 2017, for our anal-

ysis. We specifically focus on meetings in the first regular sessions which play a critical role in their budget-making process. The characteristics of the Japanese prefectural governments enable this analysis in the following ways. First, the minutes from 2001 to date are publicly available on the prefectural government websites. Second, their fiscal and electoral regulations are uniform across prefectures, thus making them comparable. Third, their electoral cycle is pre-determined in our sample period and we can even control for year fixed effects using different election cycles in some prefectures because of past political shocks so that endogeneity issues are minimal. Fourth, we can shut down other local political cycle effects because we can control for governor elections and local assembly in Japan is unicameral unlike national politics in Japan or the United States.

From the text data, we construct the following outcome variables: (1) time horizon they mention and its ambiguity measure, (2) average amount of money and its context-wise average (proposing context or not), (3) frequency of mentioning specific districts to pork-barrel policies, (4) the proportion of topics and (5) consistency between their statements and the realized budget using a machine learning technique, namely, probabilistic latent semantic indexing (pLSI). The results show that politicians increase the average amount of stated (Japanese) Yen mostly in suggestive contexts, and the frequency of mentioning Yen in the election years. Their stated time horizon becomes shorter by referring the present year when they speak of the future, and they use more ambiguous expressions to refer to the future such as *someday*. Furthermore, they mention specific locations more and change the topics in their statements from the last year. Finally, the consistency with the realized budget decreases in the election years, which is natural, because the budget change little in the election years as we will see in Section 5.4.

Next, we perform a heterogeneous impact analysis to investigate whether re-election motives drive these effects or not. Using the margin of victory in the previous election, we find that politicians who are closer to the margin have a stronger election year effect, except when it comes to the change in topic. For example, a politician who is on par with the marginal loser in the previous election is estimated to increase the amount of stated Yen by 1,618.2 percent (more than 1 digit), while a politician who has twice the votes of the marginal loser is predicted to increase it by 249.2 percent. These results are qualitatively robust against including additional control variables such as age, number of terms, and party membership, to interact with the election year dummy variable, year fixed effects or individual fixed effects.

Also, we discuss whether such statements changes are closely related with actual policies or they are just words without actions. The data suggest that in the election years actual expenditure does not increase as stated amount of Yen increases and their statements become more inconsistent with the realized budget. Moreover, we measure their effort using attendances to the committee meetings to capture their actions. Unlike the case of statement variables, we do find an insignificant impact of the election years on their effort and its impact is not varied with the previous election

results. These results are consistent with a view that re-election motives increase words without actions.

We analyze the relationships between the winning probability in the next election and these outcome variables further. We find that the change in the outcome variables in the election year is associated with a higher chance of winning. For example, a politician mentioning a greater amount of Yen, particularly in the election year, is more likely to be elected in the next election. Together with the other results, this implies that politicians successfully lure voters without actually changing their policies.

This study contributes to two strands of literature. First, we contribute to the literature that specifically studies re-election motives. We examine those effects on policy making processes by using unconventional measures that are important information to judge the quality of realized policies. The theoretical and empirical literatures show both positive and negative effects of re-election motives; some theoretical literature points out that re-election motives can lead to better political outcomes, working as a commitment device or signaling politicians' talent (Holmström, 1999; Fearon, 1999; Persson and Tabellini, 2000; Besley, 2006), while other theoretical studies point toward potential pitfalls of re-election motives such as the case where voters has a wrong belief about the optimality of policies (Maskin and Tirole, 2004; Smart and Sturm, 2013). Similarly, some empirical papers investigating re-election motives show that the re-election incentive induces less corruption (Ferraz and Finan, 2011), and lower tax rates (Besley and Case, 1995), or, affect the performance of a conditional cash transfer (de Janvry et al., 2011) or even secondary policies such as environmental policies (List and Sturm, 2006). On the other hand, some empirical studies find a drawback in re-election motives. For example, the central government might allocate a more discretionary budget to the aligned local governments in the pre-election year for their re-election (Brollo and Nannicini, 2012). Also, shorter tenure length and term limit, which will strengthen re-election motives, might entail the campaign cost or have shorter payback time horizon effect (Alt et al., 2011; Dal Bó and Rossi, 2011; Titiunik, 2016).¹ However, the effect on the process of policy making or discussion in assemblies are underinvestigated in the previous literature.

Second, this study is broadly connected with the emerging literature using text data in Economics. For example, Gentzkow and Shapiro (2010) analyze how newspapers choose slant to

¹A slightly different but closely connected strand of literature is the political budget cycle. Re-election motives will drive political budget cycles because the marginal return in the re-election probability of providing benefits to voters would be higher in the election year. This is due to the nature of Bayesian learning that voters place heavy weight on the current signal to update their belief in the ability of politicians or the limited attention of voters (Holmström, 1999; Martinez, 2009). Empirical studies of the political cycle in economic variables such as unemployment rate, GDP, monetary policies, and fiscal policies find that fiscal expenditure increases during election years (Nordhaus, 1975; Drazen, 2001; Alesina and Paradisi, 2017), especially in new democratic countries (Brender and Drazen, 2005) or developing countries (Shi and Svensson, 2006) or in the case voters are not well informed about financial information (Repetto, 2018).

maximize their profit-facing local readers' demand. Hansen et al. (2017) studies the impact of transparency of discussions on policy making using the natural experiment of the Federal Open Market Committee (FOMC) and finds that making the minutes of FOMC meetings transparent leads to detailed statements, particularly by inexperienced members due to their career concerns.² There are several studies in Political Science using minutes of assemblies to investigate the position of politicians (Laver and Benoit, 2002; Laver et al., 2003), the relationship between loyalty and career path (Eggers and Spirling, 2016), and how intra-party politics affects political statements in assembly meetings (Proksch and Slapin, 2012). However, the effect of re-election motives on the time horizon mentioned, budget size proposed, and topics addressed have not been studied so far, to the best of our knowledge.³

2 Background

Prefectural governments in Japan play an important role in determining their own local public policies (a) at their own discretion, (b) with substantial budgets, (c) resulting in significant voter turnout, (d) under a uniform structure. We elaborate the local government system in Japan below.

First, the 47 prefectural governments perform local self-government as the first level of jurisdiction and administrative division with discretion power.⁴ They provide local public goods, for example prefectural roads, high school, public health centers, and police. Second, after the inter-governmental transfers, on average between 2005 and 2016, 27.7 percent of the total revenue was allocated to the prefectural governments, 29.4 percent was allocated to the municipal governments, and 42.9 percent was allocated to the central government.⁵ Third, the voter turnout in Japanese local elections has been maintained at historically high level (Horiuchi, 2005). The voter turnout for our targeted elections was 52.48 percent in 2003, 52.25 percent in 2007, 48.15 percent in 2011, and 45.05 percent in 2015. Fourth, prefectural governance is under the 1947 Local Autonomy Act, which enables us to compare individual prefectural governments within the same framework.

Each prefecture has its own assembly that comprises publicly elected members and a directly elected governor. Thus, the powers of the governor and the assembly are separated.⁶ These local

²See Gentzkow et al. (2017) for other studies in Economics using text as data.

³In the political science literature, they use text data to investigate political positions, intra-party politics, election campaign strategies. See Laver and Benoit (2002), Laver et al. (2003), Proksch and Slapin (2012), Grimmer (2013), Eggers and Spirling (2016), and Catalinac (2018), for example.

⁴Local self-government is a constitutional right in Japan although Japan adopts a single nation system, rather than a federation system. A series of decentralization reforms in the 1990s granted prefectural governments discretion.

⁵The total expenditure data of the central government in Japan was taken from the reports of the Ministry of Finance. The total expenditure data for the prefectural and municipal governments was taken from the reports of the Ministry of Internal Affairs and Communications.

⁶The national government in Japan is different from the local governments in that it follows the parliamentary system.

governments are established by the election rules that govern all prefectures. Prefectural assemblymen are elected under a constituency system. A citizen casts a vote for an individual candidate and not a party. This is an incentive for assemblymen to appeal on their own stand, not only using their party's manifestos.⁷ In our sample dataset, the total number of electoral constituencies is 1098, of candidates is 3750, and of those elected is 2618. The term of office is four years and exogenous. Institutionally, citizens are permitted to submit a petition for the dissolution of the assembly with the signatures of one-third or more eligible voters. When the petition is submitted, the assembly is dissolved. However, prefectural assemblies have never been dissolved by residents' petitions so far.⁸ Out of the 47 prefectures, 41 currently hold local assembly elections in the same month each year. The election usually falls on the second Sunday of April, once every four years.⁹ Other three prefectures postponed the election date due to the Tohoku earthquake in 2011 and the remaining three prefectures hold local assembly elections in different years because of political shocks in the past.¹⁰

Most prefectural assemblies hold four regular sessions and, if necessary, some ad-hoc sessions every year.¹¹ A regular session is usually held for 20 to 30 days and proceeds as follows. First, when a bill is submitted to a prefectural assembly at a plenary session, the chairperson makes it a subject for discussion, requests the proposer to explain the bill, and proceeds to representative interpellation and then, general interpellation.¹² After the interpellation, the chairperson refers it to the committees. Each committee chairperson makes it a subject for discussion, requests the proposer to explain the bill, proceeds toward interpellation and discussion, and votes on the bill. After passing the bill at the committee, the committee chairperson reports the result to the plenary session. This is followed by an interpellation and discussion with the committee chairperson. Lastly, a vote is taken on the bill at the plenary session. If the bill is passed by a vote, it will be enacted.

⁷The same election rules hold for local municipalities. For the budget cycle in local municipalities, see Fukumoto et al. (2018).

⁸Some city or village assemblies have been dissolved by the residents' recall.

⁹During this month, local politics attracts more attention than central politics. See Figure A.1 for the time series pattern of interest in local and central politics in Google Trends. Note that people's interests increase on the announcement week, implying that people show interests on the information of local politics, not only the result of the elections.

¹⁰Tokyo and Ibaraki experienced assembly dissolution in the middle of 1960s and Okinawa was returned to Japanese sovereignty from the U.S in 1971.

¹¹As amended by the Local Autonomy Act in 2004, prefectures were given the authority to determine the frequency of the regular sessions in a year. However, most prefectural assemblies hold four regular sessions and one or two ad-hoc sessions overall. In 2011, the frequency of the regular sessions and ad-hoc sessions on average were 3.94 and 1.66 respectively, according to the Ministry of Internal Affairs and Communications.

¹²In representative interpellation, one representative from each within-parliamentary faction of which the size is at least five assemblymen or more, have the right to ask questions. In general interpellation, a representative from all parliamentary groups that desire to ask questions can make it regardless of the size, although the time for each question may depend on the group size.

We investigate how re-election motives affect assemblymen’s statements in the budget-making process. We focus on meetings in the first regular sessions that are held from February to March annually, where prefectural assemblymen review the budget plan for the next financial year (i.e., from April of the first year to March the following year) that is proposed by their governor, demand changes to the budget plan to their governor (e.g., increase or decrease revenues or expenditures for specific components or services, and/or submit the modified budget plan by themselves), and lastly determine to pass or reject the budget plan. Their right to amend the governor’s proposed budget plan is not limited to decreasing the budget, but also includes the possibility of increasing the budget in a way that does not violate the governor’s purport (Article 97.2 of the Local Autonomy Act). In a nutshell, the budget plan will not be enacted without the assembly’s approval, except in emergency cases.

We target all the 47 local assemblies. We apply a web-scraping method to gather officially-recorded minutes which are published in the local government websites and extract all the statements made by the assembly members in the first regular sessions. Additionally, we collect the information on the election results for each assembly member from newspaper websites and combine this information with the text data. In total, our data comprises 10,372 members and 33,213 unique words.

3 Framework

Re-election motives may affect the following outcomes in politicians’ statements: increasing the amount of money to oversell their projects, shortening the time horizon to appeal to myopic voters, mentioning ambiguous future to show appealing but unfeasible plans irresponsibly, mentioning specific locations to hint at pork-barrel policies, and more broadly speaking, changing the topic to appeal to voters and diverging from the budgetary plans authorized by local assemblies.

Such re-election motives are expected to be the strongest in the election years. To capture these effects, we first estimate the following model:

$$y_{iry} = \alpha + \beta \textit{election}_{ry} + \varepsilon_{iry}, \tag{1}$$

where y_{iry} represents any of the outcome variables described in the last section for assembly member i elected from electoral district r in year y . Note that there are five electoral terms in our sample and each electoral term has four years.

Our key variable is $\textit{election}_{ry}$ which denotes the dummy variable taking one if local elections are supposed to be held in year y .

It is unlikely that channels other than re-election motives will explain the effect of the election

years (β in Equation 3).¹³ However, we can test whether the effect is driven by re-election motives or not using the following model:

$$y_{iry} = \omega + \gamma \textit{election}_{ry} + \theta \textit{Margin of Victory}_{iry} + \tau \textit{election}_{ry} \times \textit{Margin of Victory}_{iry} + \epsilon_{iry}, \quad (2)$$

where $\textit{Margin of Victory}_{iry}$ denotes the ratio of the votes for member i in r for the last election divided by the votes for person h in r who got the largest number of votes among the losers in the last election. Therefore, this variable measures how close member i was to losing, in the last election. A higher value of $\textit{Margin of Victory}_{iry}$ implies that member i experienced a narrower margin of victory than the others did, in the previous election. This fact, in turn, leads him to expect that the next election will also be highly competitive and close for him.¹⁴ Thus, using the coefficient of interest τ , we can test whether myopic changes in statements by member i are amplified by the higher intensity of the re-election incentives or not. The members who are not elected with a vote in the last electoral year are dropped from our analyses since we cannot define the variable “Margin of Victory”.¹⁵

Using the three prefectures having different election cycles, we can control for year fixed effects in the two analyses above. We can also control for other individual-level characteristics such as age or party affiliation and its interaction term with the election year dummy, or individual fixed effects. These results will be shown as robustness checks.

Another question that then arises from the above estimations is: if member i changes his (her) statement in pursuit of re-election motives, can (s)he win the next election by doing so? To answer this question, we estimate the following equation for incumbent i who runs for office in the next election, to remain in the seat for electoral term $t + 1$:

$$\textit{win}_{irt+1} = \rho + \delta \overline{\textit{statement}}_{irt}^{\textit{nonelec}} + \eta \textit{statement}_{irt}^{\textit{elec}} + \mu_{irt}, \quad (3)$$

where \textit{win}_{irt+1} is the dummy variable taking one if incumbent i successfully retains his own seat for electoral term $t + 1$ which means he runs for office and wins the election. We exclude those who are incumbent at t but bow out of the election for $t + 1$. $\overline{\textit{statement}}_{irt}^{\textit{nonelec}}$ represents the average of any of the variables for outcomes in equation (1) during the non-election years. More precisely, $\overline{\textit{statement}}_{irt}^{\textit{nonelec}} = \sum_{p \in \{1,2,3\}} \textit{statement}_{irpt} / 3$, where p denotes the p th year of the term t . $\textit{statement}_{irt}^{\textit{elec}}$ is any of the variables for the outcomes in equation (1) during the election years. The coefficient of our interest is η which corresponds to how closely associated the probability of winning the election for $t + 1$ is with extreme statements made by incumbent i right before the election at t .

¹³We are not aware of any other economic or political cycles correlated with this four-year election cycle. We are able to control for a governor election dummy as a robustness check.

¹⁴We confirm this relationship in our data. See Figure A.2.

¹⁵We use the same sample to estimate other equations for comparability.

Although this specification cannot declare the causality between them, the result should still be meaningful. If the irresponsible remarks during the election years are positively correlated with the winning probability for elections, it implies that the politicians might rationally understand the advantage of extreme statements right before the elections, since it will be positively evaluated by voters. Put differently, voters fail to punish incumbents who indulge in opportunistic behavior by screening them out through the elections.

4 Data

This section describes our sample and data structures. We target 47 local assemblies from 2001 to 2017. We use the data from the earliest election year since 2001 for each prefecture, 2003 for 44 prefectures. We apply a web-scraping method to officially-recorded minutes which are published on local government websites and extract all the statements made by the assembly members in the first regular sessions. Additionally, we collect information on the election results for each assembly member from newspaper websites and combine them with text data. Subsection 4.1 elaborates the structure of the text data in this study, and how we generate key variables, followed by Subsection 4.2 for election data.

4.1 Text Data and Construction of Key Variables

4.1.1 Basic Structure

We first stuck their statements at the level of regular sessions and individuals. We obtain 21,943 statements made by 10,372 members in total.¹⁶ On average, the number of words per politician's statement is 702.7. We then follow the standard procedures in text mining, and obtain a 21,943 by 33,213 *term-document matrix*. Here, 33,213 denotes the total number of unique words in the dataset. Each element in the matrix indicates the number of times a unique word appears in a document.

We also apply the web-scraping method with the budget plan explaining the major features and budget sizes of the policies in addition to budget tables.

The most difficult challenge is extracting essential features of and trends in their words reflecting their re-election motives from a highly dimensional and sparse matrix without losing precision. To respond to this challenge, a natural-language-processing approach suggests two distinct methods: the *dictionary method* and *machine learning*.

¹⁶Technically, 10,372 members had actually made more than 21,943 statements during the target periods. Each member is allowed to raise questions and propose alternative budget plans more than once within a regular meeting as long as the total time that he spends is within the permitted limit. To simplify the analysis and reduce the dimensions of the term-document matrix, we consider these multiple remarks as single statements.

The dictionary method works well to construct some of our outcomes, such as an average amount of stated money or time horizon in each statement. The dictionary method requires us to construct original dictionaries which contain sets of terms (Yen or year, for example) that we are interested in. Then, we count the number or identify the frequency of the words across documents based on these dictionaries to quantify the features of the statements. We can partially consider the situation of the statement by searching for additional words, such as “liability” around “Yen.” The advantage of this method is that it can easily provide well-defined variables from a highly dimensional matrix.

When we seek to quantify the consistency or similarity among different documents, such as the change in the statements or the distance to the realized budget, we have to consider the whole content rather than a part. The dictionary method is insufficient since it deliberately extracts only a part of the information in the term-document matrix and leaves out all the other variations of terms that are not listed in the dictionaries.

Machine learning approaches can solve this problem. This paper relies on a machine learning algorithm, namely, *probabilistic latent semantic indexing* (pLSI). An important advantage of this algorithm over the dictionary method is that they make use of all the variations in the words to represent documents on a low-dimensional latent space. This reduction of the dimension enables us to compare the contents of documents quantitatively. The rest of this section explains the key variables that are estimated using the dictionary method and machine learning approach.

4.1.2 Count Measures

Definitions. We choose ten types of count measures as outcomes, which are listed in Table 2. First, we generate the N-gram data set from our corpus. N-gram is a consecutive sequence of N terms from a given document comprising text. In this paper, we set $N = 2$ and keep two-gram only if it includes the sequence of any number and Yen, such as 10,000 Yen. We call this Yen-two-gram. *Average Amount of Stated Yen (Log)* is a log of average amount of Yen that is calculated based on Yen-two-gram for each document. Second, we return to the corpus and drop sentences that do not contain any word related to the suggestion. Then, we construct Yen-two-gram to calculate *Average Amount of Stated Yen (Log, suggestion)* in the case where an assembly member suggests some policies or budget plans in the course of the political discussion. Third, in order to measure the average amount of stated Yen which is referred to as liabilities, the network analysis of the text data is employed wherein: (a) we identify the word “Yen” within the corpus and formulate networks around “Yen,” each of which has the fifteen terms as windows to the forward and the backward, respectively; (b) we keep these networks only if they contain the word(s) related to liabilities; and (c) finally, *Average Amount of Stated Yen (Log, liabilities)* is calculated by taking an average of

total amounts of Yen in the networks for each document.¹⁷ Fourth, *Frequency of Yen* is a simple variable counting the frequency of Yen which appears in each statement.

By constructing Year-two-gram in a similar manner, we measure the time horizon, *Positive Time Horizon* is equal to $\sum_m (x_{imy} - y) / n_{iy} |_{x_{imy} \geq y}$, where x_{imy} denotes the m th statement on year by member i in year y ; and n_{iy} is the total number of times that member i states on year. *Negative Time Horizon* is the case of $x_{imy} < y$. *Mentioning the Present Year* is a fraction of the times mentioning the present year ($x_{imy} = y$) over the time mentioning years.

Finally, *Frequency of Ambiguous Future* and *Frequency of Region* are count variables based on the dictionary methods. The former dictionary includes the terms that express ambiguous future such as "in the future". The latter includes all names of municipalities and prefectures in Japan.

Descriptive Statistics. Table 2 shows descriptive statistics for the above variables. We drop the politicians from the sample who are not elected with a vote in the last electoral year. We take the natural log of the average amounts of the stated Yen for the total, suggestion, and liabilities versions. The log of average amounts of stated Yen are 23.7 for total and 23.6 for suggestion. This value increases when politicians discuss liabilities. On average, they talk about money 6.8 times within their statements. When it comes to the time horizon variable, politicians refer to -17.2 years past from the year when the session is held. Frequency of year, ambiguous future, and specific regions are on average 20.8, 7.5, and 5.7, respectively.

4.1.3 Variables Estimated by Machine Learning

Statistical models. This subsection explains the brief statistical models of the topic model. Suppose there are D documents or statements that comprise a corpus of texts with V unique terms. We also assume that each document can belong to K topics. A topic defines the likelihood of the frequency with which a word shows up in a document, and we think of a document as a mixture of multiple topics. Formally, the probability that any given word in document d is equal to the v th term is $p_{dv} = \sum_k \beta_k^v \theta_d^k$ and the overall likelihood is $\prod_d \prod_v p_{dv}^{n_{dv}}$, where n_{dv} is the number of times term v appears in document d . Therefore, we can estimate $\beta_k \in \Delta^{V-1}$ and $\theta_d \in \Delta^{K-1}$ by maximizing the likelihood with the EM algorithm. This method uses all variations of the terms in the corpus to represent the entire picture of the documents by reducing the dimension of the term-document matrix dramatically.

¹⁷We only consider the network, not the whole sentence as in the case of the suggestion, because we want to know the context of Yen, and not the tone of the sentence. For example, the sentence "We have XXX Yen as liability this year, [...] so we have to shrink the budget size to YYY Yen next year." has two numbers. We want to pick up only the first one as the liability measure.

Estimation. In the beginning, we prepare the corpuses D_{jy}^B and D_j^S , where j denotes prefectures and y denotes years. D_{jy}^B consists of all statements by members in prefecture j at y and authorized budget plan in j at y . D_j^S consists of all statements by members in prefecture j during the target years.

We set $K = 20^{18}$ and apply the Maximum Likelihood Estimation to D_{jy}^B to estimate $\theta_{i,j,y}^k$ and $\theta_{budget,j,y}^k$, which indicate a topic k 's share for member i and budget in j at year y . This is pLSI. *Consistency with the realized budget* for member i is $\sum_k \sqrt{\theta_{i,j,y}^k \theta_{budget,j,y}^k}$, which measures how similarly distributed K topics for member i in j at year y are with a realized budget plan in j at year y . This variable can measure the extent to which member i 's statements are qualitatively and quantitatively reflected in budget plans.¹⁹

In order to calculate the *distance from the previous year topic and topic concentration*, we apply the same method to D_j^S and obtain $\pi_{i,j,y}^k$, which is a share of topic k in the statements by member i in prefecture j at year y . The distance between topic distribution for i at y and $y - 1$ is $\sum_k (\pi_{i,j,y}^k - \pi_{i,j,y-1}^k)^2$ and topic concentration is $\sum_k (\pi_{i,j,y}^k)^2$.

Results of Topic Model Estimation We show the result of how the topic model classifies each term. Table 1 shows 10 words from the most frequent (high p_{dv}) one for each topic in D_j^S of Aichi prefecture as an example. Although the machine learning technique does not label each topic, but we can interpret each topic in a natural way; for example, agricultural policy, industrial policy, health policy, education policy, aviation policy, and fiscal policy will be a label for topic 1, 2, 3, 4, 5, and 6 in Table 1 respectively. Moreover, the model successfully classifies big topics like education policy into more precise categories such as general education policy (topic 4) and language education policy (topic 15).

4.2 Election Data

We use web-scraping methods to extract information on electoral candidates in each election since 2001 from newspaper websites.²⁰ We calculate the index on how close candidate i was to losing the last election, which is equal to the ratio of a vote share for candidate h in electoral district r who narrowly lost the last election divided by a vote share for candidate i in r in that election. We also have information on the characteristics of candidates such as age, partisanship, and how many

¹⁸We choose this number because perplexity, the (penalized) fit of the model, is maximized in 19–20. This is a feasible number because there are 13 big categories in the expenditure (e.g., social welfare and infrastructure), and topics would be more detailed than these big categories.

¹⁹We consider each amount of Yen as a term, so that we can consider the consistency between budget sizes in proposed projects and projects explained in the authorized budget plan.

²⁰*Asahi Shimbun* for the data in 2001 and *Yomiuri Shimbun* for the data after 2001.

times he has been elected before, etc. We combine this data set with the text data explained in the last subsection.

5 Result

5.1 Political Statement Cycle

Before showing regression results, we plot the distribution of the amount of stated for each year. Figure 1 shows clear spikes during the election years, shown by red vertical lines. This result suggests that statements change due to re-election motives.

To see other outcomes and inferences, we plot-estimated coefficients with 95 percent confidence intervals based on Equation 1 using normalized outcome variables in Figure 2.²¹ For an outcome in terms of an average amount of stated money, there is a significant increase right before elections. When compared with other terms in office, politicians increase the amount of money that they state in the prefectural assemblies by 520.3 percent in the year right before elections. According to the additional results on the amounts of money, this prominent increase is likely to be driven by the statements suggesting their budget plan, rather than the statements referring to government bonds or liabilities. More specifically, the amount of stated Yen increases by 174.0 percent in the situation where assemblymen suggest alternative budget plans or policies in the regular sessions right before the elections while it does not change when the statements are related to government bonds or liabilities.

For statements on the time horizon, we find two distinct results. First, assemblymen are reluctant to mention specific years in the future, during the election years. The average years in the future that they mention decrease by -8.2 years in the election years. Also, they particularly increase the mention on the present year by 18.6 percent.²² Second, they are more likely to use ambiguous expressions for the future, implying their avoidance of referring to concrete time horizons. This frequency in the use of ambiguous future expression increases by 2.6 times a year (34.5 percent of the unconditional mean) during the election years. In other words, politicians mention specific short-term future plans more frequently rather than long-term ones, while they prefer vague expressions when they refer to the distant future in discussing budget plans right before the elections.

In contrast to the time horizon results, assemblymen make more frequent references to specific amounts of money 7.9 times a year (115.5 percent of the unconditional mean) as well as specific locations 2.0 times a year (34.9 percent of the unconditional mean), such as some towns or villages

²¹See the odd columns Table A.1 for the regression results using the original outcome variables before normalization.

²²See Figure A.3 for the effects on other time windows.

in their own constituencies, during the election years. Politicians, therefore, significantly intensify their involvement in the budget-making process closer to the next election.

A look at assemblymen's remarks in each session reveals that they do not change their topics of focus right before the elections. Furthermore, they are likely to focus on fewer topics in their statements during the election years than in other years. Most importantly, the consistency between the assemblymen's statements and their approved budgets weakens during the election years. This implies that politicians still mention similar topics in the election years, but their proposing budget size become inconsistent with the budget size in the the description of realized projects in the election years.

It is noteworthy that the outcome variable decreases after the election years in Equation 1. This will mean that the statements of consecutively elected assemblymen are not consistent between the election years and their next term. However, the pattern might be driven from compositional effect; the newly elected assemblymen may lower the outcome variable. To investigate this point, we perform a similar regression analysis with Equation 1 by using only consecutively elected assemblymen and adding *After the First Term*_{*ijt*}, which takes one in his (her) second or further consecutive terms and its interaction term with the election dummy. Figure 3 shows the estimated difference of the outcome variables from the non-election years in the first term. In the top panel, we use the variables which respond positively in Figure 2 and find that the outcome variables react in a positive direction as well in this sample and return to the original level in the non-election years after the first term. The bottom panel shows results using the variables which responds negatively in Figure 2 a similar pattern in an opposite way.²³ These patterns do not support a view that consecutively elected assemblymen are consistent between the first election year and the non-election years after the first election.

In a nutshell, the results suggest that politicians alter their statements in the assembly sessions right before the next elections and re-elected politicians return their statements after their re-election. There are two remaining issues to be addressed. The first is, are the changes in their statements the result of their re-election motives? Second, are they connected with actual policy changes or words without action? Third, do the voters evaluate politicians' aggressive statements right before voting in the elections even without actions? We examine these questions in the following subsections.

5.2 Heterogeneous Effects by the Results of the Previous Election

We test whether the electoral statement cycle above is driven by re-election motives or not. Compared with politicians that won an overwhelming victory in the last election, those who won by a

²³See Table A.2 for the original regression results.

narrow margin may feel some unease about their next term in office and have stronger re-election motives. To employ this idea, we estimate Equation 2 and plot the estimated effect of election year and its interaction with normalized *Margin of Victory* (γ and τ) and their 95 percent confidence intervals in Figure 4.²⁴ We categorize the outcome variables depending on the direction of the change during the election years. It shows that the impacts of the election years generally intensify if a politician won in the last election with a narrow margin, setting aside the variables which do not show significant effects in Figure 4. For example, a politician who is on par with the marginal loser in the previous election is estimated to increase the amount of stated Yen by 1,618.2 percent (more than 1 digit), while a politician who has twice the number of votes than the marginal loser is predicted to increase it by 249.2 percent.²⁵²⁶ These results are largely unchanged even after controlling for year fixed effects (Table A.3), individual fixed effects (Table A.4)²⁷ or other individual characteristics, such as age, the number of wins in the past, party fixed effects, and their interaction terms with the election year effect (Table A.5).²⁸ This suggests that during the session right before the election assemblymen who experienced a close election last time rather than those who won a sweeping victory at the last election, change their statements more dramatically, supporting the re-election motives channel.

5.3 Robustness Check: Sample Selection Bias and Governor Election Cycle

Because whether a politician has a chance to state something in the assembly is not random, there might be sample selection bias in the main results. In column (1) of Table A.7, we find that in the election years politicians have less chances to have statements. Thus, these might lead to the sample selection bias where only a particular type of politicians get chances to state in the election years and it causes the statement cycle. However, the findings in Figure 2 are robust against controlling for individual fixed effects in Table A.4, contradicting the sample selection bias based

²⁴See the even columns Table A.1 for the regression results using the original outcome variables before normalization.

²⁵If a politician who is on par with the marginal loser has lower the amount of stated Yen during the non-election years, the log specification might overestimate the heterogeneous impact of the election years. However, their stated amount of Yen are not different during the non-election years. See columns (2) and (4) in Table A.1.

²⁶*The amount of Yen* also includes mentions about spending cuts, which might increase in the election years to demand larger spending cuts. To separate those mentions, we also count the amount of Yen around words like "increase" or "decrease" separately and conduct a similar analysis. Figure A.4 shows the result that the main results are not driven by such cost cutting demands.

²⁷There might be concern about sample selection in the main analysis. For example, some politicians are likely to make irregular statements always and they get opportunities to have a statement in assemblies. To get rid of such bias, we control for individual fixed effects to capture the change of statements within the same individual. The result in shows that the results are largely stable even after controlling for the individual fixed effects, implying that the main result is not driven by the sample selection channel. See subsection 5.3 for other discussions of sample selection.

²⁸We also adopt a Poisson model and a Negative Binomial model for count outcomes as further robustness checks. However, the qualitative result does not change (Table A.6).

on individual time-invariant effects. Also, when we add the interaction term of the election years and margin of victory to column (1) of Table A.7, it does not show statistically and economically significant signs in columns (2)–(3). These coefficients mean that the interaction term is exogenous to the selection stage and therefore the coefficient of the interaction term in the main analysis will not be biased by the sample selection.²⁹

Another concern regarding the sample selection is the representativeness of our main results. Throughout this paper, in order to make our sample consistent among our analyses, we exclude the politicians who were elected without a vote because we cannot calculate the margin of victory.³⁰ However, we find very similar the political statement cycles when including these sample as shown in Figure A.5. Overall, though our sample is not randomly selected, it does not affect the interpretation of the main results.

Additionally, we perform a robustness check about the exogeneity of the four-year election cycle. In our context, governor election cycle is the most relevant political cycle at the prefecture level because a local assembly is unicameral. The governor election cycle might be correlated with our election cycles and affect our statement variables. To address this concern, we directly control for governor election years to Figure 4. However, we find almost identical results (Figure A.6), implying that the main result is not driven by other political cycle at the prefecture level.

5.4 Discussion: Words Without Actions?

The results above imply that political statements are driven from re-election motives, but it is unclear whether such change in statements are connected with actual policy changes or they are just words without actions to lure voters. We investigate this point by the following discussions.

First, the realized budget shows a political budget cycle, but the election effect on the realized budget is much smaller than that on the state amount of Yen. Figure 5 shows smaller changes of the budget (the left panel) than the statement (the right panel) in the election years and based on a regression analysis, the expenditure is estimated to insignificantly increase 0.39 percent in the election year while the stated amount of Yen increases by 520.3 percent. This suggests that most of the statement made during the election year do not result in actual budget changes.

Second, *Consistency to Budget* directly measures the divergence between their statement and budget. If their statements changes budget, we should observe insignificant effect of the election

²⁹Consider the following conditional expectation and the selection stage equation, $E[Y_i|D_i, stated_i = 1] = D_i\beta + E[u_i|D_i, stated_i = 1]$ and $stated_i = \mathbb{1}[Z_i\gamma + v_i > 0]$. The source of sample selection bias is when we vary D_i to estimate β , Z_i varies as well because typically D_i is a subset of Z_i . Because we only see sample with $stated_i = 1$, this means that v_i varies as well, which might be correlated with u_i . However, if we were interested in the coefficient of d_{1i} , a part of D_i , but not a part of Z_i , we could identify the β_1 with holding on the other variables in D_i ($=D_i^{-1}$) because $E[Y_i|d_{1i} = 1, D_i^{-1}, stated_i = 1] - E[Y_i|d_{1i} = 0, D_i^{-1}, stated_i = 1] = \beta_1 + E[u_i|d_{1i} = 1, D_i^{-1}, stated_i = 1] - E[u_i|d_{1i} = 0, D_i^{-1}, stated_i = 1] = \beta_1 + E[u_i|D_i^{-1}, stated_i = 1] - E[u_i|D_i^{-1}, stated_i = 1] = \beta_1$.

³⁰We also drop the politicians elected by by-elections because our election dataset do not cover by-elections.

year dummy, but the result shows divergence from the realized budget. Moreover, when we see the other statement variables, re-elected politicians do not keep their statements to fulfill their original plans they made in the previous election year. Also, the increase of *Frequency to Ambiguous Future* means that politicians does not set a clear deadline for their project. If politicians try to change budget or policy, they will clearly specify the timing.

Third, in addition to the statement variables, we obtain a proxy of effort using absences from the committees assigned to the assemblymen. After each election, the chairperson assigns all of the assemblymen to one or more committees such as financial committee and infrastructure committee. In these committees, the members have an opportunity to discuss the details of policies to give it back to the plenary sessions for the final votes. Therefore, if we do not find any impact of re-election motives on attendances to the committees, it is likely that they change statements without taking a cost to realize the statements. In Table 3, we perform a similar regression analysis with Figure 4. We do not find the effect of election years on the attendance rate in column (1) or attendance in column (3) and the point estimates are quite small (-0.015 standard deviation and 0.011 standard deviation, respectively). Also, the impacts of the election year are not varied with the previous election results in columns (2) and (4).³¹ Therefore, unlike the statement variables, re-election motives do not affect their effort significantly.³²

Overall, these results suggest that statements, not connected with the actual policy changes, increase during the election years to attract voters.

5.5 Assemblymen's Statements and the Next Election's Winning Probability

In this subsection, we examine whether member i who makes significant and temporal changes in his/her statements right before the election can win the next election by using Equation 3 or not.

In Figure 6, we plot-estimated coefficients after normalizing the explanatory variables of the first three years during the term of office on average and of the final year, that is, right before the elections, (δ and γ) with 95 percent confidence interval.³³ We categorize the statement variables depending on whether the interaction term in Figure 4 responds in a positive, negative, or insignificant way (top, middle, and bottom panels respectively).³⁴ In general, there are two distinct findings. First, a politician's statements in the assembly sessions in the first three years during his or her term of office have little association with his or her re-election probability while those soon

³¹See Table A.8 for robustness checks in the same specification with Table A.5.

³²We also employ another measure of effort, preciseness of numbers they mentioned. For example, when he mentions a 9-digit number, we count how many number are nonzero and take a ratio to nine. Table A.9 shows the result using the 9–12 digit numbers, which they mentioned most frequently, but we do not find any change in preciseness by the election year dummy or its interaction term with their vote share.

³³We topcoded the time horizon variables for future and past at 100 before normalization.

³⁴See Panel A of Table A.10 for the regression results using the original explanatory variables before normalization.

before elections increase the winning probability. This suggests that voters only pay attention to politicians' recent statements in the assembly and decide who to vote for in the elections accordingly. Second, the change in statements by politicians during the election years that we show above is associated with re-election probability. In the top panel, where variables respond in a positive way to the re-election motives, politicians who mention specific location more in election years are associated with higher probability to win in the next election. Overall, the results show that it is rational for politicians to change their statements just before the elections to increase their re-election probability.³⁵ Moreover, the results do not change qualitatively while restricting the sample to those who win more than once.³⁶ Further, the change in the statement in the previous election is not penalized in the next election.³⁷

Note that we need a different framework to explain the difference in the topics that a politician states in an assembly session in a year and in the previous year. As shown above, the topic difference becomes larger during the election years. However, we find that the previous election results do not intensify this change. Further, the change does not influence the re-election probability (Figure 4 and Figure 6). We conduct additional analyses to understand why the topic difference becomes larger during the election years. We find that the change is associated with whether a politician runs in the next election or not. Politicians who intend to contest in the next election are more likely to change their topics drastically during the election years.³⁸

6 Conclusion

In democratic countries, the creation and implementation of public policies are delegated to elected politicians. Thus, how re-election motives affect a politician's behavior is an important question. This study investigates the role of re-election motives by using the minutes of all the 47 Japanese prefectural assemblies using the text analysis method. The results reveal novel findings about policy making processes that usual aggregated budget data cannot reveal. It is found that politicians, particularly those who are closer to loss, change their statements. They increase the amount of stated Yen mostly in suggestive contexts, increase mentions of specific locations, increase mentions of the present year, shorten the mentioned time horizon for future, and present ambiguous futures. We also discuss whether all these statement changes involve policy changes, but we find in the election years (1) the amount of stated Yen increases much more than the actual budget,

³⁵We find that average time horizon for future in election years does not predict higher probability of re-election though stated time horizon is associated with re-election as we see in the results for *mentioning the Present Year* shown in the top panel.

³⁶See the second columns in Table A.11.

³⁷See the third columns in Table A.11.

³⁸Compare Panel A and B of Table A.10.

(2) their statements become less consistent with the realized budget, and (3) their effort measured by attendance to the committee meetings does not increase. Moreover, such changes in words are associated with higher chances of winning in the next election, despite there being no change in the realized budget. We confirm that the main results are robust against controlling for other covariates or year/individual fixed effects, sample selection bias or governor election cycles.

These results imply that re-election motives seem to drive politicians to attract voters without changing their actual policies. A natural question is why voters would appreciate such cheap talk and would not penalize the politicians in the next election, or after re-election. This may be due to bounded rationality, such as short-lived memory and limited knowledge. Further, the political and social environment might result in indifference to politics on part of both voters and the media, except during the election years as Figure A.1 might imply. These points are beyond the scope of this study, but represent important directions for future studies.

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Table 1: Top 10 Words for 20 Topics in the Case of Aichi Prefecture

Topic 1	information, agriculture, industry, our prefecture, technology, municipalities, one/best, medical herbs, company, trader
Topic 2	company, industry, middle-or-small-sized, technology, abroad, our prefecture, initiative, business, energy, location
Topic 3	medical care, hospital, bill, assemblymen, cancer, objection, medical doctor, center, patient, first aid
Topic 4	school, children, student, juvenile, home, high school, parents, committee, prefectural, school class
Topic 5	airport, international, <i>chubu</i> (its region name), land, industry, company, route, international exposition, aviation, project
Topic 6	finance, province/countryside, tax, governor, prefectural inhabitant, budget, our prefecture, economy, fiscal resources, company
Topic 7	agriculture, bill, forest, environment, green, nation/state, project, governor, farmland, water
Topic 8	housing, earthquake proof, old age, district/area, convention, information, shop, fire fighting, project, people/citizen
Topic 9	earthquake, housing, earthquake proof, disaster, fire fighting, municipalities, under prefectural management, damage, tsunami, our prefecture
Topic 10	handicap/obstacle, institution, municipalities, river, bill, project, old age, insurance, nation/state, dam
Topic 11	environment, industry, earthquake, prefectural inhabitant, governor, one/best, international, everyone, society, art
Topic 12	company, youth, handicap/obstacle, student, women, university, art, vocation, Triennale, regular
Topic 13	traffic, district/area, aviation, old age, bus, flower, convention, initiative, industry, economy
Topic 14	street, project, park, city, highway/highspeed, river, sewage line, section, loop, coast
Topic 15	school, teacher, student, children, commissioner, high school, foreign countries, Japanese, junior high school, English
Topic 16	medical care, juvenile, municipalities, system, women, animal, patient, center, profession, our prefecture
Topic 17	environment, governor, children, prefectural inhabitant, request, institution, people/citizen, international exposition, everyone, society
Topic 18	traffic, accident, police, damage, street, crime, police box, prefectural police, policeman, crime prevention
Topic 19	company, handicap/obstacle, industry, our prefecture, institution, prefecture, district/area, middle-or-small-sized, project, municipalities
Topic 20	medical care, municipalities, hospital, staff, institution, business, prefecture, handicap/obstacle, welfare, information

Notes: Each row shows the ten words which had the highest probability to appear in each topic for D_j^S of Aichi prefecture. The left word has the highest probability and the right word has the 10th highest probability. When translating the original Japanese words, we use a slash if it can have more than one meaning. For example, *kosoku* usually means highspeed, but they often use it as abbreviation of *kosoku doro*, meaning highway.

Table 2: Descriptive Statistics

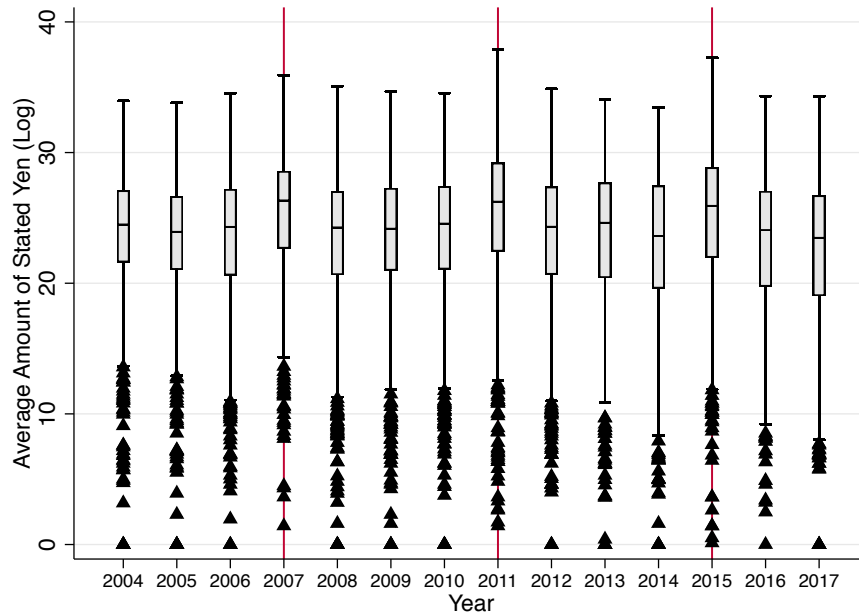
	Data Source (Method)	Mean	Standard Deviation	Min	Max	Observation
Margin of Victory	Election	.6734572	.2016083	.0355913	.9999041	14807
Age	Election	54.11401	9.666895	25	84	18429
Past Wins	Election	1.756727	1.682245	0	12	17355
Average Amount of Stated Yen (Log)	Minute (Count)	23.65997	5.841197	0	37.86301	11746
Average Amount of Stated Yen (Log, Suggestion)	Minute (Count)	23.59717	5.84277	-.9219888	37.16986	9193
Average Amount of Stated Yen (Log, Liabilities)	Minute (Count)	25.90523	4.34727	0	35.35591	2818
Frequency of Yen	Minute (Count)	6.797756	13.75322	0	354.24	18429
Time Horizon (Future)	Minute (Count)	6.801131	221.368	0	20212.22	15690
Time Horizon (Past)	Minute (Count)	-17.19826	38.32691	-1888	-1	15847
Mentioning The Present Year	Minute (Count)	.1685755	.2135518	0	1	17121
Frequency of Year	Minute (Count)	20.77242	23.82217	0	400	18429
Frequency of Ambiguous Future	Minute (Count)	7.546747	8.407424	0	303	18429
Frequency of Specific Location	Minute (Count)	5.666992	7.940977	0	142	18429
Distance from the Previous Year Topic	Minute (Machine Learning)	.3023668	.2565505	0	2	8497
Topic Concentration	Minute (Machine Learning)	.2630876	.1818092	.0800354	1	18427
Consistency to the Realized Budget	Minute and Budget (Machine Learning)	2.28409	.3061979	1.331579	3.097811	17776
Observations	18429					

Table 3: Their Effort Does Not Change by Re-election Motives

	Attendance		Attendance Ratio	
	(1)	(2)	(3)	(4)
Election Year	0.0204 (0.0277)	0.0206 (0.0277)	0.00146 (0.00267)	0.00150 (0.00267)
Margin of Victory		-0.0109 (0.0127)		-0.00190 (0.00120)
Election Year * Margin of Victory		-0.000142 (0.0274)		0.000385 (0.00261)
Constant	3.971*** (0.0129)	3.971*** (0.0129)	0.868*** (0.00118)	0.868*** (0.00118)
Observations	14807	14807	14807	14807

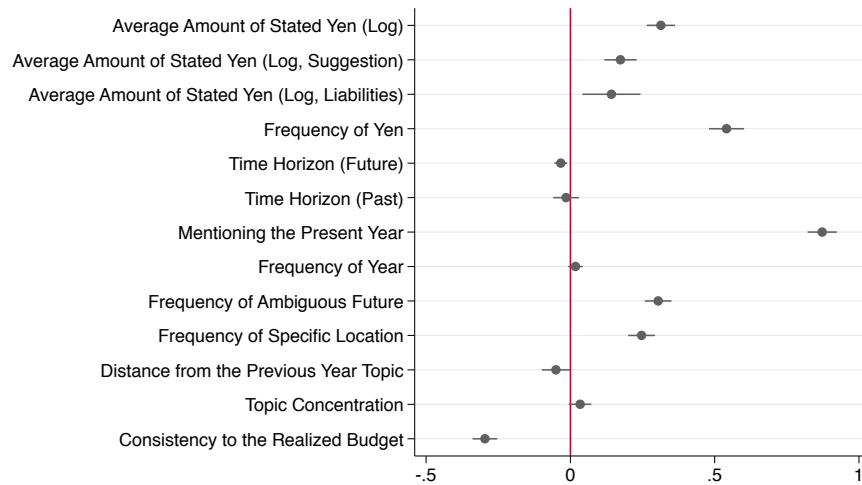
Standard errors in parentheses are cluster-robust at the individual level. + Significant at the 10% level. * Significant at the 5% level. ** Significant at the 1% level. *** Significant at the 0.1% level. *Margin of Victory* is normalized. *Attendance* is defined as the number of attendances to the meeting of committees they are assigned to. *Attendance Ratio* is defined as *Attendance* divided by the total number of their committees' meeting. The mean of *Attendance* (*Attendance Ratio*) is 4.0 (0.86) and the standard deviation of *Attendance* (*Attendance Ratio*) is 1.4 (0.13).

Figure 1: Political Statement Cycle (Amount of Yen)



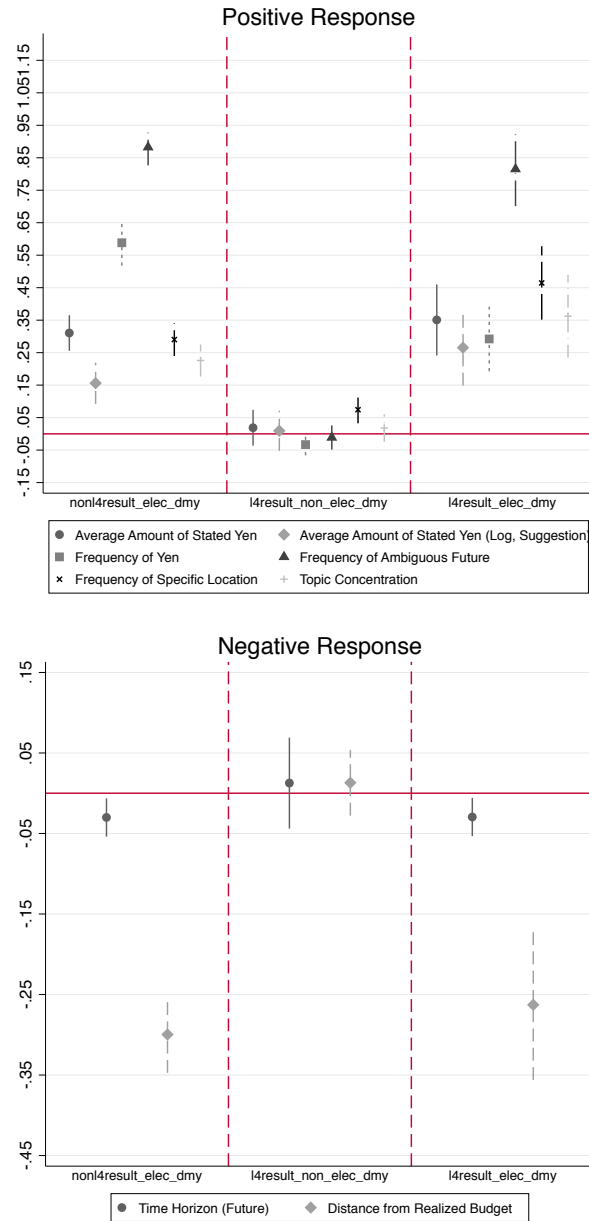
Notes: This graph shows the distribution of the average of amount of stated yen by assemblymen for each year from 2004 to 2017. The red vertical lines represent the election years. The bar shows medians and quartiles. The spikes show 1.5 times the interquartile range of the upper quartile. The triangle symbols show the outliers outside the spikes. We only use the 41 prefectures having the exact same electoral cycles in this graph.

Figure 2: The Impact of the Election Years



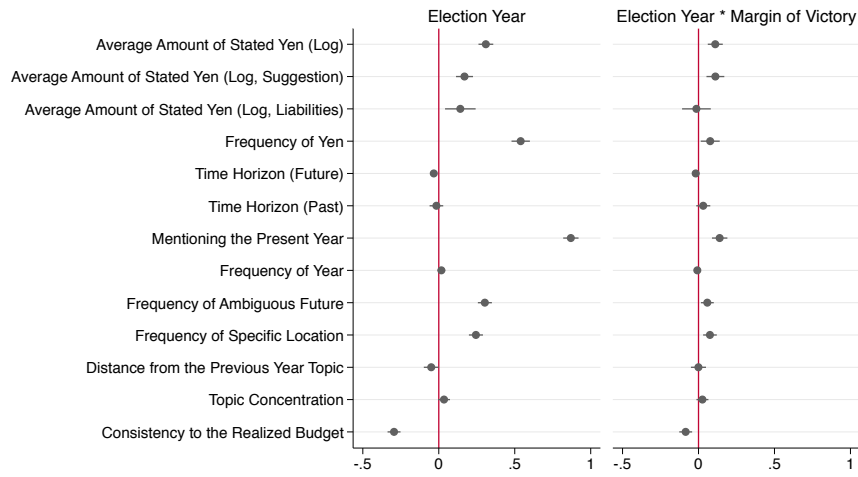
Notes: Each symbol shows the point estimate of the coefficient while regressing a normalized statement variable in the corresponding caption on the election year dummy. Lines show 95 percent CIs calculated by individual-level cluster-robust standard errors.

Figure 3: The Impact of the Election Years for Re-elected Politicians



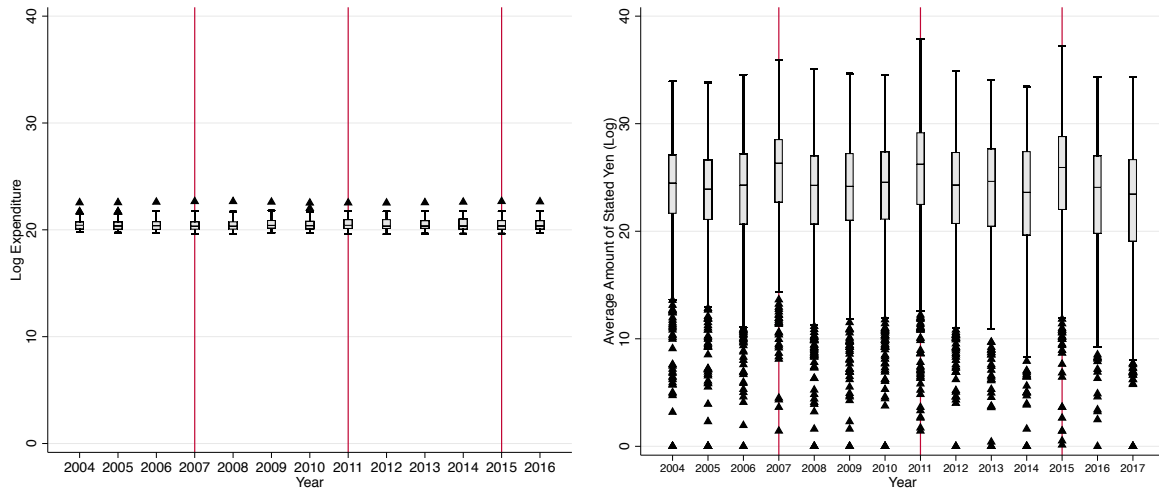
Notes: Each symbol shows the point estimate of the coefficient while regressing a normalized statement variable in the corresponding caption on the election year in the first term dummy, the non-election years in the second or further terms dummy and the election years in the second or further terms dummy. Lines show 95 percent CIs calculated by individual-level cluster-robust standard errors.

Figure 4: Re-election Motives Intensify the Impact of the Election Years



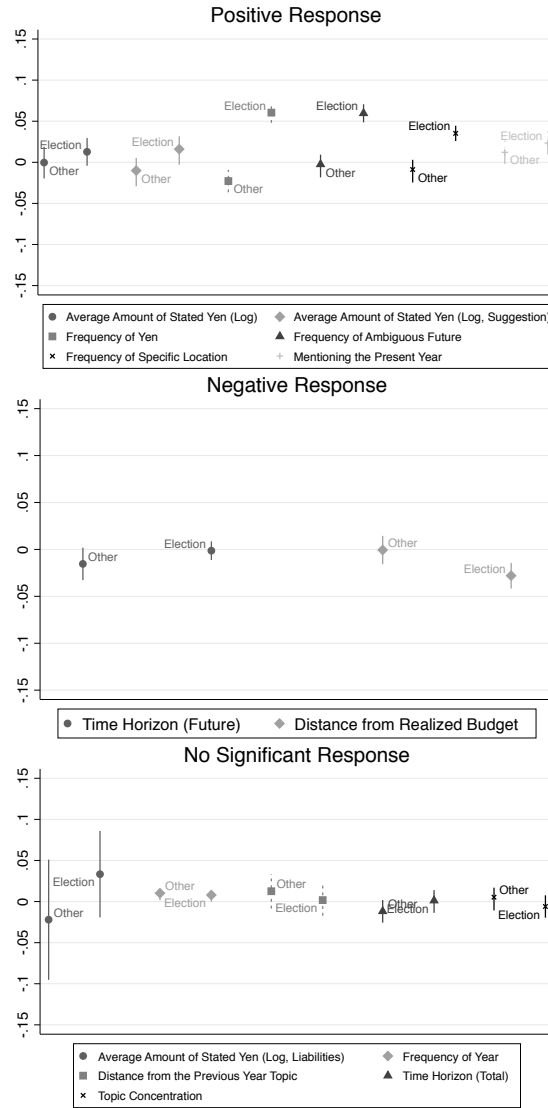
Notes: Each symbol shows the point estimate of the coefficients while regressing a normalized statement variable in the corresponding caption on the election year dummy (the left panel) and its interaction term with normalized *Margin of Victory* variable (the right panel). Lines show 95 percent CIs calculated by individual-level cluster-robust standard errors.

Figure 5: Political Budget Cycle and Political Statement Cycle



Notes: Source of the left Panel: Ministry of Internal Affairs and Communications of Japan. This graph shows the distribution of prefectural government expenditure for each year from 2005 to 2017. The red vertical lines represent the election years. The bar shows medians and quartiles. The spikes show 1.5 times the interquartile range of the upper quartile. The triangle symbols show the outliers outside the spikes. We only use 41 prefectures here, as in Figure 1. The right panel replicates Figure 1.

Figure 6: Statements and Winning Probability



Notes: Each symbol shows the point estimate of the coefficients while regressing a dummy variable which takes one if (s)he wins in the next election and zero otherwise (missing if (s)he does not run into) on a normalized statement variable in the corresponding caption during the election year (right) and the other years (left). We categorize the statement variables depending on whether the interaction term in Figure 4 respond in a positive, negative, or insignificant way (top, middle, and bottom panels, respectively). Lines show 95 percent CIs calculated by individual-level cluster-robust standard errors.

A Appendix

Table A.1: Regression Results for Figures 2 and 4

<i>Panel A</i>										
Average Amount of Stated Yen (Log)										
	All		Suggestion		Liabilities		Frequency of Yen			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)		
Election Year	1.825*** (0.145)	1.803*** (0.144)	1.008*** (0.166)	0.983*** (0.166)	0.625** (0.225)	0.623** (0.225)	7.854*** (0.450)	7.825*** (0.447)		
Margin of Victory		-0.0881 (0.0709)		-0.138* (0.0807)		-0.156 (0.108)		0.371*** (0.107)		
Election Year * Margin of Victory		0.642*** (0.146)		0.646*** (0.174)		-0.0601 (0.212)		1.118* (0.463)		
Constant	23.35*** (0.0728)	23.35*** (0.0728)	23.45*** (0.0801)	23.46*** (0.0802)	25.85*** (0.108)	25.85*** (0.108)	5.543*** (0.128)	5.544*** (0.128)		
Observations	9589	9589	7500	7500	2294	2294	14807	14807		

<i>Panel B</i>										
	Time Horizon						Frequency of			
	Future		Past		Mentioning the Present Year		Year		Ambiguous Future	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Election Year	-8.150** (2.753)	-8.105** (2.740)	-0.527 (0.800)	-0.548 (0.808)	0.186*** (0.00550)	0.185*** (0.00546)	-0.213 (0.484)	-0.213 (0.485)	2.604*** (0.201)	2.596*** (0.201)
Margin of Victory		3.577 (3.005)		-0.399 (0.319)		-0.000989 (0.00184)		0.637** (0.245)		-0.0256 (0.0781)
Election Year * Margin of Victory		-4.549 (3.043)		1.102 (0.831)		0.0296*** (0.00549)		-0.802+ (0.431)		0.497** (0.184)
Constant	9.250*** (2.735)	9.223*** (2.721)	-17.01*** (0.381)	-17.01*** (0.380)	0.130*** (0.00183)	0.130*** (0.00183)	21.08*** (0.281)	21.08*** (0.281)	7.114*** (0.0842)	7.114*** (0.0842)
Observations	12644	12644	12854	12854	13809	13809	14807	14807	14807	14807

<i>Panel C</i>								
	Frequency of Specific Location		Distance from the Previous Year Topic		Topic Concentration		Consistency to the Realized Budget	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Election Year	1.980*** (0.190)	1.961*** (0.189)	-0.0125* (0.00623)	-0.0125* (0.00625)	0.00600+ (0.00348)	0.00610+ (0.00348)	-0.0909*** (0.00669)	-0.0904*** (0.00667)
Margin of Victory		0.340*** (0.0778)		-0.0122** (0.00410)		-0.00795*** (0.00186)		-0.000694 (0.00271)
Election Year * Margin of Victory		0.605** (0.184)		-0.0000816 (0.00636)		0.00453 (0.00354)		-0.0259*** (0.00664)
Constant	5.400*** (0.0817)	5.402*** (0.0815)	0.301*** (0.00421)	0.301*** (0.00421)	0.257*** (0.00190)	0.257*** (0.00189)	2.299*** (0.00273)	2.299*** (0.00273)
Observations	14807	14807	6911	6911	14806	14806	14806	14806

Standard errors in parentheses are cluster-robust at the individual level. * Significant at the 10% level. * Significant at the 5% level. ** Significant at the 1% level. *** Significant at the 0.1% level. The even columns correspond to Figure 2 and odd columns correspond to Figure 4. We show the result without normalizing the outcome variables unlike in the figures. *Margin of Victory* is normalized.

Table A.2: Regression Results for Figure 3

<i>Panel A</i>										
Average Amount of Stated Yen (Log)										
	All		Suggestion		Liabilities		Frequency of Yen			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)		
Election Year	1.750*** (0.213)	1.670*** (0.286)	0.980*** (0.247)	0.706* (0.339)	0.587 (0.381)	0.836+ (0.463)	7.798*** (0.574)	9.541*** (0.795)		
Not the First Term		0.196 (0.191)		0.187 (0.218)		-0.156 (0.316)		-0.294 (0.225)		
Not the First Term * Election Year		0.262 (0.433)		0.780 (0.484)		-0.739 (0.825)		-4.820*** (1.010)		
Constant	23.33*** (0.110)	23.24*** (0.141)	23.40*** (0.119)	23.31*** (0.159)	25.95*** (0.166)	26.03*** (0.197)	5.325*** (0.192)	5.474*** (0.204)		
Observations	4629	4629	3585	3585	1032	1032	7272	7272		

<i>Panel B</i>										
	Time Horizon						Frequency of			
	Future		Past		Mentioning the Present Year		Year		Ambiguous Future	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Election Year	-12.71* (5.470)	-15.04* (8.866)	-0.822 (1.314)	-0.839 (1.676)	0.193*** (0.00785)	0.203*** (0.00984)	-1.619* (0.654)	-1.810* (0.751)	3.023*** (0.277)	2.957*** (0.335)
Not the First Term		-4.480 (10.94)		-1.312 (0.888)		-0.00249 (0.00480)		2.945*** (0.689)		0.548** (0.197)
Not the First Term * Election Year		4.670 (10.97)		-0.428 (2.684)		-0.0270* (0.0155)		1.618 (1.340)		0.383 (0.585)
Constant	13.81* (5.447)	16.06* (8.834)	-18.04*** (0.508)	-17.38*** (0.758)	0.129*** (0.00262)	0.130*** (0.00355)	22.48*** (0.449)	20.99*** (0.523)	7.323*** (0.126)	7.044*** (0.148)
Observations	6200	6200	6257	6257	6749	6749	7272	7272	7272	7272

<i>Panel C</i>								
	Frequency of Specific Location		Distance from the Previous Year Topic		Topic Concentration		Consistency to the Realized Budget	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Election Year	2.568*** (0.286)	2.540*** (0.339)	-0.0191* (0.00833)	-0.0195+ (0.0108)	0.00869+ (0.00484)	0.0165** (0.00618)	-0.0837*** (0.00947)	-0.0814*** (0.0121)
Not the First Term		0.391* (0.185)		-0.00756 (0.0104)		0.00766+ (0.00459)		0.00761 (0.00772)
Not the First Term * Election Year		0.222 (0.587)		-0.00145 (0.0175)		-0.0181* (0.00981)		-0.00332 (0.0193)
Constant	5.315*** (0.113)	5.116*** (0.136)	0.305*** (0.00615)	0.308*** (0.00786)	0.253*** (0.00270)	0.249*** (0.00341)	2.298*** (0.00399)	2.294*** (0.00544)
Observations	7272	7272	3457	3457	7271	7271	7271	7271

Standard errors in parentheses are cluster-robust at the individual level. + Significant at the 10% level. * Significant at the 5% level. ** Significant at the 1% level. *** Significant at the 0.1% level. This table uses only consecutively elected assemblymen. *Not the First Term* takes one in his (her) second or further consecutive terms.

Table A.3: Robustness Check for Figure 2 and Figure 4 with Year Fixed Effects

<i>Panel A</i>										
Average Amount of Stated Yen (Log)										
	All		Suggestion		Liabilities		Frequency of Yen			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)		
Election Year	1.961*** (0.278)	1.909*** (0.277)	1.116*** (0.309)	1.048*** (0.308)	0.848+ (0.467)	0.844+ (0.467)	8.461*** (0.788)	8.392*** (0.781)		
Margin of Victory	-0.0814 (0.0709)		-0.131 (0.0806)		-0.152 (0.106)		0.365*** (0.106)			
Election Year * Margin of Victory	0.631*** (0.147)		0.634*** (0.174)		-0.0391 (0.211)		1.100* (0.461)			
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Observations	9589	9589	7500	7500	2294	2294	14807	14807		

<i>Panel B</i>										
Time Horizon										
	Future		Past		Mentioning the Present Year		Frequency of			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Election Year	-7.161*** (2.148)	-7.050*** (2.115)	0.0668 (0.812)	0.00200 (0.825)	0.206*** (0.0122)	0.204*** (0.0121)	-1.007** (0.381)	-0.990** (0.381)	2.087*** (0.406)	2.061*** (0.406)
Margin of Victory	3.621 (3.029)		-0.376 (0.316)		-0.000870 (0.00184)		0.575*** (0.124)		-0.0322 (0.0784)	
Election Year * Margin of Victory	-4.844 (3.240)		1.094 (0.832)		0.0293*** (0.00549)		-0.132 (0.212)		0.511** (0.184)	
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Observations	12644	12644	12854	12854	13809	13809	35812	35812	14807	14807

<i>Panel C</i>										
	Frequency of Specific Location		Distance from the Previous Year Topic		Topic Concentration		Consistency to the Realized Budget			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)		
Election Year	1.575*** (0.336)	1.531*** (0.334)	0.000403 (0.0186)	-0.000404 (0.0186)	0.00877 (0.00760)	0.00879 (0.00759)	-0.134*** (0.0145)	-0.133*** (0.0145)		
Margin of Victory	0.335*** (0.0773)		-0.0124** (0.00412)		-0.00786*** (0.00186)		-0.000743 (0.00271)			
Election Year * Margin of Victory	0.624*** (0.184)		0.000482 (0.00639)		0.00446 (0.00354)		-0.0256*** (0.00664)			
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Observations	14807	14807	6911	6911	14806	14806	14806	14806		

Standard errors in parentheses are cluster-robust at the individual level. + Significant at the 10% level. * Significant at the 5% level. ** Significant at the 1% level. *** Significant at the 0.1% level. We show the result without normalizing the outcome variables unlike in the figures. *Margin of Victory* is normalized.

Table A.4: Robustness Check for Figure 2 and Figure 4 with Individual Fixed Effects

<i>Panel A</i>										
Average Amount of Stated Yen (Log)										
	All		Suggestion		Liabilities		Frequency of Yen			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)		
Election Year	1.584*** (0.220)	1.566*** (0.219)	0.740** (0.282)	0.706* (0.282)	-0.225 (0.559)	-0.195 (0.557)	7.792*** (0.590)	7.785*** (0.588)		
Margin of Victory		0.184 (0.206)		0.248 (0.255)		0.133 (0.534)		-0.217 (0.294)		
Election Year * Margin of Victory		0.509* (0.212)		0.619* (0.291)		-0.398 (0.580)		0.849 (0.590)		
Individual FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Observations	9589	9589	7500	7500	2294	2294	14807	14807		

<i>Panel B</i>										
	Time Horizon						Frequency of			
	Future		Past		Mentioning the Present Year		Year		Ambiguous Future	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Election Year	-8.586* (4.848)	-8.526* (4.887)	-0.842 (1.238)	-0.878 (1.252)	0.188*** (0.00729)	0.187*** (0.00725)	-0.594 (0.588)	-0.592 (0.589)	2.611*** (0.251)	2.606*** (0.251)
Margin of Victory		30.08 (29.12)		1.338* (0.700)		0.00157 (0.00513)		0.0962 (0.640)		0.144 (0.200)
Election Year * Margin of Victory		-5.991 (6.660)		1.391 (1.238)		0.0266*** (0.00728)		-0.300 (0.566)		0.551* (0.227)
Individual FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12644	12644	12854	12854	13809	13809	14807	14807	14807	14807

<i>Panel C</i>								
	Frequency of Specific Location		Distance from the Previous Year Topic		Topic Concentration		Consistency to the Realized Budget	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Election Year	2.012*** (0.248)	2.007*** (0.247)	-0.0149* (0.00854)	-0.0149* (0.00858)	0.00479 (0.00442)	0.00476 (0.00443)	-0.0902*** (0.00929)	-0.0900*** (0.00926)
Margin of Victory		0.144 (0.197)		0.00104 (0.0125)		-0.00206 (0.00488)		0.00558 (0.00804)
Election Year * Margin of Victory		0.552* (0.235)		-0.000560 (0.00878)		0.00355 (0.00439)		-0.0302** (0.00917)
Individual FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	14807	14807	6911	6911	14806	14806	14806	14806

Standard errors in parentheses are cluster-robust at the individual level. + Significant at the 10% level. * Significant at the 5% level. ** Significant at the 1% level. *** Significant at the 0.1% level. We show the result without normalizing the outcome variables unlike in the figures. *Margin of Victory* is normalized.

Table A.5: Additional Robustness Check for Figure 4

<i>Panel A</i>										
Average Amount of Stated Yen (Log)										
	All		Suggestion		Liabilities		Frequency of Yen			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)		
Election Year * Margin of Victory	0.562*** (0.154)	0.394* (0.227)	0.508** (0.184)	0.457 (0.312)	0.0146 (0.218)	-0.361 (0.624)	0.479 (0.470)	0.149 (0.615)		
Election Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Margin of Victory	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Age (* Election)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Past Wins (* Election)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Party FE (* Election)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	8964	8964	7014	7014	2164	2164	13915	13915		

<i>Panel B</i>										
	Time Horizon						Frequency of			
	Future		Past		Mentioning the Present Year		Year		Ambiguous Future	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Election Year * Margin of Victory	-4.609 (3.666)	-5.574 (6.980)	1.229 (0.932)	1.821 (1.406)	0.0301*** (0.00570)	0.0269*** (0.00766)	-0.647 (0.467)	-0.189 (0.614)	0.612** (0.194)	0.656** (0.243)
Election Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Margin of Victory	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Age (* Election)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Past Wins (* Election)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Party FE (* Election)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	11869	11869	12080	12080	12958	12958	13915	13915	13915	13915

<i>Panel C</i>								
	Frequency of Specific Location		Distance from the Previous Year Topic		Topic Concentration		Consistency to the Realized Budget	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Election Year * Margin of Victory	0.621** (0.204)	0.631* (0.265)	-0.000475 (0.00659)	-0.00206 (0.00933)	0.00318 (0.00371)	0.00380 (0.00475)	-0.0225** (0.00709)	-0.0241* (0.00987)
Election Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Margin of Victory	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Age (* Election)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Past Wins (* Election)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Party FE (* Election)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual FE	No	Yes	No	Yes	No	Yes	No	Yes
Observations	13915	13915	6496	6496	13914	13914	13914	13914

Standard errors in parentheses are cluster-robust at the individual level. + Significant at the 10% level. * Significant at the 5% level. ** Significant at the 1% level. *** Significant at the 0.1% level. The party fixed effects categorize the parties into six categories (the big five national parties and the other regional party. *Past Wins* is the total number of wins in the past elections for him (her). *Margin of Victory* is normalized.

Table A.6: Robustness Check for Count Data in Figure 4

<i>Panel A: Poisson Model</i>								
	Frequency of							
	Yen		Years		Ambiguous Future		Specific Locations	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Election Year	0.883*** (0.0336)	0.876*** (0.0330)	-0.0102 (0.0231)	-0.00973 (0.0232)	0.312*** (0.0211)	0.310*** (0.0212)	0.312*** (0.0267)	0.303*** (0.0265)
Margin of Victory		0.0681*** (0.0199)		0.0305* (0.0118)		-0.00359 (0.0110)		0.0640*** (0.0148)
Election Year * Margin of Victory		0.0464 (0.0364)		-0.0383+ (0.0206)		0.0528** (0.0201)		0.0686* (0.0270)
Constant	1.712*** (0.0231)	1.710*** (0.0231)	3.048*** (0.0134)	3.048*** (0.0133)	1.962*** (0.0118)	1.962*** (0.0118)	1.686*** (0.0151)	1.685*** (0.0151)
Observations	14807	14807	14807	14807	14807	14807	14807	14807

<i>Panel B: Negative Binomial Model</i>								
	Frequency of							
	Yen		Years		Ambiguous Future		Specific Locations	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Election Year	0.883*** (0.0336)	0.876*** (0.0330)	-0.0102 (0.0231)	-0.00972 (0.0232)	0.312*** (0.0211)	0.310*** (0.0212)	0.312*** (0.0267)	0.304*** (0.0265)
Margin of Victory		0.0667*** (0.0196)		0.0310* (0.0121)		-0.00365 (0.0112)		0.0639*** (0.0149)
Election Year * Margin of Victory		0.0488 (0.0365)		-0.0392+ (0.0215)		0.0536** (0.0204)		0.0640* (0.0264)
Constant	1.712*** (0.0231)	1.711*** (0.0231)	3.048*** (0.0134)	3.048*** (0.0133)	1.962*** (0.0118)	1.962*** (0.0118)	1.686*** (0.0151)	1.685*** (0.0151)
Observations	14807	14807	14807	14807	14807	14807	14807	14807

Standard errors in parentheses are cluster-robust at the individual level. + Significant at the 10% level. * Significant at the 5% level. ** Significant at the 1% level. *** Significant at the 0.1% level. Panel A adopts a Poisson model and B adopts a Negative Binomial Model. *Margin of Victory* is normalized.

Table A.7: Who Made Statements

	Stated or Not		
	(1)	(2)	(3)
Election Year	-0.0518*** (0.00606)	-0.0515*** (0.00607)	-0.114** (0.0425)
Margin of Victory		0.0184*** (0.00417)	0.00457 (0.00420)
Election Year * Margin of Victory		0.00664 (0.00592)	0.00350 (0.00636)
Age (* Election)	Yes	Yes	Yes
Past Wins (* Election)	No	No	Yes
Party FE (* Election)	No	No	Yes
Individual FE	No	No	Yes
Observations	31436	31436	29173

Standard errors in parentheses are cluster-robust at the individual level. + Significant at the 10% level. * Significant at the 5% level. ** Significant at the 1% level. *** Significant at the 0.1% level. *Margin of Victory* is normalized. *Stated or Not* is a dummy variable that takes one if politician stated something in the assembly. The unconditional mean of the outcome variable is 0.47.

Table A.8: Robustness Checks for Table 3

	Attendance		Attendance Ratio	
	(1)	(2)	(3)	(4)
Election Year * Margin of Victory	-0.00180 (0.0291)	0.0106 (0.0413)	-0.000719 (0.00278)	0.00254 (0.00391)
Election Year	Yes	Yes	Yes	Yes
Margin of Victory	Yes	Yes	Yes	Yes
Age (* Election)	Yes	Yes	Yes	Yes
Past Wins (* Election)	Yes	Yes	Yes	Yes
Party FE (* Election)	Yes	Yes	Yes	Yes
Observations	13915	13915	13915	13915

Standard errors in parentheses are cluster-robust at the individual level. + Significant at the 10% level. * Significant at the 5% level. ** Significant at the 1% level. *** Significant at the 0.1% level. *Margin of Victory* is normalized. *Attendance* is defined as the number of attendances to the meeting of committees they are assigned to. *Attendance Ratio* is defined as *Attendance* divided by the total number of their committees' meeting. The mean of *Attendance* (*Attendance Ratio*) is 4.0 (0.86) and the standard deviation of *Attendance* (*Attendance Ratio*) is 1.4 (0.13). See Table A.5 for the definition of the other control variables.

Table A.9: Another Effort Measure: Preciseness of Numbers

	Fraction of Nonzero Numbers at Mentioning							
	9-digit Numbers		10-digit Numbers		11-digit Numbers		12-digit Numbers	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Election Year	-0.0562 (0.0458)	-0.0542 (0.0459)	0.0115 (0.0415)	0.0115 (0.0420)	0.0471 (0.0464)	0.0481 (0.0465)	-0.0690 (0.0609)	-0.0690 (0.0610)
Margin of Victory		0.0213 (0.0257)		0.00108 (0.0262)		0.0310 (0.0247)		-0.0126 (0.0363)
Election Year * Margin of Victory		-0.0415 (0.0444)		0.000332 (0.0419)		-0.0329 (0.0457)		0.0338 (0.0607)
Constant	2.034*** (0.0248)	2.033*** (0.0250)	2.157*** (0.0234)	2.157*** (0.0238)	2.489*** (0.0223)	2.488*** (0.0223)	2.933*** (0.0342)	2.934*** (0.0343)
Observations	3826	3826	4516	4516	4651	4651	3498	3498

Standard errors in parentheses are cluster-robust at the individual level. + Significant at the 10% level. * Significant at the 5% level. ** Significant at the 1% level. *** Significant at the 0.1% level. *Margin of Victory* is normalized. The outcome variable in columns (1) – (2) is the average of nonzero numbers when he mentions a 9-digit number. The outcome variables in the other columns are similarly defined.

Table A.10: Regression Result for Figure 6

Average Amount of Stated Yen (Log)		Explanatory Variables													Consistency to Realized Budget (13)
		Frequency of Ambiguous Future			Distance from the Previous Year Topic			Topic Concentration			Time Horizon			Frequency of Year (12)	
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)			
Other	-0.000235 (0.00183)	-0.00174 (0.00180)	-0.00490 (0.00888)	-0.00316** (0.00958)	-0.00260 (0.00120)	-0.00120 (0.00126)	0.0504 (0.0444)	0.0267 (0.0497)	-0.00154* (0.000872)	-0.000693 (0.000428)	0.0820* (0.0468)	0.000728* (0.000325)	-0.00208 (0.0322)		
Election	0.00236 (0.00149)	0.00279* (0.00165)	0.00720 (0.00618)	0.00245*** (0.000256)	0.00532*** (0.000503)	0.00345*** (0.000467)	0.00561 (0.0375)	-0.0305 (0.0371)	-0.000244 (0.000881)	0.000619 (0.000439)	0.0808** (0.0255)	0.000475* (0.000235)	-0.0822*** (0.0205)		
Constant	0.822*** (0.0536)	0.863*** (0.0540)	0.790** (0.246)	0.866*** (0.00895)	0.832*** (0.0122)	0.863*** (0.0103)	0.865*** (0.0170)	0.883*** (0.0156)	0.887*** (0.00789)	0.871*** (0.0112)	0.844*** (0.0132)	0.852*** (0.00618)	1.060*** (0.0857)		
Observations	1243	880	159	2230	2230	2230	1245	2229	1820	1813	2030	5484	2229		
Testing the Difference	0.306	0.089	0.326	0.000	0.000	0.002	0.506	0.403	0.298	0.292	0.983	0.567	0.035		

Average Amount of Stated Yen (Log)		Explanatory Variables													Consistency to Realized Budget (13)
		Frequency of Ambiguous Future			Distance from the Previous Year Topic			Topic Concentration			Time Horizon			Frequency of Year (12)	
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)			
Other	-0.00303 (0.00241)	-0.00443* (0.00260)	-0.00877 (0.00967)	-0.00508*** (0.00114)	-0.00200 (0.00169)	-0.000855 (0.00160)	-0.0134 (0.0579)	-0.115* (0.0659)	-0.000834 (0.000890)	-0.00102* (0.000588)	0.0774 (0.0611)	0.00311*** (0.000419)	-0.0351 (0.0390)		
Election	-0.0000292 (0.00192)	0.0000979 (0.00215)	-0.00191 (0.00778)	0.00356** (0.000308)	0.00323** (0.00119)	0.00257*** (0.000723)	0.0722 (0.0487)	0.126** (0.0452)	-0.00205 (0.00209)	0.00144* (0.000570)	0.223*** (0.0301)	0.000729* (0.000344)	-0.139*** (0.0245)		
Constant	0.821*** (0.0678)	0.866*** (0.0728)	0.960*** (0.280)	0.748*** (0.0106)	0.748*** (0.0199)	0.747*** (0.0127)	0.770*** (0.0209)	0.761*** (0.0195)	0.767*** (0.00967)	0.763*** (0.0141)	0.682*** (0.0154)	0.644*** (0.00748)	1.141*** (0.103)		
Observations	1453	1026	200	2569	2569	2569	1395	2568	2102	2114	2348	6957	2568		
Testing the Difference	0.372	0.221	0.627	0.000	0.005	0.167	0.332	0.007	0.595	0.009	0.047	0.000	0.025		

Standard errors in parentheses are cluster-robust at the individual level. + Significant at the 10% level. * Significant at the 5% level. ** Significant at the 1% level. *** Significant at the 0.1% level. Each column represents the statement variable to predict the outcome variable. *Election* is the statement variable in the election year and *Other* is the mean of the statement variable in the other years. *Testing the Difference* shows p-value of the hypothesis test that the coefficients are the same between *Election* and *Other*.

Table A.11: Statements and Winning Probability: Full sample vs. Excluding Freshmen

Explanatory Variable:	Average Amount of Stated Yen (Log)								
	All			Suggestion			Liabilities		
Panel A:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Other	-0.000235 (0.00183)	-0.00197 (0.00264)		-0.00174 (0.00180)	-0.00292 (0.00228)		-0.00490 (0.00888)	-0.00845 (0.00779)	
Election	0.00236 (0.00149)	-0.00148 (0.00181)		0.00279+ (0.00165)	-0.00199 (0.00227)		0.00720 (0.00618)	-0.00934 (0.00809)	
PastElection			-0.00425+ (0.00250)			-0.00192 (0.00290)			-0.0123 (0.0102)
Constant	0.822*** (0.0536)	1.011*** (0.0745)	0.992*** (0.0610)	0.863*** (0.0540)	1.060*** (0.0653)	0.946*** (0.0707)	0.790** (0.246)	1.404*** (0.366)	1.199*** (0.270)
Observations	1243	245	342	880	171	277	159	31	81
Testing the Difference	0.306	0.878		0.089	0.788		0.326	0.857	

Explanatory Variable:	Frequency of Yen			Frequency of Ambiguous Future			Frequency of Specific Location		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Other	-0.00316** (0.000958)	-0.00459* (0.00226)		-0.000260 (0.00120)	0.000528 (0.00196)		-0.00120 (0.00126)	0.000677 (0.00213)	
Election	0.00245*** (0.000256)	0.00281*** (0.000677)		0.00532*** (0.000503)	0.00239*** (0.000593)		0.00345*** (0.000467)	0.00158* (0.000699)	
PastElection			-0.000423 (0.000457)			-0.00173 (0.00148)			-0.00198 (0.00159)
Constant	0.866*** (0.00895)	0.930*** (0.0155)	0.910*** (0.0136)	0.832*** (0.0122)	0.903*** (0.0217)	0.920*** (0.0177)	0.863*** (0.0103)	0.916*** (0.0174)	0.918*** (0.0158)
Observations	2230	446	549	2230	446	549	2230	446	549
Testing the Difference	0.000	0.010		0.000	0.383		0.002	0.726	

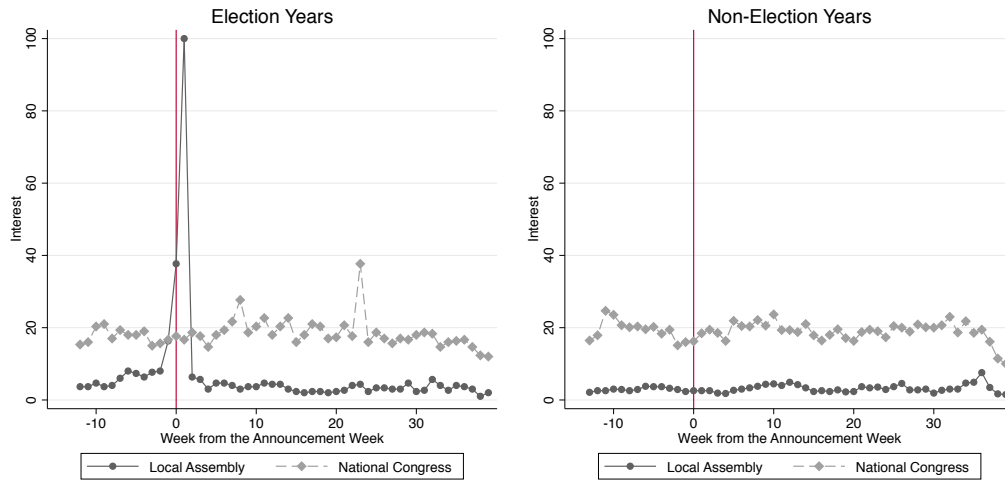
Explanatory Variable:	Distance from the Previous Year Topic			Topic Concentration			Time Horizon (Future)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Other	0.0504 (0.0444)	-0.0770 (0.122)		0.0267 (0.0497)	-0.119 (0.0928)		-0.00154+ (0.000872)	-0.00155 (0.00142)	
Election	0.00561 (0.0375)	0.178** (0.0580)		-0.0305 (0.0371)	0.0393 (0.0556)		-0.000244 (0.000881)	-0.00414 (0.00460)	
PastElection			0.00806 (0.0456)			0.0258 (0.0520)			0.000174*** (0.0000252)
Constant	0.865*** (0.0170)	0.908*** (0.0356)	0.915*** (0.0199)	0.883*** (0.0156)	0.953*** (0.0335)	0.896*** (0.0198)	0.887*** (0.00789)	0.938*** (0.0136)	0.899*** (0.0143)
Observations	1245	252	373	2229	445	549	1820	366	447
Testing the Difference	0.506	0.117		0.403	0.082		0.298	0.593	

Explanatory Variable:	Time Horizon (Past)			Mentioning the Present Year			Frequency of Year		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Other	-0.000351+ (0.000145)	-0.000379+ (0.000164)		-0.000848* (0.000329)	-0.000872* (0.000350)		0.00106* (0.000525)	0.000359 (0.000556)	
Election	-0.000189 (0.000160)	-0.00000823 (0.000184)		-0.000457 (0.000377)	-0.000109 (0.000445)		0.000274 (0.000478)	-0.000202 (0.000567)	
Past Election			0.000111 (0.000324)			0.000105 (0.000649)			0.000508 (0.000482)
Constant	0.871*** (0.00856)	0.914*** (0.00962)	0.905*** (0.00953)	0.873*** (0.00965)	0.912*** (0.0110)	0.903*** (0.0107)	0.853*** (0.0132)	0.909*** (0.0150)	0.896*** (0.0120)
Observations	1686	920	1017	1278	700	799	1925	1060	1150
Testing the Difference	0.495	0.198		0.501	0.276		0.335	0.532	

Explanatory Variable:	Consistency to the Realized Budget		
	(1)	(2)	(3)
Other	-0.00208 (0.0322)	0.0376 (0.0583)	
Election	-0.0822*** (0.0205)	-0.0412 (0.0389)	
PastElection			0.0744+ (0.0405)
Constant	1.060*** (0.0857)	0.933*** (0.173)	0.752*** (0.0893)
Observations	2229	445	479
Testing the Difference	0.035	0.206	

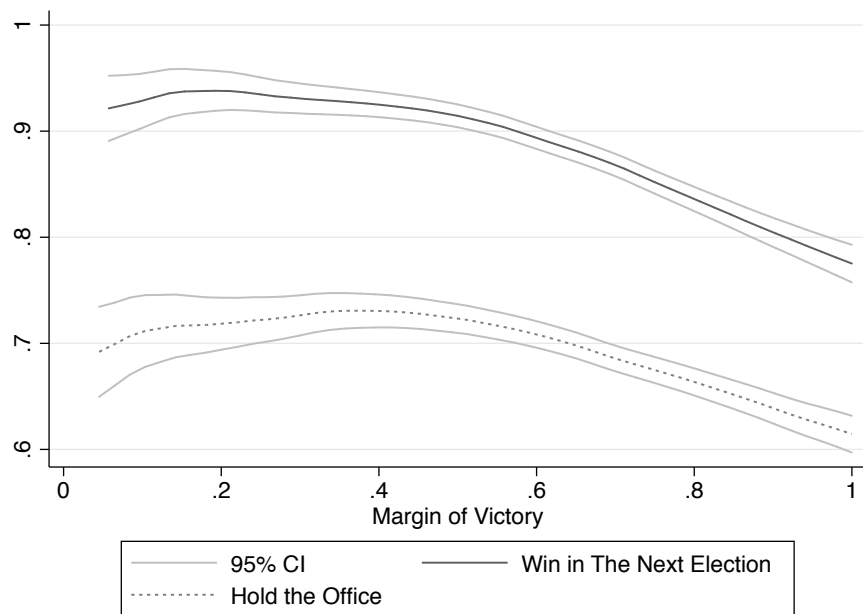
Column (1) uses the full sample and columns (2) – (3) only use those who win more than once ($win_{ijk} = 1$ for some $k \leq t - 1$). Columns (1), (4), and (7) in each panel replicate the result of Table A.10. Columns (3), (6), and (9) in each panel use the previous election year's statement ($statement_{ijk,t-1}^{elec}$) as an explanatory variable. *Testing the Difference* shows p-values when testing the coefficients of *Other* and *Election* are the same in columns (1), (2), (4), (5), (7), and (8).

Figure A.1: Google Interest on Local and Central Politics



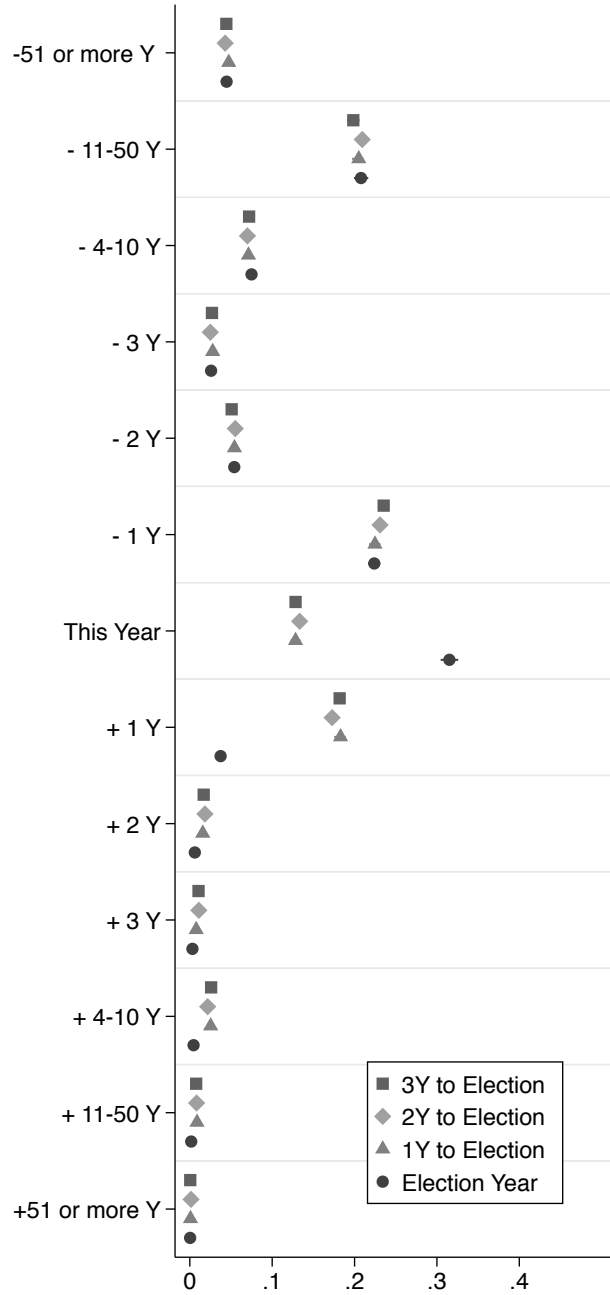
Notes: We construct each point by (1) obtaining relative weekly interest for each word (local assemblies or *ken-gikai* and national congress or *kokkai*) during 2003–2006, 2007–2010, 2011–2014 respectively and (2) taking averages over the years for election years and non-reelection years respectively and (3) plotting those averages based on week from the announcement date, which the vertical line shows. We impute a typical week of announcement date (the 15th week) for non-election years. On the announcement date, candidates have to register, and the voting date is set. The voting dates are nine days after the announcement date in our sample period.

Figure A.2: Previous Election Result and Holding the Office / Winning Probability



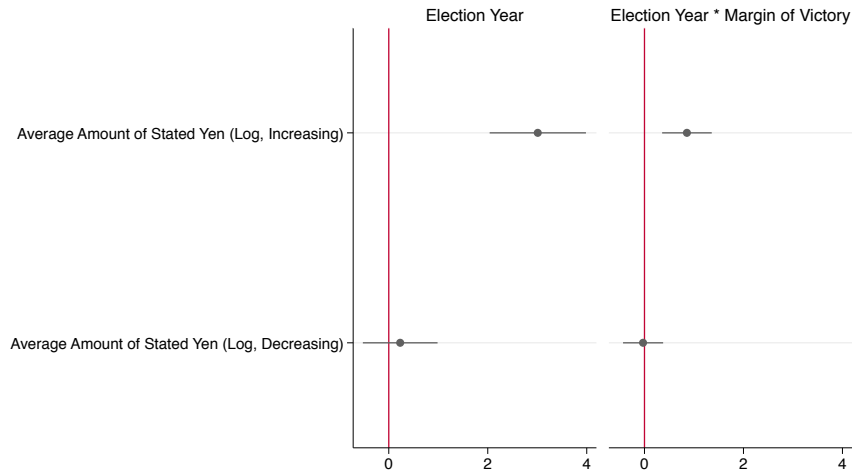
Notes: *Margin of Victory* is defined as the vote of politician i in the previous election divided by the strongest loser in politician i 's electoral district in the previous election. *Win in the Next Election* takes 1 if (s)he runs for office and wins in the next election, 0 if (s)he loses in the election, and missing if (s)he does not run for office at all. *Hold the Office* takes 1 if (s)he holds office in the next term. We use local polynomial estimators to predict point estimates and 95 percent confidence intervals.

Figure A.3: Breakdown of the Effect on Time Horizon



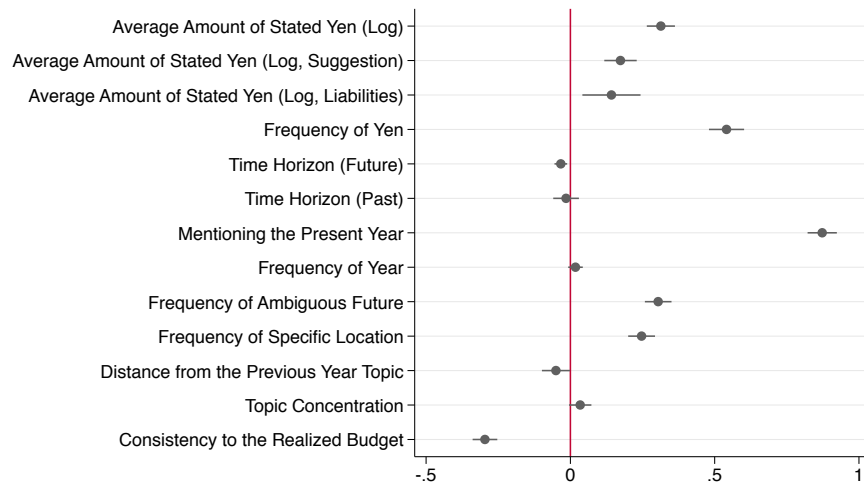
Notes: Each symbol shows the impact of the election years on the times mentioning more than 50 years ago divided by the total times mentioning years.

Figure A.4: Spending Cuts Do Not Drive the Results



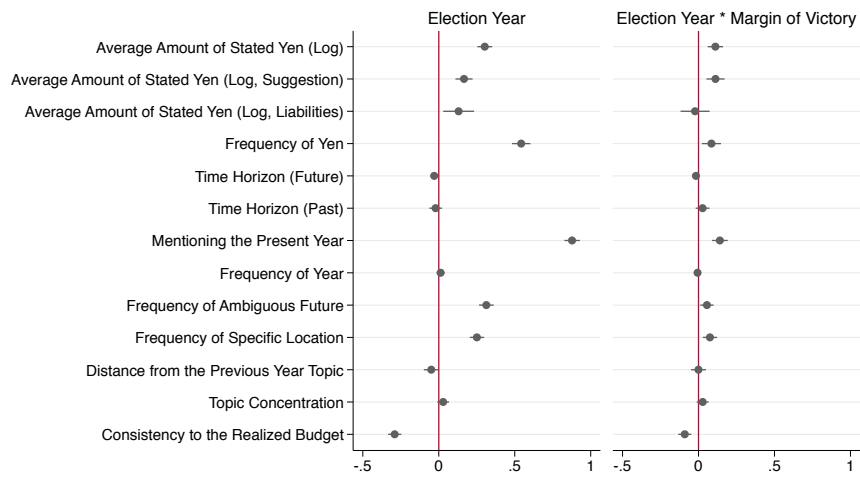
Notes: Each symbol shows the point estimate of the coefficient while regressing a normalized statement variable in the corresponding caption on the election year dummy. Lines show 95 percent CIs calculated by individual-level cluster-robust standard errors. The outcome variables are not normalized.

Figure A.5: Figure 2 Including Elected-without-voting Politicians



Notes: Each symbol shows the point estimate of the coefficient while regressing a normalized statement variable in the corresponding caption on the election year dummy. Lines show 95 percent CIs calculated by individual-level cluster-robust standard errors. We include the politicians who were elected without a vote or by by-elections unlike Figure 2.

Figure A.6: Controlling for Governor Elections to Figure 4



Notes: Each symbol shows the point estimate of the coefficients while regressing a normalized statement variable in the corresponding caption on the election year dummy (the left panel) and its interaction term with normalized *Margin of Victory* variable (the right panel). Lines show 95 percent CIs calculated by individual-level cluster-robust standard errors. We add a dummy variable that takes one if there is governor election in the year to the analysis in Figure 4.