# Parliamentary Debates in Canada (1901-2015).

Jean-François Godbout[†], Florence Vallée-Dubois[†], and Christopher Cochrane[‡]

[†]Département de science politique, Université de Montréal
[‡]Department of Political Science, University of Toronto

Paper presented at the Canadian Political Science Association Meeting
Vancouver, BC
June 4, 2019.

## Abstract

This paper analyses the effect of procedural rule change on the dynamics of parliamentary speeches in the Canadian House of Commons between 1901 and 2015. During this period, several new rules—such as a time limit on speeches—were introduced to reduce the opportunities for private members to speak during legislative debates, so that the government could get its business done in parliament within an acceptable amount of time. Our analysis looks at the impact of these rule changes on the content, the orientation, and the duration of Member speeches. These individual speeches are taken from the Hansard debates and were collected in each parliament through the lipad.ca website. Our results show that parliamentary rule changes had an important effect on the content and duration of legislative speeches. These findings confirm that institutional rules have impacted democratic representation in the Canadian Parliament over time.

# Introduction

It is widely assumed that parliamentary speech is the least constrained form of legislative behaviour. Unlike recorded votes, which are usually closely monitored by party leaders, legislative speeches are often perceived as a forum where members can publicly voice their dissent (e.g., Proksch and Slapin, 2015) or more easily represent the interests of their constituents (e.g., Soroka, Penner and Blidook, 2009). This relative 'unrestrainedness' has provided researchers with several advantages to estimate party positions and individual legislative preferences from political text (Slapin and Proksch, 2008; Lauderdale and Herzog, 2016), primarily because word choices during parliamentary speeches show more variation than votes. As such, it has the potential to offer a more accurate reflection of a member's ideology (e.g., Diermeier, Godbout, Yu and Kaufmann, 2012; Slapin and Proksch, 2014), since "parties can tolerate loose talk more than they can deviation on voting" (McGuigan, 1979, p.14)

But how reasonable is this assumption? Just like with legislative votes, we should expect parliamentary procedures to have some impact on the content of political speeches. Carrubba, Gabel and Hug (2008) have already demonstrated that procedural rules can influence the decision to record roll-call votes, which in turn can affect the individual ideological scaling of ideal points (Spirling and McLean, 2007; Bräuninger, Müller and Stecker, 2016). The same patterns should therefore be observed in the debates, because different agenda control measures—such as closure, time allocation, the guillotine, or time limit on speeches—all influence the length and content of legislative speeches.

To date, most of the empirical work that uses political text as data to look at the effect of institutional constraints on legislative speech patterns has focused on electoral incentives (Proksch and Slapin, 2015; Bäck and Debus, 2016; Herzog and Benoit, 2015; Spirling, 2016). All of these studies have found that the type of electoral system determines who speaks more during the debates. A recent analysis by Høyland and Søyland (2019) has shown that electoral reform can also influence the content of parliamentary debates. However, we have yet to find a study that explicitly looks at how parliamentary rules simultaneously affect both the length and the content of legislative speeches. In other words, we have yet to

investigate the effect of procedures on the government's ability to control the agenda during parliamentary debates.

The following paper attempts to fill this void by evaluating how procedural rule change affect the structure and the content of legislative speeches. To do so, we use a novel data-set of parliamentary speeches spanning more than a hundred years to determine who controls the agenda more and what issues are being discussed. This corpus comprises all speeches recorded in the Hansard of the Canadian House of Commons between 1901 and 2015. This period saw parliament transform from a colonial to a modern legislature, with important implications for how business was conducted in parliament.

At this stage, our analysis is exploratory, but our ultimate goal is to use these data to validate different theories of legislative organization. Parliament is increasingly considered irrelevant today. The decline of private member influence is a well documented phenomenon, especially in Westminster style parliamentary system where party discipline is usually very high. No longer able to effectively legislate, ordinary members increasingly have to rely on parliamentary speeches to communicate with their constituents or display some level of independence (Blidook, 2013). But even that is under threat. As this study will demonstrate, the recent introduction of more restrictive rules of procedure in Canada has greatly contributed to enhancing the powers of the front-bench during the debates, both in terms of volume and content. What is left is a House now dominated even more by partisanship.

The paper is organized as follows. In the first section, we briefly review the main theories of legislative organization as applied to the parliamentary context. In the next section, we discuss the history of procedural rule changes in the Canadian House of Commons. The third section introduces the data used in the analysis. We then present the results of two different levels of empirical analysis. The first one looks at the determinants of agenda control over time, while the second one analyzes the results of a structural topic model to estimate the impact of a series of important rule changes introduced in the 1980s. In the final section, we discuss the next steps of this research project.

2

# How Parliamentary Rules Affect Voting and Speeches

Until now, most empirical studies that measure the impact of legislative rules and procedures on parliamentary behaviour has done so using roll-call data. This work has generally focused on the U.S. Congress and developed different theories of legislative organization to explain the voting patterns of representatives. At the core of these studies lies the idea that the majority wants to control the agenda in order to promote party unity within its ranks. What Cox and McCubbins (1993, 2005) label "negative agenda control" is the ability to prevent controversial bills from reaching the floor for debate. During certain periods in the history of Congress, majority leaders were granted agenda-setting powers in order to facilitate the adoption of the party's legislative program (Aldrich and Rohde, 2000). These procedural powers, such as who controls the discharge process, the rules committee, or speaking time on the floor, have been linked to the recent increase in congressional partisan polarization (Lee, 2016). By scaling roll call votes, researchers have been able, for example, to confirm that parliamentary rules can be used to constrain the behaviour of members, and that more often than not, they have the potential to increase party unity during legislative votes (Cox and McCubbins, 1993).

We also know that procedural rules influence legislative behaviour in other institutional contexts as well. For example, Huber (1996) has shown that restrictive parliamentary procedures like the guillotine or the package vote in France can promote party unity, while Dewan and Spirling (2011) have confirmed—using legislative roll call data—that majoritarian control over agenda setting, rather than policy preferences, dominate voting in Westminster systems. These two studies of legislative voting confirm that procedural rules constrain the voting behaviour of legislators. But what about about speeches? Should we expect the same pattern to hold during parliamentary debates? After all, language is more difficult to control than recorded votes.

There are relatively fewer empirical studies that use text as data to look at the impact of parliamentary rules on the content of legislative speeches. Work done by Eggers and Spirling (2017) in the British Parliament demonstrates that franchise expansion during the

nineteenth century promoted the creation of shadow cabinets, whose members were given more opportunities to speak during the debates. Spirling (2016) also finds that these same reforms altered the speaking patterns of government members, by making their speeches significantly easier to understand for the newly enfranchised voting population.

Other studies have confirmed the important impact that electoral institutions can have on who speaks more during the debates. For instance, Proksch and Slapin (2015) have demonstrated that parliamentary rules offer more opportunities for rebels to take the floor when the electoral system creates incentives for a personal vote. Similarly, Høyland and Søyland (2019) have shown that switching to proportional representation also changes the *content* of parliamentary speeches by making them less personal and more in line with party positions. In two related studies, Giannetti and Pedrazzani (2016) and Pedrazzani (2017) have looked at the effect of parliamentary rule change on the frequency of legislative speeches in the Italian Cámara de Diputados. They found that the introduction of new procedures to strengthen the executive's control over the agenda shifted the balance of power in parliament by giving more speaking opportunities to supporters of the government (see also Proksch and Slapin 2015 for a similar argument in Germany and the United Kingdom).

This brief review has highlighted three important points. First, parliamentary rules can be used to promote party unity in different institutional contexts. Second, both procedural and electoral rules influence who speaks more during the debates. And third, parliamentary rules have an impact on the content of legislative speeches. Taken together, these findings suggest that procedural rules should not only have an impact on who has access to the floor, but also on what they can talk about. That is, parliamentary rules should affect who controls the agenda, as measured by how often members speak, for how long, and on what topics. In the rest of this paper, we set out to test these propositions in the Canadian context.

## The Debates of the Canadian House of Commons

The Canadian House of Commons has undergone several important rule changes over the last 150 years to control access to the floor during the debates. Parliament has historically

been the scene of speeches of "unnatural" length since the very first standing orders placed no limit on speaking time (Dawson, 1962, p.133). Members took advantage of this freedom by talking a lot, sometimes for more than nine consecutive hours, which is the equivalent of 100 columns of text in Hansard (ibid, p. 134). Almost immediately after Confederation, a conflict emerged over who should regulate the time of the House. The growing volume of government business put pressure on the cabinet to control most of the agenda, but proposals to reform the standing orders were met by fierce resistance from private members, who saw these initiatives as potential encroachments on their parliamentary rights. Indeed, members often used speeches as dilatory tactics to obtain concessions from the executive, to block the passage of bills, or even in some cases, to force elections. This obstruction was less of a problem when the country was small and the government's business could be done in a relatively short period of time. But as the size and importance of the federal government grew, so did the demands for the curtailment of debate.

Beginning in 1906, the standing orders were permanently modified to give more time to government business in the legislative process. Several other time management tools have been introduced since then, mainly to limit the influence of private members. For example, closure was adopted in 1913, time limits were put on individual speeches in 1927, and the guillotine was added to the standing orders in 1969. Other major procedural rule changes also had an impact on the speaking opportunities of members. For instance, a time limit was placed on debates on the address in reply to the speech from the Throne in 1962 and on budget debates in 1968. The organization of the committee system was also changed the same year by redirecting the consideration of all government bills to standing committees, away from the floor of the House where most bills were usually debated at length. Although the objectives of these earlier reforms were to limit the opportunities of private members to speak during the debates, most have done very little to restrict the length of legislative speeches in parliament (Dawson, 1962, p.143). On this point, Hockin is worth quoting at length :

*The trend of these and other formal rules has been decidedly against the Opposi-*

*tion and private member. But, in fact, these reforms has not materially restricted their right to speak. Nor have they been significantly helpful to the Government's attempts to achieve efficient dispatch of Government business. The whole House is still a scene of protracted discussion on both generalities and details* (Hockin, 1965, p.331).

The House of Commons was more successful at tackling this problem during the 1980s when it introduced a reform package to improve efficiency following the recommendations of a reform committee (the Lefebvre's Committee). Starting in 1982, parliament began to function under a shorter calendar, with longer periods of adjournment, and adopted a new daily timetable more in line with regular business hours. The net results of these changes was a reduction in the number of sitting days per parliamentary sessions, which now appeared to be dominated more by government business. The abolition of night sittings also greatly reduced the number of adjournment debates, which could sometimes last for several hours[1]. The motion to adjourn was often used by private members for discussing "a matter of urgent and pressing necessity" that had no connection with the daily business of the House. As such, they represented one of the few opportunities "for a private member to be heard on a subject chosen by himself [sic] and not by either front-bench" (Dawson, 1962, p.175). One final major component of the 1982 reform package was to limit the length of individual legislative speeches. The House had already adopted a forty-minute time limit for speeches in 1927, but this rule proved ineffective as House speeches were still "used by the Whips to do nothing more than kill time" (Collenette, 1983, p.3). Under the new standing orders, normal forty minutes speeches were now reduced to twenty minutes, with a ten minute rebuttal period at the end.

The final set of reforms that had a major impact on legislative speaking time relates to private member business. For most of the twentieth century, the hours allocated to consider private member business in the daily program were usually appropriated by the government through special orders. This all changed in 1983 when four hours a week were

---

[1]The House only authorized debates over this motion in the Standing Orders after 8PM. Since the House now adjourned on most days at 6PM, these motions were ruled out of order. With the 1982 rule change, members were given fifteen minutes each day to make 90-second speeches on any topic of their choice.

permanently set aside for this purpose in the schedule. A number of smaller adjustments were subsequently made to the rules following the tabling of the McGrath report in 1986, which greatly enhanced the legislative influence of private members in the House. Just like it was the case for adjournment debates, private member bills and motions now represent one of the few remaining opportunities when backbenchers can introduce a wide range of issues for discussion in the House.

To sum up, almost all of the time management tools introduced in parliament after 1900 reduced the influence of private members in the legislative process. The most important of these procedural changes occurred between 1906-13, 1955-69 and 1982-86, when the House was highly polarized along partisan lines (Stewart, 1977, p.203). Godbout and Høyland (2017) have shown that the first set of rules dramatically increased party voting unity in the legislature, when government business came to dominate the agenda. But what about the content or the length of legislative speeches? Should we expect parties to tolerate more "loose talk" among backbenchers? Given that the second period of rule changes (1955-69) barely influenced the capacity of members to speak during the debates (Hockin, 1965; Dawson, 1962), we should find that parliamentary speeches remained relatively unconstrained during this period as well. However, we expect that the 1982-86 rule change will have a much more important impact on parliamentary debates, mainly because they cut the length of individual speeches by more than half. The next two sections set out to validate this claim.

## The Canadian House of Commons Speech Data

In the following analysis, the corpus of Canadian House of Commons debates was taken from the Lipad database, which was constructed from the digitized records of the Canadian Hansards after 1900 (Beelen, Thijm, Cochrane, Halvemaan, Hirst, Kimmins, Lijbrink, Marx, Naderi, Rheault, Polyanovsky and Whyte, 2017). Freely available online (`lipad.ca`), the Lipad data include individual entries for every speech given in the Canadian House of Commons, beginning in the 9th Parliament. Each individual speech represents an observation (or document), which is then dated and linked with information on the speaker's name, riding,

province, party, gender and position in Parliament (e.g., Prime Minister, leader of the opposition, postmaster general, secretary of state, etc.). In this data-set, the general topics and subtopics of every speech are also identified (e.g., "Governor General's Speech", "Ways and Means", etc.).

[Table 1 about here.]

The corpus of Canadian parliamentary debates of the House of Commons contains over 500 millions words spread across 3.7 millions individual speeches made by 3,432 Members between 1901 and 2015 (see table 1 for more detailed statistics). Figure 1 illustrates the distribution of the total number of words used in each of these speeches over time. The mean document length across this period is 154 words, and there is an average 289 speeches per sitting days of the House. Assuming a speech rate of 120-140 words per minute, this corresponds to interventions of approximately 65-75 seconds . Thus, the bulk of these speeches are very short and contain only a handful of words, such as "throw him out" or "try the truth". In fact, more than half of all recorded speeches have fewer than 47 words. Only around 12% of those could be considered longer than 2 minutes (i.e., more than 260 words). Of course, calculating the length of speech with this method has its limits, especially if the speaker is interrupted often, for example by the phrase "hear, hear". In this case, the database reports the interruption as its own document, thus separating an intervention in two or more observations.

[Figure 1 about here.]

One simple method to get around this problem is to cluster all of the speeches made by a member on a specific topic in a single day. We assume here that members involved in a day-long discussion over the same issue (as coded by the topic of the debate in Hansard) are in fact making a single speech. To conduct this analysis, we aggregated individual member speeches by general topics and dates. Although not perfect, this approach allows us to measure how long a member might have spoken on the same issue. Admittedly, we have

8

no way of determining if these speeches are continuous, with spontaneous interruptions, or part of a broader conversation between members, but they should better reflect the dynamics of legislative debates in the House. Without surprise, this measure confirms that the mean length of individual clustered speeches is around 500 words (3-4 minutes), while the median speech length is now 136 words (1 minute).

We can also look at how the length of legislative speeches changes over time by counting the total number of words spoken by all members during the debates in a given year—or, alternatively, by looking at the annual sum of interventions over time. The top two plots of Figure 2 report these statistics. In both cases, we see an increase in the length and number of legislative speeches from the end of the Second World War to the mid-1970s, when the total annual number of spoken words reached about six millions and the number of interventions around forty thousands. After this point, there is a decrease in the number of interventions per year, but not in the total annual number of spoken words, which appears to have levelled off for the rest of the period under study.

[Figure 2 about here.]

Of course, both of these measures are highly influenced by the number of members sitting in the House, as well as the number of sitting days in a session, which have changed a lot over the last century. In order to make these statistics more comparable, we have opted to weight the data to reflect the size and the calendar of the House[2]. Correcting for these values confirms a similar trend. The bottom two plots of Figure 2 show that the period ranging from 1950 to 1975 saw a marked increase in parliament activities, both in terms of the length of speeches and the number of interventions. It is perhaps surprising to note the subsequent decline for both of these measures, considering that the number of MPs in the House of Commons increased by more than 15 percent between 1975 and 2015 (264 to 308).

Several factors help explain these trends. The period between 1950 and 1975 saw the development of some of the most important welfare initiatives in Canada, such as public

---

[2]Each value was weighted by the product of 1. the maximum number of annual sitting days in a given year $\left(\frac{x}{197}\right)$ and 2. the maximum total number of MPs in a given year $\left(\frac{y}{414}\right)$

housing, federal hospital grants, universal old age pensions, guaranteed income supplement, and the federal family allowance. The creation of these programs required a lot of legislative work, where members had to spend more time discussing, debating and voting on bills. These programs also increased the size of the budget, and the time spent reviewing and approving the government's spending plan in parliament. The decline that follows is a little harder to explain. Although funding began to be scaled back in the late 1970s and early 1980s, federal expenditures as a percentage of GDP remained relatively unchanged until the 1990s, when it returned to 1960s levels. In addition, new federal programs were still being introduced and debated in parliament, which required as much legislative oversight. So these factors cannot account for the decline we observe.

To explain this trend, we must turn to parliamentary procedures. As we saw in the previous section, several important reforms were introduced in parliament between 1960 and 1990 to "streamline the rules of the debates" (Schmitz, 1988, p.10). These were perhaps the most important reforms of the Canadian parliament after the adoption of closure in 1913. First, they removed a lot of acrimonious debates from the floor of the House by redirecting all government bills from the committee of the whole to standing committees, which could then examine the bills and report back to the main chamber (Garner, 1988, p.29). Second, they fixed a permanent annual calendar with a set number of sitting days and more regular working hours. And third, they reduced the maximum length of legislative speeches from 40 to 20 minutes. Taken together, these new rules appear to have greatly increased the efficiency in dispensing government business and reduced the number of interventions and the length of the debates in the House. But what were their effects on agenda control?

[Figure 3 about here.]

To measure how changes in parliamentary procedures could have increased the government's ability to control the agenda, we can look at who speaks more during the debates. The first plot of Figure 3 reports the annual percentage of the debates controlled by members of the government, the first opposition party, and the remaining opposition parties (left-hand

10

side), while the second plot reports the proportion of debates controlled by the front-bench of the government only[3]. In both cases, the percentages are calculated as a fraction of the total number of words spoken by each group in a given year. Unlike the previous descriptive statistics, the two plots confirm the domination of the executive and the governing party during legislative debates in certain periods only. In terms of the domination of the governing party, the first domination period roughly ranges from the introduction of closure in 1913 to the mid-1960s, while the second one goes from the early 1980s to the beginning of the 2000s. Note the significant increase in the proportion of words pronounced by members of third parties, especially following the election of two regional parties in the 1990s, the Bloc in Quebec and the Reform/Alliance in the West. The overall pattern for the front-bench of the government is somewhat different, with a gradual decline observed overtime in the data, despite the increase in its size over the years (from as little as 20 members in 1911 to as many as 40 in 2014). The data also seems to suggest that the front-bench of the government speaks less during periods of minority governments (1921-1926, 1957-1968, 1972-1979, 2004-2011), but one has to interpret these trends carefully.

This previous analysis does not tell us much about who actually controls the agenda. Put differently, the front-bench of the government could be speaking less over time, but it could still control the debates by determining who can speak and on what issues. After all, the job of the opposition is to confront and to use all of the procedural mechanisms at its disposal to oppose the government. Even though the opposition has long ago lost "the right to talk out government bills" through closure (1913), or the ability to speak for more than 40 minutes on a topic (1927), and later 20 minutes (1982), it still often uses lengthy debates to slow things down (Schmitz, 1988, p.7). Hence, measuring who speaks more during a debate may be misleading, especially if opposition members react to legislative initiatives introduced by the government. In order to determine if changes in parliamentary procedures have increased the government's ability to control the agenda, we must look at who introduces motions and bills, before they are debated in the House. This is in our view a much better indicator of

---

[3]This category includes Ministers, State Ministers, Minister without portfolio and Parliamentary Secretaries.

the distribution of power in the legislature.

[Figure 4 about here.]

Figure 4 presents the results of such an analysis by reporting the annual proportion of debates controlled by members of the government (left-hand side) or the cabinet (right-hand side). More precisely, this measure clusters daily debates by topics (as reported in Hansard) and then looks at who spoke first during these debates (we excluded from this analysis speeches made by the speaker of the house, the deputy speaker, of assistant deputy chair). The data is then aggregated by years to get an index of "first interventions". For each of these groups, the plots confirm a significant shift in the number of first interventions on the government' side, first with a decline from the 1950s to the mid-1970s, followed by a very significant increase until the mid-1990s. Clearly, the new time management tools adopted in the 1960-80 period appears to have had a significant impact on the overall amount of debates controlled by members of the government and its front-bench.

Overall then, the empirical evidence presented in this section fails to confirm the overwhelming dominance of the cabinet, or even the whole government, during legislative debates. We saw that the length of speeches and the number of interventions have increased significantly after World War II, with a subsequent decline in the 1980s, after we controlled for the size of the House and the number of sitting days. We also found that government members tended to speak more than the opposition, but only until the 1960s. After this point, the difference became relatively small, with third party members taking an increasing role in the debates. Finally, the analysis confirmed that members of both the government and the cabinet increasingly controlled the debates in the House beginning in the 1980s. This decade saw the introduction of major procedural changes, both in 1982 and 1986, with the tabling of the Lefebvre and McGrath committee reports. In the next section, we take a closer look at the consequences these changes on both the length and the content of legislative debates.

# Empirical Analysis

The empirical analysis that follows is divided in two sections. In the first part, we analyze what factors influence the length and the number of speeches made by individual members between 1908 and 2015. This analysis is conducted by parliament in order to gauge the impact of important procedural rule changes on legislative speeches. The second part presents the results of a structural topic model to estimate the effect that these new rules had on content of the debates. Our expectation is that changes in parliamentary rules should affect the issues discussed by government and opposition members. In order to conduct this last analysis, we have chosen to focus on the rules implemented in December 1982, which introduced a fixed schedule for House sittings and reduced the maximum length of individual speeches from 40 to 20 minutes. A change point analysis (discussed later) also confirmed the significance of this rule change in the data.

## Analyzing Speech Length and Number of Interventions

We begin our analysis by looking at how a member's position affects the length of legislative speeches or the number of interventions in a given parliament. The first and second columns of Table 2 reports the results of a linear regression model where the dependent variable is the natural logarithm of the total number of words spoken by a member in a given parliament, controlling for his/her position in the house. The member can either sit on the back- or front-bench of the opposition, or be a government backbencher (i.e., the reference category is members of the government front-bench). Both columns include parliament fixed-effects, but the second analysis also includes individual member fixed-effects. The analysis presented in columns 3 and 4 is a poisson regression model that counts the total number of interventions by each member in a given term. This data is aggregated at the level of the individual MPs, and grouped by their position in parliament. Like before, this model also includes parliamentary term dummies and member fixed-effects.

[Table 2 about here.]

Without surprise, the first results confirm that being in the front-bench of the opposition is associated with a greater total amount of legislative speaking time (as measured by the number of words used in a speech). It is interesting to note that being a backbencher from the opposition—but not the government—is correlated with more speaking time as well. In fact, both specifications of the first model confirm that government backbenchers speak the fewest words in parliament. Turning now to our second model, which measures the total number of interventions of each member in a given term, we find that sitting on the front-bench of both the government and the opposition is associated with more interventions. This finding is not surprising as members of the front-bench are more likely to be solicited and intervene during the debates. These results also confirm that government backbenchers have the lowest number of interventions in each parliamentary terms.

The previous findings highlight one important result, mainly that government back-benchers have the least amount of legislative influence through speech. Of course, there are some limits with this type of analysis. By aggregating speeches by member and by parliament, we lose granularity in the data. To overcome this problem, we unpack these averages and sums by reporting the outcomes of two individual-level analyses in Figure 5. This time, however, the analysis is dis-aggregated by parliamentary term ($9^{th}$-$41^{st}$). The first plot looks at the influence of member position on the length of individual speeches, while the second one looks at the same effects, but on the number of interventions. The variables of interest therefore become the total number of words in each individual parliamentary speech (left-hand side), and the sum of interventions by an individual MP in a given term (right-hand side). Both plots display the regression coefficients for all of the 31 parliaments between 1909 and 2015. Since the second analysis represents count data, we ran a quasi-poisson regression model in every term.[4]

[Figure 5 about here.]

From these two plots, we can see the changing patterns of debate dynamics over time. In terms of individual speech length, we note that government backbenchers tend to make

---

[4]This model was chosen because the data is over-dispersed in some terms.

longer speeches in the House. And from the second plot, we find that they tend to intervene less during the debates. This implies that government backbenchers make the most of the opportunities they are offered to speak during the debates by making longer speeches. There also appears to be a consolidating trend in favour of the government (both the front- and the back-bench) when we look at the number of interventions in each term. The second plot displays a lot more variation in earlier parliaments, when compared to the cabinet benchmark. On average, government and opposition backbenchers tend to intervene less during the debates, until the late 1960s, when this difference is somewhat reduced for government backbenchers, but actually increases on the opposition side.

The main takeaway from this analysis is that the speech length and the number of interventions of government backbenchers has increased over time. Both of these measures show a lot more variation around the cabinet benchmark category, but there also seems to be a trend towards a uniformization of the distribution of speech patterns during this period. Clearly, these last analyses suggest a change in the data generating process. To more formally identify this shift, we have estimated (and compared) different change-point models (one for each parliament) to locate potential structural breaks in the data[5]. This analysis identified two distinct breaks: one around the thirty-second Parliament (1980-84) for the number of words, and one around the seventeenth Parliament (1930-1934) for the number of interventions. Both of these changes are relevant because they occurred at the time or shortly after a new set of rules was put in place in the House of Commons to limit the length of debates, in 1927 and 1982. As we are more interested in how parliamentary rules affects the content of legislative speeches, the next analysis will focus on the most recent change, which had a clear impact on the number of words spoken on House members, as shown by the previous analyses.

---

[5]These breaks were identified by comparing the deviance of different statistical models with a limited number of variables. The models include the parliament number (linear and squared). Furthermore, each of these variables was interacted with a binary measure identifying the change points. All parliamentary terms were thus coded 1 after a model-specific time-point was located (for a similar approach, see (Western and Kleykamp, 2004).

## Procedural Changes and the Topics of Debates

In this section, we present the results of a Structural Topic Model (STM) analysis using the `stm` R-package developed by Roberts, Stewart, Tingley, Lucas, Leder-Luis, Gadarian, Albertson and Rand (2014). Structural topic models are a widely used unsupervised text analysis method based on the Latent Dirichlet Allocation (LDA) model (Blei, Ng and Jordan, 2003). Like LDA, STM assumes that the distribution of words in a corpus of text is associated to different topics represented by a set of fixed vocabulary. Each document can potentially contain more than one topic, and the topic model assigns a probability that each word belongs to a topic. Hence, it is possible to estimate the proportion of each topic across all documents in a corpus. The STM approach represents the corpus in a vector of words that counts their occurrence in each document. It is a data dimensionality reduction technique where every word is modeled as a sample from a mixture model in which the components are multinomial random variables that can be viewed as representations of "topics"[6]. One of the advantage of using STM is that it allows metadata to be entered in the model as well. These metadata affect the distribution of topics in a given document, and thus can be used to control for who is speaking during the debate (e.g., government or opposition) and at what time (e.g., before or after a procedural change).

The analytical approach in this section is similar to the one taken by Høyland and Søyland (2019). First, we narrowed our corpus of data to six years before and after the 1982 reform, which occurred in December. This corresponds to all of the speeches made between 1977 and 1988 inclusively. We then ran a topic model with the `stm` package for 25 topics[7]. In our model, we let the topic-proportion vary by year, but also by the MP's position in parliament (whether the member was in the government or the opposition). We also controlled for the 1982 reform by having a time fixed-effect (before or after the reform), which we interacted

---

[6]In other words, documents are "random mixtures over latent topics," and "each topic is characterized by a distribution over words" (Blei, Ng and Jordan, 2003, p.994).

[7]We also ran the model with 15-20-30 topics and found comparable results. Since a compromise between semantic coherence and word exclusivity has to be made when selecting the number of topics, we have chosen 25 topics, which corresponds to the best fit.

with the MP's position in the House[8].

The number of simulations was set at the default value of 500, and the estimateEffect() function was used to estimate the effect that being on the government side had on the topics being discussed during a speech, both before and after the 1982 reform. The dependent variable is thus the proportion of all 25 topics in every individual parliamentary speech made during the 1977-1988 period. Note that this period was governed by a mix of Liberal (6 years) and Conservative (6 years) governments from the $30^{th}$ to the $33^{rd}$ Parliaments[9]. After processing the data by removing stop words, punctuation, and frequently used or uncommon words, we were left with a corpus of 401,316 documents (or speeches) with 3,819 unique terms.

[Figure 6 about here.]

STM is a data driven approach where the researcher has to interpret the model results. In this case, we want to infer what concepts or dimensions are represented by looking at the collection of words associated with each topic. To explore this association, we looked at the most frequently used and exclusive words attached to each of the 25 topics (FREX in the package). Figure 6 reports these results. Some of the identified topics make a lot of intuitive sense, like trade (associated with *manufacture, industries, agreement, foreign*, while others are a little more difficult to interpret, like kindness (associated with *kind, bad, wrong, just* or problem (associated with *difficult, serious extreme, significant*). Five of the 25 topics relate explicitly to parliamentary procedures (amendment, procedure, adjournment, timetable, commission); four relate to actions, idioms, or terms related to speech making (kindness, question, address, problem); and fifteen to specific issues (inflation, unemployment, transportation, partisanship, trade, treaties, charter, pension, finance, environment, federalism, justice, communication, agriculture, media, health). Not all topics are discussed equally in

---

[8]The model follows this formula : $Topic_{1:25} = government + post1982 + government \times post1982 + spline(year)$

[9]The $30^{th}$ (1974-79) was a Liberal majority government, the $31^{st}$ (1979) was a Conservative minority government, the $32^{nd}$ (1980-84) was a Liberal majority government and the $33^{rd}$ (1984-88) was a Conservative majority government.

the corpus. Figure 7 show the prevalence of each topic in the parliamentary debates in the period under study. Terms related to speech making are the most frequently found in the data (around 20%). But procedural terms come in a close second. Certain issues also seem to be more prevalent during the debates, like inflation and unemployment (around 8% of the data), while others appear to have been discussed less frequently (media or health).

[Figure 7 about here.]

Having briefly discussed the 25 topics identified in the model, we now turn to the task of analyzing the impact of the December 1982 rule change on the debates. Recall that the new procedures set out a more permanent timetable by limiting the number of sitting days during a calendar year to 175. They also limited the length of individual speeches from 40 minutes to 20 minutes and modified the hours of sitting so that the House would automatically adjourn at 6PM (except on Fridays). This last change also prevented members from disrupting the regular business of the House by requesting emergency debates, a practice that was often used by private members to discuss new matters by moving for the early adjournment of the House[10].

[Figure 8 about here.]

The results of this analysis are summarized in Figure 8, where the two plots report the estimated impact of the 1982 reform on government versus opposition members. Note that we selected only four procedural (amendment, procedure, adjournment, timetable) and issue topics (trade, unemployment, federalism, charter). The full results on the 25 topics are available in the Appendix of this paper. The interactive term in the models allows us to distinguish before and after the 1982 rule change. Coefficients above zero in the plots indicate that members of the government speak more on this topic compared to members of the opposition.

---

[10]Adjournment debates were previously allowed only after after 8PM (Standing Order 52). However, since the House now adjourned automatically at 6PM, members were no longer allowed to introduced these motions, thus eliminating all conflicts between emergency debates and the regular business of the House.

The first set of results confirm that there was a significant reduction in the amount of debates linked to parliamentary procedures after the rules were changed in 1982. This is most striking when we focus on adjournment debates. Before the reform, opposition party members spoke more about adjourning the House than the government, but the reverse is true after 1982. The changes to the order of business, especially the new permanent House calendar and the abolition of evening sitting hours, also seems to have reduced the need for the government to discuss the timetable, but less so when we look at the amendment and procedural themes. Finally, we also find evidence that the new parliamentary calendar introduced in 1982 had some effects on the types of issues being discussed in the House. There are no clear patterns in the second plot of Figure 8, except perhaps that the proportion of speeches associated with the issues of the Charter of Rights and Freedom and federalism becomes indistinguishable when we compare government and opposition members.

Overall, we can summarize the results of this last analysis as follow. First, there is a clear difference between speeches made on the government and opposition sides. Members of the opposition seem to speak more about the issues, while members of the government focus on procedures instead (getting things done). In fact, ten of the fifteen issues identified by the topic model were discussed more by opposition members, whereas only one procedural topic was discussed more by the opposition—adjournment debates, and only prior to the reform. Second, we find that the 1982 rule change mostly had a targeted impact. Although it did significantly reduce the proportion of procedural speeches made after 1982, this new rule mostly impacted adjournment debates.

## Discussion and Next Steps

This paper has shown that procedural rules affect the number, the length, and the content of parliamentary speeches. Our analysis of the debates in the Canadian Parliament between 1901 and 2015 confirmed that a the introduction of different time management tools in the standing orders between 1968 to 1982 altered the content of the legislative agenda, with the most important impact observed after 1982. During this period, we found an increase in both

the number and length of speeches made by government backbenchers during the debates. Using a structural topic model, we also discovered that the content of legislative speeches was affected by the introduction of these new time management tools, with government members less likely to discuss procedural matters after 1982. There was, however, no discernible impact of these rule changes on the prevalence of the remaining topics identified by the model.

Taken together, these findings suggest that procedural reforms can affect the analysis of parliamentary debates. Despite the fact that members have much more leeway in the selection of words when taking the floor, they are still constrained by legislative rules, especially with regards to speech time limits and the length of the sessional calendar. It is thus not surprising to find that just like with the analysis of recorded divisions in Westminster systems (Spirling and McLean, 2007; Godbout and Høyland, 2011; Spirling, 2016), there is a strong government-versus-opposition issue dynamic in the context of parliamentary speeches in Canada. In fact, we suspect that any attempt to measure a member's ideology from his or her speeches, like with the existing text-scaling model Wordfish (Slapin and Proksch, 2008), could be greatly affected by such procedural rule changes. This conclusion aligns with the empirical work of Lauderdale and Herzog (2016), who show that text scaling of legislative speeches in the U.S. Congress and the Irish Dáil is much better at identifying political disagreement (i.e., government-versus-opposition), than actual individual policy preferences.

The next steps for this project are as follows. First, we want to run the STM model in other periods of rule changes, perhaps when closure was adopted, or in 1927 when the first time limit for speeches was introduced. We also want to conduct some placebo tests, by assuming that the new rules came into effects before or after an actual rule change. By comparing our main findings with the placebo reforms, it will be possible to confirm if there is indeed a causal effect which modified the content of parliamentary speeches. We also want to study how procedural rule changes could affect how parties speak about the issues, especially third parties. Finally, we are hoping to find a better approach to measure agenda control during the debates, to see how the front-bench and the opposition could speak differently about the same issues. In short, the lipad data have opened up an exciting new field of

research in Canadian political science. We hope that this paper will serve as an empirical guide for the study of parliamentary speeches to come.

# References

Aldrich, John H. and David W. Rohde. 2000. *The logic of conditional party government: Revisiting the electoral connection.* PIPC.

Bäck, Hanna and Marc Debus. 2016. *Political parties, parliaments and legislative speechmaking.* Springer.

Beelen, Kaspar, Timothy Alberdingk Thijm, Christopher Cochrane, Kees Halvemaan, Graeme Hirst, Michael Kimmins, Sander Lijbrink, Maarten Marx, Nona Naderi, Ludovic Rheault, Roman Polyanovsky and Tanya Whyte. 2017. "Digitization of the Canadian Parliamentary Debates." *Canadian Journal of Political Science/Revue canadienne de science politique* 50(3):849–864.

Blei, David M., Andrew Y. Ng and Michael I. Jordan. 2003. "Latent Dirichlet Allocation." *Journal of Machine Learning Research* 3:993–1022.

Blidook, Kelly. 2013. *Constituency Influence in Parliament.* Vancouver: UBC Press.

Bräuninger, Thomas, Jochen Müller and Christian Stecker. 2016. "Modeling preferences using roll call votes in parliamentary systems." *Political Analysis* 24(2):189–210.

Carrubba, Clifford, Matthew Gabel and Simon Hug. 2008. "Legislative voting behavior, seen and unseen: A theory of roll-call vote selection." *Legislative Studies Quarterly* 33(4):543–572.

Collenette, D. 1983. "Letter to the Prime Minister, 1.11. 1983." *Privy Council Office, released under the Access to Information Act* .

Cox, Gary W. and Mathew D. McCubbins. 1993. *Legislative leviathan: Party government in the House.* Cambridge University Press.

Cox, Gary W. and Mathew D. McCubbins. 2005. *Setting the agenda: Responsible party government in the US House of Representatives.* Cambridge University Press.

Dawson, William F. 1962. *Procedure in the Canadian House of Commons.* Toronto: University of Toronto Press.

Dewan, Torun and Arthur Spirling. 2011. "Strategic opposition and government cohesion in Westminster democracies." *American Political Science Review* 105(2):337–358.

Diermeier, Daniel, Jean-François Godbout, Bei Yu and Stefan Kaufmann. 2012. "Language and ideology in Congress." *British Journal of Political Science* 42(1):31–55.

Eggers, Andrew C. and Arthur Spirling. 2017. "Incumbency effects and the strength of party preferences: Evidence from multiparty elections in the United Kingdom." *The Journal of Politics* 79(3):903–920.

Garner, Christopher. 1988. "Reforming the House of Commons: Lessons from the Past and Abroad." *Canadian Parliamentary Review* 21(4):28–32.

Giannetti, Daniela and Andrea Pedrazzani. 2016. "Rules and Speeches: How Parliamentary Rules Affect Legislators' Speech-Making Behavior." *Legislative Studies Quarterly* 41(3):771–800.

Godbout, Jean-François and Bjørn Høyland. 2011. "Legislative voting in the Canadian Parliament." *Canadian Journal of Political Science/Revue canadienne de science politique* 44(2):367–388.

Godbout, Jean-François and Bjørn Høyland. 2017. "Unity in diversity? The development of political parties in the parliament of Canada, 1867–2011." *British Journal of Political Science* 47(3):545–569.

Herzog, Alexander and Kenneth Benoit. 2015. "The most unkindest cuts: speaker selection and expressed government dissent during economic crisis." *The Journal of Politics* 77(4):1157–1175.

Hockin, Thomas A. 1965. "Reforming Canada's Parliament: The 1965 Reforms and beyond." *The University of Toronto Law Journal* 16(2):326–345.

Høyland, Bjørn and Martin G. Søyland. 2019. "Electoral Reform and Parliamentary Debates." *Legislative Studies Quarterly* 0(0).

Huber, John D. 1996. "The vote of confidence in parliamentary democracies." *American Political Science Review* 90(2):269–282.

Lauderdale, Benjamin E. and Alexander Herzog. 2016. "Measuring political positions from legislative speech." *Political Analysis* 24(3):374–394.

Lee, Frances E. 2016. *Insecure majorities: Congress and the perpetual campaign*. University of Chicago Press.

McGuigan, Mark. 1979. "Parliamentary Reform: Impediments to an Enlarged Role for the Backbencher." *Canadian Parliamentary Review* 2(1):7–16.

Pedrazzani, Andrea. 2017. "Wasting or saving time? How government and opposition parties use time during legislative debates. Evidence from the Italian case." *The Journal of Legislative Studies* 23(3):439–464.

Proksch, Sven-Oliver and Jonathan B. Slapin. 2015. *The politics of parliamentary debate*. Cambridge University Press.

Roberts, Margaret E., Brandon M. Stewart, Dustin Tingley, Christopher Lucas, Jetson Leder-Luis, Shana Kushner Gadarian, Bethany Albertson and David G. Rand. 2014. "Structural topic models for open-ended survey responses." *American Journal of Political Science* 58(4):1064–1082.

Schmitz, Gerald. 1988. *The Opposition in a Parliamentary System*. Library of Parliament, Research Branch.

Slapin, Jonathan B. and Sven-Oliver Proksch. 2008. "A scaling model for estimating time-series party positions from texts." *American Journal of Political Science* 52(3):705–722.

Slapin, Jonathan B. and Sven-Oliver Proksch. 2014. "Words as data: Content analysis in legislative studies." *The Oxford Handbook of Legislative Studies* pp. 126–144.

Soroka, Stuart, Erin Penner and Kelly Blidook. 2009. "Constituency influence in parliament." *Canadian Journal of Political Science/Revue canadienne de science politique* 42(3):563–591.

Spirling, Arthur. 2016. "Democratization and linguistic complexity: The effect of franchise extension on parliamentary discourse, 1832–1915." *The Journal of Politics* 78(1):120–136.

Spirling, Arthur and Iain McLean. 2007. "UK OC OK? Interpreting optimal classification scores for the UK House of Commons." *Political Analysis* 15(1):85–96.

Stewart, John B. 1977. *The Canadian House of Commons: procedure and reform.* Montreal, Kingston: McGill-Queen's Press-MQUP.

Western, Bruce and Meredith Kleykamp. 2004. "A Bayesian change point model for historical time series analysis." *Political Analysis* 12(4):354–374.
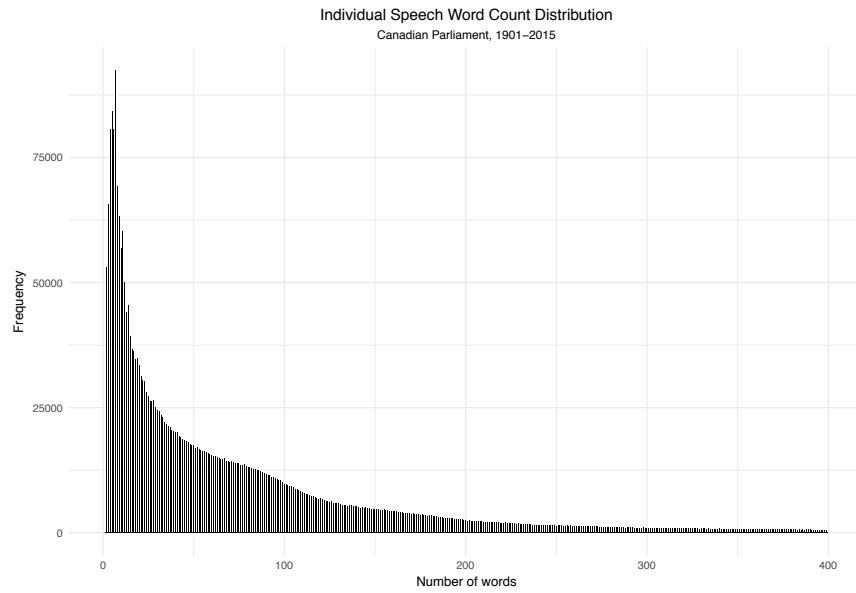
Figure 1: Figure 1 reports the distribution of the number of words (censored at 400 words) used in all of the individual speeches made in the House of Commons between 1901-2015.
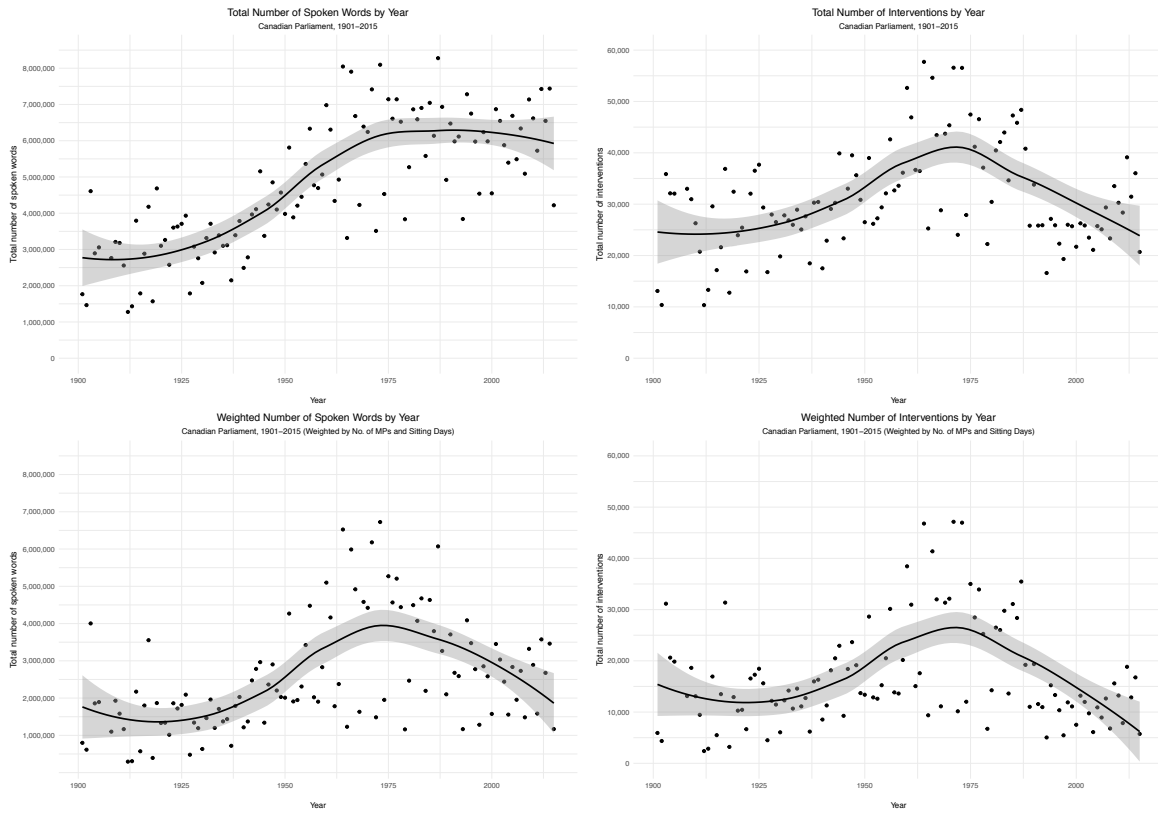
Figure 2: The two top plots of Figure 2 report the total number of words (left) and interventions (right) in the House of Commons in each year since 1901. The two bottom plots report the number of words (left) and interventions (right) weighted by the number of sitting days and the number of MPs. The lines are loess curves fitted locally on the x axis ($\alpha = .5$).
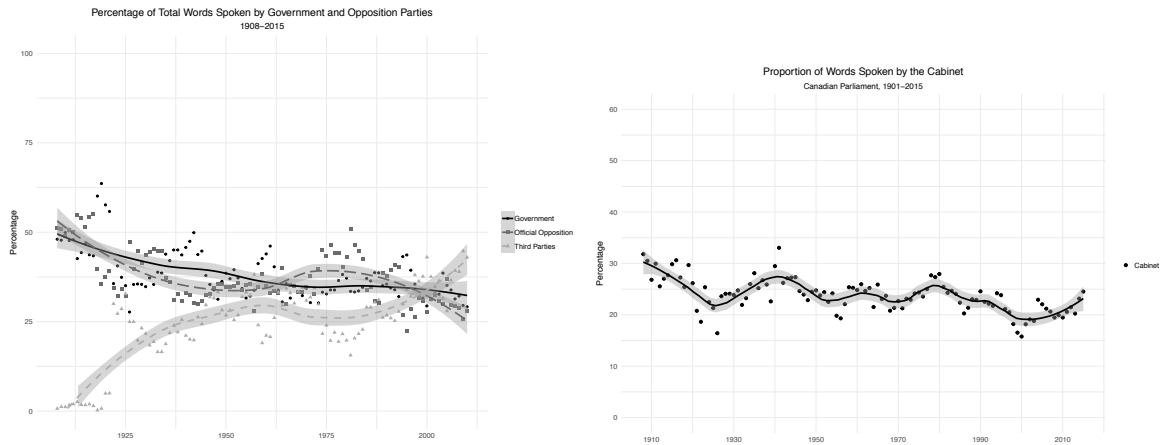
Figure 3: Figure 3 reports the total number of spoken words by members of the government, the official opposition and third parties in each year between 1901-2015 (left), and the percentage of total words spoken by Cabinet members (right). The lines are loess curves fitted locally on the x axis ($\alpha = .5$).
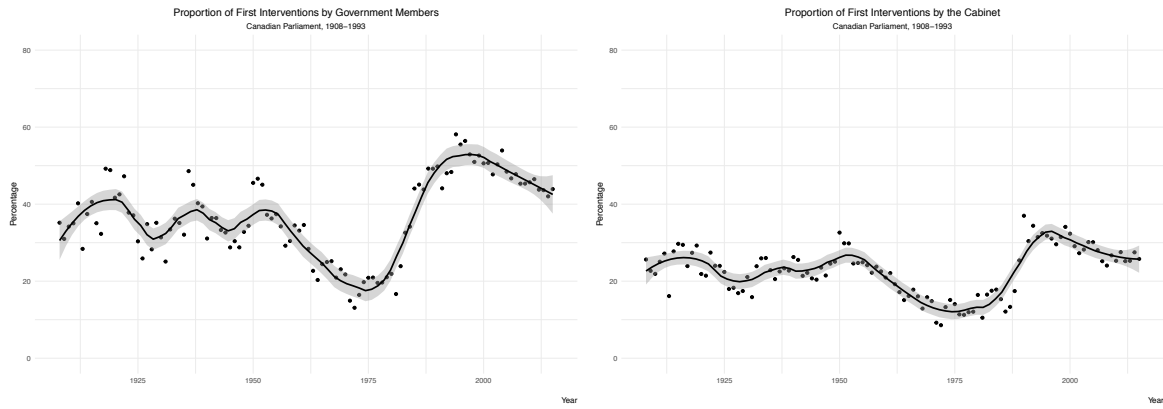
Figure 4: Figure 4 reports the percentage of first interventions on a given topic that are pronounced by members of the government (left) or by Cabinet members (right) in each year between 190 and 2015. The lines are loess curves fitted locally on the x axis ($\alpha = .5$).

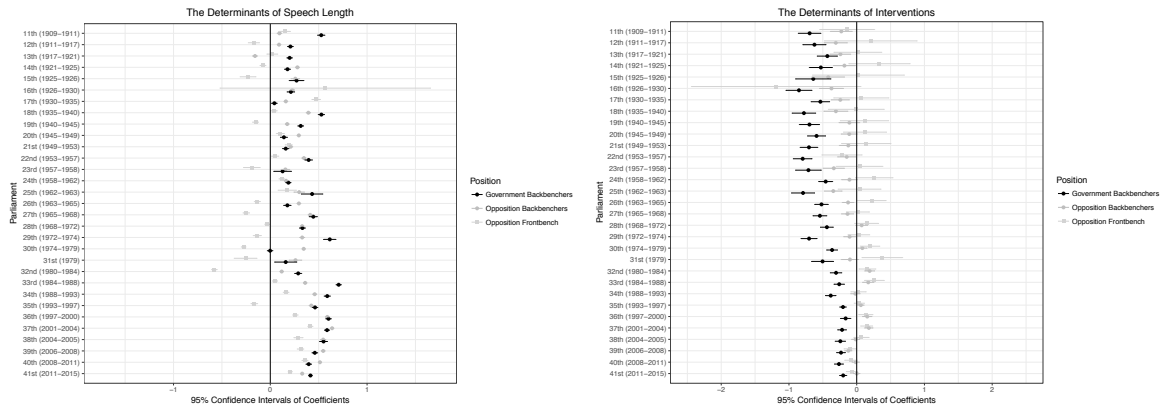Figure 5: The plots display the effect of sitting on the back-bench of the government, on the back-bench of the opposition, or on the front-bench of the opposition on the total number of spoken words (left) and the total number of interventions (right) in each parliament between 1909 and 2015 (ref. category = government frontbenchers). The bars indicate the 95% confidence intervals for the regression coefficients.

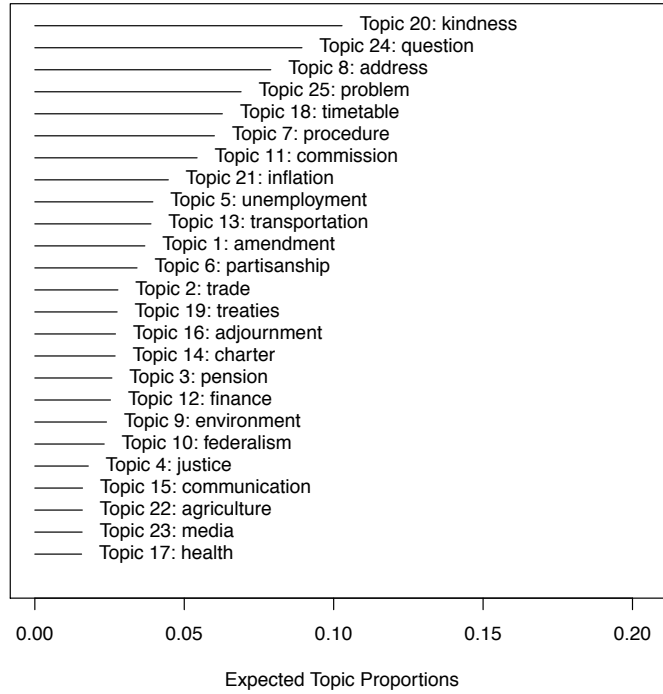**Prevalence of Each Topic in Parliamentary Debates (1977–1988)**



| | |
|---|---|
| ———————————————— | Topic 20: kindness |
| ——————————————— | Topic 24: question |
| ——————————————— | Topic 8: address |
| ————————————— | Topic 25: problem |
| ———————————— | Topic 18: timetable |
| ———————————— | Topic 7: procedure |
| —————————— | Topic 11: commission |
| —————————— | Topic 21: inflation |
| ————————— | Topic 5: unemployment |
| ————————— | Topic 13: transportation |
| ———————— | Topic 1: amendment |
| ———————— | Topic 6: partisanship |
| ——————— | Topic 2: trade |
| ——————— | Topic 19: treaties |
| ——————— | Topic 16: adjournment |
| ——————— | Topic 14: charter |
| —————— | Topic 3: pension |
| —————— | Topic 12: finance |
| —————— | Topic 9: environment |
| —————— | Topic 10: federalism |
| ————— | Topic 4: justice |
| ———— | Topic 15: communication |
| ———— | Topic 22: agriculture |
| ———— | Topic 23: media |
| ———— | Topic 17: health |

0.00    0.05    0.10    0.15    0.20

Expected Topic Proportions

Figure 6: This figure reports the prevalence of each of the 25 topic identified by the STM within the corpus (1977-1988).

**Topics by most frequent and exclusive words**

**amendment**
claus, bill, amend, legisl, act, section, regul, pass, introduc, piec, definit, draft, passag, statut, provis, substitut, author, code, purpos, contain, principl, enforc, subsect, requir, defin

**trade**
trade, manufactur, industri, tariff, free, export, commerc, american, lumber, auto, competit, market, product, japan, gatt, unit, steel, agreement, foreign, domest, textil, japanes, softwood, compet, automobil

**pension**
pension, incom, tax, retir, index, veteran, deduct, earn, home, senior, age, benefit, mortgag, taxat, pay, old, insur, gain, widow, famili, credit, spous, taxpay, exempt, supplement

**justice**
hear, refuge, court, appeal, immigr, judg, lawyer, claim, suprem, law, legal, process, claimant, applic, abus, case, legitim, status, trial, determin, person, judici, criteria, bar, judgment

**unemployment**
unemploy, job, program, research, employ, creat, technolog, econom, creation, develop, train, fund, strategi, sector, incent, region, student, assist, skill, project, expans, help, youth, scienc, work

**partisanship**
elect, liber, conserv, promis, tori, campaign, parti, democrat, ndp, senat, polit, throne, poll, progress, speech, elector, socialist, leadership, candid, caucus, critic, defeat, defend, voter, trudeau

**procedure**
point, parliamentari, motion, committe, proceed, chair, notic, rule, oclock, tabl, minut, hansard, paper, honour, common, day, adjourn, preced, shall, hour, consent, sit, hous, read, stage

**address**
hon, member, comment, friend, thank, gentleman, remark, colleagu, think, sure, listen, appreci, quit, represent, happi, glad, suggest, remind, know, apolog, hamilton, congratul, risen, pleas, speech

**environment**
fisheri, fish, water, fishermen, mine, energi, gas, ocean, oil, pipelin, vessel, environment, coast, environ, offshor, cape, coal, resourc, acid, drill, pollut, explor, harbour, breton, petroleum

**federalism**
provinc, provinci, quebec, feder, transfer, premier, ontario, columbia, british, manitoba, municip, brunswick, federalprovinci, alberta, jurisdict, edward, postsecondari, territori, saskatchewan, princ, formula, island, educ, region, nova

**commission**
inform, investig, solicitor, rcmp, report, recommend, inquiri, document, general, alleg, commiss, readi, conduct, auditor, releas, guidelin, offici, commission, letter, royal, review, appoint, secret, file, polic

**finance**
bank, corpor, petit, compani, petrocanada, loan, crown, profit, small, busi, petition, asset, financi, enterpris, invest, deposit, sharehold, ownership, canadair, patent, own, multin, transact, lend, privat

**transportation**
air, contract, airport, depart, treasuri, transport, aircraft, rail, airlin, safeti, railway, travel, passeng, via, board, date, facil, traffic, nil, agenc, equip, locat, truck, estim, ltd

**charter**
freedom, constitut, french, languag, punish, right, minor, english, multicultur, charter, aborigin, murder, human, prison, fundament, referendum, bilingu, histor, histori, uniti, resolut, discrimin, francophon, distinct, entrench

**communication**
post, mail, employe, postal, offic, cbc, broadcast, telephon, bell, metric, union, servic, bargain, labour, crtc, staff, strike, convers, communic, station, collect, worker, postmast, radio, deliveri

**adjournment**
order, rise, stand, madam, move, second, urgent, necess, immedi, pursuant, view, wherea, provis, press, matter, privileg, withdraw, instruct, therefor, forthwith, urgenc, request, remiss, simco, urg

**health**
health, women, medic, children, abort, care, crime, victim, child, parent, hospit, welfar, woman, doctor, mother, smoke, sexual, men, handicap, divorc, patient, young, drug, school, voluntari

**timetable**
opposit, leader, debat, discuss, forward, vote, hope, agre, side, want, next, bring, yes, will, accept, posit, put, soon, closur, consult, opportun, say, week, prepar, understand

**treaties**
indian, extern, nuclear, soviet, band, affair, treati, militari, peac, africa, defenc, nato, arm, weapon, missil, war, intern, secretari, cruis, ambassador, state, franc, south, summit, unit

**kindness**
thing, get, happen, talk, someth, back, got, lot, realli, littl, kind, say, let, els, anyth, away, enough, bad, wrong, around, suppos, tri, dont, look, just

**inflation**
cent, per, billion, budget, deficit, borrow, inflat, rate, increas, dollar, figur, spend, debt, expenditur, higher, gasolin, financ, reduc, growth, fiscal, reduct, declin, compar, economi, forecast

**agriculture**
farmer, farm, grain, wheat, agricultur, crop, crow, prairi, western, produc, beef, canagrex, stabil, dairi, food, feed, cattl, commod, elev, price, bushel, meat, milk, drought, car

**media**
newspap, advertis, game, articl, absolut, calgari, film, sport, art, that, artist, news, book, nonsens, olymp, team, media, publish, quot, globe, lotteri, toronto, incompet, editori, amateur

**question**
minist, answer, question, prime, ask, remain, tell, direct, yesterday, oral, whether, deputi, supplementari, financ, statement, announc, assur, confirm, intend, cabinet, explain, indic, repli, absenc, prepar

**problem**
problem, must, approach, situat, difficult, difficulti, solut, term, aspect, way, particular, various, seem, serious, much, structur, certain, extent, role, possibl, signific, becom, extrem, solv, rather

Figure 7: The figure reports the 25 most frequently used and exclusive words in the 25 topics identified by the STM (1977-1988).
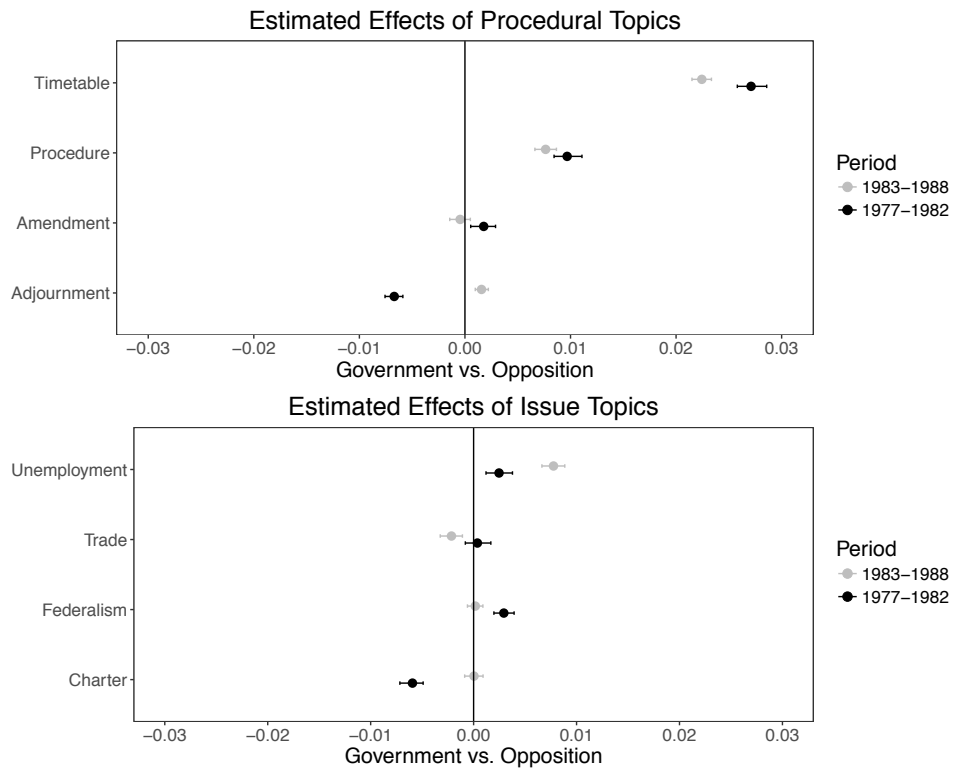
Figure 8: Each plot reports the impact of belonging to the government or the opposition on topic prevalence, before and after the 1982 rule change (1977-88). The dependent variable is the proportion of all topics in each document. The effects are differences (government compared to opposition), which are calculated by putting all variables at their sample mean, and by contrasting government and opposition members before and after the rule change with an interactive term. Positive effects means that the government is more likely to use a topic than the opposition. Uncertainty is calculated using the Global approximation.

| Descriptive Statistics of the Corpus (1901-2015) | |
| --- | --- |
| Total Number of MPs | 3434 |
| Total Number of Speeches | 3,729,366 |
| Total Number of Words | 574,691,306 |
| Total Number of Sitting days | 12,886 |
| Average Speeches (per day) | 289 |
| Average Number of Words (per speech) | 154 |

Table 1: Descriptive statistics about the entire corpus of parliamentary speech data (Lipad).

| Model | 1.1 | 1.2 | 2.1 | 2.2 |
|---|---|---|---|---|
| (Intercept) | 9.938* | 10.892* | 6.78* | 4.612* |
| | (0.113) | (0.883) | (0.004) | (0.040) |
| Gov. Back-bench | -1.310* | -0.853* | -2.203* | -1.412* |
| | (0.047) | (0.044) | (0.002) | (0.002) |
| Opp. Back-bench | 0.238* | 0.323* | -0.546* | -0.059* |
| | (0.047) | (0.047) | (0.001) | (0.253) |
| Opp. Front-bench | 0.373* | 0.237* | 0.400* | 0.253* |
| | (0.092) | (0.087) | (0.002) | (0.003) |
| Parliament Fixed Effects | ✓ | ✓ | ✓ | ✓ |
| MP Fixed Effects | | ✓ | | ✓ |
| N | 9564 | 9564 | 9564 | 9564 |

Table 2: Effect of a member's position on the length of legislative speeches (1.1-1.2) or the number of interventions (2.1-2.2)
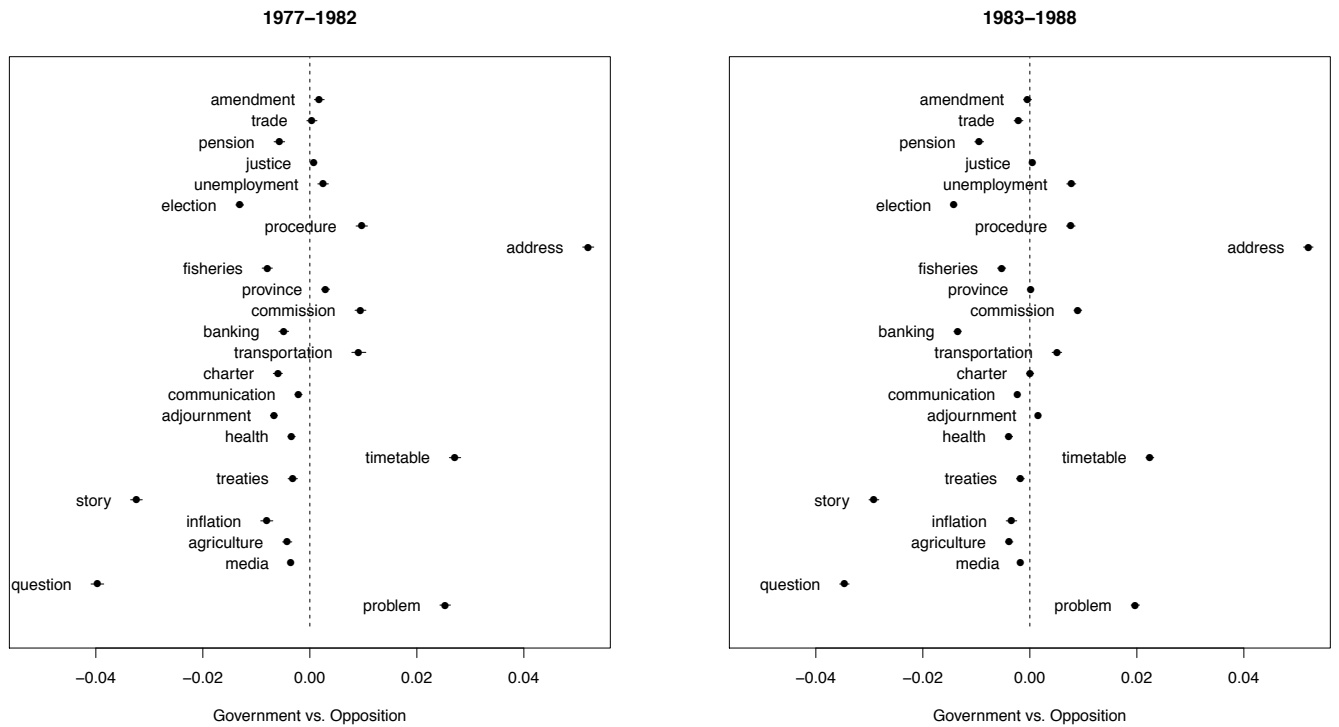
# Appendix A



Figure A1: Each plot reports the impact of belonging to the government or the opposition on topic prevalence, before and after the 1982 rule change (1977-88). The dependent variable is the proportion of all topics in each document. The effects are differences (government compared to opposition), which are calculated by putting all variables at their sample mean, and by contrasting government and opposition members before and after the rule change with an interactive term. Positive effects means that the government is more likely to use a topic than the opposition. Uncertainty is calculated using the Global approximation.