Lobbying for Democracy:
Interest Groups in Canada’s
Parliamentary System

by

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Abstract

Political scientists have long been interested in how interest groups influence policy—especially the information they provide to elected officials. In the American presidential system and in European consensus-parliamentary systems, information is increasingly understood as a subsidy from groups to their allies in the legislature. However, in majoritarian-parliamentary systems (i.e. “Westminster” countries), such a perspective remains underdeveloped. The central motivation of this project is to understand how interest groups use information to intervene in the Westminster policy process. As an empirical case, I focus on a prominent majoritarian parliament: Canada.

I generate quantitative evidence from three original datasets. First, I use aggregated Canadian lobbying registrations spanning fifteen policy areas from 1990-2009. Second, I use a dataset of 41,619 individual-level lobbying records from the House of Commons between 2010 and 2017. Third, I use a large dataset of committee transcripts of Canadian parliamentarians and witnesses between 2006 and 2018, totalling 1.09M utterances.

I present three major findings. First, lobbying from “cause” groups—representing diffuse interests like climate change—strengthens government responsiveness to public opinion. Lobbying from “sectional” groups—representing industry and professional associations—has no observable effect. Second, interest groups are more likely to communicate with government frontbenchers than with opposition or backbench members. This gap diminishes as agenda control diffuses to the opposition (i.e. during minority government). Third, interest groups—although nominally non-partisan—talk about policy issues in much the same way as partisan elected officials. Although we might expect legislative committees to help parliamentarians find common ground, the evidence suggests they often provide a venue for rival parties to learn about and develop competing issue frames.

Keywords: interest groups; government accountability; democratic representation; legislative studies; public policy; political behaviour; political communication
Dedication

To Elgin.

You jump, I jump.

To my family.

Thank you for always believing in me (and for all those White Spot pirate packs).

To my parents, Barbara & Marshal.

I’ll never live down that baby photo of my head stuck in a couch.

To my dog, Apollo.

Who’s a good boy? You are.
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Chapter 1

Introduction

Scholars have demonstrated various means by which interest groups take advantage of parties and legislatures to influence public policy. These include “party purity” associations to select favourable candidates (e.g. Murakami, 2008), “shadow party” agents like Political Action Committees that mobilize voters (e.g. Ansolabehere, De Figueiredo and Snyder, 2003; Skinner, Masket and Dulio, 2012), and the provision of policy information as a “legislative subsidy” for like-minded legislators (e.g. Hall and Deardorff, 2006). The concept of a legislative subsidy points to a crucial distinction: Lobbying is about more than changing minds or buying votes; it is about identifying allies, mobilizing them, and providing information to support their efforts. In a recent article, Schnakenberg (2016) builds on the work of Hall and Deardorff (2006), Ainsworth (1993, 1997), Austen-Smith and Wright (1994) and others to formally show that informational lobbying can help “friendly” legislators influence reluctant colleagues.

The reframing of lobbying as a legislative subsidy has broad implications for studies of the policy process. Theories of policy responsiveness suggest that governments respond to changes in issue salience (Stimson, MacKuen and Erikson, 1995; Soroka and Wlezien, 2004, 2010). But if lobbying is a legislative subsidy, then interest groups may help elected officials anticipate public opinion by offering relevant information about the consequences of their decisions. Thus, the strength of the opinion-policy relationship may vary depending on the level of interest group activity. Similarly, theories of parliamentary government depict accountability as a principal-agent relationship: Legislators (as principals) delegate authority to cabinet members (as agents) and rely on information to keep them accountable.
(Kam et al., 2010; Saalfeld and Strøm, 2014). But in Westminster systems, party cohesion creates a strong incentive for lobbyists to subsidize members of cabinet over other legislators. When the governing party controls the agenda, lobby groups may undermine parliamentary accountability by intensifying the information asymmetry between the executive and the legislature. Finally, scholars of legislative studies might hope democratic institutions, such as committees, help legislators generate policy expertise and stay well informed (Krehbiel, 1991; Tsebelis, 2002; Baughman, 2006). But if interest groups subsidize expertise among their legislative allies, then opposing politicians may grow suspect of such information and filter it through a partisan lens. Rather than help rival politicians find common ground, committees might help them develop competing “issue frames”—words, images, and language that emphasize one aspect of an issue over others (Druckman, Peterson and Slothuus, 2013).

In this dissertation, I consider the relationship between information, interest groups, and institutions. I do so in the context of lingering concerns over democratic responsiveness, parliamentary accountability, and legislative deliberation. Specifically, I explore whether interest groups have a moderating effect on the link between voter attention and government attention. I argue that certain groups—namely, public interest groups—can strengthen the link between voter attention and government attention. However, I also explore whether this comes at a cost in the legislature. Strong parties may restrict the legislative branch’s access to information from interest groups, weakening its capacity to hold the government accountable. Finally, I evaluate the normative expectation that democratic institutions, specifically committees, help rival legislators find common ground. I argue committee members contend with two competing goals. On the one hand, they must rise above the partisan fray and objectively consider all the available information. On the other hand, they are partisans who face tremendous pressure to transform committee hearings into another point of partisan conflict.

Below, I present a brief literature review and the main objectives of this study. I then outline the dissertation. For each Chapter, I provide a brief synopsis, identify the main contributions, review the relevant theory, and present my research findings. In Chapter
Two, I propose a dynamic panel regression model to test whether interest group advocacy moderates the effect of public opinion on policy activity. In Chapter Three, I combine dynamic panel regression and social network analysis to compare differences in the frequency of lobbying interactions between the executive and the legislative. In Chapter Four, I propose a scalable and automated approach to identify competitive issue frames among interest groups. I then test for partisan differences in issue framing—that is, whether legislators who share a political party are more likely to invoke the same issue frames during committee than those who do not.

1.1 Literature Review

In The Governmental Process, David Truman was one of the first to suggest that interest groups use information to support legislators. Rather than depict organized interests as “pressure groups” intent on bribing and manipulating elected officials, Truman (1951, 333) instead presented information exchange as the real purpose of lobbying: “One important factor among the informal determinants of access is created by the legislator-politician’s need of information and the ability of a group to supply it.” Milbrath (1963, 210) elaborated on Truman’s observation, pointing out that interest groups who provide information must be sensitive to legislators’ ideological and partisan biases: “Anyone reading congressional hearings...must conclude that most members of Congress hear what they want to hear from witnesses. The most significant barrier to effective communication facing the lobbyist...is the perceptual screen of the receiver”. Bauer, Pool and Dexter (1963, 442) pushed this insight even further, arguing lobbyists selectively expose “friendly” legislators to information:

When a congressman’s stand becomes known, that fact determines to a large extent what communications get sent to him...The tactical basis of pressure-group activities seemed to be to assist men already on their side to do the job of persuading fellow legislators.

In other words, a legislator who enjoys close relations with an interest group likely does so because they share political or policy goals, and not necessarily because the group has coerced or corrupted her.
Since then, a large body of literature in political science has debated the extent to which interest groups use information to purchase legislative support (“exchange models”) (Godwin, Ainsworth and Godwin, 2012), persuade political opponents (“persuasion models”) (Austen-Smith and Wright, 1992, 1994, 1996), and bankroll the policy work of allied legislators (“subsidy models”) (Hall and Deardorff, 2006). There are several lines of research in this area. Some authors investigate whether lobbying by public interest groups might strengthen democratic representation, while lobbying by special interest groups might weaken it. On one hand, findings from Mahoney (2008), Klüver (2012), Bernhagen (2012), Binderkrantz and Pedersen (2015), Dür and Mateo (2016), and Giger and Klüver (2016) suggest interest group lobbying can improve representation because legislators depend on the information that public interest groups provide. On the other hand, findings from Dür and De Bièvre (2007), Cohen et al. (2008), Yackee and Yackee (2006), Gilens (2009), and Gilens and Page (2014) suggest interest group lobbying produces unequal representation because business interests are better able to exploit electoral and policy processes for their private gain.  

Another branch within the interest group literature considers the complicated relationship between political institutions and lobbying activity. There are two main approaches here. The first, and the most common, is to use cross-national differences in observational data as evidence that political institutions determine lobbying access—i.e. who gets lobbied. Here again, the conclusions are mixed. For example, Lijphart (2012, 3) uses statistical and historical evidence from 36 democracies. He concludes that majoritarian political institutions (e.g. two party systems, strong executive powers) are closely associated with “free for all” pluralism, while consensus institutions (e.g. multi-party systems, balanced executive and legislative powers) are associated with “coordinated” corporatism. In other words, majoritarian institutions encourage interest groups to compete for access to government, while corporatist institutions discourage competition by offering certain groups a seat at the

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1 Other researchers hedge their bets. For example, Hall and Deardorff (2006, 73–74 & 81) follow Berry (1990) to argue public interest groups possess a comparative advantage in the legislature because of their ability to produce “political expertise” and “legislative intelligence”; nonetheless, they also recognize the collective action problem results in a disproportionate number of business and industry groups in the lobbying system.
decision-making table. Yet Moosbrugger (2012) uses case studies of agrochemical use in the EU, the UK, Germany, Austria, and Sweden to challenge this conclusion. She suggests that majoritarian institutions render individual legislators more “vulnerable” to interest group co-optation. Finally, Dür and Mateo (2016, 91–92 & 213–214) conduct quantitative analysis from a survey of interest groups in the EU to conclude there is little difference between pluralist and corporatist countries when it comes to lobbying access.

The second approach within this literature is to focus on a single political institution—typically, the legislature (Binderkrantz, 2014, 536). For example, Naoi and Krauss (2009) consider the relationship between electoral systems and interest group lobbying. They adopt a “quasi-experiment” research design to compare interest group behaviour before and after Japan changed from the Single Non-Transferable Vote (SNTV) to a hybrid Mixed-Member Majoritarian (MMM) standard. Using regression models, Naoi and Krauss (2009) show that Japanese interest groups focused their lobbying efforts on the legislature rather than on the bureaucracy after the switch to MMM. In explaining this change, the authors hypothesize that different electoral systems provide different incentives for contract enforcement. They use a modified “exchange model” to argue that interest groups provide information to legislators in return for access/influence. Under an SNTV system, interest groups (as principals) were unable to prevent Japanese legislators (as agents) from reneging on the contract. As a result, groups invested their time and resources in lobbying bureaucrats.

2By majoritarian institutions, I mean systems of government that correspond to the typology of Lijphart (2012): predominantly two party systems; pluralist interest group relations; small, minimal winning coalitions; parliamentarism (as opposed to presidentialism); and First-Past-the-Post electoral system (rather than a proportional model). For example, Maeda (2015) use a similar distinction to compare opposition party behaviour in deliberative and majoritarian parliaments. Almond (1958, 278) draw a similar distinction when comparing differences in lobbying access between the US and the UK: “the American system of federalism, and separation of powers, creates a different interest group ‘target structure’ than does the British parliamentary-cabinet system...because of the cohesion of the party system and the concentration of legislative power in the Cabinet, the impact of any single interest group—with the exception of the trade unions—is quite limited [in the UK].”

3Following exchange models, access and influence in the legislature are a function of the “price” legislators charge and what groups are willing to pay. The legislator charges more when she disagrees with a group’s preferred policy and when that policy is unpopular, highly visible, and undermines her political party (Godwin, Ainsworth and Godwin, 2012, 158-159). The lobby group is willing to pay a high price when it values a given policy outcome, when legislators are influential in the legislature (e.g. party leader, committee chair, etc.), and when the price is reasonable relative to what other legislators charge (Godwin, Ainsworth and Godwin, 2012, 159-160).
The switch to MMM, however, empowered party leaders to select candidates. This facilitated contract enforcement because interest groups could now appeal to party leaders in the event of reneging. As a result, lobby groups intensified their lobbying activities among legislators. This is a useful finding because it points to a possible relationship between political institutions, party coherence, and lobbying access.

Other researchers, mostly game theorists in the US, look inside legislative institutions to model the strategic calculus of individuals. Formal theories of lobbying tend to treat information either as an “access good” that facilitates an exchange (e.g. Denzau and Munger, 1986; Bouwen, 2004; Godwin, Ainsworth and Godwin, 2012) or as a tool of persuasion (e.g. Austen-Smith and Wright, 1992, 1994, 1996). Other authors follow Bauer, Pool and Dexter (1963) to interpret information as a legislative subsidy that groups use to help friendly legislators achieve shared policy goals (Hall and Deardorff, 2006). The subsidy model emphasizes information asymmetry (as with persuasion models) but also recognizes that resource scarcity leads legislators to seek help from interest groups (as with exchange models). Thus, a legislator becomes increasingly eligible for a subsidy as her policy objectives align with those of the group and as her “productivity” in the legislature grows (i.e. her ability to achieve policy goals).

The subsidy model has become a popular explanation of lobbying because it solves two puzzles in the literature. The first is empirical: Why do lobby groups focus their efforts on allies in the legislature? The answer is because they share policy goals. The allied legislator benefits from the group’s “policy expertise” and “legislative intelligence,” while the group benefits from the allied legislator’s productivity (Hall and Deardorff, 2006, 74 & 76). The

4 Austen-Smith and Wright (1992, 1994) present a “persuasion model” to argue that lobbying is counteractive—it exists to neutralize the threat from opposition groups and to persuade open-minded legislators. Whereas the exchange model emphasizes resource scarcity and gains from trade, the persuasion model emphasizes information asymmetries in the legislative process. The persuasion model is sometimes called a “signaling model,” and it is important to distinguish information signaling persuasion models from other applications, such as Kollman (1998), who uses signaling models in outside lobbying. Austen-Smith and Wright (1992, 1994) emphasize that groups lobby in order to change a legislator’s mind—that is, to change their preference on an issue. In contrast, Kollman (1998) argues that groups engage in informational signaling to communicate a change in salience to the legislator. This is akin to a type of policy activation rather than an overt effort to change a legislator’s preferences. As Hall and Deardorff (2006, 79) put it: “Through grass-roots signals of salience... the legislator will be legislatively mobilized.”

5 See A.1 through A.12, particularly A.7, in Hall and Deardorff (2006, 76-77 & 81-82).
second puzzle is theoretical: How do lobby groups enforce contracts with politicians? The answer is that the need for a contract diminishes (as does the likelihood of moral hazard) as the legislator’s policy goals align with those of the lobby group. Under the subsidy model, elected representatives may even come to demand policy information from likeminded interest groups—that is, the legislator lobbies the lobbyist (Hall and Deardorff, 2006, 80).

One of the major research areas to apply the subsidy model is legislative studies. In the European literature, the focus is on collective action and unequal representation. Different types of lobby groups are able to access different types of political actors, which influences representation. For example, Binderkrantz and Pedersen (2015) look at committee appearances in Denmark to show that the legislative arena benefits from a more diverse cross-section of group representation than the bureaucracy, where special interest groups represent 90% of all lobbying. She also suggests that few lobby groups confine their activities to the regulatory sphere. Most groups—particularly public interest groups—actively work to set the legislative agenda (p. 99). Similarly, Giger and Klüver (2016, 191-192) look at legislative voting in Switzerland. They reference the subsidy framework to suggest that legislators are agents of two principals—the voting public as well as their political party. To satisfy both principals, legislators depend on informational subsidies from interest groups. And while public interest groups are likely to advocate for policies that align with majority preferences, special interest groups may encourage “defection”—that is, a weakening of the “electoral link” with voters (p. 192-193). Bringing these two insights together may shed light on the contradictory findings in the representation literature (mentioned above). For example, while we know that special interest groups weaken representation through the regulatory process (inter alia Yackee and Yackee, 2006), it is possible that public interest groups might strengthen the responsiveness of the government’s broader policy agenda.

Bauer, Pool and Dexter (1963, 440) relate the following colourful anecdote: “one congressman, when asked what he had heard from the lobby groups on his side and whether they had pushed him, said: ‘Hell no, it’s just the other way around; it’s me calling them up and trying to shaft them to get off their fat rears and get out and do something.’” The authors also quote a legislative assistant saying, “I absolutely had to beat them over the head at my lobbying organization to find out what I wanted to find out; I had to push and push them on this to get the information.”
In the US literature, the focus has been on partisan networks of political parties and interest groups. For example, in *The Party Decides*, Cohen et al. (2008) study presidential nominations to depict interest groups as “intense policy demanders” that structure American politics. They follow Schattschneider (1960) to describe political parties as “coalitions of groups” (Cohen et al., 2008, 38), and cite Hall and Deardorff (2006, 32) to argue, “lobbyists just fill in details for goals that they and the officeholders share.” Similarly, Koger, Masket and Noel (2009) use social network analysis to show that interest groups and parties share voter lists, such that left-leaning groups affiliate with Democrats and right-leaning groups with Republicans. They suggest these “extended party networks” play an important role in legislative polarization—even ideologically proximate groups sort into different partisan teams (p. 647). Grossmann and Dominguez (2009, 794) look at campaign contributions to reach a slightly different conclusion: Interest groups sort into “party coalitions” during candidate nominations and elections, but for some “generalist” groups, these coalitions do not continue in the legislature. This is a useful distinction because, like the findings of Binderkrantz and Pedersen (2015), it suggests interest groups and elected officials interact differently in the legislative arena compared to the electoral arena.

Notably absent from this literature are Westminster parliaments. Scholars tend to write about interest group lobbying in the UK, Canada, Australia, and New Zealand from the perspective of “governance”—that is, the rise of an executive governing style that relies less on the civil service for policy information and more on interest group stakeholders (Rhodes, 1996, 2007; Savoie, 2003; Rhodes, Wanna and Weller, 2009; Aucoin, 2012). Some scholars in this literature—which Marinetto (2003) calls the “Anglo-governance-school”—consider the relationship between interest group activity and political institutions. For example, Grant (2008) argues “single issue” groups have become more prominent in UK politics as mass

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7 This is not to say the European literature does not consider party-group ties. As just one recent example, Otjes and Rasmussen (2017) surveyed Danish interest groups to show that left-leaning groups tend to interact with left-leaning parties, and vice versa for right-leaning actors.

8 For more examples see Mahoney and Baumgartner (2014), who argue that “extreme partisanship” can dissuade government allies from mobilizing in favour of an issue, but also that the support of party leaders can stimulate other actors within government to mobilize. See also LaPira and Thomas (2014), Heaney and Rojas (2007, 2015), and LaPira, Thomas and Baumgartner (2014).
membership in political parties has decreased. Other research suggests potential parallels with the subsidy model. For example, Fraussen and Halpin (2017) conclude that think tanks play an increasingly important policy advisory role in the Australian government. Similarly, Craft (2016, 34) examines case studies from five Canadian governments to show partisan staffers help “broker” the exchange of policy information from external groups to elected representatives. His introductory chapter includes a to-do list from the Prime Minister’s Office that tells incoming ministers “who to engage or avoid: friend and enemy stakeholders” (Craft, 2016, 5).

There are at least three reasons why scholars in Westminster countries have been slower to recognize the relevance of the subsidy model. First, the Anglo-governance-school has shown a strong preference for interpretive methods (Rhodes, 2007, 1257-1259). This qualitative orientation has facilitated a wealth of small-N case studies that describe how governance looks on the ground. However, Kjaer (2011) notes this literature has been criticized for its lack of causal theory (p. 109), a lack of clear definitions (p. 103-105), and its resistance to comparative analysis outside of Commonwealth countries (p. 105-106). The second reason why this literature is out of step with the American and European literature is the lack of data. As De Figueiredo and Richter (2014, 177) observe, there are three main types of lobbying data: surveys; registries; and, transaction records. Unlike governments in the US (federal and state) and Europe (e.g. Germany, the EU), Westminster governments have been slow to pass lobbying disclosure laws that create registries and transaction records. This means researchers must rely almost entirely on surveys, which are costly and often suffer from selection problems.

The third reason is that, early on, scholars in Westminster countries argued against mainstream interest group theories such as pluralism and its alternatives, the “iron triangle”

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9 Australia’s registry was created in 1983, abolished in 1996, and re-established at the provincial level in 2007. Canada’s registry has been in operation since 1989, but data on lobbying registrations are accessible online only since 1996. The UK was one of the last European countries to institute a lobbyist register in 2014. New Zealand has no registry.
(Lowi, 1969) and the “sub-government” model (McConnell, 1966). As Rhodes and Marsh (1992, 8) write:

…neither the iron triangle model specifically nor the sub-governments model generally is directly applicable to the British situation because the legislature plays a minor role in policy making. In Britain it makes much more sense to talk of a relationship between the government department, the regulatory agency, and the interest group(s), rather than one which involves the regulatory agency, the legislative committee, and the interest group(s).

Thus, Jordan and Richardson (1979) and Rhodes (1981) argued that most lobbying activity in the UK occurs in government departments, where lobby groups can form stable “policy communities” and “policy networks.” In Canada, early researchers like Presthus (1971, 1973) argued Parliament helps “legitimate” interest group activity, while later researchers like Pross (1985) emphasized the importance of bureaucratic actors within policy networks. In this way, the literature on Westminster lobbying took a different path than that of the US or Europe—avoiding formal analysis and quantitative methods in favour of interpretive analysis and qualitative methods.

But the literature shows signs of change. Increasingly, governance scholars are collaborating with interest group researchers in Europe and the US (e.g. Helboe Pedersen, Halpin and Rasmussen, 2015; Halpin and Thomas, 2012). These collaborations are often quantitative, which helps resolve definitional concerns and promotes comparison outside of the

10Lowi (1969) defines the “iron triangle” as a “triangular trading pattern” between lobbyists, bureaucrats, legislators (often those who sit on Congressional and Senate Committees). Cater (1964) and McConnell (1966) define the “sub-government” in largely similar terms, and many authors use the two terms interchangeably.

11Benson (1982, 148) define the “policy network” as “a cluster or complex of organizations connected to each other by resources dependencies and distinguished from other clusters or complexes by breaks in the structure of resource dependencies”. Rhodes and Marsh (1992, 13) describe “policy communities” as one type of policy network: “networks characterized by stability of relationships, continuity of a highly restricted membership, vertical interdependence based on shared service delivery responsibilities, and insulation from both other networks and, invariably, the general public (including Parliament)”.

12Pross (1985) even coins the term “bureaucratic pluralism” to describe interest group lobbying in Canada, wherein groups lobby Parliament only to legitimate strong relationships within the bureaucracy.
English-speaking Commonwealth. In terms of data, recent disclosure laws in Canada are opening new avenues for research. For example, Rheault (2013) uses lobbying registry data from Canada to estimate the effect of corporate lobbying on temporary worker migration. Boucher (2015) uses the same registry data to suggest the existence of a “Westminster effect” that centralizes lobbying activity around the core executive. And in terms of parliamentary lobbying, the centralization of power in Westminster parliaments is prompting scholars to rethink the role of legislators in the policy process. Parliament is back as a policymaking force, particularly in an era of hung parliaments. As party leaders centralize authority, so too have Cabinet and shadow cabinet members come to rely on partisan advisors and interest groups for policy advice.

In this context, it is reasonable to ask whether the subsidy model might shed new light on how lobby groups use information to influence the Westminster policy process. The subsidy model suggests that politicians do not just look for information, they look for friends with information. And from the perspective of interest groups, the best friends in government are those with influence. This is particularly true in Westminster parliaments where—contrary to the way things work in the US—executive dominance concentrates power in the Cabinet. This creates a strong incentive for lobby groups to subsidize Cabinet members rather than ordinary legislators. This, in turn, could make it easier for party leaders to keep backbench MPs in the dark and to undermine the legislative branch’s traditional role: To keep government accountable.

Applying the subsidy model to Westminster parliaments could also help shed light on the potential for democratic institutions—specifically legislative committees—to help rival legislators find common ground and counteract rising polarization. In theory, committees promote democratic deliberation because they provide a venue for interest groups to speak directly to legislators. This not only helps legislators stay informed, it also exposes them

\[^{13}\text{For example, Fraussen and Halpin (2016, 8) mention legislative subsidies as a key link between political parties in government and interest groups.}\]

\[^{14}\text{Recent governments in which no single party enjoyed a majority of seats include the 55th and 57th UK Parliaments, the 38th, 39th, 40th, and 43rd Canadian Parliaments, as well as the 43rd Australian Parliament. Minority parliaments are also common under New Zealand’s mixed member proportionally representative system, in which no party has enjoyed a parliamentary majority since 1996.}\]
to competing viewpoints. For example, conservative members of an environment committee might reconsider opposition to a carbon tax bill after hearing from citizen groups who favor new jobs in solar energy. But if interest groups subsidize expertise among legislative allies, then opposing politicians may selectively ignore or discount information from such groups. This is all the more likely from the perspective of motivated reasoning theory (Kunda, 1990; Lodge and Taber, 2013). After all, parliamentarians are loyal to their party not just because leaders enjoy powerful inducements (Kam, 2009), but also because of strategic incentives to rally around the party label. Dewan and Spirling (2011) look at legislative votes to show this type of government-versus-opposition dynamic is basically unavoidable. Opposing parties have a strategic interest to oppose government initiatives, even those they agree with. This creates an incentive for the government to propose legislation that is uniquely appealing to its members. It also polarizes political debate, increasing the incentives for strong parties to act as legislative “cartels”—exploiting procedural rules to appoint loyal partisans to committee (Cox and McCubbins, 2005). From this perspective, committee members may prioritize partisan interests when discussing policy, such that opposing legislators systematically invoke different issue frames when discussing the same legislative proposal.

1.2 Objectives

In summary, interest group lobbying is increasingly understood as a type of legislative subsidy to friendly legislators. This is true both in European consensus-parliamentary systems and in the American majoritarian-presidential system. However, in the literature on majoritarian-parliamentary systems (i.e. the Westminster countries), interest group lobbying has been mainly conceptualized in the context of governance and policy networks. This is due to methodological choices, data availability, and the relevance of Parliament as a policy-making venue. One by one, these factors are giving way to new trends in the literature. While it is conceivable that Parliament’s more limited policymaking role may necessitate a unique theory of interest group lobbying in the Westminster context, interest groups are still likely to grant subsidies to powerful, allied parliamentarians. In other words, just because interest groups establish strong relations with the bureaucracy does not mean
they ignore influential allies in the legislature. Thus, one of the central motivations of my dissertation is to understand how interest groups intervene in the Westminster policy process. This raises two important questions: (1) How to find data on lobbying in Parliament? and (2) How to make the most of such observational data? In this dissertation, I use data science and computational tools, including causal inference techniques, to generate new knowledge about how interest groups interact with and influence politicians in a prominent Westminster country: Canada.

This dissertation focuses on three clear gaps in our understanding of interest groups within the Westminster policy process. The first involves contradictory findings in the research on collective action and democratic representation. The vast majority of studies treat interest group lobbying as narrowly focused on specific policies and programs, rather than on the more general agenda-setting process. By offering relevant information about the consequences of agenda-setting decisions, interest groups may help elected officials anticipate public opinion. The second gap involves lingering questions about the influence of interest groups on government accountability in majoritarian parliaments. Unlike research in the US or Europe, most studies of lobbying in Westminster countries focus on corporate lobbying of the bureaucracy rather than interest group lobbying among elected officials. As a result, we do not know how or whether interest groups might offset information asymmetries in parliament. By “subsidizing” members of the government over members of the backbench or opposition, interest groups may undermine legislative oversight of the governing executive. The third gap involves competing expectations about parliamentary committees and democratic deliberation. In theory, committees promote deliberation because they invite legislators of different parties to gather and hear testimony from interest groups across the political spectrum. In practice, there is tremendous pressure on committee members to pursue partisan goals and undermine deliberation. Committee records from Westminster parliaments are hard to come by, and so we do not know whether and to what extent parliamentarians of different parties invoke different issue frames when discussing the same policy topic. From this perspective, legislative
committees might actually deepen partisan conflict by providing a venue for legislators to learn about and develop competing issue frames.

1.3 Summary

In the next section (Chapter Two), I use a three-step methodology to compile data on federal spending, public opinion, and interest group lobbying in Canada between 1989 and 2009. First, and in line with the coding scheme of the Policy/Comparative Agendas Project (Baumgartner, Green-Pedersen and Jones, 2006a), I measure the change in lobbying activity across 15 policy areas. Second, I use the same coding scheme to measure changes in government spending. Third, I apply the same coding scheme to data on issue salience (i.e. “What do you think is the most important problem facing Canada today?”). Pulling these time series together allows me to estimate short- and long-term dynamics as well as test for relationships between variables, within policy topics, and across time periods. Using this new data set of lobbyist registrations in Canada, I test an empirical model of policy responsiveness that examines the effect of the interaction between voter attention and interest group lobbying on government spending—over time, across policy areas, and among cause and sectional groups. I find that governments are more responsive to voter concerns in policy areas with a high degree of cause group activity. In real terms, this means that in policy areas with significant cause group activity—such as health, environment, and social welfare—responsiveness depends on the interaction between voter attention and interest group activity. In these areas, government spending is more responsive to shifts in public opinion when they are accompanied by interest group activity. However, the evidence suggests a differential effect depending on group type. Whereas cause groups appear to positively moderate the relationship between public opinion and spending, there is little to no evidence that sectional groups have any effect on policy responsiveness.

In Chapter Three, I create a new, panel dataset that tracks individual-level lobbying interactions between interest groups and Members of Parliament (and staff) from September 22, 2010 to April 1, 2017. I use dynamic panel and network regression models to explain changes in the number of ties between legislators and interest groups over time. I also test
for differences between minority and majority government. I make two important contributions. First, I show a legislator's access to information from outside groups is conditional not just on her parliamentary power but also the diffusion of agenda control within the legislature. Second, I find strong evidence of partisan clustering in parliamentary lobbying networks. Interest groups that communicate with one legislator are more likely to communicate with their copartisans than with their cross-partisans. This partisan clustering is especially prominent during majority government. Thus, another implication is that political institutions influence political networks—for example, by increasing or decreasing the tendency for localized diffusion of information. More generally, the results speak to ongoing debates about legislative oversight of the executive and the role of Parliament in the policy process. I conclude strong legislative parties weaken accountability by restricting legislators' access to outside information, but this is conditional on the governing party's control over the agenda.

In Chapter Four, I present a new dataset of nearly every committee utterance by Canadian parliamentarians and witnesses between January 2006 and June 2018. I focus on a subset of 1.09M utterances, covering 131 bills from 15 committees. I make two important contributions. First, I combine unidimensional scaling and topic modeling to identify issue frames in legislative debate and generate vocabularies for each frame. The approach is useful because it provides a modular, computational, and scalable solution to the problem of measuring issue framing across time or political systems. Second, I use fractional multinomial logit models to test for partisan homophily in issue framing. Empirically, I define partisan homophily as an increased probability that legislators who share a party label will invoke the same issue frame. I find strong evidence of partisan differences: About one-sixth of the time, opposing legislators use very different terms when talking about the same bill. I find partisan differences in issue framing have become more pronounced in recent years, coinciding with the country's return to majority governments. In my conclusion, I reflect on the difficulty in establishing common ground in competitive information environments.
1.4 Empirical Case Study

This dissertation is a case study of a single country: Canada.\textsuperscript{15} By studying this one case over time, I hope to better understand how interest groups use information to intervene in the policy process of other Westminster countries. Although I look at just one case, my number of observations is sometimes much larger than N=1. As Gerring (2006, 13) notes, empirical social science requires several observations to track covariation in two or more variables. In this way, there really is no such thing as a “single-N” case study. Researchers may observe covariation over time (diachronic), across cases (synchronic), or both. In my dissertation, I focus on a single spatial unit (Canada) over time. Depending on the analysis, however, I examine both diachronic and synchronic variation (Gerring, 2004, 343). In Chapter 2, I look at covariation in federal spending and interest group lobbying over 19 years. In Chapter 3, I consider covariation in agenda control (majority/minority government) and lobbying, both over time and between legislators. In Chapter 4, I pool observations from 12 years to examine covariation in competitive issue framing across 131 bills and 15 committees.

My reliance on a single country necessarily limits the generalizability of my findings. In my conclusion, I describe two such limitations.

\textsuperscript{15}Gerring (2004, 324) defines a case study as “an intensive study of a single unit for the purpose of understanding a larger class of (similar) units.”
Chapter 2

Interest Groups and Policy Responsiveness

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2.1 Introduction

Are voters right to be skeptical about who their government represents? Public opinion in the US (Hibbing and Theiss-Morse, 2001, 2002; Judis, 2001; Dyck and Lascher Jr, 2009; Jacobs and Matthews, 2015), the UK (Webb, 2013; Allen and Birch, 2015), Canada (Young and Everitt, 2011; Atkinson, 2013), and other democracies suggests anxiety about the way policy is made—specifically, that powerful interest groups and hired lobbyists call the shots instead of voters. At least part of this concern relates to the perceived failure of government to live up to an ideal of policymaking that Stimson, MacKuen and Erikson (1995) call “dynamic representation”: the willingness of government to adjust its policy priorities in response to the changing priorities of the public. The academic literature emphasizes the responsiveness of policymaking to public opinion. But this optimism is at odds with popular wisdom, which often holds that interest groups wield outsize influence in the policy process. Part of the disjuncture stems from a lack of knowledge: there remain considerable gaps in our understanding of whether lobbying strengthens or weakens the effect of voter issue attention on government priorities. This study aims to improve our knowledge of policy
responsiveness through a longitudinal analysis of government spending, public opinion, and interest group lobbying.

While some scholars suggest interest groups serve as a “transmission belt” that strengthens democracy by relaying the voices of the public to elected representatives (Miller and Stokes, 1963; Bauer, Pool and Dexter, 1963; Scott and Hunt, 1966; Presthus, 1973), others claim the converse: interest groups are “special pleaders” who weaken democracy by prevailing on legislators to advance priorities not widely shared by the public (Olson, 1965, 1982; Lowi, 1969). In reality, generalization is difficult because interest groups have diverse interests and membership. As Stewart (1958, 25-27) notes, there are two broad categories of interest groups: cause and sectional. Cause groups represent broad segments of society and advocate for policies that are likely to diffuse benefits beyond the active membership. Sectional groups represent specific segments of society and advocate for policies that are likely to restrict benefits to active members. In recent years, scholars have incorporated this cause/sectional distinction into studies of interest groups and policymaking, but findings have been contradictory. Some (e.g. Yackee and Yackee, 2006; Dür, Bernhagen and Marshall, 2015; Giger and Klüver, 2016) conclude that sectional groups bias public policy in favour of sectional and business interests while cause groups can actually improve representation of public preferences. Others (e.g. Mahoney, 2008; Klüver, 2012; Bernhagen, 2012) find little evidence that sectional or business lobby groups are more successful than cause groups.

The uneven findings may result from the literature’s enduring focus on influence—what Leech (2004, 534) calls “the Holy Grail of interest group studies.” Questions about the influence of interest groups naturally lend to a focus on policy congruence rather than policy responsiveness. Congruence compares the popularity of a specific policy to the probability of its adoption by government. In contrast, responsiveness compares changes in voters’ issue salience or policy priorities to changes in government activity (Canes-Wrone, 2015, 148). While both are valid measures of representation, interest group studies of congruence may more easily lead to contradictory findings. This is because the nature of the data required for a congruence study makes it difficult to build a comprehensive dataset that comprises many
interest groups across many policy areas. The result is that most studies tend to focus on a narrow range of policies, prominent at the time of the study, and some issues may be more likely than others to exhibit congruence. The results of the study are consequentially dependent on the time period and the policies chosen. It is important to enlarge the focus beyond just the prominent issues. In terms of case selection, the researcher should select a broad range of issue areas over time (for examples see Burstein (2014) and Baumgartner et al. (2009)). For the type of data required for responsiveness studies, this is easier to do using standardized indicators and replicable measurement, such as that permitted by the Policy/Comparative Agendas Projects (Baumgartner, Green-Pedersen and Jones, 2006b). However, even with responsiveness studies this is not a simple task.

In this chapter, I propose an empirical model of policy responsiveness that tests the interaction of voter attention and interest group lobbying on government spending—both over time and among cause and sectional groups. Using a novel dataset of lobbyist registrations in Canada spanning the 15 policy areas that cover the vast majority of federal spending between 1990 and 2009, I find that governments are considerably more responsive to the demands of voters in policy areas with a high degree of cause group activity, relative to policy areas with little or no cause group activity. However, sectional groups do not appear to have any influence on the responsiveness of policy spending to public opinion.

The paper proceeds in five parts. I review the literature on dynamic representation, paying special attention to the processes by which legislators come to recognize and respond to public preferences. Next, I consider the moderating influence of interest group lobbying on policy responsiveness, present interest group lobbying as a type of information exchange, and distinguish sectional from cause groups. I then present my hypotheses and research design. In my results section, I present the findings of a longitudinal analysis that explores the interaction between voter attention and lobbying and how this influences spending. I conclude the paper with a brief discussion of the implications of my analysis.

1Exceptions include the impressive catalogue of over 1,000 groups and 70 pieces of legislation by Dür, Bernhagen and Marshall (2015) and the large dataset of 118 Swiss referenda issues by Giger and Klüver (2016), among others.
An appendix provides additional important details about the main analysis. This includes a series of robustness checks about measurement and estimation. In terms of measurement, I use a different measure of lobbying activity and two alternative measures of government attention. In terms of estimation, I use a likelihood-based estimator that is somewhat less efficient than the random effects estimator but potentially less subject to bias when T is small. These robustness checks (and others) are highlighted at the relevant points in the analysis.

2.2 Dynamic Representation

Studies of democratic representation distinguish between procedural and substantive representation (Powell, 2004). Procedural representation refers to correspondence in electoral support: between votes cast for political parties and those parties’ preponderance in the legislature. Substantive representation refers to correspondence in policy priorities: between those of the public and those of their elected representatives. Early scholars of substantive representation, like Miller and Stokes (1963), focused on ideology to systematically map whether elected officials shared the same outlook and preferences as their constituents. In time, the focus on dyadic representation/ideological congruence shifted to policy responsiveness: whether or not public policy responds to changes in public preferences and issue salience.

In an influential article, Stimson, MacKuen and Erikson (1995) suggest that substantive representation may be “dynamic”—that is, governments may act in alignment with what citizens expect of them and are sensitive to changes in public opinion. Dynamic representation occurs through one of two mechanisms: rational anticipation and electoral turnover. In rational anticipation, an incumbent legislator faces intense pressure to adjust policy in response to changes in public sentiment. This is because incumbents are (boundedly) rational actors who believe that unresponsive elected officials face an increased risk of electoral defeat. To mitigate this risk, they seek information about public sentiment and act on this information to maximize their chances of re-election. In electoral turnover, officials either

\footnote{Note that congruence is still an important field of study.}
fail to recognize shifts in sentiment within a necessary timeframe or, for whatever reason, are unable to change policy. When an unresponsive government loses an election, it is replaced by a party with policy goals more closely aligned with those of the electorate and which faces strong incentives to implement more responsive policies and consolidate electoral gains.

In empirical work, “responsiveness” may describe a change in public policy or a change in public opinion. For example, Stimson, MacKuen and Erikson (1995, 543, 556) write about dynamic representation through policy responsiveness and government responsiveness—that is, when a change in public attitudes precipitates a change in government activity. Hobolt and Klemmensen (2008) describe government responsiveness as “the extent to which government priorities reflect the policy priorities of majority of the electorate” (312). Pickup and Hobolt (2015) use this term in much the same way. Jennings and John (2009) consider macroresponsiveness and agenda-opinion responsiveness in a similar vein. Yet for others, responsiveness refers to changes in public opinion. For example, in Soroka and Wlezien (2010), public responsiveness refers to the change in public preferences given a change in public policy (88-106). They distinguish this from “policy representation,” which is related to what others might call policy or government responsiveness. In this paper, I follow Stimson, MacKuen and Erikson (1995). I use the terms “dynamic representation” and “policy responsiveness” to refer to the willingness of government to adjust its policy priorities in response to the changing priorities of the public.

Much of the literature on dynamic representation focuses on the institutional factors that favor responsiveness. For example, Soroka and Wlezien (2010) argue that unitary systems with separate executive and legislative branches are more responsive to changes in public opinion than federal, parliamentary systems. Similarly, Jennings and John (2009), Hakhverdian (2010), Bonafont and Palau (2011) and others (e.g. Pickup and Hobolt (2015)) focus on the electoral and political conditions that promote responsiveness, such as variations in electoral rules and majority/minority government status. But institutions are not the only influence on responsiveness. Bevan and Jennings (2014, 39-41) also point out that the “scarcity of attention” among policymakers shapes their response to changes in public opinion. Political leaders can only process so much information at once. Governing institu-
tions help them prioritize issues that require immediate attention (Jones and Baumgartner, 2005; Baumgartner and Jones, 2015); however, one might reasonably ask whether other, non-institutional factors might play a similar role in signaling shifts in public opinion.

2.3 Interest Groups and Responsiveness

I argue that interest group lobbying is a key mechanism of policy responsiveness because it moderates the effect of other informational resources, particularly opinion polling. At the heart of dynamic representation is strategic thinking: Each legislator is assumed to balance personal policy preferences (an “ideal point”) with the perceived preferences of the public (an “expediency point”) (Stimson, MacKuen and Erikson, 1995, 544). The model is dynamically responsive because it recognizes that ideal points are relatively stable but expediency points are not—i.e. that public opinion moves over time. Political actors are never certain “where public opinion is going” and so rely on colleagues, journalists, academics, pundits, and interest groups to debate the trends and provide some consensus (Stimson, MacKuen and Erikson, 1995, 545).

Lobby groups help elected officials anticipate public opinion by offering relevant information about the potential consequences of government decisions—a point also made by Stimson, MacKuen and Erikson (1995, 562, n.6) (see also Herbst (1998, 52-62) and Ainsworth and Sened (1993)). Bouwen (2004, 339-340) draws on exchange and resource dependence theories to describe the relationship between legislators and lobbyists as one of interdependence: legislators communicate with lobbyists in exchange for “access goods” like expert knowledge and information. Hall and Deardorff (2006, 71-74) characterize the private and public information that comes from lobbying groups as a “legislative subsidy” that usually takes the form of constituency opinion, policy expertise, or legislative intelligence. Legislators accrue benefit from private information provided by lobbying groups—for example, a specially commissioned report on the closure of a military base or private polling about veterans in a rural constituency—because it mitigates information scarcity and is otherwise costly to generate (Hansen, 1991; Austen-Smith, 1993; Baumgartner et al., 2009). Legislators accrue benefit from public information provided by lobbying groups—for example, the
repackaging of publicly available polling data into a politically useful format, such as speaking points during a budget review or committee meeting—because it mitigates information overload and is otherwise costly to synthesize.

To be sure, the provision of public/private information does not necessarily lead to influence (e.g. Bernhagen, 2012; Bouwen, 2004; Ainsworth, 1993). But there are plausible reasons to think that such information can expand interest groups’ influence via their intermediaries in the legislature. In a recent article, Schnakenberg (2016) builds on the work of Hall and Deardorff (2006), Ainsworth (1993, 1997), Austen-Smith and Wright (1994) and others to formally show that informational lobbying can help “friendly” legislators persuade reluctant colleagues. As a legislative subsidy, interest group lobbying helps legislators conserve resources, advocate for a given cause, and provide better representation—at least for the best organized interests.

Researchers may differentiate among interest groups by examining the nature of their interests and the extent of their membership (Baroni et al., 2014). A popular approach is that of Stewart (1958), who distinguishes cause from sectional groups (e.g. Binderkrantz (2005); Klüver (2012)). Cause groups represent broad segments of society and advocate for public goods—policies that are likely to diffuse benefits beyond the core membership. For example, cause groups may advocate for increased public health care spending, pollution reduction, or greater attention to social ills like poverty. These issues are often in the public eye and, from time to time, preoccupy voters’ attention. Sudden changes in issue salience are an opportunity for under-resourced groups to grab the attention of decision-makers (Kingdon, 1984, 1989). As a result, legislators may be more responsive to shifts in public opinion when they are accompanied by significant cause group activity.

By contrast, sectional groups advocate for issues with far fewer beneficiaries, such as industrial/agricultural subsidies or preferential access to government contracts. These issues are typically of little concern to most voters. It is therefore possible that increased sectional group activity may shift government spending away from those issues that preoccupy voters and toward those that preoccupy industry. Consequently, legislators may be less responsive to shifts in public opinion when they are accompanied by sectional group
activity. Sectional groups represent specific segments of society and advocate for private goods—policies that are likely to restrict benefits to active members. Sectional groups tend to outnumber cause groups, and their relative distribution reflects the fact that not all interests in society are equally able to overcome the collective action problem, according to which the diffuse benefits of group action discourage mass political participation (Olson, 1965).

The cause/sectional distinction has considerable overlap with the advocacy group vs. business distinction usually used in the American politics literature. One of the important takeaways of this literature is that resources matter a lot. Much of this literature suggests sectional groups (also called “business groups”) are more likely than cause groups (also called “public interest groups”) to use information to influence policy. Inside government, resources permit groups to hire professional lobbyists, gather and prepare information, and provide that information to decision-makers (Andrews and Edwards, 2004; Walker, 1991; Baumgartner and Leech, 1998, 163-164). Outside government, resources help groups overcome collective action problems and mobilize interested citizens. For example, Gais and Walker (1991) distinguish between “insider” and “outsider” strategies for interest group influence. Whereas insider strategies rely on lobbying, outsider strategies rely on grassroots mobilizing.

Cause groups possess fewer resources than sectional groups and are less likely to adopt “insider” strategies. However, for those cause groups that are able to participate, inside lobbying can yield real policy influence. Cause groups advocate for issues with many beneficiaries (e.g. health care, the environment), and so their priority issues are more likely to resonate with the public than the priority issues of sectional groups (e.g. agriculture, telecommunications). For example, Andrews (2001) looks at civil rights groups in the US to argue direct communication with government officials resulted in increased government attention to poverty. Similarly, Baumgartner and Leech (1998) show nonprofit groups enjoy

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3Given the literature on “outside lobbying” (Kollman, 1998), I also investigate the possibility that contemporaneous and/or past changes in interest group activity might predict changes in voter attention, and vice versa (see Appendix A.3.3).
less access to government than business groups, but that such access can influence policy change, particularly in the early stages of the policy process.

From a sociological perspective, policymakers may see cause groups—even those that lack resources—as representatives of public concern. Politicians want to represent public opinion but often lack “ground truth” about what voters care about. For example, Herbst (1998, 58) interviews state legislators and their staff in Illinois to show political actors often distrust polling data and rely on information from cause groups. Over time, legislators and their staff may identify cause groups “not simply as indicators of public opinion, but as synonymous with the notion of public opinion.” In this way, cause groups help “construct” public opinion for decision makers.

From a utility maximization perspective, it is not necessarily irrational for re-election seeking legislators to communicate with cause groups that possess relatively fewer resources. When interests align, it is to the legislator’s benefit to listen to and receive whatever help a group can offer—even when it is meager. As Hall and Deardorff (2006, 76) argue in their subsidy model of lobbying: “legislators listen to those whom they can trust implicitly because their interests agree perfectly” (76). In the limit, legislators may even press allied interest groups for information. In this way—and despite their modest resources—cause groups may exert influence over the policy agenda.

2.4 Hypotheses and Data

2.4.1 Hypotheses

To test the potential for different types of interest groups to influence the link between legislators and voters, I derive two hypotheses:

1. **The larger the cause group activity in a policy area, the stronger the government responsiveness to public opinion in that policy area.**

2. **The larger the sectional group activity in a policy area, the weaker the government responsiveness to public opinion in that policy area.**
2.4.2 Data

In terms of case selection, I believe Canada is a valuable case study for theoretical and methodological reasons. First, a wealth of empirical evidence suggests that the federal government responds to changes in voter attention. Soroka and Wlezien (2004) look at spending responsiveness from the early 1980s until the mid-2000s, while Pickup and Hobolt (2015) examine data on legislative responsiveness from as far back as 1965. Second, although the third-place New Democratic Party was historically affiliated with organized labor, neither major governing party retains formal ties with interest groups. This helps make Canada a useful comparison to the US. Third, Canada’s lobby registry was created in 1989, making it one of the oldest in the world. This provides us with several years of data. On this basis, I believe Canada constitutes an appropriate case study to test my theoretical claims.

The data focus on public expenditure, public opinion, and interest group lobbying for 15 policy topics between 1990 and 2009. The 15 policy topics are taken from the Policy/Comparative Agendas Projects: economy; healthcare; agriculture; employment and immigration; education; environment; energy; transportation; law and justice; social welfare; community development and housing; defence; foreign trade; international affairs; and, arts/culture. In particular, I have annual observations on the Government of Canada’s total outlays. I measure real spending on each policy area per year (all figures in 2015 USD). I also note that there is substantial variation in year-to-year changes in government expenditures. The smallest change in expenditures is $0.3 million dollars (for media and culture). The largest changes are observed for the biggest spending category: social welfare, which shows a reduction of $13633M in 1995 and an increase of $14975M in 1992.

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4Ties are formal associations between parties and groups—for example, the participation of “affiliated” trade unions in the UK Labour Party’s National Executive Committee. Such arrangements could systematically facilitate (or hinder) certain organizations’ access to government. One may distinguish this type of formal relationship from the “extended party network” and “party coalition” that Koger, Masket and Noel (2009) and Grossmann and Dominguez (2009) observe in the US, and which likely exist in Canada as well. See also Almond (1958), as well as Duverger (1972), for an early discussion of party-group ties.

5See Appendix A.1.1 for additional information on measurement and Appendix A.1.2 for information on policy topic codes.

6The volatility observed in social welfare and healthcare is largely due to changes in federal-provincial transfers. See Appendix A.3.1 for a robustness check that uses an alternative, consolidated measure of spending from Soroka and Wlezien (2004).
Also for each policy topic, Environics’ *Focus Canada* series regularly conducted surveys that asked respondents the following open-ended question: “What do you think is the most important problem facing Canada today?” This is a valuable data source because there is evidence senior policymakers actually used it. Rounce (2006, 148-151) observes that by the mid-2000s, more than a dozen federal departments maintained subscriptions to the *Focus Canada* series at a total cost of approximately a quarter-million dollars. Following the Policy/Comparative Agendas Projects, I group responses by policy issue. I then use the percentage of respondents that indicated a policy issue as the most important problem as a measure for the public salience of an issue. Annual data are imputed, based on the Environics *Focus Canada* quarterly series (following (Pickup and Whelan, 2014); see Appendix A.1.1 for more information).

Finally, I measure the relative proportion of interest groups per policy area that registered with the federal government of Canada in a given year. I converted the lobbyist registry into a longitudinal dataset of all interest groups that engaged in lobbying communication between 1990 and 2009. This dataset includes 8,760 interest group registrations, with one record per year for each interest group.

To distinguish cause from sectional groups, I established the following criteria. Groups in which the benefits of lobbying were excludable to non-members were coded “0” for sectional. Groups in which the benefits of lobbying were available to non-members were coded “1” for cause. For groups in which the excludability of benefits was unclear, I examined the barriers to membership. Groups in which barriers to membership are high (low) were coded sectional (cause). An example of a sectional group is Turkey Farmers of Ontario, which registered to lobby the federal government in 2008-2009. The non-profit association represents 190 privately owned turkey farms in Ontario and sets the relevant quota allocations for turkey products. In 2008, the association registered to lobby a number of government offices, including the Prime Minister’s Office, to discuss an ongoing World Trade Organization policy.

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7Although Canada’s registry has been in operation since 1989, data on lobbying registrations are accessible online only since 1996. Fortunately, the 1990-1996 data were transcribed by an Ottawa-based periodical called Lobby Monitor. Issues of Lobby Monitor are available in hard copy in the Library and Archives of Canada. Using these publications, human coders transcribed registry entries to ensure comparability to the 1996-2009 dataset.
review on subsidies to the agricultural sector. Turkey Farmers of Ontario is coded sectional because the benefits of its lobbying efforts were excludable to non-members and there are high barriers to membership. An example of a cause group is the Winnipeg Humane Society for the Prevention of Cruelty to Animals, which registered to lobby the federal government in 2005-2008. The non-profit Society runs an animal shelter in Winnipeg that helps stray and abandoned animals and conducts investigations on behalf of Manitoba’s Office of the Chief Veterinarian. The Society has over 25,000 donors and supporters across Manitoba. In 2005, the Society lobbied Members of Parliament to discuss Bills S-213 and C-373, acts to amend the criminal code on cruelty to animals. The Winnipeg Humane Society for the Prevention of Cruelty to Animals is coded cause because the benefits of its lobbying efforts were available to non-members and there are low barriers to membership (essentially none).

The resulting dataset includes 1,165 cause group registrations (13.29% of the total) and 7,595 sectional group registrations (86.7%).

I also coded groups by policy area. Human coders used information reported in the lobbying registry and from information retrieved from interest group websites and publications to classify each interest group into one of the major topic category of the Policy Agendas Codebook. For more information, see Appendices A.1.4 and A.1.5, in which I discuss how I arrived at the final number of issue areas in my analysis and evaluate the activities of five interest groups in light of their lobbying registry information. The Topic Codebook was developed in the framework of the US Policy Agendas Project, which analyzes the composition of the policy agenda in the US by manually coding policy documents into policy areas (Baumgartner, Green-Pedersen and Jones, 2006). The Topic Codebook classifies policy documents into 19 major issue areas and 225 sub-issues. For example, Turkey Farmers of Ontario was coded as an “Agriculture” group because its website, publications,

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8Unfortunately, most groups do not provide a detailed list of lobbying issues for each lobbying registration. I therefore assign policy topics by group rather than by lobbying activity. This is consistent with previous practices in the literature. For example, Baumgartner, Gray and Lowery (2009, p.564, n.5) code groups by “interest contentâ€”using directories of organizations and associations and the Web pages of individual organizations.” Similarly, Bevan et al. (2013) assign policy topics by each group’s description in the Encyclopedia of Associations, rather than by each group’s lobbying activities. I acknowledge that a lobby group may advance goals across more than one topic code. However, I do not expect the group itself to jump between codes.
and registration information mention farming, agricultural marketing and promotion, and animal welfare in the context of agriculture. In contrast, the Winnipeg Humane Society for the Prevention of Cruelty to Animals was coded as an “Environment” group because its website, publications, and registration information emphasize the humane treatment of animals outside the context of agriculture and the protection of domestic animals and species. All registrations were double coded and reliability checks indicate a high degree of correspondence between the interest group classifications by the two coders.\footnote{The Cronbach’s alpha for the major topic codes is 0.83. Discrepancies were subsequently resolved through a meeting of the coders and the authors.}

As an indicator of interest group activity in a particular domain, I use the amount of cause/sectional group lobbying in that issue area as a proportion of all cause/sectional group lobbying.\footnote{See Appendices A.1.1 and A.3.1 for more information on measurement and for a robustness check that uses an alternative measure of interest group activity.} For each of the 15 policy areas, this is computed as the number of cause/sectional groups lobbying in the area that year (\(\#cg_{i,t}\) and \(\#sg_{i,t}\)) divided by the total number of cause/sectional groups lobbying across all issue areas in that year (\(\sum_{i=1}^{15}\#cg_{i,t}\) and \(\sum_{i=1}^{15}\#sg_{i,t}\)):

\[
 CG_{i,t} = \frac{\#cg_{i,t}}{\sum_{i=1}^{15}\#cg_{i,t}} \quad \text{and} \quad SG_{i,t} = \frac{\#sg_{i,t}}{\sum_{i=1}^{15}\#sg_{i,t}}
\] (2.1)

These data have several advantages. First, they facilitate a longitudinal panel study. This allows us to estimate short- and long-run dynamics as well as compare the relationships between my variables within policy topics and across time periods. Second, the data align with previous approaches in the literature. Aggregated public expenditure is an important indicator for government responsiveness (see Jacoby and Schneider (2009); Wlezien (1995, 1996); Wlezien and Soroka (2012)). Similarly, the “most important problem” question is a standard tool for measuring the relative importance of issues to voters (Hobolt and Klemmensen, 2008; Petrocik, 1996; Pickup and Hobolt, 2015). Lastly, lobbying registries are an important indicator of interest group activity (see Lowery and Gray, 1994, 1995).
For examples of similar methodology see Gray et al. (2004), Messer, Berkhout and Lowery (2011), and Klüver (2015).

Third, in terms of dollars spent, the 15 policy topics comprise the vast majority of federal spending during the 19 years under study—totaling $5.07 trillion. Major policy areas, such as the economy, health, the environment, and social welfare are all included. As I discuss in the conclusion, certain dimensions of policymaking are not captured with my aggregated measures of public expenditure. Responding to the demands of citizens across all policy areas may not require increases in public spending. Voter demands in predominantly regulatory policy areas, such as the environment, may not require more spending but legislative or bureaucratic changes instead. Nonetheless, I believe public expenditure is a useful and substantively meaningful dependent variable. Governments have a limited amount of financial resources at their disposal and therefore need to carefully decide how to allocate the limited funds to different policy areas. Assuming that reelection-seeking governments aim to please their voters, it is reasonable to expect that governments invest in policy areas that are important to their electorate. As a robustness check, I test my empirical model on another measure of policy attention: legislative attention, measured by the number of bills that successfully became law for each policy area in a given year between 1991 and 2009. See Appendix A.3.1, in which the results are comparable.

Before proceeding to my empirical analysis, I briefly describe summary statistics for each variable. For more information, see Appendix A.1.3 for plots. See also Appendix A.1.4 for a list of the 30 most prominent cause and sectional groups in my dataset.

I begin with the public opinion variable. The average change in voter attention across all years is -0.06 percentage points, with standard deviation (SD) 3.43. Policy areas with the greatest average swings in voter attention are Foreign Trade (mean=-1.18, SD=5.11), the Economy (mean=-0.81, SD=10.57), Health (mean=0.83, SD=6.09), and Defence (mean=0.29, SD=2.02). High variance in voter attention to Foreign Trade makes sense given the issue is not normally pressing but was the most important national issue during the 1988 election. Voter attention to the Economy exhibits a spike in 1989-1990, corresponding to rising inflation, taxes, and deficits. Voter attention to this area remains high, though it declines
thereafter. Voter attention to Health exhibits the opposite trend: It increases incrementally during the 1990s, eventually becoming the most important issue in the early 2000s. Finally, voter attention to defense sharply increases after 9/11, then stabilizes in the years after.

Next, I turn to the interest group variables. The average level of area-specific cause group activity (as a proportion of all cause group activity) across all years is 0.05, with SD 0.09. Areas with the greatest proportion of cause groups include Health (mean=0.26, SD=0.10), the Environment (mean=0.16, SD=0.07), Social Welfare (mean=0.12, SD=0.08), and International Affairs (mean=0.09, SD=0.06). This distribution reflects similar findings from the US (Baumgartner and Leech, 1998, 107-110) and Europe (Binderkrantz, 2012): Cause groups are especially active in areas with diffuse policy beneficiaries, such as Social Welfare and the Environment. The average level of sectional group activity across all years is 0.04 (SD 0.04). Areas with the greatest proportion of sectional groups include the Economy (mean=0.12, SD=0.04), Agriculture (mean=0.10, SD=0.03), Transport (mean=0.08, SD=0.02), and Health (mean=0.08, SD=0.03). Here again, the results align with findings from the US (e.g. Berry, 1990): Sectional groups are most active in areas with concentrated policy beneficiaries, such as Agriculture.

Finally, I move to the spending variable. The average change in spending across all years is $122.13M, with SD $2046.19M. The largest variation is in Social Welfare (mean=2016.50, SD=6503.82). Other policy areas with large swings in spending include the Economy (mean=-879.55, SD=2863.87), Health (mean=617.32, SD=2313.13), and Law, Crime and Family (mean=246.94, SD=317.85). As I note above, volatility in Social Welfare and Health is largely due to changes in federal-provincial transfers. For this reason, I supplement my main analysis with an alternative, consolidated measure of spending from Soroka and Wlezien (2004) (see Appendix A.3.1, in which the results are comparable).

2.5 Empirical Analysis

To examine the effects of interest group activity on the responsiveness of government attention to voter attention, I estimate a panel Autoregressive Distributed Lag (ADL) (1,1) model with controls for trending. I first describe the empirical model then present the results.
I include in this ADL(1,1) model the change in the relative number of Canadians indicating issue area \( i \) as the “most important problem” at time \( t \) (\( \Delta MIP_{i,t} \)) and its lag (\( \Delta MIP_{i,t-1} \)) to capture the effects of voter attention on government attention. I include the relative amount of interest group lobbying in an issue area \( i \) at time \( t \) and its lag to capture the effects of cause group (\( CG_{i,t} \)) and sectional group (\( SG_{i,t} \)) activity. I also include interactions between changes in voter attention and interest group activity. This is to capture the conditioning effect of interest group activity on the responsiveness of governments to changes in voters’ issue priorities.\(^{11}\) Government policy attention is measured using changes in expenditures in issue area \( i \) at time \( t \). My data model is represented by equation 2.2:

\[
\Delta \text{Expenditures}_{i,t} = \delta_0 + \rho_1 \Delta \text{Expenditures}_{i,t-1} + \kappa_{1a} \Delta MIP_{i,t} + \kappa_{2a} \Delta MIP_{i,t-1} + \\
\kappa_{1b} CG_{i,t} + \kappa_{2b} CG_{i,t-1} + \\
\kappa_{1c} (\Delta MIP_{i,t} \times CG_{i,t}) + \kappa_{2c} (\Delta MIP_{i,t-1} \times CG_{i,t-1}) + \\
\kappa_{1d} SG_{i,t} + \kappa_{2d} SG_{i,t-1} + \\
\kappa_{1e} (\Delta MIP_{i,t} \times SG_{i,t}) + \kappa_{2e} (\Delta MIP_{i,t-1} \times SG_{i,t-1}) + \\
\kappa_{t} i + \mu_{i} + \varepsilon_{i,t}
\]  

(2.2)

In addition to a lagged dependent variable to account for the autoregressive nature of the data, the model includes random effects \( \mu_{i} \). See Appendix A.2.1 for results of a Hausman specification test comparing the random effects to the fixed effects model. The Hausman test indicates no systematic differences in the results from a FE estimate.\(^{12}\) The random effects

\(^{11}\)My theoretical model holds that responsiveness—the change in spending as a result of a change in voter attention—will occur at higher or lower levels of interest group activity. For this reason, the government attention and voter attention variables are measured in differences, while the interest group variables are measured in levels. The model thus presents the level of interest group activity as a moderating factor on policy responsiveness.

\(^{12}\)The introduction of a lagged dependent variable into a random effects model may lead to bias and inconsistency due to correlation between the lagged dependent variable and the random intercept (see Baltagi (2005, 135-136) and Rabe-Hesketh and Skrondal (2012, 273)). Given a \( T \) of 19, I may expect a reduction in the magnitude of this bias. As a robustness check, I include the results from a likelihood-based estimator that resolves the problem of bias due to a small \( T \) (Lancaster, 2002) in Appendix A.3.1. This estimator is somewhat less efficient than the random effects estimator but less subject to bias. The results are approxi-
control for any systematic differences in the changes in expenditures between different issue areas. A dummy variable for each year ($\kappa_t i`t$) is also included. These time-specific effects control for any overall changes in expenditures from any one year to the next. The year dummies also control for trending, if there is any. Controlling for individual effects and time dummies is designed to reduce the possibility of a spurious result due to any systematic differences between issue areas or changes over time that affect both changes in government expenditures and changes in policy attention or levels of lobbying.\footnote{See Appendix A.2.2 for stationarity tests.}

Turning my attention to the results in Table 2.1, the coefficient on each of the contemporaneous (i.e. $t$) variables is the estimated short-run effect. The interaction of voter attention and cause group lobbying ($\Delta MIP_{i,t} \times CG_{i,t}$) is positive and statistically significant ($t$-statistic 4.12; $P$-value 0.000). For a two-standard deviation increase in the level of cause group activity (i.e. from 0 to 0.17), the short-run response of expenditures to a percentage point increase in voter attention is predicted to increase by $336.68M.\footnote{In all instances, I estimate the marginal effects of cause group activity while assuming sectional group activity is at its average.} This means the short-run response of government expenditures to voter attention is increased by higher levels of cause group activity.

In line with my first hypothesis (H1), the short-run response of government expenditures to voter attention is positively conditioned by cause group activity. Meanwhile, the interaction of voter attention and sectional group lobbying ($\Delta MIP_{i,t} \times SG_{i,t}$) is not statistically significant. In other words, there is, so far, no evidence for my second hypothesis (H2) that the short-run response of government expenditures to voter attention is negatively conditioned by sectional group activity.

This is a dynamic model. In a dynamic system, the future is a function of today and so something that affects government spending today will produce a series of (declining) knock-on effects into the future. The long-run effect is the sum total of all of these knock-on effects. The coefficients on each of the contemporaneous and lagged (i.e. $t-1$) independent variables
Table 2.1: The impact of voter attention on government spending (Short Run Effects).
Dependent variable: Changes in Federal Government spending

<table>
<thead>
<tr>
<th>Term</th>
<th>( \hat{\beta} ) (Robust SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \Delta \text{Federal Spending}_{t-1} )</td>
<td>0.352* (0.082)</td>
</tr>
<tr>
<td>( \Delta \text{Voter Attention} )</td>
<td>-311.692 (180.424)</td>
</tr>
<tr>
<td>Sectional Group Pressure</td>
<td>-704.942 (5646.835)</td>
</tr>
<tr>
<td>Cause Group Pressure</td>
<td>-507.270 (3586.372)</td>
</tr>
<tr>
<td>( \Delta \text{Voter Attention} \times \text{Sectional Group Pressure} )</td>
<td>2156.005 (1181.358)</td>
</tr>
<tr>
<td>( \Delta \text{Voter Attention} \times \text{Cause Group Pressure} )</td>
<td>1980.473* (481.108)</td>
</tr>
<tr>
<td>( \Delta \text{Voter Attention}_{t-1} )</td>
<td>97.416 (71.921)</td>
</tr>
<tr>
<td>Sectional Group Pressure(_{t-1})</td>
<td>-2836.202 (4253.121)</td>
</tr>
<tr>
<td>Cause Group Pressure(_{t-1})</td>
<td>1596.033 (2006.197)</td>
</tr>
<tr>
<td>( \Delta \text{Voter Attention}<em>{t-1} \times \text{Sectional Group Pressure}</em>{t-1})</td>
<td>-1124.616 (655.635)</td>
</tr>
<tr>
<td>( \Delta \text{Voter Attention}<em>{t-1} \times \text{Cause Group Pressure}</em>{t-1})</td>
<td>-818.972* (328.038)</td>
</tr>
<tr>
<td>Observations</td>
<td>285</td>
</tr>
<tr>
<td>( R^2 )</td>
<td>0.180</td>
</tr>
</tbody>
</table>

Cell entries represent unstandardized b coefficients with robust standard errors in parentheses. Model includes dummy variables for each year.
* \( p < 0.05 \)

may be combined with the coefficient on the lagged dependent variable to estimate the long-run effect on government spending using the equation \( \frac{(\hat{\beta}_1 + \hat{\beta}_2)}{(1 - \hat{\alpha}_1)} \), where \( \hat{\beta}_1 \) and \( \hat{\beta}_2 \) represent the coefficients on contemporaneous and lagged values of a given independent variable and \( \hat{\alpha}_1 \) represents the coefficient on the lagged value of the dependent variable (Pickup, 2014).
long-run effect estimates (Table 2.2) may be tested for statistical significance using a non-
linear Wald test with a Chi-Squared distribution. Looking at the results, only cause group
lobbying has a long-run effect on the relationship between voter attention and government
expenditures. The interaction term for voter attention and cause group activity is positive
and statistically significant ($P$-value = 0.003). For a two-standard deviation increase in
the level of cause group activity, the long-run response of expenditures to a percentage
point increase in voter attention is predicted to increase by $304.73M. This implies that
the marginal long-run effect of voter attention on expenditure increases with greater cause
group lobbying.

In line with my first hypothesis (H1), the long-run response of government expenditures
to voter attention is positively conditioned by cause group activity. There does not appear to
be a statistically significant long-run effect for the interaction between voter attention and
sectional group lobbying. There is thus no evidence of my second hypothesis (H2), that the
long-run response of government expenditures to voter attention is negatively conditioned
by sectional group activity.

I further explore the effects of lobbying on government responsiveness by plotting the
short- and long-run marginal effects of changes in voter attention on government expendi-
tures at different levels of lobbying, along with 95% confidence intervals, in Figure 2.1. In
these plots, the level of sectional group activity is set at its mean value (0.043).

The plots in Figure 2.1 show that the short- and long-run marginal effects at the lowest
value of cause group lobbying are not significantly different from zero. For the short-run
effects at the lowest level of cause group activity, the 95% confidence interval encompasses
Figure 2.1: Marginal Effects of Voter Attention on Federal Spending, by Interest Group Lobbying

The figure shows the short- and long-run marginal effects of cause group activity on federal spending. When cause group activity is low, the marginal effects are not statistically significant. As cause group activity increases, the marginal effects become positive and statistically significant.
zero (-475.16, 37.69) with an average marginal effect of -218.73 (far left on axis). At the highest level the marginal effect is 632.87 (far right on axis). The difference between these two short-run effects is 851.60. For the long-run effects at the lowest level of cause group activity, the 95% confidence interval encompasses zero (-610.82, 86.72) with an average marginal effect of -262.05 (far left on axis). At the highest level the marginal effect is 508.74 (far right on axis). The difference between these two long-run effects is 770.79. These results indicate that voter attention has a strong effect in the expected direction when cause group activity is at its highest.

The fact that the long-run marginal effects are smaller than the short-run suggests that some part of the effect is reversed over time. Substantively, this means that governments may initially respond to an increase in voter attention with a big change in expenditures but in subsequent years reduce spending so that the overall increase is smaller than the first year increase might suggest. Figure 2.1(a) also shows that the point estimate of the short-run marginal effect of voter attention is positive when cause group activity is above approximately 0.11 and is positive and statistically significant once the level of interest group activity is about one-and-one-half standard deviations above average, or 0.19. The long-run effects in Figure 2.1(b) are similar to the short-run, with a point estimate that is positive when cause group activity is above 0.14 and a positive and statistically significant effect above 0.21.

As the overlaid histogram shows, cause group activity is strongly positively skewed, with more than half of all cases at zero. When one considers marginal effects within the full sample, the short- and long-run effects are positive in 21 and 10 percent of cases, with positive and statistically significant effects in 15 and 7 percent of cases, respectively. However, cause group activity is heavily concentrated in highly salient and financially significant policy areas. In my sample, the policy areas with the highest levels of cause group activity are healthcare and environment, as well as social welfare, law and justice, and international affairs. Together, these policy areas comprise $3.25 trillion (64.2% of total spending in the sample). In other areas, cause group activity may be zero in some years. When one considers the more relevant sample of cases where cause group activity exists (i.e. is above zero), the
short-run effects are positive in 47 percent of cases and positive and statistically significant in 23 percent of cases. The long-run effects are positive in 34 percent of cases and positive and statistically significant in 15 percent of cases.

Given the non-trivial range of cases for which there appears to be an effect, the large variation in the substantive magnitude of the effect of voter attention across different values of cause group activity, along with the statistical significance of the short-and long-run interaction term coefficients, I conclude there is strong empirical evidence in support of H1. I also examined the short- and long-run marginal effects for sectional group activity (not shown). The short- and long-run point estimates are not statistically significant at any value of sectional group activity, at the 0.05 level. Therefore, I do not have any evidence of a substantive effect for sectional group activity, either in the short- or long-run.

Finally, as a robustness check, I investigate the possibility that contemporaneous and/or past changes in interest group activity might predict changes in voter attention (and vice versa). In Appendix A.3.3, I estimate a model in which changes in voter attention are a function of contemporaneous and lagged levels of sectional and cause group lobbying. The results suggest that changes in voter attention are statistically uncorrelated with levels of interest group activity. I also test whether changes in voter attention predict levels of interest group activity. Again, the results provide no evidence of statistical correlation.

2.6 Conclusion

In this study, I examine whether interest group lobbying strengthens or weakens government responsiveness to voter issue attention. Using a new dataset of lobbyist registrations in Canada, I test an empirical model of policy responsiveness that examines the effect of the interaction between voter attention and interest group lobbying on government spending—over time, across policy areas, and among cause and sectional groups. I find that governments are more responsive to voter concerns in policy areas with a high degree of cause group activity. In real terms, this means that in policy areas with significant cause group activity—such as health, environment, and social welfare—responsiveness depends on the interaction between voter attention and interest group activity. In these areas, government
spending is more responsive to shifts in public opinion when they are accompanied by interest group activity. However, the evidence suggests a differential effect depending on group type. Whereas cause groups appear to positively moderate the relationship between public opinion and spending, there is little to no evidence that sectional groups have any effect on policy responsiveness.

Although I find no evidence of a moderating relationship between sectional group activity and policy responsiveness, this could be due to a small $T$ or possibly to the use of an aggregated measure of policy spending. This expands the analysis beyond specific policies to focus on general policy attention. It also facilitates comparison with public opinion and allows me to examine a range of policy areas over time and across different interest group types. However, these advantages come with a tradeoff. The measure makes no distinction between general policy attention and attention through specific programs or policy instruments. There is evidence that business and sectional groups may bias individual pieces of government legislation or specific regulations toward narrow societal interests (Yackee and Yackee, 2006; Dür, Bernhagen and Marshall, 2015; Giger and Klüver, 2016). In other words, different dependent variables may yield different conclusions. For example, certain dimensions of policymaking are not captured with my aggregated measure of public expenditure. Voter demands in predominantly regulatory policy areas, such as the environment, may not require more spending but legislative or bureaucratic changes instead. As a robustness check, I estimate a panel ADL(1,1) model using a different dependent variable: legislative attention, measured by the number of bills that successfully became law for each policy area in a given year between 1992 and 2009. The results (Appendix A.3.1) do not contradict, and even support, my conclusion that governments are more responsive to voter concerns in policy areas with a high degree of cause group activity.

An alternative explanation for the lack of support for H2 is that sectional group activity may simply be a by-product of an already beneficial status quo. Sectional groups that enjoy a privileged position in an issue area may focus lobbying activity on maintaining, and not changing, the distribution of government attention. To paraphrase Baumgartner et al. (2009, 20): “if the wealthy are better mobilized and more prone to get what they
want in [Ottawa], they should have gotten what they wanted in previous rounds of the policy process.” In this case, the influence of sectional groups might not be visible through changes in spending or in legislation, but rather in their ability to resist changes to the policy agenda. It is beyond the scope of the current study to investigate this possibility, but my findings certainly indicate a need for more fine-grained analysis into the relationship between group type and government responsiveness.

Are voters right to be skeptical about who their government represents? My findings shed light on contemporary debates over the influence of organized groups on policy responsiveness (e.g. Gilens and Page (2014)). Specifically, my results are consistent with recent research that demonstrates cause groups—which represent diffuse interests and offer open membership to the public—can strengthen the link between policy and public priorities. However, the influence of cause group lobbying on policy responsiveness carries an important caveat. As Schattschneider (1960, 35) famously observed: “the flaw in the pluralist heaven is that the heavenly chorus sings with a strong upper-class accent.” As in the US (Leech et al., 2005), Switzerland (Giger and Klüver, 2016), and other contexts (e.g. the EU, see Klüver (2013)), sectional groups tend to outnumber cause groups in my sample—nearly seven to one. Nonetheless, my findings nuance Schattschneider’s (1960) claim by suggesting some of the choir’s most vocal members sing in harmony with the public.

By making use of panel data, my research design has distinct advantages over other potential strategies, such as a cross-sectional study of responsiveness and interest group lobbying at a single point in time. And by considering a broad range of issues, I avoid the potential drawbacks of an overly narrow focus on a few prominent policy issues. From a comparative perspective, my findings invite cross-country analysis of the relationship between political institutions, policy responsiveness, and interest groups. On the one hand, Hobolt and Klemmensen (2008) and Soroka and Wlezien (2010) show responsiveness is weaker in majoritarian parliaments, and so it is conceivable the moderating relationship I find is even stronger in presidential systems or consensus parliaments. On the other hand, different political institutions may change the very nature of government and interest group relations. Lijphart (2012, 16) relates the adversarial structure of majoritarian governments
to the competitive and conflictual lobbying environment that often accompanies them ("a system of free-for-all pluralism"). He compares this to the "compromise and concertation" of corporatism in consensus parliaments. Ultimately, the external validity of my findings depends on extending the scope of analysis beyond Canada. The increasing availability of lobby register data worldwide invites such inquiry.
Chapter 3

Parliamentary Accountability and Lobby Networks

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3.1 Introduction

A major question in the study of executive politics is the extent to which political parties influence legislative oversight: Do strong parties weaken government accountability? The question is particularly important in the parliamentary context, where accountability is a principal-agent problem. Legislators (as principals) delegate authority to the executive (as agent) to coordinate decision-making (Strøm, 2003; Cox and McCubbins, 2005). The problem is, government enjoys an enormous informational advantage—not just over opponents across the aisle but also supporters behind the bench (Saalfeld, 2000; Saalfeld and Strøm, 2014). In theory, legislators can reduce this asymmetry with information from third party groups—the so-called “fire alarm” model of legislative oversight (McCubbins and Schwartz, 1984). But in practice, many researchers argue fire alarms are incompatible with majoritarian political institutions. At issue is the potential for strong legislative parties to restrict access to outside information for all but the most powerful legislators. For example, Lupia and McCubbins (1994) argue strong party discipline weakens the incentive of government backbenchers to learn from expert testimony at committee meetings. Mattson and Strøm (1995, 299) and Strøm (1995, 65) argue party leaders in the U.K. select compliant commit-
tee chairs, appoint loyal partisans, and dominate the policy agenda. These findings align with similar work in the US, where Cox and McCubbins (2005) argue strong parties act as legislative “cartels”—exploiting procedural rules to make committees an instrument of partisan conflict rather than information gathering.

These authors are surely right about the effect of strong legislative parties on committee oversight. Yet it is premature to conclude fire alarms are incompatible with majoritarian political institutions. We do not know whether, and under what conditions, parliamentarians might bypass committees and go straight to interest groups for information. This is important because if fire alarms work, then it implies some constraint on the “elective dictatorship” of a strong majoritarian executive (Beer, 2008, 707). On a normative level, this would soften the need for democratic reform. Cabinet can never be certain of its informational advantage since interest groups keep opposition antagonists and backbench supporters well informed. However, if fire alarms do not work, then cabinet may operate knowing everyone else in the legislature—antagonists and supporters—are in the dark. Opposition parties may not be able to effectively scrutinize government decisions, making it hard for them to credibly replace the government. Similarly, backbenchers may have difficulty knowing when constituent interests trump party interests. Instead of pressing cabinet on a bad decision, backbenchers might rubberstamp such decisions. On a normative level, this would reinforce the need for democratic reform. Accountability may depend on oversight agencies (e.g. the Auditor General) or even changes to the electoral system.

In this Chapter, I present a new dataset of 41,619 lobbying records from a prominent majoritarian legislature: the Canadian House of Commons. I use dynamic panel and network regression models to explain the appearance and disappearance of ties between legislators and interest groups over time. I make two important contributions. First, I provide empirical evidence a legislator’s access to information from outside groups is conditional not just on her parliamentary power but also the diffusion of agenda control within the legislature. One implication is that the potential for fire alarm oversight varies not just between political systems but also within them. It is weakest when a single party controls the agenda and

\[1\] Quoting Lord Hailsham.
becomes stronger as multiple parties gain control. Second, I find strong evidence of partisan clustering in parliamentary lobbying networks. Groups that communicate with one legislator are more likely to communicate with her co-partisans than with her cross-partisans. I show this partisan clustering is especially prominent during majority government. Thus, another implication is that political institutions may influence political networks—for example, by increasing or decreasing the tendency for localized diffusion of information. More generally, my results speak to ongoing debates about legislative oversight of the executive and the role of Parliament in the policy process. I conclude agenda control—or the extent to which one party commands a parliamentary majority—is an important mechanism by which political parties influence accountability.

3.2 Information Asymmetries in Majoritarian Parliaments

In this section, I follow King (1976, 14-15) and Saalfeld (2000) to argue majoritarian parliaments exhibit two information asymmetries. The first is an *intra-party* asymmetry between government frontbenchers and their supporters in the backbench. The second is an *opposition* asymmetry between the governing and opposition parties. These result from an otherwise practical solution to a basic problem of parliamentarism: The delegation of legislative authority to cabinet through a political party.

Theories of parliamentary government depict accountability as a principal-agent problem. As principals, legislators depend on information to hold their agent—the executive—accountable. The problem is, cabinet members may use their delegated authority to secure greater access to policy information than legislators (Saalfeld and Strøm, 2014). The resulting information asymmetry weakens accountability in two ways: adverse selection and moral hazard (Strøm, 2000). Adverse selection occurs when a prospective agent has different preferences than the principal and is unwilling to act in the principal’s interests (McCubbins and Schwartz, 1984). For example, if cabinet is more conservative than the rest of the legislature, levels of social spending may be lower than what elected officials (and their voters) prefer. Moral hazard arises when contracted agents have access to superior information than the principal and use the asymmetry to get away with sub-optimal performance (Moe,
1984, 755). For example, cabinet may minimize the true cost of a spending scandal to spare the government legislative censure.

Over time, political parties emerged to improve the efficiency of delegation. For example, Godbout and Høyland (2015) show executive control of the legislative agenda was an important feature in the emergence of party cohesion in Canada. Similarly, Eggers and Spirling (2016) examine the British House of Commons from 1836-1910 to show national parties became more cohesive as legislators grew more loyal to the Prime Minister and his party. This is related to the well-known “efficient secret” of majoritarian parliamentarism (Cox, 1987), whereby cabinet wields formidable executive and legislative powers. As parties grew central to cabinet formation, caucuses evolved to screen potential appointees and minimize adverse selection. Kam et al. (2010) show backbenchers use prior knowledge about colleagues’ policy preferences to press for a cabinet close to their ideal point. This, combined with strong party cohesion, reduces the number of principals (or veto players) to one (Tsebelis, 1995).

There is a cost to this efficiency. Delegation through a political party minimizes adverse selection but deepens the asymmetry between the front and backbenches. This is not necessarily a problem in the short term, since cabinet members define the party brand on which backbenchers campaign. Over time, however, there may be gaps. This is especially likely during majority government, as rank-and-file legislators may bristle at their lack of autonomy. As a former representative writes, “Being a backbench MP in a majority government caucus is, without a doubt, the worst job in…politics” (Rathgeber, 2014, 224). Following the logic of “trust but verify,” backbenchers may seek reassurance about what frontbenchers do on their behalf. This is no simple task. Strong legislative parties obscure cabinet’s decision-making process (Müller and Strøm, 2003, 25), reduce the capacity of committees to gather and process information (Lupia and McCubbins, 1994; Chong, 2017), and set a firm legislative agenda, working to keep divisive issues off the floor (Kam, 2006, 28). In other words, government backbenchers delegate authority to solve problems of adverse selection but remain understandably cautious about the potential for moral hazard.

Strong legislative parties create another problem across the aisle. When one party controls a majority of seats in the legislature, it leads to a winner-take-all, government versus
opposition dynamic. Dewan and Spirling (2011) demonstrate this is basically unavoidable: Opposition parties have a strategic interest to vote against government initiatives, even those they agree with. To hold government accountable, the opposition must demonstrate its readiness to replace the government. This entails scrutiny of the public accounts, highlighting policy failures, and developing an alternative legislative agenda. Each of these requires information. Opposition parties do several things to stay informed but the government is almost always better informed than the opposition.

In theory, government backbenchers and opposition legislators can reduce their respective asymmetry through *ex post* monitoring of the executive. There are two types of monitoring. The first is “police patrol” oversight (McCubbins and Schwartz, 1984). Legislators personally review the executive’s actions. For example, government backbenchers might use regular caucus meetings to press for more information about a budgetary decision. The second form of monitoring is “fire alarm” oversight (McCubbins and Schwartz, 1984). Legislators rely on third party groups to gather and relay information about the executive. For example, opposition legislators may invite concerned interest groups to testify at committee hearings. Fire alarm oversight is typically seen as more economical than police patrols. Elected officials offload monitoring costs to interest groups, build oversight capacity, and reduce the risk of agency loss. Groups gain access and (possibly) secure policy gains.

In practice, few researchers believe *ex post* monitoring is viable in majoritarian parliaments. Much of this literature considers the potential for strong legislative parties to undermine parliamentary committees. For example, Lupia and McCubbins (1994) argue party discipline weakens the incentive for backbenchers to participate in and learn from fire alarm oversight (Lupia and McCubbins, 1994). Using a formal model, they argue expert testimony before legislative committees is most likely to produce learning in presidential systems like the U.S. and least likely in majoritarian parliaments like the U.K. Similarly, Mattson and Strøm (1995, 299) compare committees across 18 parliaments. They find committees in majoritarian parliaments are the least likely to change the legislative agenda using parliamentary rules and procedures. Strøm (1995, 65) suggests this is because the
majority party controls committee composition and operations. This limits the access of ordinary legislators, especially those in the opposition, to information from interest groups.

Committees are an important source of information for elected officials but they are not the only source. Parliamentarians may bypass committees and go straight to interest groups for information. For example, Bertelli (2008) argues government leaders rely on information from backbenchers who communicate with constituency groups. Russell and Gover (2017, 102) conduct interviews in the British House of Commons, concluding interest groups are more likely to communicate with opposition legislators at certain stages of the legislative process. These findings align with a growing literature that suggests parliament plays an increasingly important role in the policy process. As party leaders centralize authority (Aucoin, 2012), so too have legislators come to rely on external interest groups for policy advice (Craft, 2016). These networked arrangements are particularly important in an era of minority government and an increasingly assertive legislature (Russell and Cowley, 2016).

3.3 A Subsidy Model of Parliamentary Accountability

Next, I identify the conditions under which ex post monitoring of the executive may thrive in majoritarian parliaments—namely, when no single party controls the legislative agenda. I present a theory in which political parties influence accountability by structuring legislators’ access to information from interest groups. I follow the legislative subsidy model of lobbying (Hall and Deardorff, 2006) to depict information from interest groups as a “matching grant” to help allied legislators achieve shared policy goals. A legislator becomes eligible for subsidy as her policy objectives align with those of the group and, crucially, as her “productivity” grows in the legislature—i.e. her parliamentary power.²

The notion of lobbying-as-subsidy suggests a new way to consider the relationship between political parties and parliamentary accountability. In majoritarian systems, parliamentary power is vested in cabinet. In the presence of high party cohesion, lobbyists face strong incentives to subsidize influential legislators in the government frontbench rather

²Here, “parliamentary power”, refers to agenda control in the sense of Cox and McCubbins (2005). For Westminster countries like Canada and the UK, this includes the right to introduce spending bills, determine the order in which private members’ bills are introduced, and amend bills coming out of committee.
than those in the backbench or opposition. Following Hall and Deardorff (2006), this argument can be expressed in the formal language of subsidy models. In theory, the median legislator’s “productivity” parameter should be lower in majoritarian parliaments than in systems with more balanced executive-legislative powers. Consider the power of government frontbenchers relative to backbenchers, or of government to opposition legislators. In addition to their ministerial authorities, frontbenchers benefit from additional staff and larger research budgets and are frequently afforded greater media coverage. Relative to opposition legislators, members of the governing party are more likely to pass private members’ bills. They are afforded more time in the House of Commons, may set the legislative agenda, and typically chair the most powerful committees (Mickler, 2017). For these reasons, agenda-setters like government frontbenchers should be more “productive” for lobby groups—and thus more eligible for subsidy—than members of the backbench or opposition.

This reasoning carries an important caveat: The distribution of parliamentary power depends on the institutional context. It is common in majoritarian systems for a single party to hold a legislative majority. When this occurs, there is no need for power sharing between the governing and opposition parties. However, when no party enjoys a parliamentary majority, the government must build ad hoc coalitions with members of the opposition for each legislative vote (Strom, 1990). Previous research shows minority governments are more responsive to public opinion (Pickup and Hobolt, 2015), more partisan when it comes to legislative votes (Hix and Noury, 2016), yet not necessarily more conducive to strong committee systems (Martin, 2011). In theory, then, minority government should increase the parliamentary power of government backbenchers and opposition legislators and may render them eligible for legislative subsidy.\(^3\)

Figure 3.1a presents a simplified model of my argument. Panel 3.1a(a) shows two values of the main independent variable: Agenda control, or the extent to which one party commands a parliamentary majority. It shows the distribution of seats among three parties (red, blue, and yellow) in two hypothetical parliaments. In the first, a single party, red, enjoys a

\(^3\)For a slightly different view, see Tsebelis (1995, 303), who argues centrist single-party minority governments have the same number of veto players as, and behave much like, single-party majority governments (at least in terms of policy stability).
The left panel shows a majority government (a). It produces a bipartite network in which front-benchers communicate more frequently with interest groups than do other legislators (b). This leads to a unipartite network where frontbenchers are more prominent than others. The right panel shows a minority government (a). It produces a bipartite network in which backbenchers and opposition MPs communicate more frequently than during majority government (b). This leads to a more equally distributed unipartite network in which backbenchers and opposition MPs are relatively more prominent in the network.
majority and dominates the legislative agenda. Strong party cohesion concentrates power in the government frontbench. In the second parliament, red fails to secure a majority and must rely on the support of opposition legislators for each vote. This creates a tension within the governing party. On the one hand, the risk of a snap election dampens open dissent among backbenchers (Kam, 2006, 46). On the other hand, the need to compromise with other parties risks alienating those same backbenchers. Members of the rank-and-file gain influence as government frontbenchers consult with them to ensure caucus support (Savoie, 1999, 93). One recent example comes from the U.K., where government backbenchers effectively amended Bill C-16, the “Withdrawal Bill” governing Brexit. Without a parliamentary majority, the Conservative minority government had to compromise with backbenchers (and opposition Labour MPs) on the Brexit Select Committee. The government gave Parliament a greater role in future negotiations and made several concessions regarding trade and customs (Cooper, 2017). In this way, the shift from majority to minority government diffuses agenda control—away from government frontbenchers to the opposition and backbench.

Figure 3.1a(b) shows the expected impact of these changes on interest group activity. It depicts communication between parliamentarians and interest groups as a bipartite affiliation network. Groups are the top row in grey. Legislators are the bottom row coloured by party. Ties represent a lobbying communication between each group and legislator. For example, the government minister (second red node from left) communicates with three interest groups. When a single party controls the agenda (left side), it creates a powerful incentive for interest groups to communicate with government frontbenchers instead of their backbench supporters or parliamentary opponents. This leads to an unequal distribution of legislative subsidies both within parties and across the aisle. I use a straightforward measure of popularity: the total number of lobbying communications for each legislator over each time period. High scores indicate an individual is popular with interest groups—that is, frequently in communication with them. In the hypothetical majority government, government frontbenchers are more popular than either backbenchers or members of the opposition.

4“Frontbench” means all members of cabinet, including full ministers, ministers and secretaries of state, associate ministers, and parliamentary secretaries, who do not sit in cabinet but each of whom supports a minister and may represent them in the legislature.
(three connections versus one each). As agenda control diffuses (right side), access to information grows more equal. In the hypothetical minority government, interest groups are relatively more likely to communicate with backbenchers and opposition members.

Popularity matters for parliamentary accountability because popular actors tend to be prominent in social networks. This is shown in Figure 3.1a(c), which presents a unipartite projection of the bipartite network. When two legislators share a tie, it means they communicate with the same interest group. To measure a legislator’s prominence, I use a concept from social network analysis: “eigenvector centrality.” This measures both the quality and quantity of an actor’s ties (Kolaczyk and Csárdi, 2014, 48). High scores indicate an actor is central and of high rank—a prominent actor who enjoys many connections and whose neighbours are also well-connected. In the hypothetical majority parliament, government frontbenchers enjoy higher eigenvector centrality than the backbench or opposition. This inverted accountability structure is especially strong when a single party controls the agenda.

In the hypothetical minority parliament, government backbenchers and opposition legislators are more popular with interest groups, which translates to greater prominence. From this perspective, minority government improves accountability by making it harder for the executive to keep parliament in the dark.

5 The hierarchical nature of parliament means some legislators are immensely popular with interest groups, which, in turn, are well-connected to other MPs. Other legislators are less popular—they communicate with fewer groups, and those groups enjoy fewer connections in the House of Commons. As Bonacich (2007, 564) observes, this unequal distribution may pose a problem for other centrality measures, such as in-degree. Eigenvector centrality is useful because it captures not just how many connections an MP shares with her colleagues but also but the quality of those connections, defined in terms of their reach within the larger network. As an example, I compare two MPs: James Bezan (Conservative) and Ted Hsu (Liberal). During one wave in my study (August 20–November 12, 2014) Mr. Bezan and Mr. Hsu each met with seven interest groups. In other words, the two MPs were equally popular ($\text{popularity} = 7$). However, the groups that spoke with Mr. Bezan also communicated with powerful, well-connected players in the House of Commons. For example, the Association of Manufacturers and Exporters met with Mr. Bezan in addition to the Minister of International Trade (Ed Fast), the Minister of Natural Resources (Joe Oliver), and the Prime Minister (Stephen Harper). By contrast, the groups that spoke with Mr. Hsu spoke with relatively less powerful MPs. For example, the Canadian Association of University Teachers met with Mr. Hsu as well two opposition NDP legislators (Lauren Liu and Kennedy Stewart) and the leader of the third-place Liberals (Justin Trudeau). Because of this difference in their local connections, Mr. Bezan has a higher eigenvector centrality score (0.96) than Mr. Hsu (0.17).

6 The eigenvector centrality of actor $i$ is measured as $EC_i = \frac{1}{\lambda} \sum_{j \neq i} y_{i,j} EC_j$, where $EC_i$ is a vector that maximizes the array of eigenvalues $\lambda$. This vector may be normalized on a 0-1 scale.
There is one other intriguing consequence of a subsidy model of parliamentary accountability. Hix and Noury (2016) show parties and legislators adapt to minority government by shifting the dimensions of legislative conflict. During majority government, legislative votes exhibit a government-opposition dynamic. Opposition parties tend to vote with one another against the government, regardless of their ideological differences. During minority government, cross-party (or left-right) dynamics prevail, as the government builds ad hoc coalitions around each legislative vote. Just as parties and legislators adapt to the institutional context, so too may interest groups. During a majority, government frontbenchers (and key opposition leaders) account for a disproportionate share of interest group lobbying. This creates a “core” of well-connected parliamentarians who share a larger proportion of lobbying affiliations with one another than with less powerful legislators. During a minority, members of the opposition and government backbench communicate more frequently with interest groups. This bridges the partisan divide as co-partisans start communicating with the same groups as cross-partisans.\(^7\) The net result is an increase in shared lobbying affiliations among cross-partisan legislators. Lobbying networks may mirror the power-sharing of minority parliaments and otherwise follow a government-opposition dynamic.

This is shown in Figure 3.1a(c). To measure partisan clustering in lobby networks, the analysis use the popular concept of “homophily,” according to which individuals who share one attribute are more likely to share ties than those who do not (McPherson, Smith-Lovin and Cook, 2001, 416).\(^8\) Strong homophily means legislators who do not share a party affiliation are less likely to communicate with the same interest groups. This is important since different parties tend to communicate with different groups. If two parties are not talking to the same groups, they may not be getting the same information. In the hypothetical majority government, the network shows a core-periphery dynamic. Government frontbenchers (and a few opposition leaders) are at the centre, brokering information to less prominent legislators at the margins. Homophily is strong—just 2 of the 16 ties (12.5%) connect cross-

\(^7\)This happens within the governing caucus too: Government frontbenchers strengthen ties with the backbench.

\(^8\)I measure homophily by counting the number of dyads in which both nodes share a common party affiliation.
partisans. In the hypothetical minority government, legislators are better connected to one another. Homophily is much weaker—12 out of 36 ties (33.3%) connect cross-partisans. In this way, minority government improves legislative oversight of the executive and prevents the localized, partisan diffusion of information.

3.4 Hypotheses & Data

3.4.1 Hypotheses

A subsidy model of parliamentary accountability leads to three observable implications. First, politicians with strong parliamentary powers should receive more legislative subsidies—i.e. communicate more frequently with interest groups—than those who lack parliamentary power. Government frontbenchers should have greater access to legislative subsidies than government backbenchers, who in turn should have greater access to subsidies than opposition legislators. Further, the positive relationship between parliamentary power and communication with interest groups should be strongest during majority, rather than minority, government.

H1a. *Frontbenchers enjoy greater interest group popularity than other legislators.*

H1b. *The positive association between parliamentary power and popularity is stronger during majority government, relative to minority.*

Second, powerful legislators should be better connected than less powerful legislators. Most elected officials do not communicate with interest groups. Instead, they rely on key individuals, such as government ministers, to relay such information. Conceptually, this is similar to the “interlocking directorates” that empower corporate actors who sit on overlapping boards (Dornhoff, 1970). Centrally interlocked actors enjoy privileged access to information, using it to connect others and exercise influence (Mizruchi, 1996). Lobbying networks should demonstrate a similar pattern. As elected officials gain popularity, they gain centrality—i.e. prominence in the network. Following H1, government frontbenchers should have greater eigenvector centrality than government backbenchers and opposition legislators, particularly during majority parliaments.
H2a. *Frontbenchers enjoy greater eigenvector centrality than other legislators.*

H2b. *The positive association between parliamentary power and eigenvector centrality is stronger during majority government, relative to minority.*

Third, legislators should be more likely to share lobbying affiliations with members of their own party than with members of other parties. Partisan homophily should be stronger during majority government, relative to minority government.

H3a. *Co-partisan legislators are more likely to share lobbying affiliations than are cross-partisan legislators.*

H3b. *Co-partisan legislators are more likely to share lobbying affiliations than are cross-partisan legislators, especially during majority government.*

3.4.2 Data

Taking advantage of recent amendments to Canada’s *Lobbying Act*, I collect detailed, longitudinal information about lobbying. I test three hypotheses using a new dataset of lobbying interactions (see Appendix B.1 for information on how the data were collected, tidied, and organized). This comprises 41,619 lobbying interactions between interest groups and Members of Parliament (and staff) from September 22, 2010 to April 1, 2017. Each row in the dataset indicates a lobbying interaction—that is, an “oral and arranged communication” between an interest group and an elected official and/or her staff (Office of the Commissioner of Lobbying of Canada, 2010). These oral communications may take the form of a face-to-face meeting or a communication via telephone or real-time web communication (see Appendix B.2.1 for more information).

To test H1-H2, I aggregate the full dataset into 26 panel waves, tallying the number of lobbying communications for each legislator in each wave. One wave comprises 12 weeks, with adjustments for the start/end of the parliamentary session.\(^9\) The result is a panel

\(^9\)I roll summer months and election campaign periods into the subsequent wave since parliament is typically out of session and lobbying does not generally occur.
data series with large $N$ (631 legislators in total) and $T$ (26).\footnote{The data actually offer 27 waves, but the first time point is lost to lagging.} One potential issue is the unbalanced nature of the data, owing to the entry and exit of so many legislators from the House through elections and retirements. Across all waves, the average $N$ is 328. Across all legislators, the median $T$ is 21 while the mean is 18. The Ahrens and Pincus (1981) measure of unbalanceness is 0.53.\footnote{See Appendix B.12 for an investigation into selection bias.} To test H3, the full dataset is aggregated into four cross-sectional networks—one for each parliamentary session.

3.5 Empirical Analysis

*Testing H1*

To examine the effects of parliamentary power on popularity (H1), the analysis estimates a panel Autoregressive Distributed Lag (ADL) (1,1) model with controls for network effects and trending. The Appendix includes additional details on my analysis. I describe the dataset and present robustness checks about estimation. In terms of the dataset, I outline data collection and cleaning procedures and show descriptive plots about lobbying in Canada. In terms of estimation, I provide regression diagnostics, an alternative statistical estimator, different time aggregations, and test for sample selection bias. These robustness checks (and others) are highlighted at relevant points in the analysis.

My data model is represented by the following equation:
\[ Popularity_{i,t} = \delta_{0,i} \]
\[ + \rho_1 Popularity_{i,t-1} \]
\[ + \kappa_{1a} Minority_{i,t} + \kappa_{1b} Minority_{i,t-1} \]
\[ + \kappa_{2a} Opposition_{i,t} + \kappa_{2b} Opposition_{i,t-1} \]
\[ + \kappa_{3a} Gov. Backbench_{i,t} + \kappa_{3b} Gov. Backbench_{i,t-1} \]
\[ + \kappa_{4a} (Minority_{i,t} \times Opposition_{i,t}) \]
\[ + \kappa_{4b} (Minority_{i,t-1} \times Opposition_{i,t-1}) \]
\[ + \kappa_{5a} (Minority_{i,t} \times Gov. Backbench_{i,t}) \]
\[ + \kappa_{5b} (Minority_{i,t-1} \times Gov. Backbench_{i,t-1}) \]
\[ + \kappa_{6a} In - Degree_{i,t} + \kappa_{7a} In - Degree_{i,t-1} \]
\[ + \kappa_{7a} Betweenness_{i,t} + \kappa_{7b} Betweenness_{i,t-1} \]
\[ + \kappa t_{i,t} + \varepsilon_{i,t} \]  

(3.1)

This equation includes legislator-specific intercepts (δ_{0,i}) to account for fixed and average differences across members of the House of Commons. I also include a dummy variable for each wave (κ_{t_{i,t}}). These time-specific effects control for any trending or changes in popularity from one wave to the next. Controlling for individual effects and time dummies is intended to reduce the possibility of a spurious result due to any systematic differences between legislators or changes over time that affect popularity, parliamentary power or network effects (e.g. betweenness).

In the first ADL (1,1) model, the dependent variable is the number of lobbying communications for each legislator \( i \) at wave \( t \) (Popularity_{i,t}). The model also includes its lag (Popularity_{i,t-1}) to account for the autoregressive nature of the data. It includes two dummy variables (and their lags) to capture differences in parliamentary power: Opposition_{i,t} and Gov. Backbench_{i,t} (the omitted reference category is Gov. Frontbench_{i,t}). It includes another dummy variable (with lag) to capture differences between minority and majority government (Minority_{i,t}). It also includes interactions (with lag) between parliamentary
power and minority government (e.g. $\text{Minority}_{i,t} \times \text{Opposition}_{i,t}$). These capture the potentially moderating effect of agenda control on the relationship between parliamentary power and popularity. Finally, it controls for interdependence among observations using a unipartite projection of shared lobbying affiliations (with threshold = 0). The model includes two control variables: in-degree and betweenness centrality (and their lags).

Baltagi (2005, p. 135) shows the introduction of a lagged dependent variable into a fixed effects model may lead to bias. This decreases asymptotically as the number of time points increases. There is no precise number of time points at which bias becomes negligible. Beck and Katz (2011, p. 342) run Monte Carlo simulations and recommend a dynamic, fixed effects OLS model when the panels are balanced and $T$ is approximately 20 or above. On the one hand, the time series is long (maximum $T = 25$; median $T = 21$; mean $T = 18$), and so one may expect a reduction in the magnitude of bias. On the other hand, the panel is unbalanced. The analysis therefore estimates each model using the “Lancaster” method—a likelihood-based estimator less sensitive to bias when $T$ is small (Lancaster, 2002).

The results (left panel, Figure 3.2) show two main findings. First, government frontbenchers communicate with interest groups more frequently than members of the opposition or government backbench. Second, this difference largely disappears during minority government. The data also suggest autoregression. The median posterior estimate for $Rho$ is 0.40 (SD=0.01), with a 95% credible interval that does not include zero. See Appendix B.6 for full results.

**Short Run Effects (H1)**

The coefficient on the $\text{Opposition}$ variable is the estimated short-run effect of being in the opposition party on a legislator’s popularity with interest groups during majority govern-

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12See also Angrist and Pischke (2008, 243-247) and an early discussion in Nickell (1981, 1419-1423).

13The Lancaster method uses Bayesian methods to integrate over the posterior distribution of simulated data, partialling out incidental parameters responsible for bias (Lancaster, 2002). For the variables of interest, parameter estimates may be represented by the median of the sample of simulated $\hat{\beta}$ estimates. Credible intervals may also be constructed using quantile intervals. The paper uses 10,000 simulations for each analysis. It also calculates the 2.5 and 97.5 percentiles of the sample estimates to show 95% credible intervals. This technique is implemented using the OrthoPanels package in R (Pickup et al., 2017).
Figure 3.2: Popularity and Centrality in Parliamentary Lobbying Networks


Short- and long-run coefficient plots testing H1 and H2. The top panel shows that government frontbenchers communicate with interest groups more frequently than members of the opposition or government backbench. This difference largely disappears during minority government. The bottom panel tells a similar story: Government frontbenchers are more prominent in lobbying networks than members of the opposition (but not the backbench). Second, during minority government, both opposition and backbenchers gain prominence in lobbying networks.

The median posterior estimate is negative, with a 95% credible interval that does not include zero. The magnitude is -2.99 (SD=0.46), meaning opposition legislators have approxi-
imately three fewer interest group communications than government frontbenchers during each wave (one wave = approx. 12 weeks). The interaction term \( (\text{Minority} \times \text{Opposition}) \) is the difference in the short-run effect of being in opposition during minority government, relative to majority. The median posterior estimate is positive, with a 95% credible interval that does not include zero. The magnitude is 4.11 (SD=1.29). The linear combination of this coefficient with that of the \textit{Opposition} variable is positive, with a 95% credible interval that includes zero (-1.57, 3.78). In other words, the effect of going from majority to minority government is of a magnitude large enough to erase the difference between government frontbenchers and members of the opposition.

The coefficient on the \textit{Gov. Backbench} variable is the estimated short-run effect of being in the government backbench on popularity during a majority. The median posterior estimate is negative, with a 95% credible interval that does not include zero. The magnitude is -2.86 (SD=0.38), meaning government backbenchers have just under three fewer interest group communications than government frontbenchers each wave. The interaction term \( (\text{Minority} \times \text{Gov. Backbench}) \) is the difference in the short-run effect of being in the government backbench during minority government, relative to majority government. The median posterior estimate is positive, with a 95% credible interval that does not include zero. The magnitude is 4.03 (SD=1.15). The linear combination of this coefficient with that of the \textit{Gov. Backbench} variable is positive, with a 95% credible interval that includes zero (-1.13, 3.47). In other words, the effect of going from majority to minority government is large enough to cancel out the difference between front and backbenchers.

\textit{Long Run Effects (H1)}

As in Chapter Two, one may distinguish the short- and long-run effect of each independent variable using the lagged dependent variable. The short-run effect refers to the immediate impact and is captured by the contemporaneous indicator. The long-run effect refers to the cumulative effect over multiple waves and is captured by the combination of the contemporaneous and lagged indicators, divided by one minus the lagged dependent variable: \( \frac{(\hat{\beta}_1 + \hat{\beta}_2)}{1-\hat{\alpha}_1} \), where \( \hat{\beta}_1 \) and \( \hat{\beta}_2 \) represent the coefficients on the contemporaneous and lagged values of the
independent variable and $\hat{\alpha}_1$ represents the coefficient on the lagged value of the dependent variable (Pickup, 2014). The analysis uses a non-linear Wald test with a Chi-Squared distribution to assess the statistical significance of the long-run effect.

The long-run effect of being in the opposition party on a legislator’s popularity with interest groups is negative, with a 95% credible interval that does not include zero. The magnitude is -8.22 (SD=0.44), meaning opposition legislators have approximately 8 fewer interest group communications than government frontbenchers. The long-run interaction effect is an increase of 9.16 (SD=1.98) additional communications, compared to government frontbenchers (95% credible interval does not include zero). The linear combination of this effect with that of the Opposition variable (and its lag) is positive, with a 95% credible interval that includes zero (-2.81, 4.85). It appears the long run effect of going from majority to minority government is large enough to cancel out the difference between frontbenchers and members of the opposition.

The long-run effect of being in the governing backbench is also negative, with a 95% credible interval that does not include zero. The magnitude is -6.63 (SD=0.50), meaning backbenchers have approximately 6 fewer communications than frontbenchers. The long-run interaction effect is an increase of 9.16 (SD=1.98) additional communications, compared to government frontbenchers (95% credible interval does not include zero). The linear combination of this effect with that of the Gov. Backbench variable (and its lag) is positive, with a 95% credible interval that includes zero (-0.24, 6.86). The long run effect of going from majority to minority government is to erase the difference between front and backbenchers.

In line with H1a, the evidence suggests government frontbenchers communicate more frequently with interest groups than do other legislators. In line with H1b, interest groups lobby more broadly during minority government, both across the aisle and within the governing party.

Testing H2
To test H2, I estimate a second panel ADL (1,1) Lancaster model with controls for net-

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14 For ease of presentation, Figure 3.2 only shows the long run interaction effects.
work effects and trending. The dependent variable is the (normalized) eigenvector centrality score for each legislator $i$ at wave $t$ ($Eigenvector Centrality_{i,t}$). The righthand side of the equation includes the lagged dependent variable, $Eigenvector Centrality_{i,t-1}$ and the $Popularity_t$ and $Popularity_{t-1}$ variables. Otherwise, the data model is the same as above.

The results (right panel, Figure 3.2) show two main findings. First, government frontbenchers are more prominent in lobbying networks than members of the opposition but not the backbench. Second, during minority government, both opposition and backbenchers gain prominence in lobbying networks. Evidence of autoregression is weaker than in the empirical model for H1. The median posterior estimate for $Rho$ is just 0.03 (SD=0.01), with a 95% credible interval that barely excludes zero.

**Short Run Effects (H2)**

The coefficient on the *Opposition* variable is the estimated short-run effect of being in the opposition party on a legislator’s eigenvector centrality during majority government. The median posterior estimate is negative, with a 95% credible interval that just barely excludes zero. The magnitude is -0.03 (SD=0.01), suggesting opposition legislators have lower eigenvector centrality than government frontbenchers (though the standard deviation is considerable). The interaction term ($Minority \times Opposition$) is the difference in the short-run effect of being in opposition during minority government, relative to majority. The median posterior estimate is positive, with a 95% credible interval that does not include zero. The magnitude is 0.29 (SD=0.04), suggesting members of the opposition gain prominence during minority government, relative to government frontbenchers. The linear combination of this coefficient with that of the *Opposition* variable is positive, with a 95% credible interval that does not include zero. The magnitude is 0.26 (SD=0.04). In other words, the effect of going from majority to minority government is of a magnitude large enough to not only erase the small difference between government frontbenchers and members of the opposition but actually make the latter more prominent than the former.

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15I control for *Popularity* and its lag because of the strong potential for correlation between degree centrality and eigenvector centrality.
The coefficient on the \textit{Gov. Backbench} variable is the estimated short-run effect of being in the government backbench on eigenvector centrality during majority government. The median posterior estimate is negative and the 95% credible interval includes zero. There is thus no evidence of a difference in eigenvector centrality between front and backbenchers during a majority government. The interaction term ($\text{Minority} \times \text{Gov. Backbench}$) is the short-run effect of being in the government backbench during a minority government. The median posterior estimate is positive, with a 95% credible interval that does not include zero. The magnitude is 0.30 (SD=0.03), which suggests government backbenchers gain considerable prominence during minority government, relative to frontbenchers. The linear combination of this coefficient with that of the \textit{Gov. Backbench} variable is positive, with a 95% credible interval that does not include zero. The magnitude is 0.29 (SD=0.03). In sum, the effect of going from majority to minority government is to make government backbenchers more prominent in lobbying networks.

\textit{Long Run Effects (H2)}

The long-run effect of being in the opposition party on eigenvector centrality is negative, with a 95% credible interval that does not include zero. The magnitude is -0.07 (SD=0.01). The long-run interaction effect is an increase of 0.27 in eigenvector centrality (SD=0.04, 95% credible interval does not include zero). The linear combination of this effect with that of the \textit{Opposition} variable (and its lag) is positive, with a 95% credible interval that does not include zero. The magnitude is 0.19 (SD=0.04). As with the short run effects, the long run effect of going from majority to minority government is large enough to make opposition legislators more prominent in lobbying networks than frontbenchers.

The long-run effect of being in the governing backbench is also negative; however, the 95% credible interval includes zero (-0.03, 0.01). There is no evidence of a long run difference in eigenvector centrality between front and backbenchers. This changes during minority government. The long-run interaction effect is an increase of 0.28 (SD=0.03, 95% credible interval does not include zero). The linear combination of this effect with that of the \textit{Gov. Backbench} variable (and its lag) is positive, with a 95% credible interval that
does not include zero. The magnitude is 0.27 (SD=0.03). Again, the effect is large enough to make backbenchers more prominent than frontbenchers.

Contrary to H2a, there is mixed evidence of a difference in eigenvector centrality across levels of parliamentary power. Government frontbenchers are more prominent in lobbying networks than members of the opposition but not the backbench. In line with H2b, there is a differential effect of agenda control: During minority government, government frontbenchers are less prominent in lobbying networks than other legislators.

**Testing H3**

To test H3, the analysis examines the relationship between minority government and partisan homophily. This requires two adjustments to the data and methods. First, instead of a large \( T \) dataset, it aggregates lobbying records into four cross-sectional networks—one for each parliamentary session. This is because the probability of any two legislators sharing a lobbying affiliation is low. A long time series comprising sparse networks makes homophily difficult to detect. Second, instead of a panel regression, the paper estimates a series of Multiple Regressions using the Quadratic Assignment Procedure (MRQAP).\(^{16}\) This section describes the technique, reviews the empirical model, and presents the results.

The MRQAP is a non-parametric technique for hypothesis testing with network data (Cranmer et al., 2017, 239-240). In the traditional regression set-up, hypothesis testing assumes independence among errors, such that \( \varepsilon_i \) and \( \varepsilon_j \) are uncorrelated. However, network observations are often interdependent. For example, if legislators \( i \) and \( j \) communicate with many of the same interest groups, it may increase the proportion of shared affiliations between legislators \( j \) and \( k \). The MRQAP uses randomized simulations to overcome this inferential problem. By comparing an observed correlation to that of simulated random distributions, the researcher may test a “null” hypothesis of no effect. The MRQAP eliminates the potential for network confounders, such as the effect of preferential attachment on tie

\(^{16}\)The MRQAP is implemented in R using the `sna` package (Handcock et al., 2008).
creation. It uses the double semi-partialing approach from Dekker, Krackhardt and Snijders (2007), which extends this framework to partial out the effect of righthand variables.\(^\text{17}\)

The dependent variable is a unipartite matrix. Cell entries represent the proportion of shared interest group affiliations between two legislators. The main predictor variable is partisan homophily—i.e. whether or not two legislators share a party affiliation. The model controls for homophily among members of the opposition and the government backbench (relative to members of the government frontbench) and among legislators of the same sex and region. There are four MRQAP analyses—one for each parliamentary session in the sample: 40th parliament (3rd session); 41st parliament (1st session); 41st parliament (2nd session); and, 42nd parliament (1st session). Following H3a, co-partisan legislators should be more likely to share lobbying affiliations than are cross-partisans. In other words, I expect a positive and statistically significant effect for Partisan Homophily. Following H3b, partisan homophily should be weaker during the 40th minority parliament, relative to the subsequent majority parliaments.

Figure 3.3 presents the parameter estimates from the four cross-sectional regressions (see Appendix B.6 for the full table of results). There are two main findings. First, co-partisan legislators share a greater proportion of lobbying affiliations than cross-partisans. Second, this effect reverses direction when no single party enjoys a parliamentary majority: cross-partisans come to share a greater proportion of lobbying affiliations than co-partisans.

The horizontal axis shows Pearson correlation coefficients for partisan homophily with 95% confidence intervals. The vertical axis shows the point estimate for each wave. The effect sizes are small to moderate. The top wave is the 40th parliament, in which the Conservative

\(^{17}\)I made considerable effort to use longitudinal network techniques, such as Stochastic Actor Oriented Models (SAOM), but this did not prove fruitful. The SAOM is designed for slow-moving networks (Jaccard score no lower than 0.3) with average degree of 2-15 and some structural zeroes. In the present case, turnover in lobbying networks appears too volatile, with average degree too great for such analysis. With just four waves (one for each parliamentary session), average degree is between 50-60 with Jaccard scores around 0.02-0.05. Ripley et al. (2018, 20) observes that sparse networks with degree less than two may have low Jaccard scores without negative consequences for estimation. To bring degree down this low, I can extend the number of waves to 28 and increase the threshold of a tie from 0 to 0.50. This increases Jaccard scores to 0.10, which is really too low for proper estimation. Further, this means some waves include just 30% of the actors in the network. The result is extremely slow estimation (greater than seven days using distributed parallel computing with 16 cores) with high MCMC convergence ratios (the overall ratio is around 6-10 instead of the recommended 0.25).
Party led a minority government. The coefficient is negative and statistically significant. The magnitude of the effect is -0.036 ($P$-value < 0.05). In other words, the proportion of shared lobbying affiliations among co-partisans is 0.036 lower—about 20% of the mean (0.17)—than the proportion of shared affiliations among cross-partisans. This changes in subsequent waves. The Conservatives gained a majority government during the 1st session of the 41st parliament. The partisan homophily coefficient is positive and statistically significant. The magnitude of the effect is 0.021 ($P$-value < 0.05). This means the proportion of shared lobbying affiliations among co-partisans is 0.020 higher than among cross-partisans. For the 2nd session of that same parliament, the coefficient is again positive and statistically significant with magnitude 0.012 ($P$-value < 0.05). Finally, for the 1st session of the 42nd parliament, in which the Liberal Party led a majority government, the homophily coefficient is positive and statistically significant with magnitude 0.033 ($P$-value < 0.05).

Figure 3.3: Partisan Homophily in Parliamentary Lobbying Networks

Parameter estimates from four cross-sectional MRQAP regressions. The plot shows two main findings. First, co-partisan legislators share a greater proportion of lobbying affiliations than cross-partisans. Second, this effect reverses direction when no single party enjoys a parliamentary majority: cross-partisans come to share a greater proportion of lobbying affiliations than co-partisans.

\[ Z = \frac{\hat{\beta}_1 - \hat{\beta}_2}{\sqrt{(SE_{\hat{\beta}_1} + SE_{\hat{\beta}_2})}} \]

\(^{18}\) Appendix B.14 tests whether the difference between these coefficients are statistically significant using simple pairwise Z-tests, given as $Z = \frac{\hat{\beta}_1 - \hat{\beta}_2}{\sqrt{(SE_{\hat{\beta}_1} + SE_{\hat{\beta}_2})}}$. 

Records from the Office of the Commissioner of Lobbying and PARLINFO.
In Appendix B.15, I present a robustness check regarding the role of tie strength. I test whether results change when weak connections are removed. I assess the sensitivity of my results across a range of thresholds.

In sum, the results provide strong support for H3a and H3b. During majority government, co-partisan legislators are more likely to share lobbying affiliations than are cross-partisans. During minority government, cross-partisans are more likely to share lobbying affiliations than are co-partisans. The evidence suggests interest groups respond to changes in the dispersion of parliamentary power. When power is concentrated, lobbying affiliations cluster by party. When power is dispersed, interest groups communicate more evenly with parties on both sides of the aisle.

### 3.6 Conclusion

Oversight of the executive is a core function of a democratic legislature (Kreppel, 2014, 87). The executive branch has every incentive to exploit its informational advantage over the legislative, whether it be the House of Representatives or the House of Commons. In theory, legislators can overcome this asymmetry by turning to outside groups for information (McCubbins and Schwartz, 1984). In practice, many researchers contend such “fire alarm” oversight does not work in majoritarian parliaments. The basic problem is the delegation of cabinet authority via disciplined political parties. This concentrates enormous parliamentary power in just a handful of government (and party) leaders, who use it to restrict legislators’ access to outside information. This means appointing loyal partisans to committees, stacking the witness list, and dominating the legislative agenda. Paradoxically, the very thing that makes majoritarian governments so accountable to voters—single-party agenda control (Powell, 2004)—makes them so unaccountable to the legislature.

In this Chapter, I develop a theoretical model whereby an elected official’s access to outside information is conditional not just on her parliamentary power but also on her party’s influence over the legislative agenda. I present three main findings. First, interest groups are more likely to communicate with legislators who wield parliamentary power—namely, government frontbenchers. Second, this inverts the accountability structure, especially during
majority government. When a single party controls the legislative agenda, access to information from interest groups is unequally distributed, both within parties and across the aisle. As agenda control diffuses, access grows more equal, as does prominence in parliamentary lobbying networks. Third, just as parties adapt to the institutional context, so do interest groups. During majority government, lobbying networks mirror the partisan antagonism of the legislature. This changes during minority government, such that cross-partisans share more overlapping interest group affiliations than do co-partisans.

My results have implications for research on legislative oversight, political networks, and interest groups. In terms of legislative oversight, it empirically demonstrates that informational asymmetries between the executive and legislative vary with the institutional context. One implication is that strong legislative parties do not necessarily weaken government accountability. In fact, when executive-legislative powers are imbalanced—as is typical during majority government—the fire alarm model inverts, such that interest groups increase the executive’s informational advantage over the legislature. As opposition parties gain control over the agenda, so too does it get harder for the executive to keep parliament in the dark.

In terms of political networks, I show legislators are more likely to share lobbying affiliations with members of their own party than with members of other parties. I also find evidence partisan homophily is strongest when a single party controls the legislative agenda. Thus, another implication is that political institutions may structure the networks that connect political parties and interest groups. This finding dovetails nicely with recent research showing legislative networks operate differently than campaign finance networks (e.g. Grossmann and Dominguez, 2009; Heaney and Strickland, 2017). By focusing on the changing nature of political institutions, the study aims to encourage comparative work on specific aspects of political networks, such as centrality and homophily, outside the US.

Finally, in terms of interest group studies, I build on previous work (inter alia Boucher, 2015; Binderkrantz and Pedersen, 2015) to examine how interest group lobbying changes across political contexts over time—for example, during and after minority government and within the governing party. In terms of methodology, I model legislative lobbying as a dynamic, social process. I find lobbying networks change dramatically over time, both in terms
of dyadic relationships (e.g. homophily) and among individual actors (e.g. centrality). This is important because many studies of lobbying adopt cross-sectional regression techniques to explain who gets lobbied. However, more work is needed. In particular, it is unclear whether mechanisms underlying the formation of the bipartite structure I investigate are stable over time. For example, we might expect long-serving MPs to be more influential and better connected than other legislators (Fowler, 2006). They may also develop friendships or shared policy interests (or both), which could produce time-varying triadic closure that ebbs and flows with the composition of the House (i.e. with the electoral cycle). Another example relates to legislative productivity. Minority governments pass fewer laws than do majority governments (Pickup and Hobolt, 2015). Evidence from the US suggests lobbying coalitions respond to the legislative agenda (Scott, 2013), and so it is possible bipartite lobbying networks change with legislative effectiveness. As the number of bills increases, so might the number of interest groups, which could reduce edge weights in the one-mode projection. Such inquiries are beyond the scope of this study. But understanding the dynamics of parliamentary lobbying means researchers should account for the shifting and often volatile environment in which it takes place. This Chapter represents one such effort.
Chapter 4

Interest Groups & Competitive Issue Framing in Parliamentary Committees

4.1 Introduction

Voters consider policy questions in light of issue frames: words, images, and language that emphasize one aspect of an issue over others. This makes decision-making sensitive to minor differences in emphasis. For example, Nelson, Clawson and Oxley (1997) show people are more tolerant of Ku Klux Klan rallies when framed in terms of freedom of speech rather than disruption to public order. Framing effects like this are among the best documented phenomena in behavioural science (Kahneman and Tversky, 1980; Tversky and Kahneman, 1981; Druckman, 2001). Fortunately, voters’ preferences do not change with each new frame they encounter. A wealth of experimental evidence suggests framing is less effective when two or more frames compete with one another (Chong and Druckman, 2007a, 2010). When voters are exposed to competing issue frames, the frames either cancel out or—reminiscent of concerns over “confirmation bias”—people prefer the one that is attitudinally congruent (Sniderman and Theriault, 2004). In an era of political polarization, the source of the frame becomes especially important: Many voters rely on partisan cues when evaluating frames (Slothuus and De Vreese, 2010).

Despite our increasingly rich understanding of framing effects among the mass public (inter alia Bechtel et al., 2015; Robison and Mullinix, 2016; Slothuus, 2016; Leeper and Slothuus, 2019; Kamoen et al., 2019), we know surprisingly little about competitive issue
framing among political elites. Conventional wisdom holds that democratic institutions, particularly committees, expose legislators to a diversity of views by inviting interest groups to give testimony on prospective policies. In this way, committees help rival legislators find common ground. But there remain gaps in the literature and in our understanding of how and whether committees are able to do this. On the one hand, committee members have a responsibility to help the legislature hold the executive accountable. On the other hand, there is tremendous pressure on every legislator to be a team player, taking care neither to boost a rival party nor criticize their own. From this perspective, parliamentary committees might actually deepen partisan conflict, providing a venue for legislators to learn about and develop competing issue frames.

We do not know whether parliamentarians of different parties invoke different issue frames when discussing the same policy topic. This is important because if politicians compete over frames in committee, then it implies a serious limitation to deliberative models of parliamentary democracy. At a minimum, deliberation requires mutual consideration of opposing positions on matters of shared concern (Bächtiger et al., 2018). But politicians cannot establish common ground if they disagree on the problem itself. Consider a committee hearing in which liberal politicians advocate for a carbon tax to solve climate change while conservative politicians deny climate change even exists. On a normative level, such partisan differences would reinforce the need for participatory democratic reform (e.g. Hendriks, 2016; Hendriks and Kay, 2019). However, if opposing politicians invoke the same frames when discussing legislation, then it suggests some hope for meaningful deliberation in parliament. On a normative level, this would soften the need for democratic reform. It would also nuance concerns over polarization. While voters may consider policy through a “partisan perceptual screen” (Bisgaard and Slothuus, 2018), they may take comfort knowing elected representatives do not (or at least not in committee).

In this Chapter, I present a new dataset of nearly every committee utterance by Canadian parliamentarians and witnesses between January 2006 and June 2018. I focus on a subset of just over 1.09M utterances—covering 131 bills from 15 committees across four parliaments. I make two important contributions. First, I combine unidimensional scaling
and topic modeling to identify issue frames in legislative debate and generate vocabularies for each frame. The approach is useful because it provides a modular, computational, and scalable solution to an important problem in studies of issue framing: Measuring frames across time and political systems. Second, I use fractional multinomial logit models to test for partisan homophily in issue framing. Empirically, I define partisan homophily as an increased probability that legislators who share a party label will invoke the same issue frame. I find strong evidence of partisan differences: About one-sixth of the time, opposing legislators use very different terms when talking about the same bill. I find partisan differences in issue framing have become stronger in recent years, possibly due to the change from minority to majority government. In my conclusion, I reflect on the difficulty in establishing common ground in competitive information environments.

4.2 Literature Review

Motivated Reasoning and Competitive Issue Framing

Following motivated reasoning theory (Kunda, 1990; Lodge and Taber, 2013), I argue parliamentarians have two competing goals in committee. On the one hand, they are motivated by accuracy. Committee members are key players in legislative oversight of the executive. They have a responsibility to rise above the partisan fray, gather all relevant information and objectively consider each legislative proposal. On the other hand, they are also motivated by directional consistency. Opposition parties have a strategic interest to vote against government initiatives, even those they agree with (Dewan and Spirling, 2011). As such, there is tremendous pressure on each committee member to turn committee hearings into another field of partisan conflict. Below, I clarify the connection between motivated reasoning and issue framing.

I begin by situating my contribution in the framing literature. I focus on “frames in communication,” which Chong and Druckman (2007a, 100) describe as “the words, images, phrases, and presentation styles that a speaker (e.g., a politician, a media outlet) uses
when relaying information about an issue or event to an audience.”¹ I distinguish between valence frames and issue frames. Valence frames contrast substantively similar and logically equivalent concepts. For example, a politician may frame the benefits of a housing subsidy by emphasizing the larger, annual benefit (e.g. “$1,200 a year”) rather than the smaller, monthly benefit (e.g. “$100 a month”). Issue frames juxtapose substantively different concepts, systematically drawing people’s attention to some attributes over others. For example, a liberal group may describe a proposed oil pipeline using words related to climate change (e.g. “pollution,” “greenhouse gas”) while a conservative group may describe that same pipeline in relation to economic growth (e.g. “GDP,” “jobs”). I focus on issue frames in this paper.

Issue framing matters because people’s judgement often depends on how a decision is framed. For example, in the well-known “government spending” experiment, Sniderman and Theriault (2004) show that voters are more supportive of welfare spending when framed in terms of social mobility than as a tax increase. Given such examples, one might be excused for thinking voters’ preferences change with each new frame they encounter. Fortunately, this is not so. Experimental evidence suggests framing is most successful when frames are unopposed in political discourse (Chong and Druckman, 2007b, 2010).

Political competition has an interesting, dual role in framing. Sometimes, competing issue frames cancel each other out (Druckman and Nelson, 2003; Druckman, 2004; Sniderman and Theriault, 2004; Brewer and Gross, 2005; Chong and Druckman, 2007b; Hansen, 2007). This happens when frames are equally “strong”—that is, available (stored in memory), accessible (comes to mind), and applicable (compelling) (Chong and Druckman, 2007a). Equally strong frames can neutralize one another. For example, in the government spending experiment, Sniderman and Theriault (2004) show voters find a middle ground when told a new program will both improve social mobility and increase taxes. In practice, this type of cancellation is uncommon. Recently, Goodwin, Hix and Pickup (2018) show even seemingly crystallized opinions, such as UK membership in the EU, are sensitive to framing

¹In contrast, a “frame in thought” refers to an individual’s perceptions, as in “an economic frame of mind” (Chong et al. 2013).
effects. Using a survey experiment, they show UK voters were more likely to support remaining in the EU when the benefits of membership were emphasized. An opposing frame that emphasized downsides had little effect. They attribute this to asymmetries in prior exposure. Voters were less familiar with the positive frame, which made it more persuasive.

When frames do not cancel out, people tend to prefer the frame that is attitudinally congruent. The most compelling explanation for this effect comes from motivated reasoning. People process information with two goals in mind: accuracy and directional consistency (Chaiken and Eagly, 1989; Kunda, 1990). Accuracy goals are straightforward: People do not wish to be wrong, and so accept information they believe will lead to accurate inferences (Bolsen et al. 2014). Accuracy motivations are especially strong when individuals have weak prior beliefs about the focal target (Lodge and Taber, 2013). For example, someone who expects a sunny day might easily update their beliefs (and grab an umbrella) after looking outside. Directional goals are more complex. When prior beliefs are strong, people are more likely to accept confirmatory evidence and reject disconfirmatory evidence (Taber and Lodge, 2006; Lodge and Taber, 2013).

In the context of political decisions, Slothuus and De Vreese (2010) describe a three-part process by which framing can influence behaviour. First, partisan elites signal to voters which issues are the most contentious and deserving of their attention. Second, parties endorse particular issue frames, which make those frames more accessible, available, and applicable. Finally, directional motivations nudge voters toward the issue frame that is consistent with their partisan identity. Lodge and Taber (2000, 205) describe this as “operating in partisan mode,” and the concept is not new to political science. As far back as Campbell et al. (1960), researchers emphasized the tendency of voters to “filter” information through a partisan lens. In later years, more nuanced models were grounded in psychology and communications. For example, in the Receive-Accept-Sample model (Zaller, 1992), people receive new information, decide whether to accept it, and then sample among all the accepted bits of information at the moment of decision. Parties compete by appealing to the median voter

Another possibility is that weak frames may backfire, and move an individual further in the opposing direction than if no frame were invoked at all (Herr, 1986; Martin and Achee, 1992). In practice, this is less common since political competition usually brings about strong frames on both sides.
(Downs, 1957), which brings a natural left-right orientation to politics. The result is that ordinary voters develop (more or less) ideologically consistent left-right political opinions (Zaller, 1992). In the Brexit case, Goodwin, Hix and Pickup (2018) observe weak partisan cues may have increased voters’ susceptibility to framing effects. In other words, partisan conflict not only signals to loyalists where to focus their attention but acts as a thumb on the scale, encouraging directional consistency over accuracy.

*Issue Framing and Discourse Networks*

Political behaviour is not the only subfield to consider the relationship between political actors, language, and issue attention. In public policy, the study of political discourse has a rich tradition. Below, I discuss two relevant strands in the literature. I also describe recent work on the “discourse networks” that connect interest groups who use similar language when advocating for their preferred policy positions.

Some policy scholars consider frames as ideas—how they change minds and shift policy debates. Discourse is a useful concept because it combines the “substantive content of ideas” as well as “the interactive process of conveying ideas” (Schmidt, 2008, 305). For example, Schmidt (2010) has proposed “discursive institutionalism” as a new explanation for policy change and stasis. She distinguishes “coordinative” from “communicative” discourse. Co-ordinative discourse happens among political elites who advocate for (or against) policy change. Communicative discourse refers to the words, language, and symbols that political actors use in public. In other words, coordinative discourse is a conversation among policy elites, while communicative discourse spills over into the public sphere. This is where framing comes in. Establishment politicians use language to pre-empt public challenges to their preferred policy. Opposition politicians and activist groups respond in kind. Each side justifies its position by invoking narratives (e.g. “corporate welfare”, viz. Stone (1989, 1997)), target populations (e.g. “hard working Canadians”, viz. Schneider and Sidney (2009)), and other rhetorical devices. Sometimes this means framing a problem in such a way to favour a predetermined solution; in other cases, it means reframing an existing solution as most
appropriate for a new problem. In time, ideas that were once excluded from coordinative discourse may find themselves as the new status quo. This is a compelling explanation because it builds on existing theories (e.g. historical institutionalism), acknowledges the power of ideas, and is open to contemporary concerns about causation (e.g. Schmidt, 2010, 19). However, there are lingering questions, especially about the process by which elites come to compete over issue frames. An additional concern involves operationalization. Given its roots in post-structuralism, it is perhaps no surprise that discursive institutionalism is not easily amenable to empirical measurement and large-scale quantification.

Other policy scholars consider frames as “glue” that binds together political coalitions. For example, in the advocacy coalition framework, interest groups operate alongside elected officials within a policy “subsystem” (Sabatier and Weible, 2007). This is an exclusive set of key players within a policy area, e.g. the Sierra Club in the US climate change debate or Amnesty International in the debate over arms sales to Saudi Arabia. Each subsystem may contain multiple advocacy coalitions. Coalitions emerge to reap the gains from agenda setting—the process by which government or voters take notice of an issue (Howlett and Giest, 2012, 13). This is where framing comes in. Interest groups build support for their policy agenda by emphasizing shared beliefs about the nature of the problem and/or a given solution. But just as framing unites diverse coalitions, it may also invite competition from political opponents. The literature on advocacy coalitions is large; however, one “post-positivist” critique is the emphasis on beliefs (which are stable over time) over narrative (which is dynamic and context-specific) (Fischer, 2003, 100-103). Hajer (1993) and others (e.g. Dodge and Lee, 2017) prefer an alternative arrangement: discourse coalitions. These are

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3See, for example, Schmidt (2010, 19), where she discusses valence framing effects as “moderated by ‘contextual forces’ involving elite competition and ‘rhetoric’”—of which we might consider partisanship as one such force.

4As Campbell (2002, 28) notes, “researchers rarely explore the process by which frames are constructed, tested, transformed, and fit to the prevailing normative frameworks and cognitive paradigms residing in the background of policy debates.”

5In the language of discursive institutionalism, advocacy coalitions are an example of coordinative discourse (Schmidt, 2008, 309).

6Soroka (2002, 5) calls agenda-setting “the study of issue salience.”
communities of allied interest groups that invoke similar semantic concepts during legislative
debate. In a discourse coalition, it is not necessary for groups to agree on the facts or hold
underlying beliefs about an issue; rather, groups simply advance a storyline to help people
interpret reality—a “normative orientation” about how the world works (Fischer, 2003, 104). Whereas advocacy coalitions comprise a stable network of key players who coordinate
to influence the policy agenda (i.e. coordinative discourse), discourse coalitions comprise
groups who may never interact but use similar language in a shared goal of shaping the
public agenda (i.e. communicative discourse).7

More recently, policy researchers have sought to integrate these two perspectives. One
recent development comes from Leifeld and Haunss (2012), who present “discourse net-
works” as an operationalized synthesis of advocacy and discourse coalitions. They use social
network analysis to model policy debate as a bipartite graph. Interest groups are one set
of nodes. Discursive concepts (e.g. symbols, narratives, claims) are another. For example,
a debate over implementation of a federal carbon tax might elicit disagreement over the
impact on the economy. While proponents of the tax might emphasize a boost to regional
economies through re-investment of carbon tax revenue, opponents might emphasize the im-
 pact of higher gas prices on consumers. Leifeld (2013) and Leifeld (2017) propose a four-step
approach to identify the discourse networks:

1. Manually code newspaper articles to identify relevant interest groups. Use human
coders to assess each group’s support for the carbon tax. Groups that support the
tax might include the World Wildlife Federation. Groups that oppose the tax might
include the Canadian Association of Petroleum Producers.

2. Use the articles to identify relevant discursive concepts (i.e. issue frames, such as
“anthropogenic climate change”). Assign each interest group to one or more frames.

7 Much as Schmidt (2008) distinguishes coordinative from communicative discourse, one may also dis-
tinguish between policy and public agendas. The policy agenda refers to government attention, or the ranking of
a few select issues that occupy policy elites. This list is short and is typically measured using policy outputs,
such as budgetary expenditures, legislative activity, or government rhetoric (e.g. Baumgartner and Jones,
1991, 2015). Conversely, the public agenda relates to voter attention, insofar as it describes the ranking of
issues and problems that preoccupy the public. This list is long and is typically measured using survey data
or some other type of quantitative indicator (e.g. Soroka, 2003; Wlezien, 2005).
3. Create an affiliation network (interest groups as one set of nodes; concepts as another).

4. Project the affiliation network to a one-mode network connecting groups with concepts. This is an “actor congruence network,” which the authors use to classify interest groups into various discourse coalitions.\(^8\) A key dependent variable is weighted network density, both within and across each respective “side” of the issue.

Leifeld and Haunss (2012), Leifeld (2013) and Leifeld (2017) implement this approach on a corpus of newspaper articles. In this paper, I adapt the approach (described below) and use a different corpus: parliamentary committee transcripts. From the perspective of competitive issue framing, legislative committees are worth studying because they bring together coordinative and communicative discourses. In committee, policy elites and their interest group allies face scrutiny from opposition politicians, who in turn invite “outsider” groups to challenge those same elites. Unfortunately, there are few studies that look at competitive issue framing among partisan elites in committee.\(^9\) This is unfortunate because, at least in theory, committees have enormous potential to promote reasoned deliberation among parliamentarians. Hearings are public and (outside the US) are rarely covered by the media. This makes them one of the most accessible forums for elected officials to interact with and (ideally) learn from interest groups. Yet the very things that make committees so important for government accountability—face-to-face interactions between opposing politicians and outside interest groups—may actually undermine reasoned deliberation. In part, this gap in understanding is due to a lack of data and empirical tools.

In the next section, I present a research design to fill this gap. First, I develop empirical expectations about partisan differences in issue framing during committee debates. Second, I present my case study and describe the dataset I use to test these expectations. Finally, I propose a new methodological approach to identify competing political discourse coalitions and the issue frames that distinguish them.

\(^8\) Another option is to project the graph to show connections between issue frames rather than political actors—i.e. a one-mode semantic network (Yang and González-Bailón, 2017).

\(^9\) See Murphy and Maynard (2000) for a notable exception.
4.3 Hypothesis, Case Study, and Data

4.3.1 Hypothesis

In this paper, I explore the potential for elected officials to engage in partisan motivated reasoning during legislative committee debates. I argue legislators who sit on committee face two competing goals: promote accountability vs. score partisan gains. My argument is rooted in two observations.

First, oversight of the executive is a core function of a democratic legislature (Kreppel, 2014, 87). The problem is, government enjoys an enormous informational advantage over the rest of the assembly (Saalfeld, 2000; Saalfeld and Strøm, 2014). Following the “fire alarm” model of legislative oversight, legislators can reduce this asymmetry with information from third party groups (McCubbins and Schwartz, 1984). This is where committees come in. They provide a venue for outside interest groups to speak directly to legislators (McCubbins and Schwartz, 1984). As such, legislators who sit on committee have a responsibility to colleagues in the legislature: Help them hold the government to account. This amounts to an accuracy motivation. From this perspective, committee members should prioritize deliberation, for example when legislators of different parties consider each other’s “side” of an issue.

Second, legislators in majoritarian parliaments are loyal to their party not just because leaders enjoy powerful inducements (Kam, 2009), but also because of strategic incentives to rally around the party label. Dewan and Spirling (2011) look at legislative votes to show this type of government-versus-opposition dynamic is basically unavoidable. Opposing parties have a strategic interest to oppose government initiatives, even those they agree with. This creates an incentive for the government to propose legislation that is uniquely appealing to its members. It also polarizes political debate, increasing the incentives for strong parties to act as legislative “cartels”—exploiting procedural rules to appoint loyal partisans to committee (Cox and McCubbins, 2005). As such, committee members have a competing responsibility to colleagues in their party: Be a team player. This amounts to a directional motivation. From this perspective, committee members should prioritize
partisan interests when debating policy, for example when opposing legislators ignore one another and systematically invoke different issue frames.

Although we might wish for accountability to be top of mind, anecdotal evidence suggests legislators are often motivated by partisan concerns. Consider, for example, one former Member of Parliament who described his time as a government backbencher on Canada’s Justice and Human Rights Committee:

As the hearings are a sham and voting instructions are determined by executive staffers prior to the commencement of the hearing, nobody really cares what evidence comes out or how it stands up to cross-examination. The entire process is a farcical show. Accordingly, the executive staffers would prefer it if members simply lobbed softball questions to supportive witnesses, rather than giving any more of the committee’s limited time to unsupportive witnesses (Rathgeber, 2014, 131).

Or consider another sitting MP who directly compares the accountability and partisan motivations: “In theory, standing committees have immense power to hold the government to account...In practice, they often do not exercise these rights for the reason that party leaders exert substantial control over the chairs and membership of these committees” (Chong, 2017, 45).

In the context of competitive issue framing, these observations lead to competing empirical implications. If committee members are motivated by accuracy, we might expect legislators of different parties to consider different “sides” of an issue—that is, to use similar language and rhetoric to describe the same policy proposal. However, if committee members are motivated by directional (partisan) concerns, we might expect legislators of different parties to ignore other “sides” of an issue—that is, to use different language to describe the same policy proposal.

H1. Co-partisan legislators are more likely to invoke the same issue frame than are cross-partisan legislators.

I test this hypothesis using a novel dataset (described below). I first explain my choice of case study.
4.3.2 Case Study

Below, I present three justifications for the choice of Canada as a case study.\textsuperscript{10} I then discuss my dataset.

First, experimental evidence confirms Canadian MPs are sensitive to framing effects. Sheffer et al. (2018) successfully replicate the findings of the famous “Asian disease” experiment with politicians in Canada, Belgium and Israel. This is an important result because it suggests political savvy, experience, and knowledge do not necessarily inoculate against cognitive biases in political decision-making. At the same time, the Asian disease experiment uses a non-competitive valence frame. It remains an open question whether competitive electoral forces and deliberative institutions may buffer against issue framing effects.

Second, Canada’s interest group system is an excellent case of what Lijphart (2012, 3) calls “free for all” pluralism. He argues majoritarian institutions encourage interest groups to compete for access to government, while consensus institutions (e.g. multi-party systems, balanced executive and legislative powers) lead to “coordinated” corporatism. Coordination discourages competition by offering certain groups a seat at the decision-making table, such as formal ties between social democratic parties and labour unions. While I expect interest groups will have legislative allies around the table, I also expect them to offer serious debate to all parties when testifying before a Canadian parliamentary committee.

Third, there remains little research using large corpuses of committee data. Online access to parliamentary text records is paving new ground for research on topics like political polarization (Peterson and Spirling, 2018; Rheault and Cochrane, 2019) and the role of emotion in politics (Rheault et al., 2016). Most studies use plenary proceedings, such as Question Period or all-member debates, rather than committee proceedings. The importance of this depends on the question of interest; however, there is good reason to think plenary speech is different from committee speech. In contemporary majoritarian parliaments, plenary speech by ordinary members may be subject to direction by party leaders. Plenary debates are highly scripted, involve prominent members of the government and

\textsuperscript{10}In Chapter 5, I discuss limitations of this choice.
opposition, and feature prominently in news coverage. By contrast, committee work is less scripted, mostly involves backbenchers and invited groups, and is largely ignored by media (Schofield and Fershau, 2007). This matters because partisans might be more willing to “break rank” with their respective party when speaking in committee. Committees are also a place where legislators spend much of their time posing questions to citizen groups rather than speechifying. This gives opposition parties an opportunity to invite a diversity of organized interests, creating an environment where lively debate occurs on matters of national importance.

4.3.3 Data: 11 Years of Committee Debates

My data comprise nearly every legislative committee utterance by Canadian parliamentarians and witnesses between January 2006 and June 2018. I focus on a subset of just over 1.09M utterances—covering 15 committees across four parliaments and one change in governing party. In this section, I describe data manipulation, briefly touching on my approach to measurement. In the next section, I expand on this approach.

Figure 4.1: Percentage of Bills by Committee

The figure shows the percentage of all bills debated in each committee. About one in three are discussed in the Justice committee. This is more than the next two most popular committees, Finance and Human Resources, put together.
Figure 4.2: Mean No. of Words per Speaker per Bill by Committee

The figure shows the mean number of words spoken by each legislator during the course of legislative debate. This shows quite a lengthy discussion, with the average legislator using about 2000 words when discussing each bill.

I apply two filters to the full corpus. First, I select only those committee meetings during which a piece of legislation was the subject of debate. Second, I filter out procedural utterances, most of which are tagged by the House of Commons. Next, I split the dataset in two.

The first “split” of the dataset includes just those utterances by interest groups. I use topic modeling on this corpus to generate a dictionary for each issue frame (see below for more information). The corpus comprises 51,809 utterances for 1,172 unique groups discussing 131 bills. To facilitate topic modeling, I concatenate all utterances by each interest group during each committee debate, filtering out any concatenation shorter than 25 words.\footnote{This is necessary because some committee members and witnesses are silent, save for the occasional short interjection (e.g. “Would you repeat that, please?”).} This yields 2,745 “documents,” which I turn into a series of sparse document term matrices.

The second “split” of the dataset includes just those utterances by politicians. This comprises 138,914 utterances for 579 unique legislators discussing the same 131 bills. I search...
this corpus for keywords contained in the topic model dictionary of each issue frame. When a politician uses a disproportionately high number of keywords, I allocate that politician to the associated issue frame. To facilitate a dictionary-based search, I again concatenate all utterances by each legislator during each committee debate, again filtering out any concatenation shorter than 25 words. This yields 3,342 “documents,” which I again turn into sparse document term matrices.

Figure 4.1 plots basic information about the dataset. Figure 4.1 plots the percentage of all bills debated in each committee. About one in three are discussed in the Justice committee. This is more than the next two most popular committees, Finance and Human Resources, put together. Figure 4.2 plots the mean number of words spoken by each legislator during the course of legislative debate. This shows quite a lengthy discussion, with the average legislator using about 2000 words when discussing each bill.

In the next section, I present my approach to identifying discourse networks.

4.4 The Approach

I draw inspiration from Leifeld and Haunss (2012) and Leifeld (2013). I propose a scalable technique to (1) identify interest groups that use similar issue frames; (2) distinguish such groups from their opponents; and, (3) measure the extent to which each “side” of an issue is able to coordinate on one or more issue frames. I use this technique to generate vocabularies for each frame. I then use dictionary-based text analysis to calculate the proportion of utterances for each politician on each frame.

Given the size of my corpus, it is impractical for human coders to read every committee transcript and identify discursive concepts. I use quantitative text analysis to automate the process. Figure 4.3 presents an overview.\textsuperscript{12} To begin, I use unidimensional scaling to identify opposing sides of each legislative proposal. Next, I use an unsupervised topic modeling approach to extract substantive information from committee testimony and allocate each

\textsuperscript{12}In Appendix C.1, I provide a more detailed overview with examples.
interest group to one or more issue frames. I treat topics as issue frames. Finally, I create a bipartite network with interest groups and issue frames as nodes. I project this to a unipartite network, with interest groups as nodes and ties between them representing a shared frame. I then calculate sample statistics, such as density and nominal assortativity, as well as inferential statistics using Exponential Random Graph Models.

Figure 4.3: The Approach

The diagram shows the three steps of my approach to identify discourse networks. The first step involves unidimensional scaling. I use Wordfish, though other techniques are possible. The second step involves topic modeling. I use a clustering algorithm (affinity propagation) to identify the optimal number of topics. I then use simple Latent Dirichlet Allocation (LDA) to allocate each interest group to one or more topics (i.e. issue frames). The final step is a network representation, with interest groups as one set of nodes and issue frames as another. From this, one may project the bipartite graph to a one-mode network (called an “actor congruence” network).

4.4.1 Running Example

I illustrate each step using a running example: Committee debate on the controversial Bill C-36 (“Protection of Communities & Exploited Persons Act”) from the 1st session of the 41st parliament. This was a Conservative government bill to restrict sex work. It was highly contested. The Justice and Human Rights committee examined this bill. The governing Conservatives enjoyed a majority on the committee. Two opposition parties were present (New Democrats and Liberals) and held a minority of seats. The committee met several times.

An alternative approach is categorizing each document by a known list of topic categories (Grimmer and Stewart, 2013, 6-7). One potential problem with the dictionary approach in this context is that word choice is likely endogenous to the committee and the piece of legislation. For example, the Lexicoder Topic Dictionary (Daku, Young and Soroka, 2011) follows the Policy/Comparative Agendas Project to assign each document one of 19 “Major” topic codes. Using this example, consider the debate over Bill C-311 in 2009 (“An Act to ensure Canada assumes its responsibilities in preventing dangerous climate change”). The bill was submitted by New Democrat MP Bruce Hyer and was considered by the Standing Committee on Environment and Sustainable Development. Using the topic dictionary approach, two competing interest groups that testify on Bill C-311 might receive the same topic code “Environment” because they use words like “climate,” “carbon,” and “pollution”—even though they use them in very different contexts. By using topic models, I estimate each group’s issue frames as a function of each specific bill. See Nowlin (2016) for a similar approach, using topic models on US congressional testimonies about nuclear fuel to identify issue “definitions”—rhetorical concepts related to the policy issue.
in July 2014 to consider the bill. In total, 45 organized groups testified before the committee.

4.4.2 Pre-Processing

Before doing any analysis, I use the pretext package in R to assess the robustness of my textual data to pre-processing decisions (Denny and Spirling, 2018). The package allows the user to test the sensitivity of their analysis to six decisions: using n-grams; stemming; removing stopwords, punctuation, or numbers; removing infrequent terms; and turning all tokens lower-case.

I show what this looks like using the corpus for Bill C-36. The scale is such that negative coefficients produce more “usual” outcomes while positive coefficients produce unusual outcomes. The results (Figure 4.4) suggest that using n-grams, stemming tokens, removing stopwords, and removing punctuation make for more “usual” conclusions. There is no evidence that other things, such as removing numbers, have much of an effect. As a rule, I do not implement any decision with a positive and statistically significant coefficient. Otherwise, I do.

4.4.3 Step One: Extract Policy Position

Next, I use a unidimensional scaling algorithm, Wordfish, to determine each speaker’s position on each bill. Wordfish is an unsupervised scaling model that estimates unobserved (latent) ideological positions using a “bag-of-words” approach (Slapin and Proksch, 2008). It is parametric, assuming each actor $i$ uses word $j$ as drawn from a Poisson distribution:

---

14Denny and Spirling (2018, 180) use a straightforward definition of unusual results: “how documents ‘move’ relative to one another when they apply some transformation to the [document term matrix].” They calculate Cosine similarity and for each combination of pre-processing decisions (e.g. stemming + lower-case + etc.), rank each document (e.g. Document 1 is closer to Document 2 than it is to Document 3, etc.). They calculate a “preText” score, which measures the difference in rankings between combinations. The procedure uses linear regression to estimate the sensitivity of this score to a given pre-processing decision. An example of these mean estimates is given in Figure 4.4.
The plot shows linear regression coefficients. Each value estimates the sensitivity of my corpus (committee testimonies on Bill C-36) to text pre-processing decisions. Negative coefficients mean more “usual” conclusions. Positive coefficients mean more “unusual” results. In this case, the figure shows that using n-grams, stemming tokens, removing stopwords, and removing punctuation make for more usual conclusions. There is no evidence that other decisions, such as removing numbers, have much of an effect.

\[ y_{ij} = \text{Poisson}(\lambda_{ij}) \]

\[ \lambda_{ij} = \exp(\alpha_i + \psi_j + \tau_j \times \theta_i) \] (4.1)

where \( y_{ij} \) is the count of word \( j \) for each document/speaker \( i \), \( \lambda \) is the mean and the variance of the underlying distribution, \( \alpha_i \) represents fixed effects for each speaker, \( \psi_j \) represents fixed effects for each word, \( \tau_j \) is a word’s “discrimination” parameter (i.e. the importance of each word in discriminating between different speakers’ ideologies), and \( \theta_i \) is the estimate of each speaker’s ideological position (Slapin and Proksch, 2008, 709). Words with large absolute values of \( \tau_j \) are helpful in distinguishing political actors with a given value of \( \theta_i \). For example, words like “anthropogenic climate change” and “renewable energy” might have a large, positive \( \tau_j \) values. These words might help distinguish right-leaning groups with a negative \( \theta_i \) from left-leaning groups with a positive \( \theta_i \).
Wordfish works best when the “documents” (in this case, speakers giving testimony) stick to the main topic of discussion—for example, addressing one piece of legislation rather than several at once. Monte Carlo simulations also show the algorithm may falter when the number of documents is very small (Proksch and Slapin, 2009). I focus on the subset of committee debates for which a piece of legislation is on the published agenda and the number of witnesses is at least five. This leaves 131 bills, or about two-thirds of all bills debated in my sample.

I run Wordfish on each committee debate, generating $\theta_i$ estimates for interest groups giving testimony. I show what this looks like using Bill C-36 (Figure 4.5). Blue nodes are groups with positive, statistically significant $\theta_i$ values. Red nodes are groups with negative, statistically significant values. Grey nodes are groups with $\theta_i$ values statistically indistinguishable from zero.

As expected, groups that oppose legalized sex work are generally on one end of the scale, with higher $\theta_i$ values. This includes Mothers Against Trafficking Humans, Sextrade 101, and policing organizations. At the other end of the scale, groups that support legalized sex work receive lower $\theta_i$ values. This includes Prostitutes of Ottawa-Gatineau, Canadian Alliance for Sex Work Law Reform, and the British Columbia Civil Liberties Association. Wordfish provides bootstrapped standard errors, meaning the $\theta_i$ estimate for some groups (e.g. the Canadian Association of Elizabeth Fry Societies) has a 95% confidence interval indistinguishable from zero. I code these groups as “0.” Otherwise, groups with a negative, statistically significant score are coded “-1” while those with a positive, statistically significant score are coded “1.”

Note that my Wordfish models are unidentified, in the sense that positive and negative values have no substantive meaning. An identified Wordfish model generates the same absolute $\theta_i$ values with the same rank ordering. This is fine for my purpose, as I only wish to find out which groups are on opposing sides in legislative debate rather than support or oppose the specific bill.

As it happens, a previous study considered this same committee debate in 2017. Johnson, Burns and Porth (2017) hand-code each interest group’s support or opposition to Bill C-36. I compared their coding to mine using Cronbach’s $\alpha$. The reliability coefficient is 0.87. Out of the 44 groups in the two samples, there were six discrepancies. My approach coded three groups as “neutral” (a category that does not exist in the Johnson, Burns and Porth (2017) schema). The technique also allocated three groups (Ratanak International, the Asian Women Coalition Ending Prostitution, and the Evangelical Fellowship of Canada) to the “wrong” category.
The plots show \textit{Wordfish} $\theta_i$ estimates for interest groups giving testimony on Bill C-36. Blue nodes are groups with positive, statistically significant $\theta_i$ values. Red nodes are groups with negative, statistically significant values. Grey nodes are groups with $\theta_i$ values statistically indistinguishable from zero.

### 4.4.4 Step Two: Frame Representation

Next, I use topic models to represent issue frames. The first step is to select the number of $k$ topics (i.e. issue frames). There are several ways to determine $k$. For example, one might measure perplexity across different values of $k$ or visually inspect another metric across different values to identify an “elbow,” or inflection point in a curve. One might also minimize (or maximize) an LDA-specific criterion, in the manner of Arun et al. (2010) or Deveaud,
San Juan and Bellot (2014). Alternatively, one might opt to skip this step entirely and use something like Hierarchical Dirichlet Allocation. This determines the optimal number of topics as part of the topic modelling process.

For computational ease, I use a fast, unsupervised clustering algorithm to select $k$: affinity propagation. This works by iteratively assigning each cell in a matrix to its nearest data centre (called an “exemplar”). The algorithm defines the optimal number of clusters as that which minimizes the distance between all points.

Selecting the number of topics is akin to climbing down what Sartori (1970, 1040) describes as the “ladder of abstraction.” Increasing the number of topics maximizes a concept’s dimensions (i.e. intension/connotation) but minimizes the class of cases to which it applies (i.e. extension/denotation) (Sartori, 1970, 1040-1044). In my experience, affinity propagation is a “conservative” algorithm that suggests a small number of clusters ($< 10$). Other clustering algorithms, such as $k$-means, or topic-model specific procedures (e.g. picking the number of topics based on perplexity) tend to suggest far more topics. I use affinity propagation because it has some nice properties—it is fast and often suggests a reasonable number of topics. Using the full corpus for Bill C-36, affinity propagation suggests 11 clusters.18

After selecting the number of issue frames evoked during committee debate, I associate each interest group with each frame using a Latent Dirichlet Allocation (LDA) topic model. This consists of categorizing each “bag-of-words” according to an estimated statistical distribution of underlying themes (Grimmer and Stewart, 2013, 18-19). Depending on the technique, topic models assume each document contains multiple topics, and permit a more fine-grained categorization than topic dictionaries. There are a variety of topic modelling techniques, such as the expressed agenda model (Grimmer, 2009), the dynamic multitopic model (Quinn et al., 2010) and the Latent Dirichlet Allocation (LDA) model (Blei, Ng and Jordan, 2003).

I use the simplest topic model, LDA. It estimates how different political actors talk about different issues. It first examines correlations of words across documents, then groups

---

17These tools are easily available in R via the ldatuning package.

18In Appendix C.2, I provide additional information on the affinity propagation method.
words into thematic categories. It assumes each document contains a mixture of topics, which may be represented as a proportion.

Formally, Blei, Ng and Jordan (2003, 78) define a “topic” as “a distribution over a fixed vocabulary.” This is useful for my purpose because it is consistent with the concept of an issue frame. For example, when left-leaning groups speak about a proposed carbon tax, they may frame the issue in terms of climate change. This would constitute a topic, the fixed vocabulary of which might yield a high probability of words like “greenhouse gas,” “emissions,” and “polluters.” Conversely, right-leaning groups might frame the same bill in terms of economic impacts. This also constitutes a topic, the fixed vocabulary of which could yield a high probability of words like “jobs,” “GDP,” and “tax burden.”

My LDA model infers a posterior, conditional probability that a given interest group \( i \) invokes issue frame \( k \) based on four things (Blei, 2012, 80-81):

\[
p(\beta_k, \gamma_i, z_j \mid w_i) \tag{4.2}
\]

The first three terms are unobserved: \( \beta_k \) is the distribution of words in each topic; \( \gamma_i \) is the probability a given document is “about” issue frame \( k \); and, \( z_j \) is the corresponding issue frame for each word \( j \). The remaining term is the only one observed: \( w_i \) represents the actual words used in document \( i \). As Blei (2012, 81) describes it, the conditional probability can be expressed as the joint probability distribution divided by \( w_i \):

\[
\frac{p(\beta_k, \gamma_i, z_j, w_i)}{p(w_i)} \tag{4.3}
\]

The model proceeds by assigning each word in document \( i \) to one of \( k \) issue frames. The model assumes most words do not distinguish between frames. As such, it adopts a Dirichlet distribution with a sparse \( \alpha \) parameter. This yields an initial set of parameter estimates based on the posterior. I use Gibbs sampling to iteratively improve and estimate the posterior distribution (with 2000 iterations and 1000 burn-in samples).

The final model returns two sets of probability estimates: one for the probability that each document that is “about” issue frame \( k \) (\( \hat{\gamma}_i \)) as well as the probability that a given
word comes from that frame \((\hat{\beta}_k)\). For my purpose, \(\hat{\gamma}_i\) is an estimate of the probability that a given interest group \(i\) invokes issue frame \(k\).

Figure 4.6: Top Tokens by Frame for Bill C-36

The plot shows the most distinguishing terms for each of 11 issue frames from Bill C-36 as well as their \(\beta\) value from the LDA topic model. As \(\beta\) increases, so does the probability of a given token being associated with a given frame. For example, the top tokens in frame four include “tool,” “offenc,” and “law_enforc” among others. These terms distinguish frame four from the rest.

I implement an LDA model using my running example of Bill C-36. In Figure 4.6, I show the most distinguishing terms for each of 11 issue frames during Bill C-36. For example, the top tokens in frame four include “tool,” “offenc,” and “law_enforc” among others. These terms distinguish frame four from the other 10 frames. Some frames are more distinguishing than others. This is evident in Figure 4.7. It shows, for example, that frames six and seven are really only used by one group. This is an extreme case.

In Figure 4.8 I compare groups most likely to use frames two and eight. I also colour each group by its Wordfish score. Whereas frame two emphasizes professional dimensions of sex work (e.g. using tokens such as “client” and “sex_industri”), frame eight emphasizes gen-

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The plot shows the most distinguishing frames from Bill C-36. Each column represents an interest group’s $\gamma$ value from the LDA topic model. As $\gamma$ increases, so does the probability of invoking a given frame. The plot shows some frames are more distinguishing than others.

Ordered dimensions of sex trafficking (e.g. using tokens such as “survivor” and “women_girl”). Bill C-36 was controversial, so it is not surprising to see such sharp division in the use of these frames. Groups most strongly associated with frame two include sex workers’ groups (e.g. Prostitutes of Ottawa-Gatineau) as well as groups that support the legal rights of sex workers (e.g. Canadian Alliance for Sex Work Law Reform). In contrast, groups most strongly associated with frame eight include anti-human trafficking groups (e.g. Mothers Against Trafficking Humans), and those explicitly opposed to sex work (e.g. Sextrade 101).
The plot compares groups most likely to use frames two and eight, coloured by their Wordfish score. Groups most strongly associated with frame two include sex workers' groups (e.g. Prostitutes of Ottawa-Gatineau). Groups most strongly associated with frame eight include anti-human trafficking groups (e.g. Mothers Against Trafficking Humans).

4.4.5 Step Three: Network Model

Finally, I turn the LDA results into network data. For each interest group, the model assigns a probability that the group’s testimony relates to one of $k$ issue frames. Each interest group may invoke multiple frames during debate. Accordingly, I assign topics to each group if their $\hat{\gamma}_i$ estimate is above a baseline threshold (i.e. greater than $\frac{1}{k}$ topics). This yields a column of groups and a column of frames. I represent this as an affiliation network, with interest groups as one set of nodes and frames as another. I then follow Leifeld and Haunss (2012),
projecting the bipartite network to a one-mode “actor congruence network” that connects
groups with frames.

In Figure 4.9, I plot the actor congruence network for Bill C-36. Ties represent an
issue frame (i.e. LDA topic category). A tie between each node means both groups used
the same frame during their committee testimony. Ties are weighted, such that darker ties
represent multiple connections. For illustration, I highlight two red nodes for the Prostitutes
of Ottawa-Gatineau group and the Canadian Alliance for Sex Work Law Reform. I also
show illustrative tokens of one issue frame connecting them: “client,” “sex_work,” and
“advertis.” I also highlight two blue nodes for the York Regional Police and UR Home. I show
representative tokens from one issue frame connecting them: “survivor,” “women__girl,” and
“sex_traffick.”

Figure 4.9: Actor-Congruence Network for Bill C-36

The plot shows the actor congruence network for Bill C-36. A tie between nodes means both
groups used the same frame while testifying at committee. Ties are weighted (darker ties=multiple
connections). Nodes are coloured by Wordfish score (red=opposed to C-36, grey=neutral,
blue=supportive).

The intuition is straightforward: As blue nodes become more compact and move away
from the red nodes, it means the opposing groups use very different issue frames when
talking about the same bill. When coalitions are cohesive with overlapping frames within
them but few between, it suggests a highly competitive framing environment. However,
as the two clouds merge into one, it means opposing groups invoke similar frames. The
weighted density for the network is 0.56. The weighted density for the blue nodes is 0.77.
Weighted density for red nodes is 0.95. This is a preliminary indication of competitive issue framing, as it suggests the blue and red nodes are, respectively, more tightly connected to one another than to the rest of the network.

The dynamic is closely related to the network concept of homophily, according to which individuals who share one attribute are more likely to share ties than those who do not (McPherson, Smith-Lovin and Cook, 2001, 416). Strong homophily means groups who are on the same side of an issue are more likely to invoke the same issue frame, relative to groups on opposing sides.

I calculate two network homophily statistics. First, I calculate nominal assortativity. A positive assortativity coefficient means nodes that share an attribute (in this case, positive vs. negative $\theta_i$ values) share many connections. For Bill C-36, the assortativity coefficient is moderate: 0.28 on a -1 to +1 scale. Second, I estimate an Exponential Random Graph Count Model (ERGCM) to estimate the number of shared connections between groups. This lets me control for global and local network properties. I estimate an ERGCM model, controlling for some individual heterogeneity. The results (Table 4.1) suggest competitive issue framing in the debate over Bill C-36. The probability two opposing interest groups invoke the same issue frame is $\exp(-0.79)/(1 + \exp(-0.79)) = 0.32$. The probability two groups on the same side invoke the same frame is $\exp(0.57)/(1 + \exp(0.57)) = 0.64$.

Table 4.1: ERGCM of the Actor Congruence Network for Bill C-36

<table>
<thead>
<tr>
<th>Log Odds (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sum (intercept) $-0.79^* (0.06)$</td>
</tr>
<tr>
<td>k-star $3.24^* (0.16)$</td>
</tr>
<tr>
<td>Wordfish Homophily $0.57^* (0.07)$</td>
</tr>
<tr>
<td>N speakers $45$</td>
</tr>
<tr>
<td>N ties (unique ties) $670$</td>
</tr>
<tr>
<td>N ties (sum of weighted edges) $990$</td>
</tr>
<tr>
<td>AIC $-454.9$</td>
</tr>
<tr>
<td>BIC $-440.1$</td>
</tr>
<tr>
<td>p$^*&lt;0.05$</td>
</tr>
</tbody>
</table>

4.4.6 Validation Using Null Models

Next, I provide a validation check of my approach.
I begin by creating 100 “null” models with *lorem ipsum* text randomly distributed across each witness for Bill C-36. The idea is to create a corpus that, by design, has no competitive issue framing. I retain the same Wordfish estimates for each group as that estimated from the actual data.

In terms of the topic model, I should expect all speakers are equally likely to invoke each topic. The predicted probability that each group $i$ invokes topic $k$ should be equal to $\frac{1}{k}$. One can think of this in terms of bias:

$$\text{Bias}(\hat{\gamma}_i) = E[\hat{\gamma}_i] - \gamma$$

where $\hat{\gamma}_i$ represents the predicted probability each group $i$ invokes topic $k$ and $\gamma_i$ is the known probability under the null model, equal to $\frac{1}{k}$ topics.

In Figure 4.10, I present my measure of bias (with 95% confidence intervals) for each group across 100 simulations. For the topic model, I find the mean bias in topic probability is around zero for all 46 groups. In other words, there was no systematic variation in topic usage between groups. The standard errors are given as the standard deviation of $\text{Bias}(\hat{\gamma}_i)$ divided by the square root of the number of samples ($N=100$). In Appendix C.3, I plot the length of each utterance and the magnitude of bias. There is no evidence of a systematic relationship.
The plot shows bias for each group across 100 simulations in a null model of Bill C-36. Mean bias is approximately zero for all 46 groups. Standard errors are given as the standard deviation of $\text{Bias}(\hat{\gamma}_i)$ divided by the square root of the number of samples ($N=100$).
Figure 4.11: Actor Congruence Network for a Null Model of Bill C-36

The plot shows a bipartite projection from one of the null models. The results shows a well-connected network with no appearance of homophily. Network density=1. Nominal assortativity=-0.017.

To give a visual sense of what a committee debate looks like without competitive issue framing, Figure 4.11 shows a bipartite projection from one of the null models. I expect network density to be at or near 1, with assortativity and homophily coefficients around 0. Indeed, the results shows a well-connected network with no appearance of homophily. Network density equals 1. Nominal assortativity equals -0.017. The ERGCM homophily coefficient is 0.000 with undefined standard errors, likely owing to convergence difficulties given the large number of ties between nodes.

In Appendix C.4, I use the approach to examine competitive issue framing across all parliamentary committee debates over 131 bills. In the next section, I return to the hypotheses presented above.

4.5 Empirical Analysis: Partisan Homophily in Parliamentary Committee Debates

In this section, I return to the motivating question of the Chapter. I discuss my empirical model, present my results, and provide a qualitative example of competitive issue framing...
among partisan elites in committee.

Testing H1
To test whether co-partisan legislators invoke the same issue frames, I estimate a series of Fractional Multinomial Logistic (FML) regression models. Conceptually similar to a maximum likelihood based multinomial logistic regression, the FML uses a quasi-likelihood estimator to model proportions between several outcome categories. The outcome values for each category are bounded between zero and one and sum to one. Following Papke and Wooldridge (1996), the functional form is:

\[
\text{Prob}(y_{ij}|X_i) = G(X_i \beta_j)
\]

where \(j\) is each issue frame and \(i\) is each MP who sits on committee and \(G(\cdot)\) is a multinomial logit function for the dependent variable \(y_{ij}\), which is the fraction of utterances each legislator allocates to each frame. The main predictor variable, \(X_i\), captures the partisanship of each legislator \(i\). This is measured as a variable with five categories: Liberal, Conservative, NDP, Bloc Québécois, and Other (typically either a lone Green MP or an independent). The coefficients \(\beta_j\) capture the effect of individual \(i\)’s partisanship on the probability of invoking issue frame \(j\), relative to individual \(i\) being in the governing party. In my analysis, the omitted reference category is always the government party.

As an example, I present predicted probabilities from an FML model for Bill C-69 in Figure 4.12 (below). Using the \texttt{fmlogit} package in R, I calculate predicted probabilities for each issue frame \(j\) by estimating a discrete change in the categorical Party variable from, e.g., Liberal to Conservative: \(Pr(y = j \mid x_{\text{party}} = \text{Liberal}) - Pr(y = j \mid x_{\text{party}} = \text{Conservative})\). The package uses Krinsky and Robb (1990) simulations to estimate standard errors (N=1000). In essence, this works by simulating a multivariate normal distribution with the means and variance-covariance matrices given by the parameters of the FML model (especially the marginal effects). Similar to bootstrapping, the Krinsky and Robb (1990) method takes a single draw from each simulated distribution and calculates an “empirical distribution” (Hole, 2007), from which it draws percentile ranges and standard deviations.
of Figure 4.12. To provide a sense of what each issue frame is “about,” I show the four most common tokens above the estimates (in boxes).

Figure 4.12: Predicted probability of each party invoking each frame for Bill C-69 (with 95% confidence intervals)

The plot shows predicted probabilities from a Fractional Multinomial Logistic regression for Bill C-69. The results show evidence of partisan differences in issue framing in five out of six frames. For example, Conservative MPs were more likely than others to discuss Bill C-69 in terms of resource extraction (the most common tokens for this frame are “mining investments,” “oil,” and terms associated with exports, such as “countries” and “world”).

The results show evidence of partisan differences in issue framing in five out of six frames. For example, MPs from the New Democratic Party (NDP) were more likely than the Liberals and other MPs to discuss Bill C-69 in terms of aboriginal issues (the most common tokens for this frame are “First Nations,” “Indigenous peoples,” “traditional territories,” and “consent”). Similarly, it shows that Conservative MPs were more likely than others to
discuss Bill C-69 in terms of resource extraction (the most common tokens for this frame are “mining investments,” “oil,” and terms associated with exports, such as “countries” and “world”). For one issue frame, which dealt with planning and nuclear management, there is no evidence of partisan difference.

To test H1, I conduct 131 FML regressions—one for each bill in my dataset. To simplify analysis and presentation, I capture the point estimate (as log-odds coefficient) and standard error for each party and frame on each bill—1,436 in total. I also capture the $P$-value for each coefficient. In Figure 4.13, I plot the results for the full dataset, with 95% confidence intervals and a Bonferroni correction to adjust for multiple comparisons. I colour each coefficient, using green and red to indicate the significant and non-significant results. Across 1,436 frames, I find evidence of partisan differences in 235 cases, or about 0.16. I then look at all 131 bills separately. For each, I divide the number of statistically significant frames from the total number of identified frames. The average proportion is 0.29.

In other words, I find strong evidence for H1. Across all bills, there is evidence of partisan differences in one out of every six issue frames. For the average bill, I find evidence of partisan differences in about one out of every three issue frames. This difference is largely due to the number of issue frames for each bill: bills with many frames tend to have fewer statistically significant frames (the Pearson’s $r$ between the number of frames and the proportion of statistically significant frames is -0.18).

**Heterogeneity by Parliament**

Next, I look at partisan differences in issue framing across the four parliaments in my dataset. The approach is the same as above: I calculate the number of times the FML model finds a statistically significant coefficient and use a Bonferroni correction to adjust for multiple comparisons. In Figure 4.14, I plot the results. For the 39th parliament (2006-2008), I find evidence of partisan differences in 17 of 165 issue frames, or about 0.10. For the 40th parliament (2008-2011), I find evidence of partisan differences in 30 of 339 frames, or about 0.09. For the 41st parliament (2011-2015), I find evidence of partisan differences
The plot shows FML regression results for all 131 bills in my dataset, with 95% confidence intervals and a Bonferroni correction to adjust for multiple comparisons. Green coefficients are statistically significant. Red coefficients are not. Across 1,436 frames, I find evidence of partisan differences in 235 cases, or about 0.16. I then look each bill separately. For each, I divide the number of statistically significant frames from the total number of identified frames. The average proportion is 0.29.

in 120 of 598 issue frames, or about 0.20. Finally, for the 42nd parliament (2015-2018), I find evidence of partisan differences in 68 of 330 frames, or about 0.21.

In other words, partisan differences in issue framing were stronger in the two most recent parliaments than in the two preceding parliaments. Reflecting on these findings, it is important to note the 39th and 40th parliaments were minority governments—that is, the governing party did not enjoy a majority in the House of Commons.

*Qualitative Example*

Next, I provide an intuitive sense of these results by discussing committee debate over bill C-69. See C.5 for additional examples.

The Impact Assessment Act (Bill C-69) was a Liberal government proposal from February 2018. The bill sought to restructure the federal approval process for large natural re-
Figure 4.14: Partisan Differences in Issue Framing by Parliament

The plot shows the proportion of times the FML models find a statistically significant coefficient (with Bonferroni correction). Partisan differences in issue framing were stronger in the two most recent parliaments (both majority) than in the two preceding parliaments (both minority).

sources projects. The Liberals are a moderate-centrist party, and Bill C-69 was part of a grand environmental compromise. On the one hand, the government would support—and even pay for—an oil pipeline in western Canada. On the other hand, Bill C-69 would tighten the regulatory system and improve consultation with affected parties, including indigenous communities.

Bill C-69 was debated at the Environment and Sustainable Development Committee, comprising seven members of the governing Liberal Party and four opposition members.

During committee debate, 97 interest groups testified. Several indigenous groups appeared, including the Mikisew Cree First Nation and the Metis National Council. Many of these groups were supportive and pushed for specific amendments to improve the bill. In their testimony, some sought to frame the bill as a chance to address unresolved treaty rights. For example, Mr. Bill Namagoose of the Grand Council of the Crees (Eeyou Istchee) testified:

The key message of our submission today is that Bill C-69 should provide for a carve-out, or distinct regime, to address specifically the [James Bay and Northern Quebec Agreement, JBNQA] territory. In so doing, Bill C-69 must guarantee the treaty rights of the Cree of the Eeyou Istchee under the JBNQA, as recognized in the Moses decision.
Business associations representing the extractive industries also testified. These groups were usually opposed to the bill. Rather than stress specific amendments, many framed the bill as a drag on the country’s economy. For example, Mr. Chris Bloomer of the Canadian Energy Pipeline Association framed the bill as a direct—possibly even intentional—threat to the oil and gas industry:

With built-in climate change tests covering upstream and downstream emissions, it is preposterous to expect that a pipeline proponent would spend upwards of a billion dollars only to be denied approval at the end, because the project must account for emissions from production of the product to consumption in another part of the world. If the goal is to curtail oil and gas production and to have no more pipelines built, this legislation may have hit the mark (Canada, 2018b).

Elected officials discussed C-69 in much the same terms. On the left, the bill was criticized for undermining Aboriginal treaty rights in service of the government’s allegedly true goal: Building a pipeline. In committee, NDP representative Linda Duncan (Edmonton-Strathcona, AB) went clause by clause to identify weaknesses in the bill’s scope for consultation. For example, when speaking with Yukon Regional Chief Kluane Adamek, she linked limitations in the bill to the government’s commitment to the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP):

Thank you, Chief Adamek, for raising your concerns about the adequacy of adherence to section 35 and the UNDRIP responsibilities, where the government and the agencies are only required to take into account the section 35 rights. These issues have also been raised by Fort McKay, and Fort McKay recommended that any of the consultations and accommodations on those rights and interests be at the planning stage and resolved before you go into the hearing (Canada, 2018c).

Another New Democrat, Georgina Jolibois (Desnethé-Missinippi-Churchill River, SK), appeared at committee and adopted a similar issue frame in her question to Chief Roland Willson of the West Moberly First Nations:

Do you share the concerns expressed by other first nations that a federal assessment should be required not just for certain projects on a list, and that impact assessments
must also be triggered when a proposed activity may cause adverse impacts to migratory birds, the rivers and the lakes, indigenous groups or their rights as recognized and affirmed by section 35 of the Constitution Act, 1982, and UNDRIP? (Canada, 2018d).

On the right, legislators criticized the bill for going too far. In the House of Commons, Conservative MPs echoed the business groups that claimed C-69 would harm the economy by “killing Canadian innovation and killing Canadian jobs” (Stubbs, 2018). In committee, Conservatives emphasized the potential impact on the economy. For example, Robert Sopuck (Dauphin-Swan River-Neepawa, MB) tried to link C-69 to broader trends in Canada’s investment competitiveness:

It’s quite obvious that what is proposed here is a throttling of Canada’s natural resource industries, and by extension, the economy. I should note that the Royal Bank has pointed out there’s a real outflow of capital from this country: ‘Investment by foreigners has collapsed. Foreign direct investment…in Canada clocked in $31.5 billion in 2017, down 56% since 2013, when it totalled $71.5 billion.’ Again, the wreckage of communities that results from that is only beginning to be felt (Canada, 2018a).

Other Conservative MPs emphasized the impact to specific industries. For example, Stephanie Kusie (Calgary Midnapore, AB) appeared at committee to emphasize the potential for C-69 to impact Canada’s oil and gas sector:

Marathon Oil, Norway’s Statoil, ConocoPhillips, Apache, and Royal Dutch Shell are corporations that have been major players in Calgary, in Alberta, and in Canada for years and are now selling off their investments, something very concerning for me and for my constituents. Can you please speak to the impact this bill will have on the energy industry in terms of organizations, corporations, taking their investments outside Canada, following the implementation of this bill, and what this will mean for competitiveness for Canada on the international stage? (Canada, 2018b).

In sum, this qualitative evidence reflect the quantitative evidence. New Democrats were more likely to discuss C-69 in terms of Indigenous consultation. Conservatives were more likely to mention natural resources and the economy. These partisan differences continued into the legislature. In the final vote, Bill C-69 passed the House of Commons on sharp party lines. Members of the Liberal Party voted in favour, while the New Democrats, Conservatives, and Bloc Québécois voted against.
Issue framing is one of the most powerful forces in politics. But when voters are exposed to competing issue frames, they often fall back on partisan cues (Slothuus and De Vreese, 2010; Slothuus, 2016). The literature on issue framing is large; yet, we know surprisingly little about the process by which competing politicians select issue frames. From one view, we might expect democratic institutions, such as legislative committees, to minimize partisan competition. Committees are a powerful opportunity for democratic deliberation. By inviting interest groups to weigh in on contentious issues, committees have the potential to help rival legislators find common ground. Yet from another perspective, there are valid reasons to expect partisan differences to emerge in committee. In Westminster parliamentary systems, where legislative parties are strong and cohesive, we might expect legislators to turn committees into another field of partisan conflict. From this perspective, parliamentary committees could sharpen partisan conflict by providing a venue for elected officials to learn from competing interest groups and develop their own issue frames.

In this study, I use a new, large dataset of committee transcripts to make two contributions. First, I combine unidimensional scaling and topic modelling to produce a modular, computational, and scalable approach to measure issue framing across time and policy contexts. Second, I use Fractional Multinomial Logit models to test for partisan homophily in issue framing across 131 bills. I find strong evidence of partisan differences. About one-sixth of the time, opposing legislators use very different terms when talking about the same bill. I also find partisan differences in issue framing have gotten larger in recent years, coinciding with the country’s return to majority government.

My findings are important for three reasons.

First, my empirical results help consolidate the connection between issue framing and political discourse networks. Many studies of issue framing consider the impact of partisan cues on behaviour. When political parties disagree about an issue, it signals to partisans where to focus their attention and may activate motivated reasoning. However, the content of frames—where the ideas come from, and how elites coordinate on one or more frames—is relatively understudied. Conversely, most studies of political discourse focus on non-partisan
actors, especially interest groups. By extending the discourse network approach of Leifeld (2013) and Leifeld (2017) to a highly partisan environment—the legislative assembly—I show the importance of considering partisan motivated reasoning when we examine political discourse.

Second, my findings are “proof of concept” for a new, computational approach to discourse network analysis. My approach builds off Leifeld (2013) and Leifeld (2017). It combines web-scraping, unidimensional scaling, topic modeling, and network analysis. A virtue of this approach is that it is modular—that is, any single component may be improved upon and it only strengthens the final product. For example, an improved clustering algorithm at the front end will yield more accurate topic model predictions. Similarly, an improved frame representation strategy will increase the accuracy of the network modeling component.

Third, my findings point to the difficulty of elite deliberation in competitive information environments. On a basic level, democratic deliberation is about reciprocity. Rival parties must find common ground on matters of shared concern, even when they hold opposing positions (Bächtinger et al., 2018). In this Chapter, I raise a serious challenge to this normative ideal: Politicians cannot establish common ground if they disagree on the problem itself. My findings would appear to lend support to related research calling for more participatory democratic reforms. For example, Hendriks (2016) and Hendriks and Kay (2019) advocate for “designed coupling,” in which ordinary citizens are brought into the legislative process. From a deliberative democratic perspective, this is exciting because individual citizens could weigh in on policy questions from within the halls of power. At the same time, the evidence presented in this Chapter suggests that interest groups—although nominally non-partisan—talk about policy issues in much the same way as partisan elected officials. By examining the relationship between interest group discourse and partisanship, my findings point to the importance—and potential limitations—of deliberative reform.
Chapter 5

Conclusion

Interest groups try to shape government priorities in ways that may not always align with popular preferences. For this reason, political scientists have long been interested in how groups influence politics—the candidates they support, the donations they make, the information they provide. Following Dahl (1957, 1961), an early line of research assumed that competitive elections effectively translate popular preferences into public policy. Accordingly, political institutions effectively limit the influence of organized interests in society. This perspective remains popular still today: Neopluralist models based on modifications to Dahl’s initial formulation are among the leading approaches in interest group research (e.g. Baumgartner et al., 2009; Lowery and Gray, 2004; Hojnacki et al., 2012).

Even so, there are problems with this perspective. Democratic institutions can only keep organized interests in check if they resist exploitation by those interests. Yet scholars have demonstrated various means by which interest groups take advantage of parties and legislatures to influence public policy. These include “party purity” associations to select favourable candidates (e.g. Murakami, 2008), “shadow party” agents like Political Action Committees that mobilize voters (e.g. Ansolabehere, DeFigueiredo and Snyder, 2003; Skinner, Masket and Dulio, 2012), and the provision of policy information as a “legislative subsidy” for like-minded legislators (e.g. Hall and Deardorff, 2006). The concept of a legislative subsidy points to a crucial distinction: Lobbying is about more than buying votes; it is about identifying allies, mobilizing them, and providing information to support their efforts.
In this dissertation, I focus on three gaps in our understanding of interest groups and policymaking in Westminster systems. The first involves contradictory findings in the research on collective action and democratic representation. Rather than consider the influence of interest group lobbying on agenda setting more generally, most researchers focus on specific policies or programs. The second gap involves the influence of interest groups on government accountability. Whether due to methodological orientation, data availability, or debates about the relevance of Parliament, scholars in Westminster countries have been slow to investigate interest group lobbying of politicians. As a result, we do not know whether interest groups might undermine legislative oversight of the executive by “subsidizing” members of the government over members of the backbench or opposition. The third gap involves serious challenges to deliberative models of parliamentary democracy. Conventional wisdom holds that legislative committees strengthen deliberation—by inviting interest groups to testify, they expose legislators to a diversity of views. In practice, committees might actually deepen partisan conflict by providing a venue for legislators to learn about and develop competing issue frames.

To fill these gaps, I generate quantitative evidence from three original datasets. In Chapter Two, I collect data on federal spending, public opinion, and interest group lobbying in Canada between 1989 and 2009. I show that governments are more responsive to voter concerns in policy areas with a high degree of cause group activity. However, the evidence suggests a differential effect depending on group type. Cause groups positively moderate the relationship between public opinion and spending but I find no evidence that sectional groups have any effect on policy responsiveness. In Chapter Three, I create a new dataset that tracks individual-level lobbying communications between interest groups and legislators. I show a legislator’s access to information from outside groups is conditional on her parliamentary power and the diffusion of agenda control within the legislature. I also find strong evidence of partisan clustering in parliamentary lobbying networks. In Chapter Four, I collect a large corpus of Canadian parliamentary transcripts. I present a modular, computational, and scalable solution to the problem of measuring issue framing across time and policy contexts. Using this technique, I find evidence of partisan differences in issue
framing. Interest groups—although nominally non-partisan—often talk about policy issues in much the same way as partisan elected officials.

I close by discussing some limitations of my approach and outlining an important area for future research.

**Limitations**

As mentioned in the Introduction, my reliance on a single country may limit the generalizability of my findings. Below, I describe two such limitations.

First, idiosyncrasies of the Canadian case may complicate cross-case comparison. For example, Chapter 3 presents a model of parliamentary accountability in which parties exhibit strong party coherence. This is a well-known feature of majoritarian parliamentary systems (Bowler, Farrell and Katz, 1999; Lijphart, 2012). However, every country’s party system is slightly different. For example, backbench MPs in Canada may use legislative votes to signal displeasure with their leader but it almost never represents a serious threat. In the UK, however, backbenchers may openly revolt against a leader, threatening her hold over the party (Kam, 2009, 44-51). Thus, if a researcher were to reproduce my study in the UK, variations in party system could nuance—and possibly even challenge—my findings.

Another example relates to the country’s committee system, discussed in Chapter 4. In Canada, parliamentary committees review nearly every legislative proposal. The House of Commons may strike a new committee for each bill but most of the time, bills are assigned to one of several standing committees. This means, for example, one group of MPs considers environmental bills, another group considers crime bills, and yet another group considers immigration bills. In the UK, however, the House of Commons strikes a new committee comprising different members for every piece of legislation.\(^1\) Here again, differences in committee system mean the generalizability of my findings is an open question.

Second, the majority of my inferences are based on data “infrastructure” that may not exist in other countries. For example, Chapter 3 relies heavily on “monthly communications reports.” These are day-by-day records of communications between politicians and interest

\(^1\)In both countries, bills may also be considered by the full plenary—the “committee of the whole”—rather than a standing or public bill committee.
group lobbyists. Canada is the only major democracy to require such detailed disclosure, meaning this type of individual-level inquiry is (currently) impossible elsewhere. Similarly, I use a large corpus of committee transcripts in Chapter 4. I created this new data source using online, automated data collection techniques (i.e. webscraping). Many countries publish such records (e.g. Australia, New Zealand, the UK, Ireland, etc.); however, researchers would have to invest considerable effort to gather them. At the same time, certain elements of my dissertation may complement other countries’ data “infrastructure.” For example, I propose a methodology in Chapter 4 that one could apply in any democratic system that meets certain criteria.² In Chapter 2, I use government spending and lobbying registry data and follow a Canada-specific codebook variant to the Policy/Comparative Agendas Project. As such, researchers in any country that releases budgetary estimates and has a lobbying registry could fairly easily reproduce my research design. This includes the US, UK, Ireland, and many other democracies, including Germany, where Klüver and Pickup (2019) have already conducted a similar study (with similar results).³

Future Research

There is an urgent need to understand the role of interest groups in political polarization. Recent work in the US has shed new light on the complex relationship between interest group lobbying, partisan polarization, and legislative agenda-setting (inter alia Crosson, Furnas and Lorenz, 2018, N.d.). Early evidence suggests not only that interest groups can promote polarization but also that partisan politics can polarize interest groups. This line of reasoning holds tremendous potential to shed light on polarization in Westminster countries. In the US, most measures of legislative polarization rely on roll call votes (e.g. Jones, 2001; Aldrich, Montgomery and Sparks, 2014; McCarty, Poole and Rosenthal, 2016). But in Westminster parliamentary systems, strong party cohesion means that legislative votes exhibit little intra-party variation (Franklin and Tappin, 1977, 49-50). This makes it dif-

²Such a system should: (1) have an elected legislature; (2) have a committee system comprised of non-cabinet members; (3) invite interest group witnesses to committee; and (4) publish transcripts of committee proceedings.

³Of course, each country has its own idiosyncrasies when it comes to budgets and lobbying registries. What gets recorded and published—and how this might impact comparison—is an open question.
difficult to measure polarization. In response, scholars have devised a variety of workaround solutions. For example, Kam (2009) uses a survey to estimate MPs’ placements on a left-right ideology scale. Kellermann (2012) uses “early day motions” (i.e. co-signed petitions among MPs) to estimate ideal points in the UK House of Commons. Most recently, Peterson and Spirling (2018) uses parliamentary speech to predict an MP’s partisan affiliation. When classification accuracy is high—that is, when MPs of different parties use different words—the authors take it as evidence of polarization. This is a novel approach because it uses publicly available text corpora to measure polarization.

Building on the data and findings from this study, future work might conceptualize polarization in terms of selective exposure (Taber and Lodge, 2006; Stroud, 2010, 2011). Similar to motivated reasoning, this is a psychological theory in which individuals seek ideologically congruent information—that is, information that agrees with their prior beliefs. Future research might consider the extent to which an MP’s partisan affiliation may be inferred from the interest groups she associates with. If a researcher is able to predict the party affiliation of a politician based solely on the interest groups who lobby her, it could suggest a polarized information environment—one in which different parties systematically hear from different groups. For example, Conservative legislators may disproportionately communicate with right-leaning groups, while NDP legislators communicate with left-leaning groups. Conversely, a less polarized information environment might be one in which all groups lobby all parties equally. The increasing availability of lobbying data in majoritarian parliamentary systems makes this approach particularly interesting.

Future work might also consider new ways of measuring ideology among MPs and interest groups. In the US, Crosson, Furnas and Lorenz (2018) devise a clever method to estimate interest group and legislator ideal points. They gather publicly available data from the Maplight Foundation, which records interest group positions on various bills from the House and Senate. They implement a Bayesian Item Response Model to create a common scale of ideal points for over 2,600 interest groups and nearly 1,000 congressional represen-

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4 Stroud (2014, 539) distinguishes selective exposure from selective avoidance, in which individuals avoid incongruent information.
tatives. The common scale is useful because it permits theoretically rich hypothesis testing. For example, Crosson, Furnas and Lorenz (2019, 38) show the distribution of policy preferences among interest groups is bimodal and approximately in line with the distribution of preferences among members of Congress—suggesting partisan polarization is not unique to politicians and voters but to nominally non-partisan interest groups, too.

In Westminster systems, such an approach would be impracticable. Party discipline reduces variation in roll call voting, and there is no equivalent to the Maplight Foundation in the UK, Canada, or other such countries. Following Peterson and Spirling (2018), one potential workaround could be machine learning classification accuracy—i.e. predicting partisanship based on nothing more than political speeches. One could train a model on purely partisan utterances from legislative committees and test it on a combined dataset of legislator and interest group testimony. One could then use the predicted probabilities from the model to measure the partisanship of elected officials and interest groups on a common scale. This, combined with the lobbying data used in Chapter Two, could shed tremendous light on polarization in Canada—its extent, nature, and impact on the Westminster policy process.
Bibliography


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Sunlight Foundation. 2014. “Transparency Case Study: Lobbying disclosure in Canada.”. URL: https://sunlightfoundation.com/2014/05/05/transparency-case-study-lobbying-disclosure-in-canada/


Appendix A

Appendix for Chapter Two

A.1 Measurement, Policy Codes, and Descriptive Figures

A.1.1 Measurement of Variables

*Measurement and Data*

To measure interest group activity, I rely on the number of interest groups per policy area that registered with the federal government of Canada in a given year. For examples of similar methodology see Gray and Lowery (1996); Gray et al. (2004); Klüver (2015); Messer, Berkhout and Lowery (2011). Lobbying registries are an important indicator of interest group activity (Gray and Lowery, 1996, 7-9). Although Canada’s registry has been in operation since 1989, data on lobbying registrations are only accessible online starting in 1996. Fortunately, data from 1990–1996 were transcribed by an Ottawa-based periodical called Lobby Monitor. Using these publications, human coders transcribed registry entries to ensure comparability to the 1996–2009 dataset. The 1990–1996 Lobby Monitor data does not distinguish non-profit from business lobbyists, so human coders used online records (e.g. federal corporation registries, annual reports, media reports, etc.) to identify non-profit associations.¹

¹Across the full sample of interest groups that were human coded, the Cronbach’s alpha for cause/sectional topic coding is 0.63. Again, discrepancies were resolved through a meeting of the coders and the authors.
Using these two data sources, I converted the lobbyist registry into a longitudinal dataset of all interest groups that engaged in lobbying communication between 1990 and 2009. This dataset includes 8,760 interest group registrations, with one record per year for each interest group.

Table A.1 shows some basic information about the cause/sectional groups in my dataset. There are 1,165 cause group registrations, or 13.29% of the total, and 7,595 sectional group registrations, or 86.7% (one record per year per group).

The overall number of interest groups increases in a curvilinear form with economic growth and government activity. As such, the absolute number of interest groups is not sufficient to capture the attention of interest groups to different policy areas. I use the relative number of cause and sectional groups active in an issue area as an indicator for the cause or sectional group activity in this domain. The relative number of sectional/cause groups was computed by dividing the number of sectional/cause groups in each of the 15 policy areas by the total number of sectional/cause groups annually registered in the federal registry across all issue areas.

To measure voter attention to different policy areas, I rely on public opinion data retrieved from the Environics Focus Canada series, which is a quarterly public opinion poll conducted in Canada since 1977. This survey includes an open question that asks respondents to
indicate the current most important problem in their view.\textsuperscript{2} The most important problem question (MIP) is a standard tool for measuring the relative importance of issues to voters (see e.g. Hobolt and Klemmensen (2008); Klüver and Spoon (2014); Petrocik (1996); Pickup and Hobolt (2015)). The Environics Focus Canada series is a particularly valuable data source. Rounce (2006, 151-152) observes that as many as 13 federal departments maintained a subscription to this polling data during the 2000s, at a total cost of approximately a quarter-million dollars.

I use the percentage of respondents that indicated a policy issue as the most important problem as a measure for the public salience of an issue. Data are imputed based on survey respondents' answers to demographic questions as well as the "most important problem" questions that are common across the Canadian Election Study and commercial (Gallup/Environics) polls (Pickup & Whelan 2014). To assess how interest groups affect the responsiveness of governments to the issue priorities of voters, I code answers to the most important problem question according to the Policy Agendas Codebook. This allows me to directly compare the interest group data with the public opinion data.

I measure government attention to different policy issues using federal expenditure data released by Statistics Canada.\textsuperscript{3} This covers all public expenditures at the federal level (including block transfers to provincial governments), and allows me to directly assess whether interest group activity at the federal level has an impact on public spending by the federal government. The expenditure data is available from 1980 until 2009. In line with the availability of the lobbying data, I am therefore able to trace government responsiveness from 1990 until 2009. I match expenditure data with the public opinion and interest group data to

\begin{footnotesize}
\textsuperscript{2}The precise question wording is "What do you think is the most important problem facing Canada today?". Environics Focus Canada surveys can be obtained from the Canadian Opinion Research Archive at \url{http://www.queensu.ca/cora/5data.html}.
\end{footnotesize}

\begin{footnotesize}
\textsuperscript{3}Federal expenditure data is collected by Statistics Canada (CANSIM #385-0002) and can be obtained at the following website: \url{http://www5.statcan.gc.ca/cansim/a26?lang=eng&id=3850002}. See appendix 3.1.
\end{footnotesize}
arrive at 18 common policy areas. I removed three areas due to concerns over measurement error, as levels of salience were consistently low (government operations; telecommunications; and, land/water). I rely on the relative spending of the Canadian government in each of the remaining 15 policy areas as a measure of government’s issue attention. More specifically, I use the amount of chained 2015 real dollars (USD) in federal expenditure that is devoted to each policy area per annum.

*Specification*

Scholars of policy responsiveness typically specify time series or panel data models to represent real-world time-dependent processes. Stimson, MacKuen and Erikson (1995, p. 558) measure voter attention in both levels (lagged) and differences (contemporaneous). Soroka and Wlezien (2004, table 3, p. 546) use a dead-start model to explain the change in public spending as a function of the lag of net public preferences (in levels), with controls for public debt (lagged) and partisan control of government (lagged) (note, however, that their measure is inherently one of change, since it gauges public support for “more” or “less” spending). Hobolt and Klemmensen (2008, model 2, tables 3-5, p. 324–325, 327, 329) also specify a dead start model to explain changes in public expenditure as a function of lagged public preferences, measured in levels. Jennings and John (2009, tables 2 and 4, p. 847, 849) use a general Error Correction Model to model government attention (measured by Queen’s Speeches in the UK) as a function of its lag as well as the contemporaneous first differences of public opinion and its lag. Hakhverdian (2010, p. 852) uses an equivalent specification, an Autoregressive Distributed Lag (1,1) model to explain policy (as measured through parliamentary budget speeches in the UK) as a function of contemporaneous and lagged values of public opinion (though the contemporaneous coefficients are not significant and therefore not given, see p. 850). Bevan and Jennings (2014, table 3, p. 49) also use an Error Correction Model to model government attention (measured through executive, legislative and budgetary activities). Most recently, Pickup and Hobolt (2015, p. 523–525) specify a two-step Error Correction Model to estimate the conditional effect of government popularity on the legislative effectiveness of minority and majority governments.
Like most theories of political science, policy responsiveness does not offer precise expectations about an empirical model’s lag structure or whether it should necessarily be specified in levels of differences (De Boef and Keele, 2008). That said, longitudinal models are the norm, typically with a lagged measure of voter attention, a lagged measure of government attention, or both. Differencing public expenditure as a dependent variable is common, and public opinion is alternatively measured in levels or differences.4

In specifying a model, De Boef and Keele (2008, p. 186–187) recommend researchers follow the principle of general-to-specific, beginning with the most general model: Autoregressive Distributed Lag (ADL). This would include a combination of contemporaneous and lagged values of government attention and public opinion. In the case of policy responsiveness, there may be theoretical reasons to restrict the contemporaneous coefficient for public opinion to zero. For example, Soroka and Wlezien (2004, p. 535) and Hobolt and Klemmensen (2008, p. 320) use dead-start models to analyze budgetary data. They observe that the annual budgeting process in government is slow and the contemporaneous value of public opinion may exercise little to no effect on contemporaneous changes in spending. Hakhverdian (2010) first tests an ADL model before omitting contemporaneous public opinion (p. 850–851). Other researchers (e.g. Jennings and John, 2009) include the contemporaneous effect and arrive at similar conclusions.

4 Although it relates to the other “half” of the thermostatic cycle, Wlezien (1995) models the first difference of public preferences as a function of levels of spending (see tables one through four on p. 990, 991, 994, and 996). Soroka and Wlezien (2004) use a Partial Adjustment, or Lagged Dependent Variable, model to explain public responsiveness. They regress the contemporaneous level of net preferences on its lag along with contemporaneous levels of spending, the misery index, and net dislike of Russia among Americans (Soroka and Wlezien, 2004, table 2, p. 542, note a).
## A.1.2 Policy Codes, by Variable

<table>
<thead>
<tr>
<th>Policy Topic</th>
<th>Code</th>
<th>Voter Attention Codes</th>
<th>Interest Group Codes</th>
<th>Expenditure Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economy</td>
<td>1</td>
<td>General Domestic issues, Inflation, Unemployment, Budget, Tax</td>
<td>General Domestic Macroeconomic Issues; Inflation, Prices, and Interest Rates; Unemployment Rate; Monetary Supply, Central Bank (and the Treasury/Consolidated Revenue Fund); National Budget and Debt; Taxation, Tax policy, and Tax Reform; Industrial Policy; Price Control and Stabilization; Mining and Quarrying; Manufacturing; Construction; Employer issues (general)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Mining; Regional planning and development; Reciprocal taxation agreement; Interest due, borrow on behalf special funds; Other interest expense; Other debt charges; Other expenditures.</td>
</tr>
</tbody>
</table>

Continued on next page
<table>
<thead>
<tr>
<th>Health</th>
<th>3</th>
<th>Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Health; Comprehensive Health Care Reform; Insurance Reform, Availability, and Costs; Regulation of the Drug Industry, Medical Devices, and Clinical Labs; Facilities Construction, Regulation, and Payments; Provider and Insurer Payments and Regulation; Medical Liability, Fraud, and Abuse; Health Manpower and Training; Disease Prevention, Treatment, and Health Promotion (includes services for specific diseases not mentioned elsewhere); Infants and Children; Mental Health and Mental Retardation; Long-Term Care, Home Health, Terminally Ill, and Rehabilitation Services; Prescription Drug Coverage and Costs; Tobacco Abuse, Treatment, and Education; Drug and/or Alcohol Abuse and Treatment; Health Research and development; Other Health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital care; Medical care; Preventive care; Other health services; Canada health and social transfer</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Agriculture</th>
<th>4</th>
<th>Agriculture, Forests, Fisheries</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Agriculture; Agricultural Trade; Government Subsidies to Farmers and Ranchers (includes Agricultural Disaster Insurance); Food Inspection and Safety (includes Seafood Inspection and Safety); Agricultural Marketing and Promotion; Animal and Crop Disease, Animal Welfare, and Pest Control; Fisheries and Fishing; Agricultural Research and Development; Other Agriculture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agriculture; Fish and game</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Continued on next page
<table>
<thead>
<tr>
<th>Category</th>
<th>Page</th>
<th>Sub-Category</th>
<th>Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labour &amp; Immigr-</td>
<td>5</td>
<td>Labour</td>
<td>General Labour and Employment; Worker Safety and Protection (includes occupational health and safety); Employment Training and Workforce Development; Employee Benefits; Employee Relations and Labour Unions; Fair Labour Standards/Labour Law; Youth Employment Programs and Child Labour Issues; Migrant and Seasonal Workers/Farm Labour Issues; Other Labour and Employment</td>
<td>Workers’ compensation benefits; Labour and employment; Immigration; Other labour, employment and immigration</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Elementary and secondary education; Postsecondary education; Special retraining services; Other education; Libraries; Art galleries and museums</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Water purification and supply; Pollution control; Other environmental services</td>
</tr>
<tr>
<td>Education</td>
<td>6</td>
<td>Education</td>
<td>General Education; Higher Education; Elementary and Secondary Education; Education of Underprivileged Students; Vocational Education; Special Education; Educational Excellence; Arts and Humanities (e.g. museums—not cultural production); Education Research and Development; Other Education</td>
<td></td>
</tr>
<tr>
<td>Environment</td>
<td>7</td>
<td>Environment</td>
<td>General Environment; Drinking Water; Safety, Water Supply, Water Pollution, and Water Conservation; Waste Disposal; Hazardous Waste and Toxic Chemical Regulation, Treatment, and Disposal; Air pollution, Global Warming, and Noise Pollution; Recycling; Indoor Environmental Hazards; Species and Forest Protection; Land and Water; Environmental Research and Development; Other Environment</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Continued on next page</td>
</tr>
<tr>
<td>Energy</td>
<td>8</td>
<td>Energy</td>
<td>General Energy; Nuclear Energy; Electricity and Hydroelectricity; Natural Gas and Oil (includes Offshore Oil and Gas); Coal; Alternative and Renewable Energy; Energy Conservation; Energy Research and Development; Other Energy</td>
<td>Oil and gas; Water power; Other resource conservation and industrial development</td>
</tr>
<tr>
<td>--------------</td>
<td>-----</td>
<td>----------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Transportation</td>
<td>10</td>
<td>Transport</td>
<td>General Transportation; Mass Transportation and Safety; Road /Highway Construction, Maintenance, and Safety; Airports, Airlines, Air Traffic Control, and Safety; Railroad Transportation and Safety; Maritime Issues; Public Works (i.e. Infrastructure Development); Transportation Research and Development; Other Transportation</td>
<td>Air transport; Road transport; Rail transport; Water transport; Other transportation and communication</td>
</tr>
<tr>
<td>Law, Crime &amp; Family</td>
<td>12</td>
<td>Law</td>
<td>General Law, Crime, and Family Issues; Executive Branch Agencies Dealing with Law and Crime; White Collar Crime and Organized Crime; Illegal Drug Production, Trafficking, and Control; Court Administration; Prisons; Juvenile Crime and the Juvenile Justice System; Child Abuse and Child Protection; Family Issues; Police, Fire and Weapons Control; Criminal and Civil Code; Riots and Crime Prevention; Domestic Disaster Relief; Domestic Terrorism Police; Other Law/Crime/Family Issues</td>
<td>Courts of law; Correction and rehabilitation services; Policing; Regulatory measures; Other protection of persons and property</td>
</tr>
</tbody>
</table>

Continued on next page
<p>| Social Welfare | 13 | Welfare | General Social Welfare; Food Stamps, Food Assistance, and Nutrition Monitoring Programs; Poverty Assistance for Low-Income Families; Elderly Issues and Elderly Assistance Programs; Assistance to the Disabled and Handicapped; Social Services and Volunteer Associations; Social Benefit Related to Children; Other Social Welfare | Social assistance; Income maintenance; Other social assistance; Social security; Family allowances; Miscellaneous social assistance; Employee pension plan benefits and changes in equity; Other social services; Canada social transfer (CST) |
| Community Development &amp; Housing | 14 | Housing | General Housing and Community Development Issues; Housing and Community Development; Urban Economic Development and General Urban Issues; Rural Housing and Farm Housing Assistance Programs; Rural Economic Development; Low and Middle Income Housing Programs and Needs; Elderly and Handicapped Housing; Housing Assistance for Homeless and Homeless Issues; Other Housing and Community Development | Housing |</p>
<table>
<thead>
<tr>
<th>Defence</th>
<th>16</th>
<th>Defence</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Defence; Defence Alliances and Security Assistance; Military Intelligence and Espionage; Military Readiness, Coordination of Armed Services Air Support and Sea lift; Arms Control and Nuclear Non-proliferation; Military Aid and Weapons Sales to Other Countries; Manpower, Military Personnel, and Dependents, Military Courts; Veteran Issues; Military Procurement and Weapons System Acquisitions and Evaluation; Military Installations, Construction, and Land Transfers; Reserve Forces and Reserve Affairs; Military Nuclear and Hazardous Waste Disposal and Military Environmental Compliance; Civil Defence (war related); Civilian Personnel and Civilian Employment by the Defence Industry, Military Base Closings; Oversight of Defence Contracts and Contractors; Direct War Related Issues; Relief of Claims Against National Military; Defence Research and Development; Other Defence</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Foreign Trade</th>
<th>18</th>
<th>Trade</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Foreign Trade; Trade Negotiations, Disputes, and Agreements; Export Promotion, Regulation, and Export-Import Bank and Credit Agencies; International Private Business Investments; Tariff and Import Restrictions, includes Import Regulation; Exchange Rates and Related Issues; Other Foreign Trade</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| National defence; Veterans’ benefits |
| Trade and industry |

Continued on next page
<table>
<thead>
<tr>
<th>Category</th>
<th>Page</th>
<th>Subcategory</th>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>International Affairs &amp; Foreign Aid</td>
<td>19</td>
<td>International</td>
<td>General International Affairs and Foreign Aid Foreign Aid; International Resources Exploitation and Agreement; Developing Countries Issues; International Finance and Economic Development; Treaties with Specific Countries / Regions; Human Rights International Organizations Other than Finance (includes NGOs, United Nations); International Terrorism and Hijacking; Diplomats, Embassies, Citizens Abroad, Foreign Diplomats in Canada, and Passports; Other General International Affairs and Foreign Aid</td>
<td>Foreign affairs and international assistance</td>
</tr>
<tr>
<td>Media &amp; Culture</td>
<td>26</td>
<td>Culture</td>
<td>General Cultural Policy Issues; Production of Media/Cultural Products</td>
<td>Culture; Other culture; Broadcasting</td>
</tr>
</tbody>
</table>
A.1.3 Descriptive Figures

Changes in Voter Attention, by Policy Topic, 1990–2009

Changes in Federal Spending ($), by Policy Topic, 1990–2009
### A.1.4 Most Prominent Groups

Below, I present the 30 most prominent sectional and cause groups in the lobbying registry.

<table>
<thead>
<tr>
<th>Sectional Groups</th>
<th>Cause Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can. Assoc. of Petroleum Producers</td>
<td>Evangelical Fellowship of Canada</td>
</tr>
<tr>
<td>Can. Medical Assoc.</td>
<td>World Vision Canada</td>
</tr>
<tr>
<td>Forest Products Assoc. of Canada</td>
<td>Canada-Israel Committee</td>
</tr>
<tr>
<td>Can. Institute of Chartered Accountants</td>
<td>Non-Smokers’ Rights Assoc.</td>
</tr>
<tr>
<td>Can. Labour Congress</td>
<td>Oxfam Canada</td>
</tr>
<tr>
<td>Can. Bankers Assoc.</td>
<td>Miningwatch Canada</td>
</tr>
<tr>
<td>Can. Federation of Independent Business</td>
<td>Sierra Club of Canada</td>
</tr>
<tr>
<td>Assoc. of Universities &amp; Colleges of Canada</td>
<td>David Suzuki Foundation</td>
</tr>
<tr>
<td>Biotecanada</td>
<td>Can. Public Health Assoc.</td>
</tr>
<tr>
<td>Brewers Assoc. of Canada</td>
<td>Pembina Institute</td>
</tr>
<tr>
<td>Can. Assoc. of University Teachers</td>
<td>Rick Hansen Foundation</td>
</tr>
<tr>
<td>Can. Chamber of Commerce</td>
<td>West Coast Environmental Law Assoc.</td>
</tr>
<tr>
<td>Railway Assoc. of Canada</td>
<td>Canada Family Action Coalition</td>
</tr>
<tr>
<td>University of Alberta</td>
<td>Can. Lung Assoc.</td>
</tr>
<tr>
<td>Can. Standards Assoc.</td>
<td>Can. Red Cross</td>
</tr>
<tr>
<td>Aerospace Industries Assoc. of Canada</td>
<td>International Fund For Animal Welfare</td>
</tr>
<tr>
<td>Can. Gas Assoc.</td>
<td>Environmental Defence Canada</td>
</tr>
<tr>
<td>Can. Shipowners Assoc.</td>
<td>World Wildlife Fund Canada</td>
</tr>
<tr>
<td>Certified General Accountants Assoc. of Canada</td>
<td>Can. Foodgrains Bank</td>
</tr>
<tr>
<td>Queen’s University</td>
<td>Can. Wildlife Federation</td>
</tr>
<tr>
<td>Mining Assoc. of Canada</td>
<td>Mennonite Central Committee Canada</td>
</tr>
<tr>
<td>Heart &amp; Stroke Foundation of Canada</td>
<td>Nature Canada</td>
</tr>
<tr>
<td>Dairy Farmers of Canada</td>
<td>Oxfam-Quebec</td>
</tr>
<tr>
<td>Can. Assoc. of Occupational Therapists</td>
<td>Plan International Canada Inc.</td>
</tr>
<tr>
<td>Can. Life &amp; Health Insurance Compensation Corp.</td>
<td>Schizophrenia Society of Canada</td>
</tr>
</tbody>
</table>
A.1.5 Qualitative Examples

As I note in my main analysis, my dependent variable (spending changes) may not capture certain dimensions of policymaking. Some groups may lobby with spending goals in mind, others may pursue legislative goals, while others may lobby to influence spending and legislation. Below, I select five illustrative interest groups and evaluate their activities in light of lobbying registry information. We pay special attention to the group’s stated goals, and whether these goals imply spending or legislative changes. These qualitative examples are by no means representative—many groups do not include detailed registration information, while many others provide pro forma information that rolls over year to year. Yet I believe they are helpful because they illustrate the range of issues that animate the interest groups in my study. It also illustrates how spending and legislative goals often go hand in hand. Four out of the five mention both legislative and spending goals. And for the one group that does not explicitly mention spending (the Canadian Association of Financial Institutions in Insurance), the evidence suggests its legislative goals would likely increase federal expenditures.
#1 Air Transport Association of Canada (2006-2007 Registration)

<table>
<thead>
<tr>
<th>Who is represented (i.e. who are members)?</th>
<th>Registry Data</th>
<th>Evidence Registry Data is Correct?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The ATAC represents commercial aviation companies, aeronautics suppliers, and related aviation businesses.</td>
<td>Yes. See the ATAC website and annual reports (2006-2009).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Did the group lobby with legislative goals?</th>
<th>Registry Data</th>
<th>Evidence Registry Data is Correct?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes. Legislative targets included the Aeronautics Act Amendments, the Canada Airports Act, and the Canadian Transportation Agency Act, among others.</td>
<td>Yes. See the ATAC’s 2006 Annual Report (p.13) and parliamentary records from December 2006 (Human Resources Committee, debate over Bill C-257 from Dec. 7th, 2006).</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Did the group lobby with spending goals?</th>
<th>Registry Data</th>
<th>Evidence Registry Data is Correct?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes. Spending goals included government support for marketing of aviation products and services (through the Department of Foreign Affairs and International Trade).</td>
<td>Yes. See the ATAC’s 2007 Annual Report (p.10) and parliamentary discussion about need for enhanced safety during debate over in 2009 (see House of Commons Hansard #24, 40th Parliament, 2nd Session, March 5th, 2009)</td>
<td></td>
</tr>
</tbody>
</table>

#2 Miningwatch Canada (1999-2000 Registration)

<table>
<thead>
<tr>
<th>Who is represented (i.e. who are members)?</th>
<th>Registry Data</th>
<th>Evidence Registry Data is Correct?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members are volunteers as well as public, not-for-profit organizations concerned about the environmental and social costs of mining.</td>
<td>Yes. Membership is confirmed in annual reports, newsletters, and media accounts.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Did the group lobby with legislative goals?</th>
<th>Registry Data</th>
<th>Evidence Registry Data is Correct?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes. Legislative goals included amendments to the Canadian Environmental Protection Act (CEPA), the Fisheries Act relating to effluents.</td>
<td>Yes. Miningwatch newsletters from the early 2000s mention smelter toxins and CEPA. Miningwatch also participated in contemporaneous discussions about Metal Mining Effluent rules in the Fisheries Act.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Did the group lobby with spending goals?</th>
<th>Registry Data</th>
<th>Evidence Registry Data is Correct?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes. Spending goals included reductions in public liability for closed mines in Canada’s North, as well as tax expenditures related to mining.</td>
<td>Yes. News releases from Miningwatch in the late 1990s emphasize its “zero public liability” goal. In the early 2000s, the organization released a report on taxation and the federal/provincial governments (“Understanding Mining Taxation in Canada”).</td>
<td></td>
</tr>
</tbody>
</table>
### #3 Canadian Advanced Technology Alliance (2008-2009 Registration)

<table>
<thead>
<tr>
<th>Who is represented (i.e. who are members)?</th>
<th>Registry Data</th>
<th>Evidence Registry Data is Correct?</th>
</tr>
</thead>
<tbody>
<tr>
<td>CATA represents various technological entrepreneurs and companies.</td>
<td>Yes, see CATA’s website.</td>
<td></td>
</tr>
</tbody>
</table>

**Did the group lobby with legislative goals?**

Yes. Legislative targets include those involving internet policies surrounding the practice of â€œ throttling â€œ by ISPs.

Yes, according to various press releases on CATA’s website (eg. “Legislative Alert & Mobilization: Traffic Shaping Internet Policies,” April 7th, 2008).

**Did the group lobby with spending goals?**

Yes. Advocated for development of a “national brand” through Canadian Pavilions, programs for developing IT capacity for women, programs to increase enrolment in IT programs through investment in education, and various tax credits.

Yes. See parliamentary records from February 2008 (Industry Committee on Feb 5th, 2008) and December 2009 (Status of Women Committee on December 3rd, 2009), as well as the Advocacy section on CATA’s website.

### #4 Canadian Association Of Financial Institutions In Insurance (2006-2007 Registration)

<table>
<thead>
<tr>
<th>Who is represented (i.e. who are members)?</th>
<th>Registry Data</th>
<th>Evidence Registry Data is Correct?</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAFII represents, promotes and advances the interests of financial institutions in insurance and affiliated organizations.</td>
<td>Yes, see CAFII’s website.</td>
<td></td>
</tr>
</tbody>
</table>

**Did the group lobby with legislative goals?**

Yes. Legislative targets included any involving financial sector or legislative framework policies with respect to insurance.

Yes. See debate on “An Act to amend the law governing financial institutions and to provide for related and consequential matter” in February and March 2007.

**Did the group lobby with spending goals?**

Unclear. Registry information mentions “Any financial sector or legislative framework policies with respect to insurance,” which may include federal programs.

Yes. The Association was heavily involved in the debate over Canada’s “Do Not Call” list. In its 2006 submission to the federal regulatory agency, the Association requested the federal government maintain the list of Canadians who opt out of unsolicited telemarketing. This would almost certainly increase federal expenditure in the telecommunications sector.
#5 Canadian Bar Association (1999-2000 Registration)

<table>
<thead>
<tr>
<th>Question</th>
<th>Registry Data</th>
<th>Evidence Registry Data is Correct?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who is represented (i.e. who are members)?</td>
<td>The Canadian Bar Association represents Canadian jurists both nationally and internationally.</td>
<td>Yes, see the CBA’s website.</td>
</tr>
<tr>
<td>Did the group lobby with legislative goals?</td>
<td>Yes. Legislative targets included the Copyright Act, judicial conduct, and international human rights treaties.</td>
<td>Yes. See parliamentary discussion on Bill C-12 (the Judges Act) from April 6th, 2001.</td>
</tr>
<tr>
<td>Did the group lobby with spending goals?</td>
<td>Yes. Spending targets included changes to the Canada Social Transfer, funding for Legal Aid, and international development funds.</td>
<td>Yes. See parliamentary debate about funding for legal aid and the CBA in 2000 (House of Commons Hansard #116, 36th Parliament, 2nd Session).</td>
</tr>
</tbody>
</table>
A.2 Diagnostics

A.2.1 Hausman Test

The random effects estimator assumes a lack of correlation among the explanatory variables and the individual-specific effects. For this to be true, a comparison of the coefficient estimates from the random and fixed effects estimators (table one) should show no statistical difference. To test this I employ the Hausman specification test. The results (table two) show a $\chi^2$ test statistic of 21.445, with 28 degrees of freedom (including the dummy variables and trend term). This yields a $P$-value of 0.806. On this basis I may not reject the null hypothesis that the difference in the coefficients is not systematic. Consequently, I use the random effects estimator.
Table A.4: The impact of voter attention on government spending.

<table>
<thead>
<tr>
<th></th>
<th>(1) Fixed Effects</th>
<th>(2) Random Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in Federal Spending_t-1</td>
<td>0.311(^*)</td>
<td>0.352(^*)</td>
</tr>
<tr>
<td></td>
<td>(0.061)</td>
<td>(0.060)</td>
</tr>
<tr>
<td>Change in Voter Attention</td>
<td>-351.186(^*)</td>
<td>-311.692()</td>
</tr>
<tr>
<td></td>
<td>(173.545)</td>
<td>(171.390)</td>
</tr>
<tr>
<td>Sectional Group Pressure</td>
<td>-1488.815</td>
<td>-704.942</td>
</tr>
<tr>
<td></td>
<td>(8793.136)</td>
<td>(7597.440)</td>
</tr>
<tr>
<td>Cause Group Pressure</td>
<td>-5465.188(^*)</td>
<td>-507.270</td>
</tr>
<tr>
<td></td>
<td>(2754.688)</td>
<td>(2285.740)</td>
</tr>
<tr>
<td>Change in Voter Attention _t-1</td>
<td>80.343</td>
<td>97.416</td>
</tr>
<tr>
<td></td>
<td>(97.290)</td>
<td>(95.870)</td>
</tr>
<tr>
<td>Sectional Group Pressure _t-1</td>
<td>3910.069</td>
<td>-2836.202</td>
</tr>
<tr>
<td></td>
<td>(8619.594)</td>
<td>(7511.605)</td>
</tr>
<tr>
<td>Cause Group Pressure _t-1</td>
<td>-3448.000</td>
<td>1596.033</td>
</tr>
<tr>
<td></td>
<td>(2670.391)</td>
<td>(2223.778)</td>
</tr>
<tr>
<td>Change in Voter Attention _t-1 x Sectional Group Pressure _t-1</td>
<td>-1088.364</td>
<td>-1124.616</td>
</tr>
<tr>
<td></td>
<td>(801.144)</td>
<td>(795.954)</td>
</tr>
<tr>
<td>Change in Voter Attention _t-1 x Cause Group Pressure _t-1</td>
<td>-888.530</td>
<td>-818.972</td>
</tr>
<tr>
<td></td>
<td>(517.364)</td>
<td>(519.229)</td>
</tr>
<tr>
<td>Constant</td>
<td>399.249</td>
<td>147.722</td>
</tr>
<tr>
<td></td>
<td>(600.658)</td>
<td>(515.538)</td>
</tr>
<tr>
<td>Observations</td>
<td>285</td>
<td>285</td>
</tr>
<tr>
<td>(R^2)</td>
<td>0.214</td>
<td>0.180</td>
</tr>
</tbody>
</table>

Cell entries represent unstandardized \(\hat{\beta}\) coefficients with standard errors in parentheses.
Model includes dummy variables for each year.
\(\ast\) \(p < 0.05\)
Table A.5: Hausman Test

<table>
<thead>
<tr>
<th>$H_0$: Difference in coefficients is not systematic</th>
<th>Chi-Sq.</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.445</td>
<td>.806</td>
<td></td>
</tr>
</tbody>
</table>
A.2.2 Serial Correlation and Cointegration Tests

Before estimating my model, I test if interest group pressure, change in voter attention and change in expenditure are stationary. The first step is to confirm that none of the three are derived from unit root (i.e. I(1)) data generating processes. Applying the Levin-Lin-Chu unit-root test to the cause and sectional group pressure variables, I can reject the null hypotheses that the panel data contain unit roots ($P$-value .000 in both cases), against the alternative of a stationary process. I can also reject the null hypothesis that the change in expenditure ($P$-value .000) and change in voter attention ($P$-value .000), and both bilinear interaction variables ($P$-value .000 in both cases) contain unit roots. Proceeding on the assumption that the data are stationary, I estimate the ADL(1,1) model in equation (2) from the main analysis using feasible generalized least squares regression (Wooldridge, 2008).

After estimation, I perform diagnostic tests to confirm that the residuals from this model resemble a white noise process. Using the Levin-Lin-Chu test, I can reject the null hypothesis that the panel residuals are derived from unit root processes ($P$-value 0.000). To test serial correlation in a dynamic pooled OLS model, Wooldridge (2010, section 7.8.5, 176–177) recommends estimating the model residuals, re-running the original regression with the lagged residuals included as an independent variable, and evaluating whether the coefficient on the lagged residuals is different from zero. Applying this test to my ADL(1,1) model ($P$-value 0.323), I am unable to reject the null hypothesis that the residuals' coefficient is zero. On this basis, I conclude that the ADL(1,1) model produces stationary residuals that are free from serial correlation. It appears the model is well specified.

An additional consequence of the potential for bias in dynamic panel models is that it may bias certain serial correlation tests. For example, Wooldridge (2010) regresses the residuals of a first-differenced fixed effects panel model against the lagged residuals then uses a Wald test to test whether the coefficient is different from -0.5 (see also Drukker, 2003, for implementation in Stata via -xtserial-). To test serial correlation in a dynamic pooled OLS model, Wooldridge (2010, section 7.8.5, p. 176–177) recommends taking the model residuals, re-running the regression, and evaluating a standard t-test of whether the coefficient on the lagged residuals is different from zero. I present the results of this procedure for the random effects model. The results (Table A.6) show that none of the differenced, lagged residual terms are statistically significant at the 0.05 level, which suggests no residual serial correlation.

I also tested the sectional and cause group variables for cointegration using the set of four panel cointegration tests developed by Westerlund (2007) (see also Persyn and Westerlund, 2008). Running the full model (i.e. change in spending, change in voter attention, level of sectional or cause group pressure, and the interaction of a change in voter attention and the level of sectional or cause group pressure) with one lag (but no trend term or constant), I am able to reject the null hypothesis of no cointegration in one instance ($P$-value 0.000, 1.000, 1.000, 1.000). This may suggest that the two series are cointegrated. I lack sufficient time points to include the full model as well as a lag, a constant and a trend term. So, I run

$I$ use t-statistic from heteroskedasticity-robust standard errors.
two sets of Westerlund tests (one for cause and one for sectional groups). For cause groups, I am able to reject the null hypothesis of no cointegration in one instance ($P$-value 0.001, 1.000, 0.989, 1.000). For sectional groups, I am unable to reject the null hypothesis of no cointegration in any instance ($P$-value 0.783, 1.000, 0.964, 1.000).
Table A.6: Serial Correlation Tests of the impact of voter attention on government spending. Dependent variable: Government spending.

<table>
<thead>
<tr>
<th>Differenced Residuals$_{t-1}$</th>
<th>$\hat{\beta}$ (Robust SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\Delta$Voter Attention</td>
<td>-0.027 (0.028)</td>
</tr>
<tr>
<td>Sectional Group Pressure</td>
<td>4862.285 (7254.458)</td>
</tr>
<tr>
<td>Cause Group Pressure</td>
<td>3677.789 (2572.207)</td>
</tr>
<tr>
<td>$\Delta$Voter Attention x Sectional Group Pressure</td>
<td>2306.198 (1212.673)</td>
</tr>
<tr>
<td>$\Delta$Voter Attention x Cause Group Pressure</td>
<td>1331.911* (442.746)</td>
</tr>
<tr>
<td>$\Delta$Voter Attention$_{t-1}$</td>
<td>-76.680 (177.042)</td>
</tr>
<tr>
<td>Sectional Group Pressure$_{t-1}$</td>
<td>-10184.746 (9665.658)</td>
</tr>
<tr>
<td>Cause Group Pressure$_{t-1}$</td>
<td>-2066.469 (3540.729)</td>
</tr>
<tr>
<td>$\Delta$Voter Attention$<em>{t-1}$ x Sectional Group Pressure$</em>{t-1}$</td>
<td>-329.112 (1179.110)</td>
</tr>
<tr>
<td>$\Delta$Voter Attention$<em>{t-1}$ x Cause Group Pressure$</em>{t-1}$</td>
<td>100.976 (509.578)</td>
</tr>
<tr>
<td>Constant</td>
<td>413.315 (454.792)</td>
</tr>
<tr>
<td>Observations</td>
<td>255</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.121</td>
</tr>
</tbody>
</table>

Cell entries represent unstandardized b coefficients with robust standard errors in parentheses. Models include dummy variables for each year. $^* p < 0.05$
A.2.3 More Specific Models

I follow the general-to-specific principles outlined in Campos, Hendry and Ericsson (2005) and De Boef and Keele (2008). This approach recommends researchers begin with a more general specification, in my case, the Autoregressive Distributed Lag (ADL) model. In my main results, the ADL (1,1) model includes a combination of contemporaneous and lagged values of government attention and public opinion.

As a robustness check, I also present a model without lags and with fixed effects for each year and policy area (Table 1). Running this more specific, static model, the results are substantively similar to the results in the main analysis. In column 1 of Table 1, the interaction of voter attention and cause group lobbying \((\Delta MIP_i \times CG_i)\) is positive and is the only statistically significant variable in the model \((t\text{-statistic } 2.23; \ P\text{-value } 0.043)\). In column 2, I include the differenced, lagged value of federal spending. The autoregressive term is positive and statistically significant \((t\text{-statistic } 2.33; \ P\text{-value } 0.036)\), suggesting the static model in column 1 contains residual serial correlation. Again, the interaction of voter attention and cause group lobbying is positive and statistically significant \((t\text{-statistic } 4.14; \ P\text{-value } 0.001)\).
Table A.7: The impact of voter attention on government spending.

<table>
<thead>
<tr>
<th></th>
<th>(1) No lags</th>
<th>(2) DV lag</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in Voter Attention</td>
<td>-129.173 (113.588)</td>
<td>-272.485 (145.310)</td>
</tr>
<tr>
<td>Sectional Group Pressure</td>
<td>6045.190 (4168.387)</td>
<td>3450.601 (3751.922)</td>
</tr>
<tr>
<td>Cause Group Pressure</td>
<td>-3253.284 (4104.461)</td>
<td>-5759.029 (6674.673)</td>
</tr>
<tr>
<td>Change in Voter Attention x Sectional Group Pressure</td>
<td>1606.096 (762.198)</td>
<td>1691.396 (1027.699)</td>
</tr>
<tr>
<td>Change in Voter Attention x Cause Group Pressure</td>
<td>676.765* (303.795)</td>
<td>1236.492* (298.710)</td>
</tr>
<tr>
<td>Change in Federal Spendingₜ₋₁</td>
<td>0.282* (0.121)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>48.737 (354.242)</td>
<td>219.921 (366.080)</td>
</tr>
<tr>
<td>Observations</td>
<td>300</td>
<td>285</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.117</td>
<td>0.188</td>
</tr>
</tbody>
</table>

Cell entries represent unstandardized $\hat{\beta}$ coefficients with robust standard errors in parentheses.
Model includes fixed effects for each year and policy area.
* $p < 0.05$
A.3 Robustness Checks

A.3.1 Alternative Measurement and Estimation

Alternative Measurement of Interest Group Pressure

As mentioned above, the main analysis measures relative interest group pressure by dividing the number of sectional/cause groups in each of the 15 policy areas by the total number of sectional/cause groups annually registered in the federal registry across all issue areas. Alternatively, one may wish to measure the total amount of cause/sectional group pressure relative to all interest group pressure. In this appendix, I run the same random effects model but compute “total” cause/sectional group pressure. For each of the 15 policy areas, this is computed as the number of cause/sectional groups lobbying in the area that year ($\#cg_{i,t}$ and $\#sg_{i,t}$) divided by the total number of interest groups lobbying across all issue areas in that year ($\sum_{i=1}^{15} \#cg_t + \sum_{i=1}^{15} \#sg_t$). This produces measures of the total amount of cause and sectional group pressure:

$$CG_{i,t}^* = \frac{\#cg_{i,t}}{(\sum_{i=1}^{15} \#cg_t + \sum_{i=1}^{15} \#sg_t)}$$
$$SG_{i,t}^* = \frac{\#sg_{i,t}}{(\sum_{i=1}^{15} \#cg_t + \sum_{i=1}^{15} \#sg_t)}$$

(A.1)

Alternative Measurement of Government Attention (Consolidated Spending)

The volatility observed in social welfare and health spending (Appendix A.1.3) is largely due to changes in federal-provincial transfers in the mid-1990s. Specifically, the creation of the Canada Health and Social Transfer (CHST) combined much of the federal government’s expenditure on the two policy issues. Although the CHST removed many of the blocks and conditions of the previous Established Programs Financing and Canadian Assistance Program, the CHST was not completely unconditional. The federal government continued to enforce the Canada Health Act while simultaneously removing most criteria for social assistance funding. A comparison of provincial expenditure in CANSIM #385-0002 suggests that the majority of CHST funds were spent on health and not social programs and, accordingly, I treat the CHST as health expenditure. However, a portion of this money was likely spent on social welfare issues at the provincial level. For this reason, Soroka and Wlezien (2004) warn of potential measurement error when estimating federal expenditure on health and social welfare. As a robustness check, I estimate my main analysis using the consolidated measure of spending – i.e. both provincial and federal spending. I use the same expenditure data as in Soroka and Wlezien (2004). These cover five issue areas (health, education, environment, transportation, and social welfare) and overlap with ours for 1990-2004.

Alternative Measurement of Government Attention (Legislative Attention)

Data are available at [http://www.snsoroka.com/data.html](http://www.snsoroka.com/data.html). Data have been converted from 2000 CAD to 2015 USD.

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Lastly, and as noted in the main analysis, I recognize that certain dimensions of policymaking are not captured with my aggregated measures of public expenditure. Voter demands in predominantly regulatory policy areas, such as the environment, may not require more spending but legislative or bureaucratic changes instead. As a robustness check, I run the main analysis on a different dependent variable: legislative attention, measured by the number of bills that successfully became law for each policy area in a given year between 1992 and 2009.

**Alternative Estimation**

Researchers working with autoregressive panel data must also deal with the potential bias that can accompany a lagged dependent variable. The introduction of a lagged dependent variable into a random effects model may lead to bias and inconsistency due to correlation between the lagged dependent variable and the random intercept (see Baltagi (2005, p. 135-136) and Rabe-Hesketh and Skrondal (2012, p. 273)). Baltagi (2005, p. 135) shows this to also be the case for the fixed effects, within-estimator. Modeling $y_{i,t}$ as a function of all variables on the right-hand of the equation means that it is also a function of $\mu_i$. But since the dependent variable $y_{i,t}$ is a function of $\mu_i$, then it must also be the case that $y_{i,t-1}$ is also a function of $\mu_i$. As a consequence, including the lagged dependent variable implies correlation between a regressor and the error term. The resulting bias may fall as the number of time points increases asymptotically (Nickell, 1981, p. 1422; Wawro, 2002, p. 29; Baltagi, 2005, p. 136). There is no precise number of time points at which bias becomes negligible; however, given my use of a GLS random effects model with a T of 19, I may expect a reduction in the magnitude of bias. On this subject, Beck and Katz (2011, p. 342) run Monte Carlo simulations and recommend a dynamic, fixed effects OLS model when the panels are balanced and T is approximately 20 or above.

As a robustness check, I estimate each model using a likelihood-based estimator to resolve the problem of bias due to a small T (Lancaster 2002). This “Lancaster” method is somewhat less efficient than the random effects estimator but less subject to bias. I implement the OrthoPanels package in R (Pickup et al. 2016).

**Alternative Estimation of Main Analysis**

I begin by re-estimating the main analysis using the Lancaster method. The short-run results (Table A.8) and their associated marginal effects (Figure A.1, presented with 95% credible intervals) are in line with the results presented in the random effects model. The contemporaneous product term is positive (median posterior estimate = 1666.792, SD = 616.87), and the marginal effects show that higher levels of cause group pressure have positive moderating effects on the relationship between lagged changes in voter attention and current changes in government attention. It is important to note that the credible interval for the long-run median posterior estimates contains zero (not shown), and as such I may be hesitant to conclude that cause group lobbying has a long-run effect on

---

the relationship between voter attention and government expenditures. However, as noted above, the Lancaster model is less efficient than the regular random effects model. The difference, then, may come down to a question of efficiency.

**Alternative Estimation using Total Interest Group Pressure**

Next, I estimate the model with “total” interest group pressure, first using random effects and then the Lancaster method. Table A.9 shows that the short-run results and their associated marginal effects are in line with the results presented in the random effects model. The product term is positive (b coefficient = 10602.445, SE = 2495.840), and the marginal effects (Figure A.2a) show that higher levels of lagged cause group pressure have positive moderating effects on the relationship between lagged changes in voter attention and current changes in government attention. The long-run results (Table A.10) and their associated marginal effects (Figure A.2b) are also in line with these results. The product term is positive (b coefficient = 8903.692, SE = 5123.933), and the marginal effects show that higher levels of cause group pressure have positive moderating effects on the relationship between lagged changes in voter attention and current changes in government attention. Note that the coefficients are larger than in the main analysis, owing to the fact that a percentage change in overall interest group pressure is a substantively bigger change than a percentage change in relative cause (or sectional) group pressure.

Turning to the Lancaster results, the short-run results (Table A.11) and their associated marginal effects (Figure, presented with 95% credible intervals) are in line with the results presented in the random effects model. The contemporaneous product term is positive (median posterior estimate = 8899.142, SD = 3561.422), and the marginal effects show that very high levels of cause group pressure have positive moderating effects on the relationship between lagged changes in voter attention and current changes in government attention (though the credible intervals are large). The credible interval for the long-run median posterior estimates contains zero.

**Alternative Estimation using Consolidated Spending**

Using the Soroka and Wlezien (2004) consolidated spending data reduces the number of years from 19 to 14. At this range, the potential for biased parameter estimates increases and so I opt for the Lancaster method instead of random effects. Table shows the short-run impact of relative interest group pressure on consolidated spending. Again, the short-run results and their associated marginal effects are in line with the results presented in the random effects model (presented with 95% credible intervals). The product term is positive (median posterior estimate = 5802.027, SD = 2436.01), and the marginal effects (Figure A.4) show that higher levels of cause group pressure have positive moderating effects on the relationship between lagged changes in voter attention and current changes in government attention. Note that the posterior estimates are much larger than in the previous model, owing to the fact that the dependent variable combines federal and provincial expenditure.

**Alternative Estimation using Legislative Attention**

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Table A.13 shows the short-run impact of relative interest group pressure on federal legislative attention. The results strongly align with my findings. The contemporaneous product term $\kappa_{1c}(\Delta MIP_{i,t} \times CG_{i,t})$ is positive and statistically significant, at the 0.05 level. However, the marginal effects of voter attention on legislative attention (not shown) show little evidence of a significant and non-trivial moderating relationship across different values of cause group pressure. Nonetheless, the findings presented here do not contradict, and even support, my conclusion that governments are more responsive to voter concerns in policy areas with a high degree of cause group pressure. There is no evidence of a short-run effect using the Lancaster estimation method—possibly due to the relative inefficiency of the Lancaster method compared to random effects.
Table A.8: The impact of voter attention on changes in federal spending, by relative interest group pressure (Lancaster Dynamic Panel Model)

<table>
<thead>
<tr>
<th></th>
<th>Median Posterior Est.</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\Delta$ Federal Spending$_{t-1}$</td>
<td>0.401</td>
<td>0.071</td>
</tr>
<tr>
<td>$\Delta$ Voter Attention</td>
<td>-236.134</td>
<td>180.797</td>
</tr>
<tr>
<td>$\Delta$ Voter Attention$_{t-1}$</td>
<td>326.237</td>
<td>171.269</td>
</tr>
<tr>
<td>Cause Group Pressure</td>
<td>-7034.98</td>
<td>3090.738</td>
</tr>
<tr>
<td>Cause Group Pressure$_{t-1}$</td>
<td>-3895.383</td>
<td>2949.715</td>
</tr>
<tr>
<td>Sectional Group Pressure</td>
<td>4686.079</td>
<td>9708.984</td>
</tr>
<tr>
<td>Sectional Group Pressure$_{t-1}$</td>
<td>-89.082</td>
<td>9539.294</td>
</tr>
<tr>
<td>$\Delta$ Voter Attention x Cause Group Pressure</td>
<td>1666.792</td>
<td>616.87</td>
</tr>
<tr>
<td>$\Delta$ Voter Attention$<em>{t-1}$ x Cause Group Pressure$</em>{t-1}$</td>
<td>-1193.513</td>
<td>619.362</td>
</tr>
<tr>
<td>$\Delta$ Voter Attention x Sectional Group Pressure</td>
<td>1343.824</td>
<td>1427.852</td>
</tr>
<tr>
<td>$\Delta$ Voter Attention$<em>{t-1}$ x Sectional Group Pressure$</em>{t-1}$</td>
<td>-3375.034</td>
<td>1371.375</td>
</tr>
</tbody>
</table>

Cell entries represent posterior estimates from 10,000 Monte Carlo iterations. Model includes dummy variables for each year. Relative cause/sectional group pressure is measured as a proportion of all cause/sectional group pressure.
Figure A.1: Marginal Effects of Relative Interest Group Pressure on Federal Spending, by Voter Attention (ADL(1,1), Lancaster Dynamic Panel Model)
Table A.9: The impact of voter attention on federal spending, by total interest group pressure (R.E. Model).

<table>
<thead>
<tr>
<th>Term</th>
<th>$\hat{\beta}$ (Robust SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\Delta$ Federal Spending$_{t-1}$</td>
<td>0.344$^*$ (0.071)</td>
</tr>
<tr>
<td>$\Delta$ Voter Attention</td>
<td>-193.736 (125.907)</td>
</tr>
<tr>
<td>Total Sectional Group Pressure</td>
<td>-1277.572 (4733.732)</td>
</tr>
<tr>
<td>Total Cause Group Pressure</td>
<td>13631.764 (11070.429)</td>
</tr>
<tr>
<td>$\Delta$ Voter Attention x Total Sectional Group Pressure</td>
<td>774.549 (639.304)</td>
</tr>
<tr>
<td>$\Delta$ Voter Attention x Total Cause Group Pressure</td>
<td>10602.445$^*$ (2495.840)</td>
</tr>
<tr>
<td>$\Delta$ Voter Attention$_{t-1}$</td>
<td>65.864 (51.674)</td>
</tr>
<tr>
<td>Total Sectional Group Pressure$_{t-1}$</td>
<td>-1130.430 (3245.080)</td>
</tr>
<tr>
<td>Total Cause Group Pressure$_{t-1}$</td>
<td>-444.592 (11441.662)</td>
</tr>
<tr>
<td>$\Delta$ Voter Attention$<em>{t-1}$ x Total Sectional Group Pressure$</em>{t-1}$</td>
<td>-535.733 (329.569)</td>
</tr>
<tr>
<td>$\Delta$ Voter Attention$<em>{t-1}$ x Total Cause Group Pressure$</em>{t-1}$</td>
<td>-4760.645$^*$ (1269.270)</td>
</tr>
<tr>
<td>Observations</td>
<td>285</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.173</td>
</tr>
</tbody>
</table>

Cell entries represent unstandardized $b$ coefficients with robust standard errors in parentheses. Model includes dummy variables for each year.

* $p < 0.05$
Table A.10: Long-Run Effects

<table>
<thead>
<tr>
<th></th>
<th>Long-Run Effect (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Δ Voter Attention x Total Cause Group Pressure</td>
<td>8903.692*</td>
</tr>
<tr>
<td></td>
<td>(2751.887)</td>
</tr>
<tr>
<td>Δ Voter Attention x Total Sectional Group Pressure</td>
<td>363.987</td>
</tr>
<tr>
<td></td>
<td>(939.646)</td>
</tr>
</tbody>
</table>

* p < 0.05
Figure A.2: Marginal Effects of Relative Interest Group Pressure on Federal Spending, by Voter Attention (ADL(1,1))

(a) Short−Run Marginal Effect of Voter Attention on Real Spending ($)

(b) Long−Run Marginal Effect of Voter Attention on Real Spending ($)

Coefficient on product term is 14638.82 (Robust SE=3848.254, t−ratio=3.80)

Coefficient on long−run product term is 12821.13 (Robust SE=5255.316, t−ratio=2.44)
Table A.11: The impact of voter attention on changes federal spending, by total interest group pressure (Lancaster Dynamic Panel Model)

<table>
<thead>
<tr>
<th></th>
<th>Median Posterior Est.</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\Delta$ Federal Spending$_{t-1}$</td>
<td>.387</td>
<td>.07</td>
</tr>
<tr>
<td>$\Delta$ Voter Attention</td>
<td>-111.137</td>
<td>176.712</td>
</tr>
<tr>
<td>$\Delta$ Voter Attention$_{t-1}$</td>
<td>386.225</td>
<td>173.078</td>
</tr>
<tr>
<td>Total Cause Group Pressure</td>
<td>9633.316</td>
<td>24271.82</td>
</tr>
<tr>
<td>Total Cause Group Pressure$_{t-1}$</td>
<td>-15704.81</td>
<td>22320.79</td>
</tr>
<tr>
<td>Total Sectional Group Pressure</td>
<td>4730.223</td>
<td>7061.877</td>
</tr>
<tr>
<td>Total Sectional Group Pressure$_{t-1}$</td>
<td>-1243.652</td>
<td>6729.858</td>
</tr>
<tr>
<td>$\Delta$ Voter Attention $\times$ Total Cause Group Pressure</td>
<td>8899.142</td>
<td>3561.422</td>
</tr>
<tr>
<td>$\Delta$ Voter Attention$<em>{t-1}$ $\times$ Total Cause Group Pressure$</em>{t-1}$</td>
<td>-6598.391</td>
<td>3538.229</td>
</tr>
<tr>
<td>$\Delta$ Voter Attention $\times$ Total Sectional Group Pressure</td>
<td>138.914</td>
<td>1042.146</td>
</tr>
<tr>
<td>$\Delta$ Voter Attention$<em>{t-1}$ $\times$ Total Sectional Group Pressure$</em>{t-1}$</td>
<td>-2888.462</td>
<td>1025.53</td>
</tr>
</tbody>
</table>

Cell entries represent posterior estimates from 10,000 Monte Carlo iterations. Model includes dummy variables for each year. Total cause/sectional group pressure is measured as a proportion of all interest group pressure.
Figure A.3: Marginal Effects of Total Interest Group Pressure on Federal Spending, by Voter Attention (ADL(1,1), Lancaster Dynamic Panel Model)
Table A.12: The impact of voter attention on changes in consolidated spending, by relative interest group pressure (Lancaster Dynamic Panel Model)

<table>
<thead>
<tr>
<th></th>
<th>Median Posterior Est.</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\Delta$ Consolidated Spending$_{t-1}$</td>
<td>.273</td>
<td>.156</td>
</tr>
<tr>
<td>$\Delta$ Voter Attention</td>
<td>40.71</td>
<td>154.337</td>
</tr>
<tr>
<td>$\Delta$ Voter Attention$_{t-1}$</td>
<td>1.739</td>
<td>157.099</td>
</tr>
<tr>
<td>Cause Group Pressure</td>
<td>-7840.072</td>
<td>3515.438</td>
</tr>
<tr>
<td>Cause Group Pressure$_{t-1}$</td>
<td>2991.46</td>
<td>3580.594</td>
</tr>
<tr>
<td>Sectional Group Pressure</td>
<td>8694.187</td>
<td>16589.22</td>
</tr>
<tr>
<td>Sectional Group Pressure$_{t-1}$</td>
<td>13501.36</td>
<td>15774.39</td>
</tr>
<tr>
<td>$\Delta$ Voter Attention $x$ Cause Group Pressure</td>
<td>5802.027</td>
<td>2436.979</td>
</tr>
<tr>
<td>$\Delta$ Voter Attention$<em>{t-1}$ $x$ Cause Group Pressure$</em>{t-1}$</td>
<td>636.554</td>
<td>2842.014</td>
</tr>
<tr>
<td>$\Delta$ Voter Attention $x$ Sectional Group Pressure</td>
<td>-9577.344</td>
<td>4656.451</td>
</tr>
<tr>
<td>$\Delta$ Voter Attention$<em>{t-1}$ $x$ Sectional Group Pressure$</em>{t-1}$</td>
<td>-36.18</td>
<td>5344.121</td>
</tr>
</tbody>
</table>

Cell entries represent posterior estimates from 10,000 Monte Carlo iterations. Model includes dummy variables for each year. Relative cause/sectional group pressure is measured as a proportion of all cause/sectional group pressure.
Figure A.4: Marginal Effects of Relative Interest Group Pressure on Consolidated Spending, by Voter Attention (ADL(1,1), Lancaster Dynamic Panel Model)
Table A.13: The impact of voter attention on government legislation.

<table>
<thead>
<tr>
<th></th>
<th>$\hat{\beta}$ (Robust SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\Delta$No. Bills$_{t-1}$</td>
<td>-0.392* (0.042)</td>
</tr>
<tr>
<td>$\Delta$Voter Attention</td>
<td>-0.162 (0.115)</td>
</tr>
<tr>
<td>Sectional Group Pressure</td>
<td>-16.670 (9.313)</td>
</tr>
<tr>
<td>Cause Group Pressure</td>
<td>-1.061 (1.320)</td>
</tr>
<tr>
<td>$\Delta$Voter Attention x Sectional Group Pressure</td>
<td>0.568 (0.924)</td>
</tr>
<tr>
<td>$\Delta$Voter Attention x Cause Group Pressure</td>
<td>0.613* (0.258)</td>
</tr>
<tr>
<td>$\Delta$Voter Attention$_{t-1}$</td>
<td>-0.133 (0.068)</td>
</tr>
<tr>
<td>Sectional Group Pressure$_{t-1}$</td>
<td>15.596 (8.888)</td>
</tr>
<tr>
<td>Cause Group Pressure$_{t-1}$</td>
<td>2.617 (1.530)</td>
</tr>
<tr>
<td>$\Delta$Voter Attention$<em>{t-1}$ x Sectional Group Pressure$</em>{t-1}$</td>
<td>1.949* (0.461)</td>
</tr>
<tr>
<td>$\Delta$Voter Attention$<em>{t-1}$ x Cause Group Pressure$</em>{t-1}$</td>
<td>-0.082 (0.248)</td>
</tr>
</tbody>
</table>

Observations 270
$R^2$ 0.293

Cell entries represent unstandardized b coefficients with robust standard errors in parentheses.
Model includes dummy variables for each year.

* $p < 0.05$
A.3.2 Marginal Effects of Interest Group Pressure on Spending, by Voter Attention

Berry, Golder and Milton (2012) recommend researchers produce marginal effects plots for both interacted variables (see Figure A.5). As the overlaid histogram shows, cause group pressure is centered around zero. The short- and long-run effects are statistically significant in 15 and 8 percent of cases, respectively. This implies that the marginal short- and long-run effects of cause group pressure on relative expenditure are modest across a significant range of values of changes in voter attention.
Figure A.5: Marginal Effects of Interest Group Pressure on Spending, by Voter Attention (ADL(1,1))

(a) Short–Run Marginal Effect of Cause Group Pressure on Federal Spending ($)

(b) Long–Run Marginal Effect of Cause Group Pressure on Federal Spending ($)
A.3.3 The Impact of Interest Group Pressure on Voter Attention

Given the literature on “outside lobbying” (Kollman, 1998), I also investigate the possibility that contemporaneous and/or past changes in interest group pressure might predict changes in voter attention. Below, I estimate a model in which changes in voter attention are a function of contemporaneous and lagged levels of sectional and cause group lobbying. The results suggest that changes in voter attention are statistically uncorrelated with levels of interest group pressure. I also test whether changes in voter attention predict levels of interest group pressure. Again, the results provide no evidence of statistical correlation.
Table A.14: The impact of interest group pressure on voter attention.

<table>
<thead>
<tr>
<th></th>
<th>$\beta$ (Robust SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in Voter Attention$_{t-1}$</td>
<td>0.071 (0.190)</td>
</tr>
<tr>
<td>Sectional Group Pressure</td>
<td>-9.424 (14.997)</td>
</tr>
<tr>
<td>Cause Group Pressure</td>
<td>-0.950 (1.357)</td>
</tr>
<tr>
<td>Sectional Group Pressure$_{t-1}$</td>
<td>-0.258 (8.048)</td>
</tr>
<tr>
<td>Cause Group Pressure$_{t-1}$</td>
<td>2.158 (1.704)</td>
</tr>
<tr>
<td>Observations</td>
<td>285</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.059</td>
</tr>
</tbody>
</table>

Cell entries represent unstandardized $b$ coefficients with robust standard errors in parentheses.
Model includes dummy variables for each year.

* $p < 0.05$
Table A.15: The impact of voter attention on cause group pressure.

<table>
<thead>
<tr>
<th></th>
<th>β (Robust SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cause Group Pressure_{t-1}</td>
<td>0.810*</td>
</tr>
<tr>
<td></td>
<td>(0.055)</td>
</tr>
<tr>
<td>Change in Voter Attention</td>
<td>-0.000</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
</tr>
<tr>
<td>Change in Voter Attention_{t-1}</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
</tr>
<tr>
<td>Sectional Group Pressure</td>
<td>-0.314</td>
</tr>
<tr>
<td></td>
<td>(0.298)</td>
</tr>
<tr>
<td>Sectional Group Pressure_{t-1}</td>
<td>0.327</td>
</tr>
<tr>
<td></td>
<td>(0.376)</td>
</tr>
<tr>
<td>Observations</td>
<td>285</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.083</td>
</tr>
</tbody>
</table>

Cell entries represent unstandardized b coefficients with robust standard errors in parentheses.
Model includes dummy variables for each year.
* $p < 0.05$
Table A.16: The impact of voter attention on sectional group pressure.

<table>
<thead>
<tr>
<th></th>
<th>$\beta$ (Robust SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sectional Group Pressure$_{t-1}$</td>
<td>0.919* (0.022)</td>
</tr>
<tr>
<td>Change in Voter Attention</td>
<td>-0.000 (0.001)</td>
</tr>
<tr>
<td>Change in Voter Attention$_{t-1}$</td>
<td>-0.001 (0.001)</td>
</tr>
<tr>
<td>Cause Group Pressure</td>
<td>-0.029 (0.025)</td>
</tr>
<tr>
<td>Cause Group Pressure$_{t-1}$</td>
<td>0.033 (0.034)</td>
</tr>
<tr>
<td>Observations</td>
<td>285</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.266</td>
</tr>
</tbody>
</table>

Cell entries represent unstandardized $b$ coefficients with robust standard errors in parentheses. Model includes dummy variables for each year.

* $p < 0.05$
A.3.4 “Jackknife” Regressions by Policy Area

In Tables A.17 and (below), I perform a series of “jackknife” regressions, in which issue areas are excluded from the analysis one by one. Table A.17 shows the relationship between cause group activity and policy responsiveness. Columns 1 through 3 show the long-run effect of interest group activity on policy responsiveness, the $\chi^2$ statistic, and the corresponding $P$-value. One drawback of this “jackknife” approach is that it arbitrarily removes issue areas with significant cause group activity. This is important because the distribution of cause group activity is uneven across policy areas. Cause groups cannot moderate policy responsiveness in a given policy area if they are not active in that area. Thus, column 4 shows the mean proportion of all cause groups removed from each regression. As I note in my main analysis, cause group activity is heavily concentrated in highly salient and financially significant policy areas – most notably health and social welfare. As expected, my results in Tables A.17 show the moderating effect of cause group activity is concentrated in areas where cause groups are active. This is particularly true for health. When health is removed from the analysis, the statistical significance of the long-run coefficient drops well below an acceptable threshold. This should be not too surprising since, as shown in column 4, one out of every four cause groups is a health group. The results in Tables A.17 thus underscore a main finding of my analysis: In policy areas with significant cause group activity, responsiveness depends on the interaction between voter attention and interest group pressure.

Tables A.18 shows the relationship between sectional group activity and policy responsiveness. The results show no evidence of a statistically significant relationship between sectional group activity and policy responsiveness. Column 4 shows sectional group activity is more evenly distributed across issue areas than cause group activity, and my finding of a null effect holds regardless of which issue areas I exclude.
Table A.17: The impact of voter attention and cause group activity on government spending.
(i.e. $\Delta$ Voter Attention x Cause Group Pressure)

<table>
<thead>
<tr>
<th>Excluding Category</th>
<th>$\hat{\beta}$ (Long-Run)</th>
<th>$\chi^2$</th>
<th>P-value</th>
<th>Prop. of Cause Groups Removed (mean)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excluding Economy</td>
<td>828.505</td>
<td>2.907</td>
<td>.088</td>
<td>0</td>
</tr>
<tr>
<td>Excluding Health</td>
<td>138.314</td>
<td>.003</td>
<td>.959</td>
<td>.26</td>
</tr>
<tr>
<td>Excluding Agriculture</td>
<td>1914.575</td>
<td>7.193</td>
<td>.007</td>
<td>.012</td>
</tr>
<tr>
<td>Excluding Employment</td>
<td>1822.58</td>
<td>6.909</td>
<td>.009</td>
<td>.009</td>
</tr>
<tr>
<td>Excluding Education</td>
<td>1891.94</td>
<td>6.319</td>
<td>.012</td>
<td>.005</td>
</tr>
<tr>
<td>Excluding Environment</td>
<td>1872.323</td>
<td>7.691</td>
<td>.006</td>
<td>.162</td>
</tr>
<tr>
<td>Excluding Energy</td>
<td>1800.096</td>
<td>6.867</td>
<td>.009</td>
<td>.003</td>
</tr>
<tr>
<td>Excluding Transportation</td>
<td>1809.421</td>
<td>6.38</td>
<td>.012</td>
<td>.007</td>
</tr>
<tr>
<td>Excluding Law and Justice</td>
<td>1830.772</td>
<td>6.378</td>
<td>.012</td>
<td>.065</td>
</tr>
<tr>
<td>Excluding Social Welfare</td>
<td>1155.955</td>
<td>3.405</td>
<td>.065</td>
<td>.12</td>
</tr>
<tr>
<td>Excluding Housing</td>
<td>1796.09</td>
<td>6.976</td>
<td>.008</td>
<td>.007</td>
</tr>
<tr>
<td>Excluding Defense</td>
<td>2600.764</td>
<td>8.194</td>
<td>.004</td>
<td>.002</td>
</tr>
<tr>
<td>Excluding International Trade</td>
<td>1472.383</td>
<td>7.665</td>
<td>.006</td>
<td>0</td>
</tr>
<tr>
<td>Excluding Foreign Affairs</td>
<td>1835.582</td>
<td>7.019</td>
<td>.008</td>
<td>.09</td>
</tr>
<tr>
<td>Excluding Culture</td>
<td>1832.203</td>
<td>6.754</td>
<td>.009</td>
<td>.001</td>
</tr>
</tbody>
</table>
Table A.18: The impact of voter attention and sectional group activity on government spending.
(i.e. $\Delta$ Voter Attention $\times$ Sectional Group Pressure)

<table>
<thead>
<tr>
<th>Excluding Category</th>
<th>$\hat{\beta}$ (Long-Run)</th>
<th>$\chi^2$</th>
<th>P-value</th>
<th>Prop. of Sectional Groups Removed (mean)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excluding Economy</td>
<td>4667.715</td>
<td>2.186</td>
<td>.139</td>
<td>.116</td>
</tr>
<tr>
<td>Excluding Health</td>
<td>1445.34</td>
<td>1.048</td>
<td>.306</td>
<td>.079</td>
</tr>
<tr>
<td>Excluding Agriculture</td>
<td>-645.017</td>
<td>.21</td>
<td>.647</td>
<td>.104</td>
</tr>
<tr>
<td>Excluding Employment</td>
<td>-471.028</td>
<td>.121</td>
<td>.728</td>
<td>.015</td>
</tr>
<tr>
<td>Excluding Education</td>
<td>-634.35</td>
<td>.198</td>
<td>.656</td>
<td>.057</td>
</tr>
<tr>
<td>Excluding Environment</td>
<td>-495.166</td>
<td>.135</td>
<td>.714</td>
<td>.024</td>
</tr>
<tr>
<td>Excluding Energy</td>
<td>-573.951</td>
<td>.18</td>
<td>.672</td>
<td>.045</td>
</tr>
<tr>
<td>Excluding Transportation</td>
<td>-360.908</td>
<td>.068</td>
<td>.794</td>
<td>.083</td>
</tr>
<tr>
<td>Excluding Law and Justice</td>
<td>-463.339</td>
<td>.113</td>
<td>.737</td>
<td>.021</td>
</tr>
<tr>
<td>Excluding Social Welfare</td>
<td>534.179</td>
<td>.599</td>
<td>.439</td>
<td>.021</td>
</tr>
<tr>
<td>Excluding Housing</td>
<td>-457.837</td>
<td>.116</td>
<td>.733</td>
<td>.009</td>
</tr>
<tr>
<td>Excluding Defense</td>
<td>-1021.298</td>
<td>.403</td>
<td>.526</td>
<td>.002</td>
</tr>
<tr>
<td>Excluding International Trade</td>
<td>-1157.35</td>
<td>.603</td>
<td>.438</td>
<td>.023</td>
</tr>
<tr>
<td>Excluding Foreign Affairs</td>
<td>-600.759</td>
<td>.194</td>
<td>.66</td>
<td>.013</td>
</tr>
<tr>
<td>Excluding Culture</td>
<td>-422.451</td>
<td>.094</td>
<td>.759</td>
<td>.034</td>
</tr>
</tbody>
</table>
Appendix B

Appendix for Chapter Three

B.1 Lobbying Data: Collection, Tidying, & Organization

I merge government records into a longitudinal dataset on lobbying interactions between July 2008 and April 2017. These are available from the website of the Office of the Commissioner of Lobbying and from the federal government’s Open Data portal (https://open.canada.ca/data/dataset/a34eb330-7136-4f5e-9f5f-3ba41df58b06). I then apply ensemble Machine Learning to distinguish political from bureaucratic actors (Grimmer and Stewart, 2013, 10-14) and a dictionary-based text mining approach to classify elected officials and their staff by party. Following Grimmer and Stewart (2013), I begin the machine learning component by iteratively creating a coding scheme. I then classify a handful of observations using a concise handbook and identify ambiguities and potential difficulties. Next, I revise the coding scheme to accommodate these ambiguities. I also “pre-process” the data by removing special characters, punctuation, and capitalization. Next, I randomly sort this pre-processed dataset for manual coding. I select the first 5,000 rows and, using the coding scheme, I code bureaucratic actors as “0” and parliamentary actors as “1”. Next, I pass the training set through eight machine learning algorithms to distinguish bureaucratic from political actors (N=3,500).

I then classify the data using a test set (N=1,500) with all eight algorithms. The predicted classifications are 97.7% accurate (i.e. 1,466 out of 1,500 predictions are accurate). Of the 34 errors, 13 are bureaucratic (i.e. coded 1 when it should be 0) and 21 are parliamentary (i.e. coded 0 when it should 1). Approximately 65% of these errors result from disagreement among the algorithms, while 95.8% of the correct predictions result from consensus agreement among at least seven algorithms. These types of classification errors typically require a trade-off between coverage and accuracy. However, my goal is to correctly code existing lobby registrations, not predict future registrations. For this reason, I manually code two subsets of data. First, I manually code all observations without at least seven algorithms in agreement (N=6,529). Second, among those observations with seven or more algorithms in agreement, I manually code all observations where the average probability score across all eight algorithms is below 0.85 (N=3,859). The combination of a high threshold for inter-algorithm agreement as well as manual coding of the remaining cases allows me to maximize...
both coverage and accuracy. Next, I combine these “reconciled” observations (N=6,529 and N=3,859) with the machine learning subset (N=143,234) and the original training dataset (N=5,000). The resulting number of observations is 158,622, with approximately 80,000 repeated rows due to multiple policy codes for each observation (i.e. one row per policy code). This repetition is purely for ease of analysis; the final dataset contains approximately 53,000 unique observations. Each observation corresponds to a unique lobbying communication between an interest group (approximately 650 in total) and an MP or Senator (819 in total). It is important to note that prior to September 20 2010, Senators and MPs outside of Cabinet were not deemed Designated Public Office Holders. Consequently, I discard observations before September 20, 2010 and those involving Senators. The resulting dataset comprises 41,619 lobbying communications.

As in Chapter Two, I follow a Canada-specific codebook variant to code each lobby group by policy area. The full Canada-specific codebook is presented in Appendix A.1.2. This coding scheme follows the tradition of the Comparative Agendas Project (CAP) (Baumgartner, Green-Pedersen and Jones, 2006a) but it is not part of the project and may deviate from the CAP codebook.¹

¹See https://www.comparativeagendas.net/.
B.2 A Note on Lobbying Communications and the Case Study

B.2.1 Lobbying Communications

Not all communication between an interest group and an elected official counts as lobbying. The Office of the Commissioner of Lobbying uses several criteria to determine whether a communication falls under the disclosure requirements of the Lobbying Act (2008). Monthly Communication Reports are not necessary if “the cumulative lobbying activities of all employees [within an organization] do not constitute 20% or more of one person’s duties over a period of a month” (Office of the Commissioner of Lobbying of Canada, 2010). Similarly, volunteers and ordinary citizens who communicate with an elected official are not required to register communications—lobby group representatives must be paid to communicate with government officials. Also exempt are requests for information, clarity on some aspect of Canadian jurisprudence, and submissions to parliamentary committees. Similarly, members of municipal/provincial/aboriginal government are not required to register, nor are foreign diplomats. Reports are only necessary for lobbying communications with “Designated Public Office Holders”—a long list of job titles that includes elected officials and senior civil servants. Prior to September 20 2010, Senators and legislators outside of cabinet were not deemed Designated Public Office Holders. Consequently, my comparison of minority and majority governments excludes lobbying communications before that date.

There is an important limitation to this data: It measures lobbying communications and does not capture requests for information from legislators to interest groups. This is important. As Stimson, MacKuen and Erikson (1995, 545), Herbst (1998, 58), and others point out, political actors rely on interest groups to help them make sense of public opinion and the likely consequences of a given policy decision. Such communication is not regulated by the Lobbying Act (2008) and remains unobserved. However, its absence does not invalidate the empirical investigation presented in the main analysis. When legislators are able to reach out and communicate directly with interest groups, it may greatly reduce the risk of moral hazard. This is because it directly addresses the principal-agent problem: If the principal knows where to look for fires—and can inform herself of the agent’s actions—then the informational asymmetry (and attendant risk of moral hazard) is not so great. Ex post monitoring, such as is the subject of Chapter Two, is only necessary when principals are at a systematic informational disadvantage.

Readers may wonder about the quality of these reports. The Office of the Commissioner of Lobbying conducts a variety of compliance audits. Every month, members of the Investigations Directorate sample 5% of all communication reports. Investigators validate this information with the relevant Designated Public Office Holder. In 2017, for example, the Directorate confirmed 93% of reports were made without any errors. Most errors (about two-thirds) fall into the “clerical” and “over-reporting” categories. The Office also monitors media to identify groups that lobby without registration.

Notwithstanding these important quality assurance practices, there are at least three clear shortcomings with Monthly Communication Reports. First, the 20% threshold rule is difficult to enforce. Individuals whose lobbying activities comprise more than 20% of their time may fail to register a communication—either in error or through strategic decision-making.
Second, there is nothing stopping individuals from arranging “accidental” run-ins between a lobbyist and a Designated Public Office Holder during a public fundraiser. This activity is increasingly under scrutiny because it increases the chances of a conflict of interest (Office of the Commissioner of Lobbying of Canada, 2019). Third, the registry is voluntary. The Commissioner is granted considerable investigatory power, and lobbyists who fail to register face stiff penalties, including prison time. There is precedent of this happening (Canadian Press, 2014), and so the Commissioner’s threat is likely credible. That said, illegal lobbying communications, or simply communications that are intended to remain secret, are unlikely to be captured in the data.

B.2.2 The Case Study

Canada enjoys a system of concentrated executive power, similar to other majoritarian parliamentary democracies (e.g. UK and Australia). The executive comprises the head of government (the Prime Minister) and her appointed cabinet. There is no formal investiture vote; however, a majority of the legislature must periodically demonstrate confidence in the executive through votes on key items of legislation, typically spending bills. This “confidence convention” is the chief mechanism by which the legislature holds the executive accountable. In comparative terms, the Canadian executive is one of the most powerful in the world. Canada scores in the top 25th percentile of Lijphart’s (2012, 120-121) scale of executive dominance—above Sweden, France and Austria and just below the UK and Spain. The executive proposes spending bills, appoints and directs the public service, and can shape parliamentary committees. Cabinets are also more durable than in other parliamentary democracies, lasting about 8 years on average. These formal powers are magnified by single party governments and strong party discipline. With just one exception (the 1917 Union government), no Canadian cabinet has included members of more than one party. This, despite the fact the country has experienced several single-party minority governments—nearly one in three since 1945. Canadian legislators are even less likely to break rank than British MPs, and when they do it is usually over non-spending bills (Kam, 2009). Taking these factors into account, I consider the Canadian parliament as a “least-likely” case study (Gerring, 2006, 116), where majoritarian institutions—specifically strong parties and a dominant executive—make *ex post* monitoring so difficult yet so important.
B.3 Lobbying in the Canadian Parliament (Descriptive Plots)

Below, I plot trends in lobbying across key variables in my analysis.

Figure B.1: Frequency of Lobbying in the Canadian Parliament Over Time

Lobbying Varies By Month And Increases Over Time
Interest Group Lobbying in the House of Commons (September 2010 to March 2017)

No. of Lobbying Communications per Month

Month and Year
Data from the Office of the Commissioner of Lobbying and PARLINFO
Plots LOESS smoothed (span = 1)
Figure B.2: Lobbying in the Canadian Parliament by Branch of Government

The Legislative Branch Gets Lobbied More Than The Executive During Minority Governments
Interest Group Lobbying in the House of Commons (September 2010 to March 2017)

Figure B.3: Lobbying in the Canadian Parliament by Party

The Governing Party Gets Lobbied More Than Opposition Parties
Interest Group Lobbying in the House of Commons (September 2010 to March 2017)
Figure B.4: Lobbying in the Canadian Parliament by Region

Ontario Legislators Get Lobbied More Than Legislators From Other Regions
Interest Group Lobbying in the House of Commons (September 2010 to March 2017)

Data from the Office of the Commissioner of Lobbying and PARLINFO
Plots LOESS smoothed (span = 1)

Figure B.5: Lobbying in the Canadian Parliament among Men and Women

Men Get Lobbied More Than Women
Interest Group Lobbying in the House of Commons (September 2010 to March 2017)

Data from the Office of the Commissioner of Lobbying and PARLINFO
Plots LOESS smoothed (span = 1)
Figure B.6: Lobbying in the Canadian Parliament by Issue Area

Proportion of Lobbying per Month

Month and Year

Data from the Office of the Commissioner of Lobbying and PARLINFO
Vertical dashed line indicates election month
B.4 Descriptive Statistics by Wave

I aggregate the full dataset into 27 panel waves. Each wave is approximately 12 weeks. The number of lobbying communications drops considerably in the summer months (when parliament is out of session) and during election periods. I therefore collapse the summer months into the subsequent wave. I do the same with election periods. In Figure B.7, I present six descriptive statistics for the full panel series, including unipartite projections of shared lobbying affiliations. Network effects enter the ADL(1,1) models as left- (i.e. eigenvector centrality) and right-hand (i.e. in-degree, betweenness) variables.

The top row of Figure B.7 shows two the number of legislators as well as bipartite network density for each wave. The first column shows the total number of legislators in each wave. This is calculated as the observed number of MPs \( #V_j \), including those who did not get lobbied. This series show two increases during the 41st and 42nd parliaments, owing to the entry of new legislators through by-elections and to redistricting in 2015 which enlarged the House of Commons from 308 to 338. The mean number of MPs is 314 (SD=12.70). The second column shows bipartite network density over time. This is calculated as the observed number of ties divided by the total possible number of ties—that is, \( \frac{#(V,E)}{#V_i \times #V_j} \), where \( #V_i \) is the number of interest groups and \( #V_j \) is the number of legislators. The figure shows lobbying networks are sparse with minor seasonal fluctuations. Density is low (mean = 0.005), and slightly higher between September to December (mean = 0.008) than other months (0.003). Across all waves, the standard deviation is fairly high (0.007), owing to a spike in wave 22 (to 0.039). This wave includes the 42nd general election, during which the frequency of lobbying drops considerably.\(^2\)

The middle row of Figure B.7 plot shows average values of two unipartite network controls in my ADL(1,1) models: in-degree and betweenness. The first column shows in-degree. This is calculated as the observed number of incoming ties \( #(V,E) \)—that is, the number of legislators with whom legislator \( i \) shares at least one lobbying affiliation. The mean number of incoming ties is 57.6, with some seasonal fluctuations (mean = 65.70 during the fall and 53.60 during the winter/spring). The standard deviation is high (40.90). This is partly due to seasonality and partly due to the 2015 enlargement of the House of Commons (from 308 seats to 338), which increased the overall number of possible ties. As Figure B.7 shows, seat enlargement did not have much effect on network density, with the sole exception of wave 22. During this wave, the number of incoming ties drops to just 0.124. The second column shows (mean) betweenness. This represents “the degree to which a point falls on the shortest path between others” (Freeman 1977, 35). The betweenness centrality of actor \( i \) is measured as \( B_i = \sum_{h,j,h \neq j,h \neq i,j \neq i} \frac{\sigma_{hj}(i)}{\sigma_{hj}} \), where \( \sigma_{hj} \) is the number of geodesics (i.e. shortest paths) between actors \( h \) and \( j \) and \( \sigma_{hj}(i) \) is the number that pass through actor \( i \). This value may be normalized on a 0-1 scale, such that \( B_i' = \frac{B_i}{(n-1)(n-2)/2} \), where \( n \) is the number of actors in the network. The mean betweenness across all waves is 153, with a minor increase.

\(^2\)I do not include density in the ADL(1,1) regression models because I am unable to reject the null hypothesis of all panels containing unit roots from the Fisher-type Phillips-Perron panel unit root test (Inverse \( \chi^2 = 0.000, P\text{-value} = 1.000 \)). Similar results are observed for several network structure effects, including transitivity, mean distance, and diameter.
in the fall (165) and a decrease in the winter/spring (129). The standard deviation across all waves is 54. Popularity drops during campaign periods (18.90 and 0.137 during the 40th and 41st elections) and between parliamentary sessions (69.40 in September 2013).

The bottom row of Figure B.7 shows the two main dependent variables in the study: popularity and eigenvector centrality. The first column shows (mean) popularity over time. This is a count of the number of communications for each legislator $i$ at wave $t$. The mean popularity across all waves is 4.94, with a minor increase in the fall (5.23) and a decrease in the winter/spring (4.80). The standard deviation across all waves is 2.53. Popularity drops during campaign periods (0.663 and 0.215 during the 40th and 41st elections). It also exhibits greater volatility during the 42nd parliament, with a low of 0.215 just after the election and a high of 10.8 in the final months of 2016. The second column shows (mean) eigenvector centrality. For each actor $i$, the eigenvector centrality is measured as $EC_e^i = \frac{1}{\lambda} \sum_{j \neq i} y_{i,j} EC_e^j$, where $EC_e^i$ is a vector that maximizes the array of eigenvalues $\lambda$. This vector is then normalized on a 0-1 scale. The mean eigenvector centrality across all waves is 0.321, with a minor increase in the fall (0.339) and a decrease in the winter/spring (0.313). Like popularity, eigenvector centrality drops during campaign periods (0.162 and 0.015 during the 40th and 41st elections). The standard deviation across all waves is 0.140.

In Figure B.8, I present box plots for the two main dependent variables in the study. Each legislator’s score is indicated by a small point on the vertical axis (points are jittered to ease interpretation). The correlation between these variables is 0.52.
Figure B.7: Descriptive Statistics by Wave

Data from the Office of the Commissioner of Lobbying and PARLINFO.
Dotted vertical lines indicate election date.
Plots LOESS smoothed (span = 1).
Figure B.8: Dependent Variables by Wave (Full Panel)
B.5 A Note on Network Variables

My empirical models each use network data, either as covariates (H1 and H2) or as dependent variables (H3). To do this, I create a series of bipartite networks, each with two sets of nodes (legislators and interest groups) that interact between, but not within, sets. For example, let \( G = (V,E) \) represent the subgraph of lobbying interactions during the 41st Parliament (June 2, 2011 to August 2, 2015).\(^3\) \( V(G) \) may be partitioned into two independent sets, such that \( V_i \) represents every active lobby group in the 41st Canadian parliament and \( V_j \) represents every legislator during that period. \( E(G) \) corresponds to individual Monthly Communication Reports submitted to the Office of the Lobbying Commissioner of Canada. Edges are undirected, and may be weighted or unweighted. For example, in \( G(\text{V}_i=\text{EcoJustice}, \text{V}_j=\text{Justin Trudeau}, E_{ij}) \), the edge \( E_{ij} \) is weighted to the number of communications between EcoJustice and Justin Trudeau (in this case, four). Edges may also be unweighted, in which case they represent the presence of lobbying communication between two nodes rather than the frequency of communication—that is, \( E_{ij} = \{0,1\} \).

By multiplying the unweighted network by its transpose, I project the bipartite network as a simple one-mode (\( V_{1\times1} \times V_{1\times1} \)) network of legislators. In this weighted, directed one-mode network, \( E_{ij} = \{0\ldots p\} \), with \( p \) representing the (natural) number of unique interest group ties in common between \( MP_i \) and \( MP_j \) (and 0 otherwise). In theory, \( p \) is unbounded but in practice MPs rarely share more than a few dozen groups in common. The one-mode network is symmetric, with the diagonal representing the total number of unique lobbying communications for each MP. By dividing each row by its diagonal, one may turn the number of shared ties into a proportion, such that \( E_{ij} = \{0\ldots1\} \), representing the proportion of shared ties between two MPs. This is equivalent to dividing the number of unique interest groups that intersect \( MP_i \) and \( MP_j \) by the total number of unique interest groups that communicate with \( MP_i \):

\[
E(MP_i, MP_j) = \frac{\#\text{Group}_{MP_i} \cup \#\text{Group}_{MP_j}}{\sum \#\text{Group}_{MP_i}} \quad (B.1)
\]

The overlap is asymmetric across MPs. For example, the proportion of interest groups Prime Minister Stephen Harper shares with backbench MP Charmaine Borg is 14/345 (0.04), but the proportion of groups Ms. Borg shares with Mr. Harper is 14/33 (0.42). The resulting graph may be turned into a directed network by setting some threshold value, above which a “1” indicates a tie and “0” otherwise. For example, one might set a threshold equal to the mean proportion of shared ties (0.21) plus one standard deviation (0.15). In this case, the directed edge Borg → Harper equals 1, while Harper → Borg equals 0.

---

\(^3\) There are several mathematical notations to represent networks. I follow the convention in Kolaczyk and Csárdi (2014, 14), in which “graph \( G = (V,E) \) is a mathematical structure consisting of a set \( V \) of vertices (also commonly called nodes) and a set \( E \) of edges (also commonly called links), where elements of \( E \) are unordered pairs \( u,v \) of distinct vertices \( u,v \in V \).” In a unipartite, “one-mode” network, \( V \) represents a vertex of legislators. In the bipartite “two-mode” network, \( V \) comprises two vertex sets: one of legislators and one of interest groups.
## B.6 Full Results, H1-H3

Below, I present the full table of results for the dynamic panel and network regressions in the main analysis.

Table B.1: Likelihood-Based Panel Regression for H1

<table>
<thead>
<tr>
<th></th>
<th>Median Posterior (SD)</th>
<th>95% Credible Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rho</td>
<td>0.404 (0.014)</td>
<td>(0.377, 0.431)</td>
</tr>
<tr>
<td>Minority</td>
<td>-4.957 (0.932)</td>
<td>(-6.783, -3.130)</td>
</tr>
<tr>
<td>Opposition</td>
<td>-2.993 (0.455)</td>
<td>(-3.885, -2.102)</td>
</tr>
<tr>
<td>Gov. Backbench</td>
<td>-2.862 (0.365)</td>
<td>(-3.577, -2.146)</td>
</tr>
<tr>
<td>Minority x Opposition (Short Run)</td>
<td>4.111 (1.288)</td>
<td>(1.587, 6.636)</td>
</tr>
<tr>
<td>Minority x Gov. Backbench (Short Run)</td>
<td>4.028 (1.146)</td>
<td>(1.781, 6.274)</td>
</tr>
<tr>
<td>Minority (t-1)</td>
<td>-1.164 (0.552)</td>
<td>(-2.246, -0.082)</td>
</tr>
<tr>
<td>Opposition (t-1)</td>
<td>-1.912 (0.499)</td>
<td>(-2.890, -0.933)</td>
</tr>
<tr>
<td>Gov. Backbench (t-1)</td>
<td>-0.884 (0.409)</td>
<td>(-1.685, -0.082)</td>
</tr>
<tr>
<td>Minority x Opposition (t-1)</td>
<td>1.359 (0.726)</td>
<td>(-0.064, 2.782)</td>
</tr>
<tr>
<td>Minority x Gov. Backbench (t-1)</td>
<td>1.678 (0.688)</td>
<td>(0.330, 3.027)</td>
</tr>
<tr>
<td>In-Degree</td>
<td>0.051 (0.001)</td>
<td>(0.049, 0.053)</td>
</tr>
<tr>
<td>In-Degree (t-1)</td>
<td>-0.021 (0.001)</td>
<td>(-0.023, -0.019)</td>
</tr>
<tr>
<td>Betweenness</td>
<td>0.005 (0.000)</td>
<td>(0.005, 0.005)</td>
</tr>
<tr>
<td>Betweenness (t-1)</td>
<td>0.001 (0.000)</td>
<td>(0.001, 0.001)</td>
</tr>
<tr>
<td>Minority x Opposition (Long Run)</td>
<td>9.161 (1.976)</td>
<td>(5.289, 13.033)</td>
</tr>
<tr>
<td>Minority x Gov. Backbench (Long Run)</td>
<td>9.557 (1.750)</td>
<td>(6.127, 12.986)</td>
</tr>
</tbody>
</table>

Results from orthogonal re-parameterization model (Pickup, et al., 2017).
Time-specific effects included but not shown.
Data aggregated into 27 x 12 week waves (Sept. 2010-Apr. 2017).
Unbalanced panel: N=631, T=1-26, obs.=7,846.
Records from the Office of the Commissioner of Lobbying and PARLINFO.
Table B.2: Likelihood-Based Panel Regression for H2

<table>
<thead>
<tr>
<th></th>
<th>Median Posterior (SD)</th>
<th>95% Credible Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rho</td>
<td>0.026 (0.013)</td>
<td>(0.001, 0.051)</td>
</tr>
<tr>
<td>Minority</td>
<td>-0.025 (0.028)</td>
<td>(-0.080, 0.030)</td>
</tr>
<tr>
<td>Opposition</td>
<td>-0.028 (0.014)</td>
<td>(-0.056, -0.001)</td>
</tr>
<tr>
<td>Gov. Backbench</td>
<td>-0.012 (0.011)</td>
<td>(-0.034, 0.009)</td>
</tr>
<tr>
<td>Minority x Opposition (Short Run)</td>
<td>0.291 (0.038)</td>
<td>(0.216, 0.365)</td>
</tr>
<tr>
<td>Minority x Gov. Backbench (Short Run)</td>
<td>0.304 (0.034)</td>
<td>(0.237, 0.370)</td>
</tr>
<tr>
<td>Minority (t-1)</td>
<td>-0.029 (0.017)</td>
<td>(-0.062, 0.004)</td>
</tr>
<tr>
<td>Opposition (t-1)</td>
<td>-0.043 (0.015)</td>
<td>(-0.072, -0.013)</td>
</tr>
<tr>
<td>Gov. Backbench (t-1)</td>
<td>0.001 (0.012)</td>
<td>(-0.022, 0.025)</td>
</tr>
<tr>
<td>Minority x Opposition (t-1)</td>
<td>-0.032 (0.022)</td>
<td>(-0.075, 0.011)</td>
</tr>
<tr>
<td>Minority x Gov. Backbench (t-1)</td>
<td>-0.028 (0.021)</td>
<td>(-0.069, 0.013)</td>
</tr>
<tr>
<td>Popularity</td>
<td>-0.008 (0.000)</td>
<td>(-0.008, -0.008)</td>
</tr>
<tr>
<td>Popularity (t-1)</td>
<td>0.002 (0.000)</td>
<td>(0.002, 0.002)</td>
</tr>
<tr>
<td>In-Degree</td>
<td>0.005 (0.000)</td>
<td>(0.005, 0.005)</td>
</tr>
<tr>
<td>In-Degree (t-1)</td>
<td>0.000 (0.000)</td>
<td>(0.000, 0.000)</td>
</tr>
<tr>
<td>Betweenness</td>
<td>0.000 (0.000)</td>
<td>(0.000, 0.000)</td>
</tr>
<tr>
<td>Betweenness (t-1)</td>
<td>-0.000 (0.000)</td>
<td>(-0.000, -0.000)</td>
</tr>
<tr>
<td>Minority x Opposition (Long Run)</td>
<td>0.266 (0.036)</td>
<td>(0.196, 0.336)</td>
</tr>
<tr>
<td>Minority x Gov. Backbench (Long Run)</td>
<td>0.283 (0.033)</td>
<td>(0.219, 0.347)</td>
</tr>
</tbody>
</table>

Results from orthogonal re-parameterization model (Pickup, et al., 2017).
Time-specific effects included but not shown.
Data aggregated into 27 x 12 week waves (Sept. 2010-Apr. 2017).
Unbalanced panel: N=631, T=1-26, obs.=7,846.
Records from the Office of the Commissioner of Lobbying and PARLINFO.
Table B.3: MRQAP Analysis for H3

<table>
<thead>
<tr>
<th></th>
<th>40th Parl. (3rd)</th>
<th>41st Parl. (1st)</th>
<th>41st Parl. (2nd)</th>
<th>42nd Parl. (1st)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.069** (0.001)</td>
<td>0.126** (0.001)</td>
<td>0.134** (0.001)</td>
<td>0.165** (0.001)</td>
</tr>
<tr>
<td>Partisan Homophily</td>
<td>-0.036** (0.002)</td>
<td>0.021** (0.002)</td>
<td>0.012** (0.002)</td>
<td>0.033** (0.002)</td>
</tr>
<tr>
<td>Opposition Homophily</td>
<td>0.049** (0.002)</td>
<td>0.016** (0.002)</td>
<td>0.011** (0.002)</td>
<td>-0.014** (0.002)</td>
</tr>
<tr>
<td>Gov. Backbench Homophily</td>
<td>0.010** (0.001)</td>
<td>0.005** (0.001)</td>
<td>0.003** (0.001)</td>
<td>-0.005** (0.001)</td>
</tr>
<tr>
<td>Sex Homophily</td>
<td>-0.000 (0.001)</td>
<td>0.009** (0.001)</td>
<td>0.006** (0.001)</td>
<td>-0.006** (0.001)</td>
</tr>
<tr>
<td>Regional Homophily</td>
<td>0.067** (0.001)</td>
<td>0.021** (0.001)</td>
<td>0.021** (0.001)</td>
<td>0.021** (0.001)</td>
</tr>
</tbody>
</table>

** p < 0.05.
B.7 Hausman Specification Tests

Below, I compare the results from an Ordinary Least Squares fixed effect model to a Feasible Generalized Least Squares random effects model. A random effects model assumes individual effects are uncorrelated with the variables in the data model. For this to hold, there should be no statistical difference between the coefficient estimates from the random and fixed effects estimators (tables four and six). To test this I conduct a Hausman specification test.\(^4\) The results (tables five and seven) show $\chi^2$ test statistics of, respectively, 1597.813 (15 degrees of freedom) and 1207.735 (17 degrees of freedom). These yield $P$-values of 0.000 and 0.000. On this basis I may reject each null hypothesis in favour of the alternative (i.e. the difference in the coefficients is systematic). Consequently, I use the fixed effects estimator when testing H1 and H2.

\(^4\)I omit time dummies, as these produce a singular matrix in the random effects model, owing to correlation with the Minority variable.
Table B.4: Dynamic Panel Regressions for H1

<table>
<thead>
<tr>
<th>Dependent Variable:</th>
<th>Popularity (FE)</th>
<th>Popularity (RE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minority</td>
<td>$-2.717^{***}$ (0.618)</td>
<td>$-3.813^{***}$ (0.649)</td>
</tr>
<tr>
<td>Minority (t-1)</td>
<td>$-1.746^{***}$ (0.501)</td>
<td>$-0.429$ (0.512)</td>
</tr>
<tr>
<td>Opposition</td>
<td>$-3.091^{***}$ (0.451)</td>
<td>$-2.716^{***}$ (0.465)</td>
</tr>
<tr>
<td>Opposition (t-1)</td>
<td>$-2.464^{***}$ (0.490)</td>
<td>$0.532$ (0.466)</td>
</tr>
<tr>
<td>Gov. Backbench</td>
<td>$-2.805^{***}$ (0.359)</td>
<td>$-2.769^{***}$ (0.362)</td>
</tr>
<tr>
<td>Gov. Backbench (t-1)</td>
<td>$-1.385^{***}$ (0.395)</td>
<td>$0.565$ (0.364)</td>
</tr>
<tr>
<td>Minority $\times$ Opposition</td>
<td>1.108 (0.752)</td>
<td>$1.730^{**}$ (0.778)</td>
</tr>
<tr>
<td>Minority $\times$ Opposition (t-1)</td>
<td>1.596** (0.625)</td>
<td>0.918 (0.613)</td>
</tr>
<tr>
<td>Minority $\times$ Gov. Backbench</td>
<td>2.274*** (0.757)</td>
<td>2.891*** (0.794)</td>
</tr>
<tr>
<td>Minority $\times$ Gov. Backbench (t-1)</td>
<td>1.770*** (0.614)</td>
<td>0.593 (0.622)</td>
</tr>
<tr>
<td>In-Degree</td>
<td>0.050*** (0.001)</td>
<td>0.050*** (0.001)</td>
</tr>
<tr>
<td>In-Degree (t-1)</td>
<td>$-0.016^{***}$ (0.001)</td>
<td>$-0.030^{***}$ (0.001)</td>
</tr>
<tr>
<td>Popularity (t-1)</td>
<td>0.312*** (0.012)</td>
<td>0.576*** (0.009)</td>
</tr>
<tr>
<td>Eigenvector Centrality (t-1)</td>
<td>0.005*** (0.0002)</td>
<td>0.005*** (0.0002)</td>
</tr>
<tr>
<td>BetweenCent Centrality</td>
<td>0.001*** (0.0002)</td>
<td>0.001*** (0.0002)</td>
</tr>
</tbody>
</table>

Wave Dummies? | No | No |
N | 631 | 631 |
T | 1-26 | 1-26 |
Observations | 7,846 | 7,846 |
$R^2$ | 0.573 | 0.768 |
Adjusted $R^2$ | 0.535 | 0.768 |
F Statistic | 644.721*** (df = 15; 7200) | 728.722*** (df = 15; 7830) |

Note: *p<0.1; **p<0.05; ***p<0.01

Table B.5: Hausman Test

<table>
<thead>
<tr>
<th>Alt. Hypothesis</th>
<th>Chi-Sq.</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difference in coefficients is systematic</td>
<td>1597.813</td>
<td>0</td>
</tr>
</tbody>
</table>
Table B.6: Dynamic Panel Regressions for H2

<table>
<thead>
<tr>
<th>Dependent Variable:</th>
<th>Eigenvector Cent. (FE)</th>
<th>Eigenvector Cent. (RE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minority</td>
<td>-0.055*** (0.019)</td>
<td>-0.044** (0.019)</td>
</tr>
<tr>
<td>Minority (t-1)</td>
<td>-0.016 (0.015)</td>
<td>-0.005 (0.015)</td>
</tr>
<tr>
<td>Opposition</td>
<td>-0.033** (0.014)</td>
<td>-0.027** (0.014)</td>
</tr>
<tr>
<td>Opposition (t-1)</td>
<td>-0.042*** (0.015)</td>
<td>-0.015 (0.014)</td>
</tr>
<tr>
<td>Gov. Backbench</td>
<td>-0.016 (0.011)</td>
<td>-0.021* (0.011)</td>
</tr>
<tr>
<td>Gov. Backbench (t-1)</td>
<td>-0.001 (0.012)</td>
<td>-0.005 (0.011)</td>
</tr>
<tr>
<td>Minority × Opposition</td>
<td>0.177*** (0.023)</td>
<td>0.208*** (0.023)</td>
</tr>
<tr>
<td>Minority × Opposition (t-1)</td>
<td>-0.030 (0.019)</td>
<td>-0.041** (0.018)</td>
</tr>
<tr>
<td>Minority × Gov. Backbench</td>
<td>0.142*** (0.023)</td>
<td>0.158*** (0.023)</td>
</tr>
<tr>
<td>Minority × Gov. Backbench (t-1)</td>
<td>-0.022 (0.019)</td>
<td>-0.034* (0.018)</td>
</tr>
<tr>
<td>In-Degree</td>
<td>0.005*** (0.00004)</td>
<td>0.005*** (0.00003)</td>
</tr>
<tr>
<td>In-Degree (t-1)</td>
<td>0.0003*** (0.0001)</td>
<td>-0.0004*** (0.0001)</td>
</tr>
<tr>
<td>Popularity</td>
<td>-0.008*** (0.0004)</td>
<td>-0.007*** (0.0003)</td>
</tr>
<tr>
<td>Popularity (t-1)</td>
<td>0.001*** (0.0004)</td>
<td>0.003*** (0.0003)</td>
</tr>
<tr>
<td>Eigenvector Centrality (t-1)</td>
<td>-0.041*** (0.012)</td>
<td>0.096*** (0.011)</td>
</tr>
<tr>
<td>BetweenCent Centrality</td>
<td>0.0002*** (0.00001)</td>
<td>0.0002*** (0.00001)</td>
</tr>
<tr>
<td>BetweenCent Centrality (t-1)</td>
<td>0.000002*** (0.00001)</td>
<td>-0.00000 (0.00001)</td>
</tr>
</tbody>
</table>

Wave Dummies? No No
N 631 631
T 1-26 1-26
Observations 7,846 7,846
R^2 0.819 0.850
Adjusted R^2 0.803 0.850
F Statistic 1,915.072*** (df = 17; 7198) 2,607.874*** (df = 17; 7828)

Note: *p<0.1; **p<0.05; ***p<0.01

Table B.7: Hausman Test

<table>
<thead>
<tr>
<th>Alt. Hypothesis</th>
<th>Chi-Sq.</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difference in coefficients is systematic</td>
<td>1206.735</td>
<td>0</td>
</tr>
</tbody>
</table>
B.8 Serial Correlation Tests

Following (Wooldridge, 2010, Section 10.5.4, p. 310-312), I test for serial correlation in each ADL(1,1) model by testing the residuals for negative serial correlation. Under the Wooldridge test for autocorrelation, such correlation may be evidence of non-stationarity. Applying this test to the first ADL(1,1) model in Tables B.8 and B.9, I am unable to reject the null hypothesis of no serial correlation ($F = 0.002$, $P$-value = 0.964). Applying this test to the second ADL(1,1) model, I am again unable to reject the null hypothesis ($F = 0.518$, $P$-value = 0.472). I therefore find no evidence either ADL(1,1) model produces non-stationary residuals with serial correlation. I conclude both models are well specified and proceed with my analysis.

Table B.8: Wooldridge Autocorrelation Test, H1

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>F Stat.</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>No serial correlation</td>
<td>0.002</td>
<td>0.964</td>
</tr>
</tbody>
</table>

Table B.9: Wooldridge Autocorrelation Test, H2

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>F Stat.</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>No serial correlation</td>
<td>0.518</td>
<td>0.472</td>
</tr>
</tbody>
</table>

5 As in Appendix 9, I use robust, heteroskedasticity-consistent standard errors.
B.9 Unit Root Tests

To determine whether the variables in my model are derived from unit root (i.e. I(1)) data generating process, I apply a Fisher-type Philips-Perron unit-root test with 1 lag to each variable. For each test I demean the data and include a time trend. This test is a relatively low hurdle for the data to overcome: The null hypothesis is that all panels are unit root. The test uses four test statistics: Inverse $\chi^2$, Inverse-Normal, Inverse-Logit Transformation of $P$-values, and a modification of the Inverse $\chi^2$ when $N$ tends to infinity. In no case do these test statistics disagree, so I report the Inverse $\chi^2$ for simplicity. More flexible tests exist, but they unfortunately cannot accommodate highly unbalanced panel data.

Table B.10: Fisher-type Philips-Perron Unit-Root Tests

<table>
<thead>
<tr>
<th></th>
<th>Inverse $\chi^2$</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Popularity</td>
<td>7707.812</td>
<td>0.000</td>
</tr>
<tr>
<td>Eigenvector Cent.</td>
<td>7959.812</td>
<td>0.000</td>
</tr>
<tr>
<td>In-Degree</td>
<td>8974.472</td>
<td>0.000</td>
</tr>
<tr>
<td>Betweenness</td>
<td>7999.554</td>
<td>0.000</td>
</tr>
</tbody>
</table>

The results (Table B.10), suggest at least one panel is stationary for each variable. Proceeding on the assumption that the data are stationary, I estimate both ADL(1,1) models using a dynamic fixed effects OLS regression with controls for time-specific effects. I also apply a Levin-Lin Chu unit-root test to the subsample of 90 legislators for whom $T = 27$ (the maximum in my sample). This is a more stringent test: The null hypothesis is that panels contain unit roots against an alternative hypothesis that all panels are stationary. The adjusted $t$ statistic is -9.91 ($P$-value 0.000). On this basis, I may reject the null hypothesis and proceed with greater confidence that the data are stationary.

---

I implement this test in Stata, using the following command: `xtunitroot fisher variable, demean trend pperron lags(1)`. I also ran this command for each variable at 5 and 10 lags. I was able to reject the null hypothesis in every case.
B.10 Heteroskedasticity Tests

Table B.11: Breusch-Pagan Heteroskedasticity Test, H1

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>Breusch-Pagan Stat.</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homoskedasticity</td>
<td>1349.771</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Table B.12: Breusch-Pagan Heteroskedasticity Test, H2

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>Breusch-Pagan Stat.</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homoskedasticity</td>
<td>1239.426</td>
<td>0.000</td>
</tr>
</tbody>
</table>

To test for heteroskedasticity in each ADL(1,1) model I use the Breusch-Pagan (BP) test for heteroskedasticity. This test uses OLS regression to test the correlation between a model's residuals and its explanatory variables. I use Koenker’s studentized version, which is less sensitive to kurtosis in the distribution of residuals (Koenker, 1981; Wooldridge, 2002). Applying this test to the first ADL(1,1) model (Table B.11), I am able to reject the null hypothesis of homoskedasticity (BP Stat. = 1349.77, P-value = 0.000). Applying this test to the second ADL(1,1) model (Table B.12), I am again able to reject the null hypothesis (BP Stat. = 1239.436, P-value = 0.000). On this basis, I use robust, heteroskedasticity-consistent standard errors.
B.11 Ordinary Least Squares Estimator

As a robustness check, I also estimate my main empirical models for H1 and H2 using a dynamic OLS fixed effects estimator. The results in Figure B.9 (panel 1) are substantively similar to those presented in the main analysis; however, there are notable differences. The median posterior estimate for $Rho$ is 0.40 (SD=0.01), with a 95% credible interval that does not include zero. This is slightly larger than the lagged dependent variable coefficient in the OLS model ($\hat{\beta} = 0.32$, $P$-value < 0.05). Similarly, the product term for opposition legislators ($Minority_{i,t} \times Opposition_{i,t}$) is positive (median posterior estimate = 4.03, SD=1.28), with a 95% credible interval that does not include zero. In the OLS model, the short-run interaction is positive but not statistically significant. For backbench legislators, the short-run product term ($Minority_{i,t} \times Gov.Backbench_{i,t}$) is positive (median posterior estimate = 3.98, SD=1.09), with a 95% credible interval that does not include zero. In the OLS model, the equivalent coefficient is positive but of a smaller magnitude (in fact, the Lancaster estimate is above the upper bound of the 95% confidence interval in the OLS model). These values, combined with the larger estimate of $Rho$, lead to smaller long-run effects than in the Lancaster model. In the OLS model, the long-run effect for opposition legislators is positive ($\hat{\beta} = 4.27$, $P$-value < 0.05). The long-run effect for backbench legislators is also positive ($\hat{\beta} = 5.95$, $P$-value < 0.05). These results are nearly half as large as the long-run effects in the Lancaster model. In other words, the substantive conclusions from the OLS model are in line with the Lancaster model and the magnitude of the effects are smaller.

Next, I re-estimate the main analysis for H2 using OLS. Again, the results (right panel, Figure B.9) are substantively similar to those in the main analysis. The most important difference regards the lagged dependent variable. In the OLS model the $Rho$ estimate is negative ($\hat{\beta} = -0.08$, SE = 0.01). It is positive in the Lancaster model ($\hat{\beta} = 0.03$, SD=0.01). The short-run product terms are also smaller in the OLS model. The product term for opposition legislators ($Minority_{i,t} \times Opposition_{i,t}$) is positive ($\hat{\beta} = 0.15$, $P$-value < 0.05). For backbench legislators, the short-run product term ($Minority_{i,t} \times Gov.Backbench_{i,t}$) is also positive ($\hat{\beta} = 0.11$, $P$-value < 0.05). These short-run effects are smaller than the equivalent values in the Lancaster model. This, combined with the positive estimate of $Rho$, leads to smaller long-run effects in the OLS model relative to the Lancaster model. The long-run interaction effect for opposition legislators is positive ($\hat{\beta} = 0.12$, $P$-value < 0.05). The long-run effect for backbench legislators is also positive ($\hat{\beta} = 0.09$, $P$-value < 0.05). Again, the substantive conclusions from the OLS model are in line with the Lancaster results, but the magnitude of the effects are smaller.
Figure B.9: OLS Regressions, H1 and H2

Point estimates from fixed effects linear regression. Error bars represent 95% confidence intervals with robust standard errors. See appendix for full table with autoregressive parameters and network controls. Time-specific effects included but not shown. Data aggregated into 28 x 12 week waves (Sept. 2010-Apr. 2017). Unbalanced panel: N=631, T=1-26, obs.=7,846. Records from the Office of the Commissioner of Lobbying and PARLINFO.
### Table B.13: Dynamic Panel Regressions for H1 and H2

<table>
<thead>
<tr>
<th>Dependent Variable:</th>
<th>Popularity</th>
<th>Eigenvector Centrality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eigenvector Centrality (t-1)</td>
<td>0.321*** (0.044)</td>
<td>0.001** (0.0005)</td>
</tr>
<tr>
<td>Popularity</td>
<td>-0.079*** (0.010)</td>
<td>-0.006*** (0.0005)</td>
</tr>
<tr>
<td>Popularity (t-1)</td>
<td>-2.240** (0.947)</td>
<td>0.101*** (0.031)</td>
</tr>
<tr>
<td>Minority</td>
<td>-2.962*** (1.091)</td>
<td>-0.037* (0.020)</td>
</tr>
<tr>
<td>Minority (t-1)</td>
<td>-1.974*** (0.558)</td>
<td>0.044** (0.021)</td>
</tr>
<tr>
<td>Opposition</td>
<td>-2.847*** (0.553)</td>
<td>0.011 (0.020)</td>
</tr>
<tr>
<td>Opposition (t-1)</td>
<td>-2.357*** (0.534)</td>
<td>-0.002 (0.011)</td>
</tr>
<tr>
<td>Gov. Backbench</td>
<td>-1.723*** (0.624)</td>
<td>-0.004 (0.012)</td>
</tr>
<tr>
<td>Gov. Backbench (t-1)</td>
<td>-1.2357*** (0.625)</td>
<td>-0.026 (0.019)</td>
</tr>
<tr>
<td>Minority × Opposition</td>
<td>0.890 (0.787)</td>
<td>0.151*** (0.028)</td>
</tr>
<tr>
<td>Minority × Opposition (t-1)</td>
<td>2.010*** (0.625)</td>
<td>-0.026 (0.019)</td>
</tr>
<tr>
<td>Minority × Gov. Backbench</td>
<td>2.161*** (0.817)</td>
<td>0.109*** (0.030)</td>
</tr>
<tr>
<td>Minority × Gov. Backbench (t-1)</td>
<td>1.877*** (0.549)</td>
<td>-0.009 (0.020)</td>
</tr>
<tr>
<td>In-Degree</td>
<td>0.040*** (0.003)</td>
<td>0.006*** (0.0001)</td>
</tr>
<tr>
<td>In-Degree (t-1)</td>
<td>-0.017*** (0.003)</td>
<td>0.0005*** (0.0001)</td>
</tr>
<tr>
<td>Betweenness Centrality</td>
<td>0.006*** (0.0005)</td>
<td>0.0001*** (0.00001)</td>
</tr>
<tr>
<td>Betweenness Centrality (t-1)</td>
<td>0.002* (0.001)</td>
<td>0.000000 (0.00001)</td>
</tr>
</tbody>
</table>

Wave Dummies? | Yes | Yes |
N | 631 | 631 |
T | 1-26 | 1-26 |
Obs. | 7,846 | 7,846 |

**Note:** *p<0.1; **p<0.05; ***p<0.01

### Table B.14: ADL(1,1) OLS Models (Long-Run Effects), H1 & H2

<table>
<thead>
<tr>
<th></th>
<th>Popularity</th>
<th>Eigenvector Centrality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minority x Opposition</td>
<td>4.27** (1.494)</td>
<td>0.116** (0.021)</td>
</tr>
<tr>
<td>Minority x Gov. Backbench</td>
<td>5.945** (1.579)</td>
<td>0.093** (0.021)</td>
</tr>
</tbody>
</table>

**Significant at 5 percent level.
B.12 Unbalanceness

Wooldridge (2002, 577-578) emphasizes the importance of balance in OLS panel data models. My data constitute a “rotating panel”—legislators at $T=1$ may leave at $T=2$, while others may enter at $T=3$ and leave at $T=4$, etc. In Figure B.10, I plot histograms with the number of waves for each legislator across the four major political parties. Canada’s first-past-the-post electoral system can produce sudden and large swings in party fortunes. For example, many members of the Bloc Québécois lost their seats in 2011, and so are much less likely to be in the sample than others (median number of waves equals three). The distribution for the Liberals is bimodal. Many Liberals lost their seats in 2011, while many other Liberals won in 2015. The median number of waves among Liberals is 8, while the mean is 14.8. Members of the Conservative and New Democratic Party are much more likely to be in sample. The median number of waves for these parties is, respectively, 22 and 19.

To better understand the nature of unbalanceness, I present a linear regression of some factors that might predict why legislators leave the sample (Figure B.11). The results show important demographic variations. First, there is a positive relationship between years of service and the number of panel waves. This has a straightforward (and logical) interpretation. For every additional year a legislator serves in the House of Commons, her number of panel waves is expected to increase by 0.943 ($P$-value $< 0.05$). The results also show some important regional variations. Legislators from Manitoba, Ontario, Quebec, and every Atlantic province except Prince Edward Island are more likely to be in the sample, relative to legislators from Alberta. Finally, the results show important differences by party affiliation. Conservatives, Liberals, New Democrats, Greens, and independents (including the two-person party Strength and Democracy) are more likely to be in the sample, relative to members of the Bloc Québécois.

In other words, the “rotation” of legislators into and out of each panel do not appear random. Legislators leave the House of Commons for several reasons and it is conceivable some of these factors may influence the frequency of communication with interest groups.

As Wooldridge (2002, 579-580) observes, rotating panels may increase the risk of sample selection bias. For example, if interest groups communicate more frequently during minority government with legislators who are about to leave the House of Commons, then it could bias my coefficients of interest. On the face of it, this may seem counterintuitive. Why should interest groups devote special resources to retirees and soon-to-be-defeated incumbents? One explanation could come from the “exchange theory” of lobbying. In an exchange model, access and influence in the legislature are a function of the “price” legislators charge and what groups are willing to pay. For example, the legislator may charge more when she disagrees with a group’s preferred policy, when that policy is unpopular and highly visible, or when it undermines her political party (Godwin, Ainsworth and Godwin, 2012, 158-159). In the present case, outgoing MPs might lower the cost of access for interest groups. For example, an opposition committee member who is not running for re-election might “sell” access to a group concerned about a bill under consideration. Again, this scenario may seem unlikely. There is a five-year prohibition on legislators working for groups that lobby them, and so interest groups have little to offer outgoing legislators. Nonetheless, the scenario
is not implausible. The unbalanced nature of the data, combined with the risk of sample selection bias, mean additional inquiry is needed.

Sample selection bias can arise when the probability of being observed, \( s_i \), is not a random draw from the population (Wooldridge, 2002, 553). For a randomly rotating panel in a fixed effects model, \( s_i \) should be independent of the covariates \( (x_i) \), idiosyncratic errors \( (u_i) \), and incidental parameters \( (c_i) \). As Wooldridge (2002, 579-580) writes, “if we think selection in all time periods is correlated with \( c_i \) or \( x_i \), but that \( u_{i,t} \) is mean independent of \( s_i \) given \( (x_i, c_i) \) for all \( t \), then fixed effects on the unbalanced panel is consistent and asymptotically normal.” When this does not hold, the correlation between \( s_i \) and \( u_{i,t} \) may bias the parameter estimates.

In the cross-sectional case, the standard approach to non-random sample selection issues is the Heckman two-step procedure (Heckman, 1977). The first step is to estimate a selection model. This means estimating the probability of observing each unit in the sample based on some set of covariates. In the case of a probit selection model, this is given as:

\[
P(y_{i2} = 1 | x_i) = \Phi(x_i, \delta_2)
\]

where \( y_{i2} \) indicates whether an individual is observed and \( \hat{\delta}_2 \) is the probit estimate of selection, based on covariates \( x_i \) (Wooldridge, 2002, 564). Using the parameter estimates from this model, the researcher calculates the ratio of the probability density to the cumulative density functions for each legislator \( i \) in the sample. This is the Inverse Mills Ratio (IMR), \( \hat{\lambda} \). The second step uses \( \hat{\lambda} \) as a covariate in a typical regression model. Using a t-test, a statistically significant coefficient is evidence of sample selection bias.

In the case of panel data, Wooldridge (2002, 579-580) recommends a straightforward test for selectivity. The researcher first creates a selection indicator—a binary variable indicating whether a legislator is in a given panel wave. The researcher includes either the lag or the lead of this indicator in a fixed effects model. In the case of the lag, Wooldridge (2002, 581) writes: “Under the null hypothesis, \( u_{i,t} \) is uncorrelated with \( s_i, r \) for all \( r \), and so selection in the previous time period should not be significant in the equation at time \( t \).” In the case of the lead: “For observations \( i \) that are in the sample every time period, \( s_{i,t+1} \) is always zero. But for attriters, \( s_{i,t+1} \) switches from zero to one in the period just before attrition.” Either way, a statistically significant coefficient is evidence of sample selection bias.

Below (Figure B.13), I implement this test with the ADL(1,1) fixed effects OLS model in the main analysis. For the Popularity model, the results show a statistically significant coefficient on the Selection Indicator \((T+1)\) variable. This is consistent with selection bias. For the Eigenvector Centrality model, the Selection Indicator \((T+1)\) variable is not statistically significant. This does not necessarily mean there is no selection bias, but it does suggest it may not be as big a problem for the Eigenvector Centrality model.

To correct sample selection bias in panel data, Wooldridge (2002, 579-580) suggests two modifications to the Heckman two-step. First, he recommends a series of probit selection models to calculate \( \hat{\lambda} \) for each unit \( i \) at time \( t \). Second, he recommends the researcher estimate a pooled OLS model with interaction terms \( \hat{\lambda}_{i,t} \times \tau_{i,t} \), where \( \tau_{i,t} \) is a dummy for
each wave. Pooling is necessary because a fixed effects regression may produce inconsistent estimates (Wooldridge, 2002, 582).

I implement this correction with the lobbying dataset. For the selection models, I use probit regression. The outcome variable is a simple 0-1 indicator of whether a legislator is in a given panel wave. I use the same four predictors as in the OLS model (above): Sex, Years of Service, Province, and Party. Rather than show the results from all 27 selection models, I plot the distribution of IMR scores across each wave in Figure B.12 (below). Next, I re-estimate my ADL(1,1) models with a pooled OLS estimator and include interactions between the IMR variable and each wave. I plot the main coefficients in Figure B.13. The direction and statistical significance of each variable is in line with the fixed effects models from the main analysis—positive and statistically significant increases in popularity and eigenvector centrality among members of the opposition and the government backbench during minority government.

Figure B.10: Histograms of Panel Balance by Party

Data from the Office of the Commissioner of Lobbying and PARLINFO.
Figure B.11: OLS Model, Number of Waves by Legislator

Joint estimates from linear regression. Error bars represent 95% confidence intervals with robust standard errors. N=631. Records from the Office of the Commissioner of Lobbying and PARLINFO.
Table B.15: Wooldridge’s Panel Test for Heckman Selectivity, H1 and H2

<table>
<thead>
<tr>
<th>Dependent Variable:</th>
<th>Popularity</th>
<th>Eigenvector Centrality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eigenvector Centrality (t-1)</td>
<td>-0.004</td>
<td>(0.011)</td>
</tr>
<tr>
<td>Popularity</td>
<td></td>
<td>-0.006*** (0.0004)</td>
</tr>
<tr>
<td>Popularity (t-1)</td>
<td>0.311***</td>
<td>(0.039)</td>
</tr>
<tr>
<td>Minority</td>
<td>-2.422**</td>
<td>(0.959)</td>
</tr>
<tr>
<td>Minority (t-1)</td>
<td>-1.851***</td>
<td>(0.551)</td>
</tr>
<tr>
<td>Opposition</td>
<td>-2.821***</td>
<td>(0.577)</td>
</tr>
<tr>
<td>Opposition (t-1)</td>
<td>-3.464***</td>
<td>(1.211)</td>
</tr>
<tr>
<td>Gov. Backbench</td>
<td>-2.542***</td>
<td>(0.610)</td>
</tr>
<tr>
<td>Gov. Backbench (t-1)</td>
<td>-1.579**</td>
<td>(0.649)</td>
</tr>
<tr>
<td>Minority × Opposition</td>
<td>1.252</td>
<td>(0.803)</td>
</tr>
<tr>
<td>Minority × Opposition (t-1)</td>
<td>1.774***</td>
<td>(0.578)</td>
</tr>
<tr>
<td>Minority × Gov. Backbench</td>
<td>2.246***</td>
<td>(0.836)</td>
</tr>
<tr>
<td>Minority × Gov. Backbench (t-1)</td>
<td>1.781***</td>
<td>(0.546)</td>
</tr>
<tr>
<td>In-Degree</td>
<td>0.042***</td>
<td>(0.003)</td>
</tr>
<tr>
<td>In-Degree (t-1)</td>
<td>-0.016***</td>
<td>(0.003)</td>
</tr>
<tr>
<td>Betweenness Centrality</td>
<td>0.005***</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Betweenness Centrality (t-1)</td>
<td>0.002*</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Selection Indicator (t+1)</td>
<td>-1.483***</td>
<td>(0.382)</td>
</tr>
<tr>
<td>Constant</td>
<td></td>
<td>-0.172*** (0.024)</td>
</tr>
</tbody>
</table>

Fixed Effects?                     Yes        Yes
Wave Dummies?                      Yes        Yes
N                                   630        630
T                                   1-25       1-25
Obs.                                7,505      7,505

Note: *p<0.1; **p<0.05; ***p<0.01
Figure B.12: Histograms of Inverse Mills Ratio by Wave

Data from the Office of the Commissioner of Lobbying and PARLINFO. Dotted vertical lines indicate election date.
Figure B.13: Pooled OLS Models, Heckmann Estimation

Point estimates from pooled linear regression. Error bars represent 95% confidence intervals with robust standard errors. Network controls, time-specific effects, and Inverse Mills Ratio interactions included but not shown. Data aggregated into 27 x 12 week waves (Sept. 2010-Apr. 2017). Unbalanced panel: N=631, T=1-26, obs.=7,846. Records from the Office of the Commissioner of Lobbying and PARLINFO.
B.13 Different Time Aggregations, H1 & H2

Panel data analyses can be sensitive to time aggregation rules. Below (Figure B.14), I replicate the dynamic panel and network regressions in the main analysis but with 14 panel waves rather than 27. The results are consistent with those in the main analysis. Turning to the results for H1 (Figure B.14, left panel), the coefficient on the lagged dependent variable (not shown) is 0.41 (SE= 0.01, P-value < 0.05), which is slightly larger than the lagged dependent variable coefficient in the OLS model (\( \hat{\beta} = 0.32 \)). The interaction term (\( Minority \times Opposition \)) is the short-run difference in the effect of being in opposition, between majority and minority governments. The coefficient is positive and, unlike in the main analysis, statistically significant (\( \hat{\beta} = 6.54, P\text{-value} < 0.05 \)). The interaction term (\( Minority \times Gov. Backbench \)) is the short-run difference in the effect of being in the governing backbench, between majority and minority governments. As in the main analysis, the coefficient is positive and statistically significant (\( \hat{\beta} = 8.77, P\text{-value} < 0.05 \)). Neither linear combination of the interaction term with the Opposition and Gov. Backbench variables is statistically significant (\( \hat{\beta} = 0.340 \) and 2.88, both \( P\text{-value} > 0.05 \)). Thus, the smaller panel suggests a slightly different conclusion, at least for the short-run effects. Opposition legislators and government backbenchers communicate more frequently with interest groups during minority government relative to majority government, and the magnitude of this difference is large enough to effectively erase the difference between these legislators and members of the governing frontbench.
Figure B.14: OLS Regressions, H1 and H2 (T=14)

Point estimates from fixed effects linear regression. Error bars represent 95% confidence intervals with robust standard errors. See appendix for full table with autoregressive parameters and network controls. Time-specific effects included but not shown. Data aggregated into 14 x 12 week waves (Sept. 2010-Apr. 2017). Unbalanced panel: N=631, T=1-13, obs. = 4,077.
Records from the Office of the Commissioner of Lobbying and PARLINFO.
The long-run results tell a similar story (Table B.16). For members of the opposition, the long-run interaction effect is an increase of 10.79 additional communications, compared to government frontbenchers ($P$-value $< 0.05$). For members of the governing backbench, the long-run interaction effect is an increase of 14.74 additional communications ($P$-value $< 0.05$). These effects are larger in magnitude than the model with 27 waves, partly because shorter panels means more lobbying occurs in each wave.

Turning to the results for H2 (Figure B.14, right panel), the coefficient on the lagged dependent variable (not shown) is -0.16 (SE= 0.02, $P$-value $< 0.05$), which in magnitude is slightly larger than the lagged dependent variable coefficient in the OLS model ($\hat{\beta} = -.08$). In Figure B.14, the interaction term ($\text{ Minority } \times \text{ Opposition}$) is positive and statistically significant ($\hat{\beta} = 0.112$, $P$-value $< 0.05$). The interaction term ($\text{ Minority } \times \text{ Gov. Backbench}$) is also positive and statistically significant ($\hat{\beta} = 0.054$, $P$-value $< 0.05$)—it should be noted, however, that the effect is just above the 0.05 threshold ($P$-value = 0.048). The long-run results tell a similar story. For members of the opposition, the long-run interaction effect is an increase of 0.11 in eigenvector centrality scores, compared to government frontbenchers ($P$-value $< 0.05$). For members of the governing backbench, the long-run interaction effect is an increase of 0.08 additional communications ($P$-value $< 0.05$).

A similar analysis was done on an even smaller panel ($T=4$), with each wave representing a parliamentary session. This creates just one wave during minority government, so no dynamics were included. The results (not shown) are consistent with those presented here. In sum, the results in the main analysis appear robust to different time aggregations.
B.14 Z-Tests for H3

Below (Table B.17), I compare partisan homophily coefficients between MRQAP models. Following Clogg, Petkova and Haritou (1995, 1275-1276), I test whether the differences between these coefficients are statistically significant using simple pairwise Z-statistics, given as

\[ Z = \frac{\hat{\beta}_1 - \hat{\beta}_2}{\sqrt{(SE_{\hat{\beta}_1} + SE_{\hat{\beta}_2})}} \]

One obvious problem with this comparison is the assumption of independent samples. This is clearly not reasonable in this case, as the data consist of repeated observations of legislators and legislator-dyads at different points in time (in addition to the entry and exit of legislators following elections). Nonetheless, this comparison is useful if only to distinguish the coefficients from one model to another.

Table B.17: Comparison of Partisan Homophily in MRQAP Models, H3

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Z-Stat.</th>
</tr>
</thead>
<tbody>
<tr>
<td>40th Parl. (3rd) to 41st Parl. (1st)</td>
<td>-23.417</td>
</tr>
<tr>
<td>40th Parl. (3rd) to 41st Parl. (2nd)</td>
<td>-19.778</td>
</tr>
<tr>
<td>40th Parl. (3rd) to 42nd Parl. (1st)</td>
<td>-31.438</td>
</tr>
</tbody>
</table>
B.15 Sensitivity to Removal of Weak Ties

To test H3, I use unipartite, weighted networks, with edge weight measuring the fraction of shared lobbying affiliations. These are symmetric matrices, but edge weights are asymmetric between each node. For example, one MP i might share 0.50 of their lobbying affiliations with MP j, but MP j might only share 0.25 of their affiliations with MP i. The results presented in Figure 3.3 are not “thresholded” – that is, I treat all ties as equally important. Below, I present sensitivity analyses to test whether results change as I remove weak connections.

I use a “disparity filter” to remove ties that are not statistically significant (Serrano, Boguná and Vespignani, 2009). This works by first calculating the strength, $s$, of node $i$ in the network, defined as

$$ s_i = \sum_j \omega_{ij} \quad (B.3) $$

where $\omega_{ij}$ equals the edge weight between node $i$ and node $j$—in this case, the proportion of shared ties. The algorithm then calculates a normalized weight, $p_{ij}$, given as

$$ p_{ij} = \frac{\omega_{ij}}{s_i} \quad (B.4) $$

Next, the algorithm simulates a null model, using random assignment from a uniform distribution to generate normalized weights for each node of degree $k$ (Serrano, Boguná and Vespignani, 2009, 6484). Finally, the disparity filter removes instances where the normalized edge weight $\omega_{ij}$ is statistically significant—i.e. it removes edge weights that fall within a range of the random distribution. The size of this range is determined by the $\alpha$ level.

The disparity filter helps identify the “backbone” of social networks. In selecting $\alpha$, Serrano, Boguná and Vespignani (2009) recommend users examine “topological” properties of network. In Figure B.15, I do this for four key statistics: mean strength (i.e. the mean of $s$ from B.3), number of edges, number of nodes, and the clustering coefficient. I plot changes in these four statistics for each of my four networks across the full range of $\alpha$ values: from 0.01 to 1 in increments of 0.01. I plot these changes as a proportion relative to the unfiltered network (i.e. $\alpha = 1.0$).

At high values of $\alpha$ (i.e. lies within $[0.75, 1.0]$), the disparity filter has no apparent change on network topology. However, as $\alpha$ drops from 0.75 to 0.15, there is a gradual effect: the number of edges and the clustering coefficient go down, as does mean strength. There is no change in the number of nodes. Below 0.15, things become unpredictable. The number of nodes precipitously drops. As it does, the networks become small—sometimes just half of all nodes remain. This increases the chance of clustering, which explains sudden fluctuations in the clustering coefficient. The number of edges gradually falls to zero.

In Figure B.16, I provide a visual sense of what happens as $\alpha$ approaches zero. I plot the unipartite network of shared lobbying affiliations among Canadian MPs during the 42nd parliament (1st session). As suggested in Figure B.15, there is little change as $\alpha$ goes from 0.01 to 1.0.
1.0 to 0.75. However, there is a clear difference between 0.5 and 0.25—the network retains its “hairball” structure but with far fewer ties between nodes. When $\alpha = 0.05$, the network looks entirely different, with fewer nodes, isolated dyads and triads, and just one structure containing more than 10 connected nodes.

Accordingly, I apply the disparity filter with $\alpha=0.25$ and re-estimate the four MRQAP regressions. I select this $\alpha$ value because the plot in B.15 suggests it retains the same basic topological structure as the full network. The only statistic to fall below 0.5 is the
Figure B.17 shows the parameter estimates. The results are broadly in line with those presented in the main analysis. The coefficient is smaller during the minority government than during the majority government. When no single party enjoys a parliamentary majority, the evidence suggests cross-partisans share a greater proportion of lobbying affiliations than co-partisans. There is one difference. The coefficient for the 41st parliament (2nd session) is now statistically indistinguishable from zero. This largely stems from a more general pattern: As $\alpha$ drops, the intercept drops on all the coefficients (i.e. bringing them closer to negative homophily).

In sum, I am able to reproduce the results presented in the main analysis for a wide range of $\alpha$ levels—from 1.0 to about 0.25. Below this value, when the number of nodes and edges is very small, clustering is less common (but often volatile), and mean strength is weak, my results no longer hold.

Figure B.17: Partisan Homophily in Parliamentary Lobbying Networks (w/ Disparity Filter)

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7N.B. I also ran these regressions with $\alpha=0.75$ and 0.50. The results were even closer to those presented in the main analysis.
Appendix C

Appendix for Chapter Four

C.1 Overview of the Approach

Below, I show a step-by-step overview of my approach in Chapter 4.

Figure C.1: Step One

1. Extract Policy Positions

- I use Wordfish, an unsupervised scaling model to estimate each speaker's position on each bill (i.e. support/neutral/oppose).
- Below, I show an example for bill C-36, a government proposal to restrict sex work in Canada. In this model, words like "sex worker" and "women's rights" help distinguish groups that oppose C-36 from groups that support it.

- The image (above) shows Wordfish estimates for six interest groups. Those that support bill C-36 are on one end of the scale (in blue). Groups that oppose bill C-36 are on the other end (in red). Groups whose 95% confidence interval straddles zero are coloured grey, for neutral.
2. Represent Frames

- I use a simple topic model, Latent Dirichlet Allocation (LDA), to identify issue frames. I also use affinity propagation to identify the number of topics.
- For bill C-36, the model identifies 11 issue frames. Below, I plot the probability six groups invoke two frames in particular.

Bill C-36 was controversial, and we can see some sharp divisions in the use of issue frames.
- Groups most strongly associated with frame #2 include sex workers and civil rights groups. Groups most strongly associated with frame #8 include anti-human trafficking groups and those explicitly opposed to sex work (e.g. Sextrade 101).

3. Model the Network

- Finally, I represent the LDA results as a network. I assign each interest group to one or more issue frames if their LDA probability estimate is greater than 1 / the total number of frames for that bill.
- I represent this as an affiliation network, projecting it as a one-mode “actor congruence network” that connects groups with frames (Leifeld 2012).

Each node is one interest group. A tie between each node means both groups used the same frame during their committee testimony.
- As blue nodes become more compact and move away from the red nodes, it means the opposing groups use very different issue frames when talking about the same bill. When coalitions are cohesive with overlapping frames within them but few between, it suggests a highly competitive framing environment.
C.2 Additional Information on Affinity Propagation for Topic Models

Below, I provide additional information on my use of affinity propagation when identifying the number of issue frames for the topic models in Step 2.

Affinity propagation requires a similarity matrix. Following its original use case (Frey and Dueck, 2007), I use negative squared Euclidean distance. In Table C.1, I present an illustrative example of how this works using five tokens and five groups for Bill C-36.

Table C.1: Document Term Matrix for Sample from Bill C-36

<table>
<thead>
<tr>
<th></th>
<th>“section”</th>
<th>“charter”</th>
<th>“right”</th>
<th>“sex”</th>
<th>“worker”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walk With Me Canada Victim Services</td>
<td>10</td>
<td>0</td>
<td>14</td>
<td>32</td>
<td>6</td>
</tr>
<tr>
<td>Canadian Alliance for Sex Work Law Reform</td>
<td>11</td>
<td>4</td>
<td>4</td>
<td>42</td>
<td>32</td>
</tr>
<tr>
<td>Criminal Lawyers Association</td>
<td>9</td>
<td>0</td>
<td>1</td>
<td>20</td>
<td>18</td>
</tr>
<tr>
<td>Government of Manitoba</td>
<td>1</td>
<td>0</td>
<td>7</td>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td>Evangelical Fellowship of Canada</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>0</td>
</tr>
</tbody>
</table>

Using the values in Table C.1, I calculate negative squared Euclidean distance for two groups: the Canadian Alliance for Sex Work Law Reform and the Evangelical Fellowship of Canada. The first group used the word “sex” 42 times, while the second group used the same word just 6 times. I subtract these values and square the difference (i.e. \((42 - 6)^2 = 36^2 = 1296\)). I do this for each of \(N\) word pairs, sum them together, and multiply by -1 such that

\[
d^2 = -\sum_{j}^{N} (p_j - q_j)^2
\]

where \(d^2\) is negative squared Euclidean distance, \(p_j\) represents the number of times the Canadian Alliance for Sex Work Law Reform uses word \(j\), and \(q_j\) is the number of times the Evangelical Fellowship of Canada uses that same word. In this case, \(d^2 = -2353\). Below, I show a heatmap for the values in Table C.1. Darker colours represent smaller values—that is, less distance between these two groups. The results suggest the Evangelical Fellowship of Canada and the Canadian Alliance for Sex Work Law Reform are the “farthest” from one another (\(d^2 = -2353\)), while the Evangelical Fellowship of Canada and the Government of Manitoba are the closest (\(d^2 = -183\)).
Figure C.4: Negative Squared Euclidean Distance
(sampling from Bill C-36)
C.3 Word Count and Bias in a Null Model of Bill C-36

Below, I plot the length of each utterance and the magnitude of bias. Each point represents the difference in the observed $\gamma$ value and the expected value under the null model, equal to $\frac{1}{k}$ topics. There is no evidence of a systematic relationship—in other words, bias is not a function of the length of a speaker’s utterance.

Figure C.5: Bias in Gamma Probability for a Null Model of Bill C-36, by Word Count of Each Utterance

Each point represents the difference in the observed $\gamma$ value and the expected value under the null model, equal to $\frac{1}{k}$ topics. There is no evidence of a systematic relationship.
C.4 Results Across All Bills

Below, I apply the approach to understand competitive issue framing in parliamentary committee debates across the full sample of 131 bills. I present the ERGCM results, which (unlike alternative indicators such as weighted density) provide a measure of uncertainty.\(^1\)

Figure C.6 plots ERGCM homophily coefficients (with 95% confidence interval) for each bill, ranked by magnitude. I also separate the results by number of speakers. Green estimates are statistically significant.\(^2\) Red are not. I find evidence of competitive issue framing in approximately 42% of legislative debates. In these cases, two interest groups on the same side of an issue were more likely to invoke the same frame than were two opposing interest groups. In the remaining 58%, there is no evidence of competitive issue framing. In these cases, opposing interest groups were equally likely to invoke the same frame as were interest groups on the same side of an issue.

Figure C.6: Homophily by Number of Witnesses

There also appears to be a strong relationship between the number of interest groups giving testimony and the degree of competitive issue framing. Among those legislative debates with fewer than 10 testifying groups, just 11% of bills show evidence of homophily. When the

\(^1\)The ERGCM homophily coefficients are correlated with nominal assortativity (Pearson’s correlation = 0.42).

\(^2\)The 0.05 significance level is used for hypothesis testing throughout.
number of witnesses increases to 10-19, the proportion of bills exhibiting homophily increases to 40%. Roughly 79% of bills with 20 or more witnesses show evidence of competitive issue framing. I regard this as a “face validity” check. Interest groups are most successful when they mobilize on issues that resonate with voters (Klüver and Pickup, 2019; Hopkins, Klüver and Pickup, 2018). Similarly, committee activity fluctuates with changes in issue salience (e.g. May, Sapotichne and Workman, 2006; Burstein and Hirsh, 2007). On this basis, I would expect to see more competition over issue framing as the number of interest group witnesses increases.

I also note there is no evidence of statistically significant negative homophily. This is encouraging, as negative homophily would imply two opposing interest groups are more likely to share the same frame than are two groups on the same side of an issue. I can think of no theoretical reason to expect negative homophily in my dataset and would regard such a result as strong evidence against the validity of my approach.

Across all statistically significant debates, I note that my running example of Bill C-36 is in the upper-mid-range of the pack. The smallest effect is 0.18. The largest is 3.1. With a log-odds coefficient of 0.57, my running example of Bill C-36 lies around the 70th percentile.
C.5 Examples of Competitive and Non-Competitive Bills

Bill C-24
The Strengthening Canadian Citizenship Act (Bill C-24) was a Conservative government proposal from June 2014. The bill was controversial. Section 10(2) gave the federal government the power to revoke Canadian citizenship from dual citizens convicted of terrorism, high treason or spying. In the House of Commons, opposition parties called the bill “unconstitutional” and criticized it for establishing “two-tiered citizenship.” Bill C-24 was debated at the Citizenship and Immigration Committee, which comprised six members of the governing Conservative Party and four opposition members.

During committee debate, 30 groups testified. Legal groups appeared, including the Canadian Association of Refugee Lawyers and the David Asper Centre for Constitutional Rights. These groups mostly opposed C-24, and sought to frame it in terms of potential violations of Canada’s Charter of Rights and Freedoms. For example, Ms. Barbara Jackson of the Canadian Bar Association testified:

> We think that [C-24] could raise serious human rights concerns. It does raise serious human rights concerns. It may well contravene the Charter. The Supreme Court of Canada has already ruled in the past that we can’t exile Canadians. By redefining who a Canadian is, you achieve exile. That’s not right. It’s against the Charter. It appears to be against the Charter, and I expect there will be significant litigation.

Other groups supported the bill, including the Air India 182 Victims Families Association. These groups tended to use different language than groups who opposed it. For example, Ms. Maureen Basnicki of the Canadian Coalition Against Terror made no mention the legal dimensions of Bill C-24. Instead, she framed the bill in terms of Canada’s moral obligation to oppose terrorism:

> Most immigrants do adjust and become productive members of Canadian society, in actions, if not in spirit, accepting Canadian values. Terrorist acts are the exact antithesis of such values. Terrorists, in executing innocent people, denigrate and violate every tenet of the values that make up Canada. Therefore, if Canada allows a convicted terrorist to retain Canadian citizenship, Canada is in effect saying that we accept the terrorist act as part of the fabric of life in Canada.

In the final vote, Bill C-24 passed the House of Commons on sharp party lines. Members of the Conservative Party voted in favour, while the Liberals, New Democrats, and Bloc Québécois voted against.

The ERGCM results suggest Bill C-24 was an intensely competitive issue framing environment. The odds of two opposing interest groups invoking the same issue frame are $\exp(\beta_1) = \exp(-0.97, SE = 0.20) = 0.38$. The odds of two groups on the same side invoking the same frame are $(\exp(\beta_2) = \exp(1.49, SE = 0.33)) = 4.71$ times higher. Both coefficients are statistically significant.
Bill C-32

The Victims Bill of Rights Act (Bill C-32) was a Conservative government proposal from April 2013. The bill sought to empower victims of crime, for example by giving them the right to information about their perpetrator’s pardon status. In the House of Commons, opposition parties spent much of the debate suggesting specific amendments to improve Bill C-32. Still, many were supportive. One member of the New Democratic Party who scrutinized the bill during committee noted the bill’s broad support among interest group representatives who appeared before the committee:

I cannot say that the witnesses were on one side or the other. What mattered most to all of the witnesses was putting victims at the centre of the debate. I think that is the most positive thing that stood out about the victims bill of rights. That was the most common remark I heard.

Bill C-32 was debated at the Justice and Human Rights Committee, which comprised six members of the governing Conservative Party and four opposition members.

During committee debate, 67 groups testified. Several victims groups appeared, including Canadian Parents of Murdered Children and Survivors of Homicide Victims and l’Association Québécoise Plaidoyer-Victimes. Many of these groups were supportive of Bill C-32. In their testimony, some sought to frame the bill as a measured improvement to the criminal justice system. For example, Mr. Joseph Wamback of the Canadian Crime Victim Foundation testified:

The humane treatment of victims is of absolute, paramount importance to any civilized society. I have been working on and waiting for this for 15 years, and I’m here today to congratulate this government for initiating Bill C-32 and for recognizing the importance of providing protection to Canadian crime victims. Today I am not going to deal with the minutiae of the bill, because I am so pleased that victims’ rights are being considered, and my focus is to recognize its fundamental importance in Canadian society.

Similarly, Yvonne Lindfield of Canadian Parents of Murdered Children and Survivors of Homicide Victims emphasized the need to balance offender and victims rights, and appealed for cross party unity:

the implementation of the Canadian victims bill of rights must over time—because it will take time—ensure that all parties operating within the criminal justice system shift their mindset to one of equality for both the offender and the victim. Bill C-32 will have a profound impact on how the criminal justice system, and other government departments and agencies, treat victims. I appeal to all political parties and all levels to work cooperatively to ensure its effective implementation.

Several other types of groups also testified, including legal associations and indigenous organizations. Some of these groups opposed sections of Bill C-32. Yet many of them used
similar language as the victims’ rights groups. For example, Mr. Joshua Ginsberg of the Canadian Bar Association (CBA) also framed the bill in terms of the need to balance victims and offenders’ rights, and suggested improvements to specific clauses:

The CBA recognizes that an effective criminal justice system must balance the interests of victims of crime, the procedural rights of those accused of crimes, and the public interest in seeing the efficient administration of justice... On the whole, the CBA section believes that this bill is an important step forward, improving the way the criminal justice system responds to victims of crime; however, some of the proposed amendments fail to strike the appropriate balance, leading to fundamental unfairness and some inefficiency.

In the final vote, Bill C-32 passed the House of Commons with full support from all parties.

The ERGCM results suggest Bill C-32 was not a competitive issue framing environment. The odds of two opposing interest groups invoking the same issue frame are $\exp(\beta_1) = \exp(-0.67, SE = 0.11) = 0.51$. The odds of two groups on the same side invoking the same frame are roughly the same ($\exp(\beta_2) = \exp(0.27, SE = 0.17) = 1.31, P\text{-value} >0.05$).

Below, I plot the actor congruence networks for Bills C-24 and C-32. As above, nodes coloured blue (red) represent positive (negative) $\theta_i$ estimates from Wordfish.

Figure C.7: Actor Congruence Network and Competitive Issue Framing

### Competitive Issue Frames

**Bill C-24**

Homophily Coefficient (odds ratio) = 1.49*

**Bill C-32**

Homophily Coefficient (odds ratio) = 0.27

### Non-Competitive Issue Frames

* $p < 0.05$