

Political behaviour in the United Kingdom:
An examination of Members of Parliament
and Voters

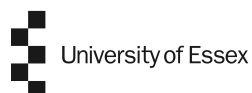
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For Mum and Dad

Summary

This thesis builds on quantitative British politics scholarship with four papers unified by a strong emphasis on positivist theory, research design and cutting edge statistical methodology. I examine political behaviour among representatives in the UK's House of Commons and voting behaviour in the 2016 EU Referendum. I show that the UK parliamentary system's reliance on strong party discipline has important adverse consequences for public approval. Firstly, I show how high-salience debates such as *Prime Minister's Questions* bring out the worst behaviours in MPs. As parties' access to the floor (ability to make speeches) is reduced, MP behaviour becomes more aggressive. Secondly, with co-authors, I examine the conditions under which ideologically extreme MPs are more likely to vote against their party. We find that the impact of such behaviour affects party unity more often when in government, meaning that parties are more likely to appear united until they are elected, at which point party divisions become more apparent once again. Thirdly, I show that career progression in the House of Commons rewards 'insider' behaviour such as increased attendance and participation in House of Commons debate and a focus on national rather than local issues. The power political parties have over the future of political leadership tends to centralise power and reward party politicians to whom the general public feels no strong affinity. In the final paper, we analyse voting behaviour during the 2016 EU Referendum assessing the potential effect of rainfall on the referendum result. We find that if the referendum had occurred on a sunny day, the likely result would have widened the margin of victory for Vote Leave. In the most comprehensive statistical analysis of the referendum to date, we concur with earlier analyses that the surprise result was driven by strong Brexit support in districts of economic and social deprivation, particularly in rural and suburban locations.

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Patrick Leslie

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Statement of Contributions

in Co-Authored Chapters

Chapter 3 was written with four other authors. My contributions were:

- responsible for coding and merging leadership, career length data, and electoral majority data
- The data analysis relied on a dataset indicating monthly status in the House of Commons between 1979-2016. I updated an existing dataset provided by Jon Slapin and Ole Proksh that covered up to 2001. The leadership variable was crucial to categorising MPs between backbench and frontbench positions.
- I collected data on the electoral majorities of MPs between 1992-2015.
- Early in the paper's development, I suggested that we identify ideologically extreme MPs by checking memberships of intra-party parliamentary groups and I compiled initial lists of intra-party groups of backbench MPs. These were then revised by Tom O'Grady for use in the word-scores analysis.
- I drafted the discussion section 3.5.

Chapter 5 was written with a single co-author, Baris Ari (BA). My contributions here were:

- Collection and merging of electoral data
- Except for the rainfall data (BA) and the forecasting data (Ben Lauderdale), I was responsible for collecting and merging together all data used in the statistical analyses.
- I was responsible for drafting the paper. I worked with BA in revising the paper, including his suggested revisions for structure and clarity into the text.
- Research design strategy
- All statistical analyses except the robustness check using rainfall to improve forecasts (BA)
- All tables, statistical figures and formulas were my own except for the map figures (BA).

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Chapter 1

Introduction

The word ‘behaviour’, when referring to Members of Parliament in the British House of Commons, is often preceded by negative adjectives: ‘pathetic’, ‘jeering’, ‘grim’ or ‘silly’ (Hansard Society, 2014, pp. 5-7, 15). Political trust and engagement has been in steady decline (Phillips and Simpson, 2015; Whiteley et al., 2016) and the government’s failure to fully appreciate the causes and magnitude of support for Brexit (Goodwin and Heath, 2016; Inglehart and Norris, 2016) has resulted in one of the largest constitutional crises in modern British history.

This thesis sets out to make a contribution to the understanding of how British politics functions from the perspective of both politicians and the general public. Its purpose is to understand why British political behaviour (increasingly viewed on all sides as incomprehensible) – is the result of the aggregation of ‘rational’ decisions at the individual level. The thesis examines British politics from a positivist, theoretically-driven, data-analytic perspective. They examine political behaviour, both by elites and voters, through applying cutting-edge statistical methods including quantitative text analysis, advanced estimation and model-based simulation techniques, geographic information systems (GIS), and exploiting natural experiments to estimate causal effects.

1.0.1 Four Studies in British Politics

This thesis is divided into four studies. The first three studies share a common theme in that they discuss different aspects of behaviour in the House of Commons, while the fourth paper analyses voting behaviour in the 2016 Referendum on Membership of the European Union. Each study answers a separate question in British politics using different theoretical constructs and datasets. I introduce each question below, summarising the motivations, methods and findings.

Why, for example, are British politicians so rude to each other in the debating chamber? Focus groups reviewing parliamentary debate have called the proceedings ‘a pantomime’, ‘infantile’, ‘about party point-scoring’, ‘a joke’, and ‘great for tourists, crap for the country’ (Hansard Society, 2014, pp. 27-36). This is a subject that requires more significant examination to enable a better understanding of its cause, impact and consequences. My first study, contained in Chapter 2 of the thesis examines the phenomenon of partisanship at Prime Ministers Questions, showing that a party’s level of access to the floor – beyond an MP’s individual dislike for a political opponent – is a deciding factor in how aggressively partisan s/he will be to a rival party. Exploiting a natural experiment in the random allocation of questions to backbenchers during Prime Minister’s Questions, Chapter 2 finds that as access to the plenary is restricted, parties focus their behaviour on aggressively partisan questioning. Somewhat ironically, the more desperate parties are to be heard, the more aggressive they become and the less appealing they are to members of the general public.

Why do MPs occasionally vote against their own party? Traditionally, strong party discipline is a core feature of Westminster parliamentary systems and parties typically compel MPs to support the party regardless of MPs’ individual preferences. Rebellion, however, does occur. The second study, within Chapter 3¹ uses an original dataset of MP votes and speeches in the British House of Commons from 1992 to 2015, coupled with new estimations of MPs’ ideological positions within their party. We find that MPs use rebellion strategically to differentiate themselves from their

¹co-authored with Jonathan Slapin, Justin Kirkland, Joseph Lazzaro and Tom O’Grady.

party, contingent upon an interaction of ideological extremity with party control of government. Extremists are loyal when their party is in the opposition, but these same extremists become more likely to rebel when their party controls government. Additionally, they typically emphasise their rebellion through speeches, making their opinions on the vote clear to their constituents.

From backbenchers to aspiring prime ministers, how and why do we end up with our political leadership? My third study, within Chapter 4 examines the allocation of MPs to leadership roles in the House of Commons. I propose four potential factors that predict promotion, which are derived from the speeches of MPs in their first term: participation, policy specialisation, focus on local issues, and confidence. I test these measures in three models of career progression: these comprise promotion to a position in government or opposition, time to first promotion, and seniority of first promotion. I find strong empirical support for the effect of parliamentary speechmaking on career progression in the House of Commons. The strongest association shows that participation in the debating chamber is associated with improved career prospects, as are (to a lesser extent) confident speech patterns. Conversely, an increased focus on local representation are associated with decreased chances of promotion. Crucially, this pattern of behaviour holds for MPs who are promoted to become ministers, but does not hold for MPs who go on to become whips. This suggests that party leaders pay attention to the performance of their members and assign promotions according to the relevant skills required of each parliamentary role. The implication of this behavioural analysis is that British parliamentary politics rewards political insiders, often referred to as politicians of the ‘machine’. In contrast, populist MPs, who are likely to end up as the perennial ‘rebels’ of Chapter 4.

Finally, the question: can the 2016 Brexit result be attributed to freakish weather conditions? According to the fourth study, contained in Chapter 5 ², almost certainly not. Previous studies have shown that weather conditions may affect voter turnout, sometimes in ways that could plausibly swing the result of a close election. On the day of Britain’s EU referendum, the presence of torrential rain in the South-East of England and Northern Ireland raised concern in the media that voter turnout could

²Co-authored with Barış Ari

be affected in a manner that favoured the Vote Leave campaign (Knapton, 2016; Aron, 2016). To answer this question, Chapter 5 takes data at the polling district level and overlays interpolated rainfall data using geographic information system (GIS) technology. Our analysis shows that the rain had the greatest effect on the leave vote, reducing the Brexiteer tally by as many as 3,566 votes in one district. However, rainfall's effect on the wider referendum was far more limited. We find that if the Referendum had taken place on a sunny day, there would have been no significant change to the overall result. The leave campaign did, of course, prevail by a far wider margin than any analyst dared to predict before the fact and we find (as do many other studies on Brexit) that the surprise result to the EU Referendum had its roots not in adverse weather conditions, but in unchecked support from areas seen as peripheral by central government.

Chapter 2

PMQs: Access to the Floor and Aggression in the Chamber

2.1 Introduction

This chapter seeks to explain variation in levels of adversarial questioning between political parties during Prime Minister's Questions (PMQs). To be specific, parties vary in the proportion of questions that attack the members or policies of a rival party. For example, during PMQs held on Wednesday 3rd February 2016, the Labour Party used every question allocated to its backbenchers to attack government policy. A typically partisan line was taken by John Mann, Labour backbencher for Bassetlaw:

“Is that it? Is that the best that the Prime Minister can do? There is nothing for British pensioners and nothing for British workers . . . the Prime Minister's . . . plan relies on more than a million new migrants entering this country before 2020. Has he got the bottle to confirm that inconvenient truth?”

Just a month earlier on the 6th of January, however, Labour attacked government policy in only *one third* of its questions. The rest of the questions represented a diversity of approaches, idiosyncratic to the interests of each member. For example George Howarth (Lab, Knowsley) asks:

“The Prime Minister might know that Knowsley also has a Shakespeare connection? ... Will he lend his support to the proposal for a Shakespearean theatre of the north to complete the triangle: The Globe Theatre, Stratford-on-Avon and Knowsley – in a celebration of Shakespeare’s work?”

Why did Labour’s apparent resolve to hold the government to account change so drastically within a month? This study argues that allocation of plenary time is the key to answering this question. At PMQs, high demand for plenary time has resulted in the *random allocation of questions to applicants*. In both debates referenced above, Labour MPs applied in similar numbers, and relative to the total number of applications that week, could have expected to be granted a similar number of questions (five in January and six in February). However, the randomised ballot allocated Labour MPs nine questions in January but just three questions in February. In both cases, Labour asked the same number of partisan questions (three) to the prime minister.

This observation is illustrative of a systematic relationship found in a natural experiment derived from data granted by the Speakers Office of the House of Commons. The relationship is stated as follows: *For each party of significant size, as access to the plenary session is withdrawn, there is an increase in the proportion of partisan questions*. To explain this relationship, I adopt a framework of party unity, arguing that partisanship in parliamentary debate (here defined as questions that attack a rival party) can be interpreted in analogy to parliamentary voting. The greater the proportion of questions from that divide debate explicitly on party lines, the more unified is that party in opposing their political rival. I then adapt the theory of the plenary bottleneck (Cox, 2006), using the logic of plenary time as finite resource to show how parties respond to periods of plenary scarcity by encouraging their MPs to

toe the party line during legislative debate.

The findings of this chapter have significance for (i) voters, (ii) political parties, and (iii) policy conventions for legislative debate and reform of the format of PMQs. First, legislative debate in the UK (in particular PMQs) is seen by citizens as problematic in a way that suggests that ‘over-polarization’ may be partly to blame. A study carried out by the Hansard Society found that representative focus group attendees saw PMQs as ‘a pantomime’, ‘infantile’, ‘about party point-scoring’, ‘a joke’, and ‘great for tourists, crap for the country’ (Hansard Society, 2014, pp. 27-36). Crucially, 67% of participants agreed there was too much party political point scoring, compared to just 5% who disagreed (p. 47).

Second, party leaders from both Government and Opposition recognise the public relations problem created by the partisan atmosphere at PMQs. When Jeremy Corbyn was first elected leader of the Labour Party and the official opposition in September 2015, he began his first session as David Cameron’s opposite number at the despatch box. He argued for the adoption of an approach to PMQs characterised by more respectful debate of issues relevant to the general public. It wasn’t the first time a party leader had called for a ‘reboot’ of the debate format. Corbyn’s predecessor, Ed Miliband had argued for the same on his appointment, but by the end of his tenure both Miliband and Cameron had reverted to a more combative debating style. Speaking on the issue, Cameron admits that:

“[Ending] ‘Punch and Judy’ at PMQs was a promise I wasn’t able to deliver. I tried a quieter approach and frankly, it didn’t really work. The Commons can be a bit of a bear pit at times, so you have to be robust.”
(Hansard Society, 2014, p. 50)

Thirdly, this study, by highlighting the effect that demand on plenary time can have on partisanship, suggests that a potential solution to the problem may be found through efforts to increase the supply of ‘high-value’ plenary time. Indeed, there have been moves to increase the running time of PMQs in the hope of ameliorating excessive partisanship during the House’s most widely viewed political debate. Speaker John Bercow argues that in order to account for “the numerous disruptions in the noisy

chamber”, PMQs should be extended to last for one hour (Casalicchio, 2017). An extension to the time allowed for the format is justified by the findings of this chapter, and if enacted, ought to provide ample opportunity to further test the effect of plenary access on partisanship in the House of Commons.

2.2 Literature: Party Unity, Time Scarcity and Speechmaking

Time as a Legislative Resource and Party Unity

Studies of party unity in terms of legislative politics often overlook the impact of time scarcity, shown to have considerable importance in determining legislative outcomes (Linz, 1998; Goetz and Meyer-Sahling, 2009). Döring (1995; 2001) theorises time as a scarce resource for political parties, and as a crucial arena for party competition and control. Conceptually, the impact of time constraints on party behaviour can be surmised in terms of the plenary bottleneck and the legislative state of nature (Cox, 2006).

A legislative state of nature is characterised by no limits on the rights of members to debate and by extension delay legislation. As legislatures become busy and time is scarce, gridlock would result if there were no limits to the rights of members to delay bills indefinitely. Agenda setting powers (Cox and McCubbins, 2005; 2007) therefore limit minority rights and limit the number of bills to those with a good chance of passing with a majority. Procedural conventions, such as anti-filibustering rules further limit the ability of minority parties to delay the passage of legislation into law. Binder (1996) finds evidence connecting legislative workload (that is, the pressure to pass increasing amounts of legislation) in the US House resulted in the curtailing of minority party rights to delay legislation. Martin (2004) shows that the more time left in a parliamentary term, the more quickly politically salient issues are passed through parliament. Similarly, Giannetti et al. (2016) show that Italian parties intentionally allocate more debate time for bills that are likely to be controversial.

However, there are few studies relating time as a resource to party unity. Some

examples explore the relationship between periods within a politician’s career and party loyalty. To be specific, once politicians have made the decision to retire or have been overlooked for promotion, they no longer have the incentive to toe the party line, and so are more likely to cross the floor (Figlio, 1995; Benedetto and Hix, 2007).

In their study of parliamentary voting in the European Parliament, Hix et al. (2005) observe that voting unity among party groups has increased over time alongside the political and legal importance of the legislature, but cannot conclusively isolate demand on legislative time as a determining factor. Yet the importance of time scarcity in creating incentives for party discipline are clear: if infinite time existed for the passage of each bill, then there would be no limit to the number of votes that could be taken on a given bill. Cohesive voting would not be a requisite for legislative success, as it is in modern parliamentary democracy.

Partisan Questions as Party Unity in Speech Form

Studies of party unity normally analyse legislative voting as a highly visible and measurable consequence of cohesion. The level of party unity in legislative voting between democracies depends on institutional structures that produce different incentives for elected representatives to toe the party line. Carey (2007; see also Hix et al. 2005; and Sieberer 2006) demonstrates that voting unity is lower in systems that promote intra-party competition, thus prioritising electoral competition over party loyalty. In the US House, personal vote seeking ensures that parties have minimal capacity to control legislator voting after bills are put to the floor (Krehbiel, 1993; Cox and Poole, 2002; Krehbiel, 2010), while – in the UK – voting against the party whip is rare and voting unity is high (Cowley, 2005; Spirling and McLean, 2007; Kam, 2009).

Within countries, party unity may differ between parties too, according to candidate selection rules and opportunities for promotion (Sieberer, 2006; Depauw and Martin, 2009; Kam, 2009). Majority-minority conditions also affect the extent to which ideologically extreme legislators are willing to vote against their own party (Slapin et al., 2018; Kirkland and Slapin, 2017), with parties in the majority rebelling more frequently than minority parties.

Analysis of party unity is not confined to parliamentary voting, however, and recent

scholarship shows that party unity and legislative time (in the form of speechmaking) are intimately connected. Proksch and Slapin (2012; 2015) argue that speechmaking is an important legislative resource that may be retained by party leadership or delegated to backbenchers, with comparative differences between parliamentary systems being driven by the incentive to create a personal vote. Legislative speech and voting are similarly aligned as indicators of party unity. Indeed, instances of disloyalty in legislative voting are often accompanied by explanatory speeches (Slapin et al., 2018).

In voting divisions, party unity is defined as the proportion of MPs of a given party voting in the same direction against an opposing party or group of parties. It is not immediately clear how this translates to speechmaking, which may take a practically infinite number of political and semantic positions, far removed from the binary choice of parliamentary voting. The task at hand, therefore, is to define a satisfactory proxy for party discipline that classifies MP speeches in terms of an MP's commitment to her own party as well as opposing the position of the rival party.

Scales of local/national focus (Killermann and Proksch, 2013; Killermann, 2016, see also Chapter 4) or of 'discourse quality' (Bächtiger et al., 2005) are related to party unity, but are conceptually distinct. A satisfactory measure of party unity in speechmaking should be derived from an aggregation of binary choices – as is voting unity. It should also classify each question in terms of its political position with regard to a rival party. When voting with the party line, by definition, an MP chooses to oppose their rival party in the legislature. Similarly, if a MP's speech denounces a rival party, then the MP makes a clear statement of party loyalty, analogous to voting loyalty at the ballot box. I argue that the more parliamentary speech reflects this partisan style of questioning, the more we might classify legislative speech as expressly party political and reflective of an underlying logic of party unity.

Party Unity as a Function of Time-Scarcity and Political Speech

How far should an MP value their right to ask whatever question they like? Conversely, how much partisanship is enough - should a party force all its members to speak against their rival party? As the supply of plenary time to a political party is withdrawn, the ability of the party to exert influence on members increases. In Westminster systems,

the party has a large degree of control over promotion to parliamentary positions and a high level of influence over a member's prospects for re-election. Indeed, party loyalty is far less reliable when members see few opportunities for further advancement within their party (Benedetto and Hix, 2007), and the development of the cabinet and ministry in 19th century Britain induced party loyalty from ambitious party members with promises of advancement (Eggers and Spirling, 2016).

In addition, as a party's access to the floor is restricted, successful applicants bear a burden of responsibility to act as representatives of both the party and of like minded MPs whose applications were not successful. Parties, as the principal coordinators of like minded groups in the House, are able to leverage this responsibility, steering members to lines of questioning that best highlight political cleavages between groups (and therefore common ground within groups), resulting in a partisan approach to questioning.

On the other hand, once the supply of plenary time increases past a certain point, it is not in a party's interest to insist that all speeches attack the opposition if doing so means sacrificing other lines of questioning of value to its members. Just as there is less need for governments to whip dissenting MPs if their majority is assured, once a point has been made sufficiently in debate, repetition *ad nauseam* does not win the argument. Persuading MPs to divert from their ideal line of questioning is not cost free – if members feel taken advantage of, they may be less willing to support the party leadership in the future. Second, as groups of MPs get larger, effective coordination without contractual obligations becomes more difficult (Olson, 1965), meaning party leaders will have a harder time getting all successful applicants to act according to the party's wishes. After all, the random ballot is designed specifically for backbench MPs to bring up questions of interest to them – not the parties.

In summary, by theorising plenary time as the property of parliamentary parties – to be delegated to individual legislators depending on parliamentary conditions (Proksch and Slapin 2012; 2015) – the effect of fluctuations in the relative value of individual speeches is analogous to legislative voting. In the United Kingdom, whips communicate the urgency of attendance for a vote in Parliament by the number of lines underneath voting instructions to MPs. As the importance of a vote increases,

so too does the party influence on MPs to toe the party line. Similarly, we might expect that, as the importance of access-to-the-floor increases, party influence on MP behaviour will increase too.

2.3 Research Design

2.3.1 Prime Minister’s Questions: Types of Question and Their Role

Each week, while Parliament is in session, PMQs is held at 12pm on Wednesdays. The institution is perhaps the most important platform for opposition scrutiny in the British Parliament (Bevan and John, 2016) as it gives opposition parties the opportunity to question directly the leader of the government on national and local issues. The debate is broadcast on live national television and radio, and typically lasts 40-45 minutes, a time allocation which has risen sharply in recent years.¹

There are four types of questions asked of the prime minister: (i) randomised, (ii) leaders’, (iii) government, and (iv) discretionary. The first type of question (on which this chapter focuses) is the *randomised* question. MPs who wish to ask questions of the prime minister may apply to a random ballot, which is usually carried out one week in advance of the debate. The successful applicants are informed and are therefore given one week to prepare for their appearance on live national television and radio. MPs expect to benefit from an exchange with the prime minister in their own constituency via subsequent reporting in local media. If questions are of broader appeal, an MP may also expect to benefit from repeated coverage in the national media.

Leaders’ questions are allocated to Labour and the Scottish National Party. Each leader is granted a number of questions roughly proportional to their representation in the House, and typically follow a strictly partisan line of questioning. The leader of

¹Scholarship (Bates et al., 2014; Hansard Society, 2014) on the history of the institution has concluded that the debate has grown more shallow and party political over time, characterised more by theatrics than reasoned policy debate. The finding of this study – that increased access to plenary time ameliorates partisanship – may be used to test whether recent moves to increase the supply of plenary access have been successful.

the opposition (Labour) asks six questions close to the beginning of the session, with other questions following soon after. Government questions are granted to MPs of the governing party, in lieu of special privilege to a leader (the prime minister cannot question herself). These questions, as guaranteed plenary time to the governing party are typically planned strategically to highlight government successes. The fourth type of question is discretionary to the Speaker of the House of Commons. Traditionally, this was the only means by which backbench MPs could access plenary time in the chamber independently of parties.

2.3.2 Data

The data on randomised questions at PMQs were gathered from two sources. The content of questions was sourced from the record for applications to speak at PMQs, which was graciously provided by the Speaker's Office of the House of Commons. The unit of analysis is the party, observed across 33 editions of PMQs. The data granted by the Speaker's Office give information on the applicants to 33 editions of PMQs – from June 2015 to May 2016. This data lists the names of MPs entered into the ballot, and gives the names of the 15 successful applicants. The record of speeches was taken from Hansard, the official record of the Houses of Parliament. The textual record of Prime Minister's Questions is available on the parliament.uk website.

2.3.3 Dependent Variable: Partisan Questions

Methods for the scaling of political documents are now common in political science and a variety of approaches exist for automated classification and scaling of political texts (Friedman et al., 2001; Laver et al., 2003; Slapin and Proksch, 2008; Grimmer and Stewart, 2013). However, human coding of political texts, where feasible, remains a desirable means of document classification. In total, I code 495 questions from 33 editions of PMQs for partisanship. I then take the proportion of partisan questions for each party at each edition of PMQs to measure partisanship at the party level.

To classify questions as partisan versus non-partisan, I code a question that attacks the conduct of an opposing party or an opposing party's leadership as one

Table 2.1: Partisan and Non-Partisan Questions

Partisan Questions
Patrick Grady (SNP, 23rd March 2016): <i>“Academics, civil society and the Scottish Government have all condemned the Government’s anti-lobbying clause . . . How can the Prime Minister promote transparency, democracy and freedom of speech overseas when that clause is clamping down on those principles here in the UK?”</i>
Bill Esterson (Labour, 2nd March 2016): <i>“. . . before the election, the Prime Minister said that he had no plans to change Sunday trading laws. When did he change his mind, or was it always his plan to scrap this great British compromise as soon as the election was safely out of the way?”</i>
Robert Jenrick (Conservative, 25th November 2015): <i>“Three thousand jobs in Newark were lost under Labour. This month, we celebrate the creation of the 10,000th new job in Newark since 2010. Does the Prime Minister agree that . . . Newark leads the way to a strong economy . . . and lower welfare?”</i>
Non-Partisan Questions
Martyn Day (SNP, 21st October 2015): <i>“Will the Prime Minister tell the House what plans are in place to ensure that the interests of all devolved nations are taken into account in his forthcoming letter to the European President, Donald Tusk, on EU reforms? What plans are in place to ensure that the devolved nations are represented in renegotiation discussions before the EU summit in December?”</i>
Kate Hollern (Labour, 16th September 2015): <i>“My constituent Enola Halleron-Clarke, who is 11 years old, suffers from Morquio syndrome . . . Enola would like to be able to use the drug Vimizim to help alleviate her condition . . . Will the Prime Minister do all he can to encourage NICE [National Institute for Health and Care Excellence] to come to a speedy decision for Enola and people like her?”</i>
Jesse Norman (Conservative, 13th April 2016): <i>“Will and Carol Davies and many other farmers in south Herefordshire are still awaiting their 2015 payments from the Rural Payments Agency . . . It is causing great personal and financial distress . . . Will the Prime Minister agree to meet farmers to discuss the issue and press the RPA to make these payments by the end of this month . . . ?”</i>

(*partisan* = 1), and zero otherwise. Table 2.1 provides an illustrative example of typical classifications. Under ‘Partisan Questions’, I give one example of a partisan question from a MP of each party included in the analysis. For Labour and the SNP, partisan questions are directed at the Prime Minister and attack the policy of the Conservative Party. For Conservative MPs, a partisan question is typically directed at Labour, the largest opposition party. Robert Jenrick’s question attacks the policies of the previous (Labour) government, while supporting the policies of his own governing Conservative Party. Non-Partisan questions may take a variety of forms. As long as they do not explicitly oppose the policies of rival parties, then they are classified as non-partisan.

2.3.4 Independent Variable: Random Access to the Floor

For each party, I measure the severity of a bottleneck in access to the floor by counting the number of questions granted relative to the number of applications made to the ballot. More precisely, I measure *difference between the expectation of plenary time relative to demand and the amount of time allocated in practice*.

MPs tend to apply for PMQs out of habit; application rates are typically higher among men, new MPs, and MPs with small majorities. For backbenchers, the expected success rate-to-application for PMQs is around 5%. The number of questions allocated to each party may vary theoretically from 0-15. Fifteen is the total number of questions allocated by random ballot. The number of questions is allocated randomly, but the number of questions received by each party is determined by the number of applications made by its members relative to the overall number of applications from the House. $Q_i - \mathbb{E}[Q]$ represents the difference between the number of questions granted to a party, minus the number they would have expected given their applications and overall demand, and therefore captures the random variation in plenary access given through the ballot.

I also use simpler measures of plenary access: *N. of Q’s* is the number of questions allocated to a party in an edition of PMQs, while *Success Rate* is the ratio of successful to non-successful applications to the ballot.

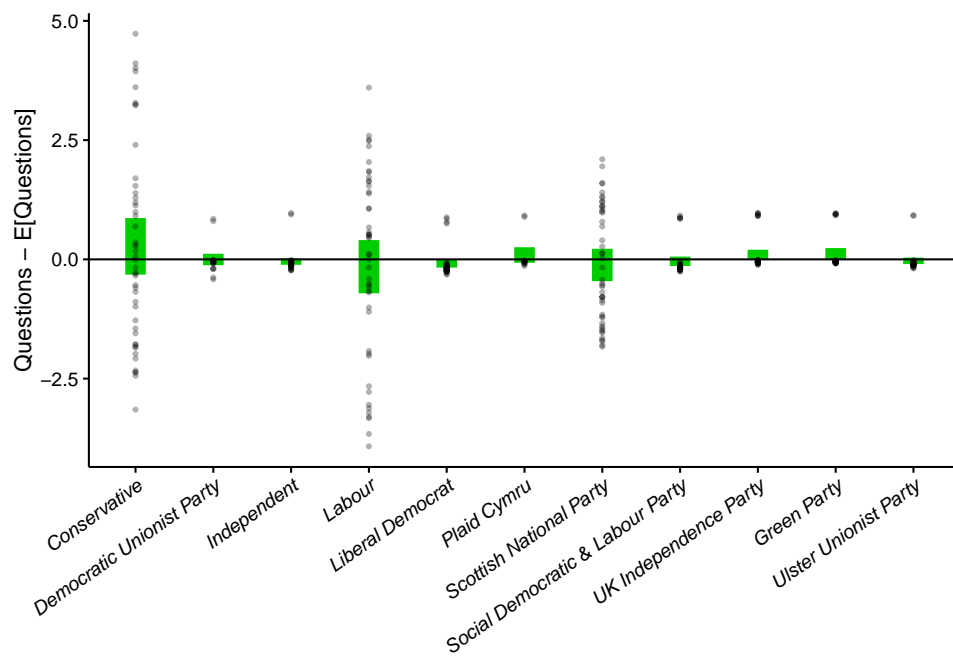
The Validity of Treatment Conditions

For the allocation of questions to be seen as a true exogenous treatment, we must verify the extent to which the ballot truly randomises applicants by party. I provide four assurances of this. First, I show that parties are sufficiently able to react according to treatment conditions. Second, Parliament claims that the process is random (UK Parliament, 2018). I provide a simple verification of this claim using expected values and a reasonable assumption of uncertainty to show that confidence intervals of the mean deviation from the expected value bracket zero. Third, I account for variation to the level of demand for questions at PMQs. Fourth, I argue that variations in the type of demand for questions should not bias statistical results.

First, a crucial condition for valid treatment is that the content of questions is not decided upon before questions are allocated. If this condition is not met then the treatment is irrelevant because parties cannot adapt their questions to reflect treatment conditions. Crucially, all that is required for entry into the ballot is the name of the MP. Parties then have one week from the publication of ballot results to Prime Minister's Questions to coordinate their line of questioning. This ensures that, once the ballot results are published (one week before PMQs), MPs and parties can coordinate their questions given the treatment condition.

Second, I test the claim that the ballot for PMQs is randomly assigned. Figure 2.1 shows the distribution of question allocation by party in PMQs between 2015-2016. On the y-axis, each point represents the difference between the allocation of questions for a party in a single PMQs and the number of questions the party could have expected to be granted given their share of applications in the ballot. The horizontal line set to zero represents a scenario in which a party receives *exactly* the number of questions they ought to have received. In simple arithmetic terms, if a party's members make 100 applications, and there are 300 applications overall, it should expect to receive one third of the available plenary time (five questions). Deviations from the zero line therefore represent how well parties do in the plenary lottery. Above the line, the party does better than expected; below the line, worse. Over the course of several iterations, the allocation for each party is distributed around zero,

Figure 2.1: Test for randomness using bootstrapped confidence intervals of mean deviance.



the line of expectation. Note that the distributions for each party differ significantly in shape, according to the number of applications they make. For smaller parties, the typical expectation for the ballot is close to 0, explaining the clustering just below the expectation mark. Occasionally, an application from a smaller party is granted, explaining the smaller clusters just under 1, showing that the smaller party received almost one more question than they should have expected.

A confidence interval for the mean deviation for each party is drawn (samples: 1000, confidence intervals: 95%), and is displayed in bars across the zero line. Bootstrapped confidence intervals are presented because the non-normality assumption suits the data, though results are not substantively changed using normally distributed confidence intervals. If a 95% confidence interval for the mean includes zero, then the distribution of questions is considered ‘random’ for each party. While this type of statistical test cannot prove beyond doubt the absence of bias (Coronel-Brizio et al., 2008), it shows that under reasonable tolerances for uncertainty the ballot does not systematically advantage or disadvantage any party.

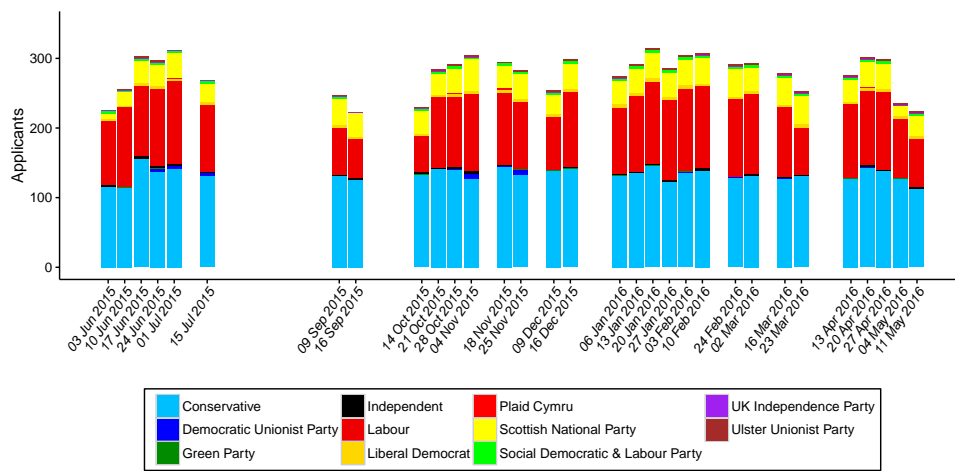
Third, another condition of valid treatment is that the element of ‘luck’, or the success rate of parties, is independent of external fluctuations in demand for plenary time. If high external demand is correlated with a low success rate for applications, then it is plausible that the source of partisanship is not due simply to plenary allocation, but to some external political event which could be driving anger at the government or the prime minister. That is, if our measure ignored variation in demand for questions at PMQs, then the measurement of question allocation would not be randomly assigned.

I account for this problem by accounting for the demand for questions from each party at each ballot for PMQs (see Figure 2.2). By measuring the difference between the expected number of questions *given demand* and the number of questions granted by ballot, this study finds a reliable measurement of random treatment assignment.

Fourth, one might argue that the type of demand (cf. the magnitude of demand) for questions at PMQs may also present a problem for analysis. For example, if new legislation were to emerge that infringed upon the rights of a given minority, we might expect an unrepresentative rise in demand for questions from that minority. Such

events are exogenous to ballot allocation, however, and should add uncertainty but not bias to the statistical analysis. Due to the low individual success rate of application (5%), in order to make PMQs a reliable avenue to voice group grievances, there has to be significant collective action among individuals. The more likely strategy would be for an aggrieved group would be to pass on the line of questioning to their party leaders, who may then choose either to take the cause for themselves or delegate to a backbencher.

Figure 2.2: Applicants to PMQs by party (June 2015 - May 2016)



2.4 Results

The results for the natural experiment are obtained using ordinary least squares regression. Models 1-4 use the $Q_i - \mathbb{E}[Q]$ version of the independent variable. Model 1 tests a pooled model including the Conservatives, the Labour Party, and the SNP. Model 2 tests for just Labour and the Conservatives. The reason for this is that results for the SNP could be biased. As mentioned above, smaller parties are often unsuccessful in their applications to PMQs. The only two parties in the sample that are always granted at least one question are Labour and the Conservatives. The SNP were allocated zero questions in 7 out of 33 occasions. Since it is not possible to know SNP partisanship when question allocation is zero, the missing values could

Table 2.2: OLS Regression

	Proportion of Partisan Questions					
	(1)	(2)	(3)	(4)	(5)	(6)
$Q_i - \mathbb{E}[Q]$	-0.057*** (0.018)	-0.042** (0.017)	-0.044*** (0.014)	-0.026** (0.011)		
Labour			0.433*** (0.062)	0.444*** (0.045)		
SNP			0.368*** (0.066)			
N. of Q's					-0.062*** (0.011)	
Success Rate						-3.863*** (1.187)
Constant	0.446*** (0.033)	0.401*** (0.035)	0.185*** (0.044)	0.177*** (0.031)	0.756*** (0.063)	0.665*** (0.077)
N	92	66	92	66	92	92
R-squared	0.101	0.086	0.448	0.645	0.271	0.105

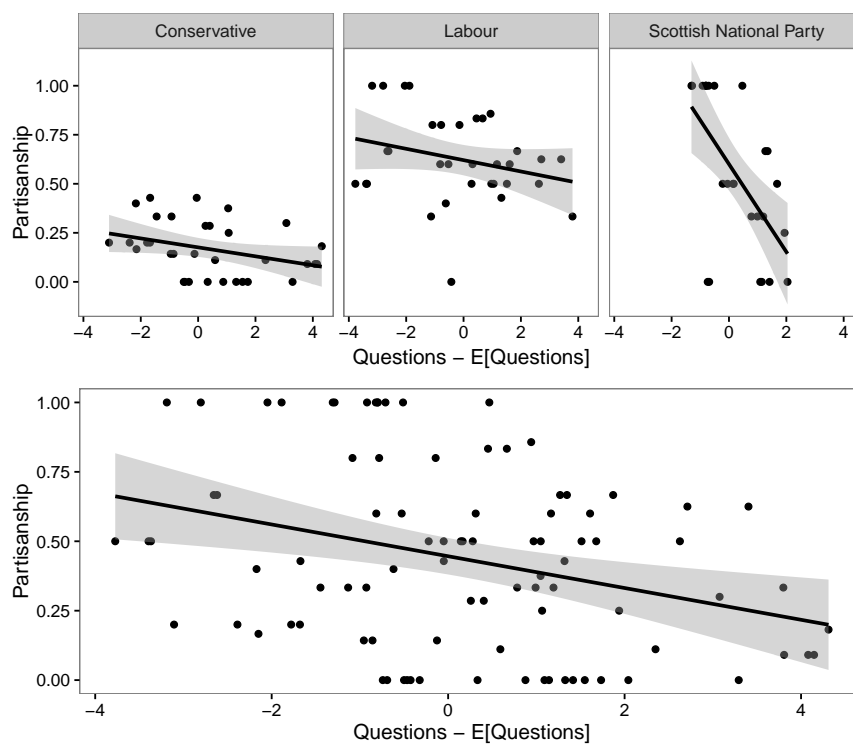
Notes: ***p < .01; **p < .05; *p < .1. Model 1 shows a simple model with the treatment as the number of questions allocated minus expected number of questions given demand. Model 2 includes only Labour and Conservatives. Model 3 includes party intercepts (Conservative Party as baseline). Model 4 also includes party intercepts but excludes the SNP. Model 5 tests a simpler specification of treatment with the number of questions allocated to each party. Model 6 tests the effect of success rate for each party at each edition of PMQs.

bias estimation. As we can see, despite an attenuation in the effect, the independent variable remains statistically reliable.

Model 3 includes dummy indicators for the political parties to ensure that within-party variation is captured. Model 4 includes a dummy for the Labour Party and excludes the SNP. In all four models, there are significant treatment effects, showing an inverse relationship between access to the floor and partisanship. Models 5 and 6 test the alternate formulations of the access to the plenary session in fully pooled models, showing similar effects on the proportion of partisan questions.

Figure 2.3 gives a graphical representation of the natural experiment, showing that the relationship holds in each party [above], and when pooled together [below]. Here, we see the markedly different baseline levels of partisanship between parties. The governing Conservative Party recorded a 17% average percentage of partisan questions asked, while Labour were 63% partisan and the SNP 54% partisan. The reason for relative lack of aggression from the Conservative Party reflects their position as the governing party. Their role in PMQs, whilst no less party political

Figure 2.3: Association between access to the floor and partisan questioning for Labour, Conservatives and the SNP.



than the opposition parties, is defensive rather than offensive. Since questions from Conservative backbenchers are also directed to the PM, it is more likely that questions are used to praise the policies of the government than to acknowledge the presence of minority parties. Nevertheless, in all three parties we observe a clear reduction in the proportion of partisan questions as the access to the plenary increases.

2.5 Conclusions

This chapter has shown that partisanship in House of Commons debates is dependent upon plenary access as well as political ideology. Backbenchers are responsive to plenary time because they have two choices: to ask a question of political interest to them (cultivating a personal vote), or to toe the party line. The increase in plenary time allows more backbenchers to feel comfortable voicing their own views without feeling that they could have done better by explicitly advocating a partisan stance. Furthermore, this chapter adapts the theory of the plenary bottleneck to show that parties in PMQs respond to time scarcity by focusing their questions along partisan lines.

These findings have implications for the study of legislative organisation, and for the House of Commons itself. Firstly, whilst there are arguments in favour of aggressive ‘Question Time’ formats in increasing the level of public engagement with politics (Hetherington, 2001; Salmond, 2014), the evidence increasingly shows that raucous and disrespectful behaviour is off-putting to a majority of voters (Bates et al., 2014; Hansard Society, 2014). Taking measures to curb excessive partisanship through increasing the supply of high-value debating time may help to broaden the parameters of PMQs debate, and give a more representative impression of political debate in the House of Commons in general. Accordingly, this study supports recent efforts made to extend the running time of PMQs beyond 30 minutes.

Secondly, this chapter adds a new perspective on the importance of time scarcity in determining legislative behaviour. Previous studies show that parties in the majority tend to restrict minority party rights as a response to time scarcity (Binder, 1996; Cox, 2006; Eggers and Spirling, 2014). Here, short-term variations in party-level

access to the floor show that parties also react to time scarcity by influencing the behaviour of their own party, as well as the behaviour of other parties. Thirdly, this study adds to the continuing expansion of natural experiments in legislative politics (Grofman et al., 1995; Grofman et al., 1995; Pettersson-Lidbom, 2012; Loewen et al., 2014; Fukumoto and Matsuo, 2015; Horiuchi and John, 2016).

Further study might explore links between partisanship, plenary access and gender to further develop study of the mechanisms causing the gendered disparity in legislative speechmaking (Bäck et al., 2014). At present, women are significantly less likely to apply to speak at PMQs than are men. Efforts to reduce excessive partisanship in the House of Commons may have the potential secondary benefit of improving gender balance in applications to PMQs. Other studies might also explore the link between speech at high-value and high-exposure debates like PMQs with individual electoral outcomes. Legislative research shows that representatives often take the opportunity to communicate their actions to their constituents (Grimmer, 2013; Slapin et al., 2018). The ballot for PMQs may provide an excellent means to test the relationship between legislative performance and re-election for incumbents. Finally, this Chapter provides the basis on which to study the link between plenary access, partisanship and other forms of parliamentary behaviour. It identifies and applies a source of exogenous variation in parliamentary debate which may also be available across other democracies and may be the basis of new studies identifying causal mechanisms in legislatures going forward.

Chapter 3

Ideology, Grandstanding and Strategic Party Disloyalty in British Parliament

WITH JONATHAN B. SLAPIN, JUSTIN KIRKLAND, JOSEPH LAZZARO
& TOM O'GRADY

During David Cameron's first term as Conservative Prime Minister, Philip Hollobone — a socially conservative member of the Tory rightwing — was the most rebellious MP in the House of Commons. He voted against his own party leadership in 19.9% of votes, a remarkable figure in Westminster where party cohesion is typically very high. He rebelled despite the fact that the vast majority of the government's agenda moved policies in his preferred ideological direction. He was even willing to rebel against his party on votes containing core conservative principles, saying that they did not go far enough. In 2013, he went so far as to vote against the Queen's Speech — the annual statement of the government's policy agenda. It was the first rebellion by government MP's against their own agenda since 1946. Hollobone, along with three other Conservative MPs, instead put forward an "Alternative Queen's Speech"

outlining policies such as bringing back the death penalty, privatizing the BBC, and banning the Burka.¹

Hollobone's own remarks suggest that he uses such votes to connect with his constituents, signalling to them his independent spirit and ideological purity, saying to the BBC that he rebels because his role is to "represent constituents in Westminster, it's not to represent Westminster in the constituency."² However, despite such a public commitment to independence in voting, in the previous parliamentary term, when the Conservatives were in opposition facing a Labour government, he rebelled against his own party leadership almost five times less, just 4.3% of the time. Why would the same MP behave so differently in these two settings?

We argue that his change in voting behaviour when in government compared with opposition highlights features of Westminster politics that the theoretical and empirical literature on postwar parties and parliamentary democracy has largely overlooked, namely the link between government agenda control, ideology, and backbencher rebellion. We demonstrate that backbencher rebellions are much more likely to occur among ideologically extreme MPs *when their party is in government*. The Hollobone vignette reflects a broader pattern: governing parties experience higher levels of rebellion than opposition parties because the exact same ideological extremists rebel more frequently when their party controls government, while moderates' rebellious behaviour remains largely unaffected by changes in government control. This result is surprising given that most of the theoretical literature on party unity in parliamentary systems focuses on government rather than opposition unity (e.g. Diermeier and Feddersen, 1998; Huber, 1996). Moreover, because we look at within individual changes, these patterns cannot be accounted for by the more mundane explanation that parties' delegations tend to be larger and more ideologically diverse when in government than in opposition.

We present a theory of rebellion in Westminster parliamentary systems that links government agenda control, ideology, and constituency representation. Because the government has control over the legislative agenda, government party ideologues are

¹Robert Watts, "Conservative MPs launch attempt to bring back death penalty, privatise the BBC and ban burka" *The Telegraph* 20 June, 2013.

²See <http://www.bbc.co.uk/news/uk-politics-23958650>. Last accessed 13 April, 2017.

able to rebel on policy grounds, allowing them to represent the interests of certain segments of their constituency without appearing to support the policy platform of the opposition. Opposition ideologues, on the contrary, find it difficult to vote against their party without appearing to support the policy prerogatives of the government. They are less able to use rebellion as a tool to connect with constituents. To test our theory, we draw on an extensive new database of rebellion on divisions (roll call votes) and related debates in the House of Commons. We link the likelihood of rebellion to ideology and government status, with ideology measured using the content of parliamentary debates surrounding welfare politics using *Wordscores* (Laver et al., 2003). We demonstrate that ideologically extreme MPs rebel more frequently, especially when in government, and are more likely to pair their rebellion with participation in debate, thus emphasizing their position.

3.1 Voting in the Westminster Systems

Any model of voting and rebellion in Westminster must account for two empirical regularities: very high levels of party unity and a government vs. opposition divide (Baughman, 2004; Kam, 2009; Spirling and Quinn, 2010; Dewan and Spirling, 2011). Indeed, partisan politics dominates so much of the decision-making calculus of MPs that ideological voting is, at best, a secondary motivation (Hix and Noury, 2016). Nevertheless, we see historical variation in parties' average levels of unity (Eggers and Spirling, 2016), variation in individuals' propensity to rebel (Gaines and Garrett, 1993), and that British voters value the dyadic link between themselves and their representatives (Bertelli and Dolan, 2009; Bowler, 2010; Cain et al., 1987; Vivyan and Wagner, 2012), including a representative's independence from the party (Campbell et al., 2016; Vivyan and Wagner, 2015). Nevertheless, the relative rarity of individual defections from party line voting in the UK and elsewhere has resulted in literature that either a) focuses on explanations for aggregate levels of party unity (e.g. Carey, 2007; Sieberer, 2006), or b) has relied on issue-specific explanations for defections from the party line (Schonhardt-Bailey, 2003; Berrington and Hague, 1998; Cowley and Norton, 1999; Lynch and Whitaker, 2013; Heppell, 2013). Less research offers

general theories of individual-level rebellion (but see Kam, 2009). We draw theoretical insights from literature focusing on both aggregate and individual levels of analysis.

Theoretical literature on aggregate-level party unity has examined how institutions and government agenda control induce discipline among governing parties (e.g. Diermeier and Feddersen, 1998; Heller, 2001; Huber, 1996). The need to pass a policy agenda and the requirement that government have the confidence of parliament leads governing parties to demand loyalty from their backbenchers. Indeed, the literature on British political development highlights the relationship between government agenda control and party loyalty (Cox, 1987). Beyond the UK, theoretical work suggests that governments can control the agenda to avoid legislative defeat (if not disunity) (Cox and McCubbins, 2005; Tsebelis, 2002).³ Theoretical scholars have paid less attention to conditions that might foster high levels of unity among the opposition, although Dewan and Spirling (2011) offer a model in which opposition parties can achieve more favorable policy outcomes by committing their MPs to vote en bloc. If the opposition can remain unified, the government must compromise with its own potential rebels rather than with those from the opposition.⁴ Others suggest that opposition parties may be able to avoid taking controversial stances on divisive issues in ways that governing parties cannot, leading the opposition to show higher levels of cohesion (Sieberer, 2006).

Literature focused on rebellion asks a slightly different, albeit related, question; namely, conditional on some existing level of dissent, which MPs (or groups of MPs) are most likely to publicly rebel from the party line. In contrast to aggregate-level studies of party unity, this literature tends not to consider government agenda control as a explanation for rebellion. Instead, it focuses on an MP's ideology, likelihood of promotion up the party ranks, and length of tenure in parliament (Kam, 2009). Virtually all empirical literature on rebellion in Westminster, both quantitative and qualitative, examines rebellion (often conceived of as a group activity) on the government back benches (e.g. Benedetto and Hix, 2007; Cowley and Norton, 1999;

³There is an important distinction between the ability of government to use agenda control to pass policy and to reign in rebels. If a governing party controls enough seats, it is likely able and willing to bring a bill up for a vote (and pass it) in the face of some internal opposition.

⁴We discuss the relationship between our model and theirs in the next section.

Gaines and Garrett, 1993; Garner and Letki, 2005). Rebellion among opposition backbenchers, or lack thereof, receives little attention.⁵ Given the political and policy consequences of government backbencher rebellion, the empirical focus on governing parties is not surprising. However, because the existing literature has not directly compared individual-level MP behaviour while in the opposition to their behaviour while in the government, we argue that researchers do not know the full extent of the empirical puzzle and have yet to fully explore the impact of government agenda setting on rebellion.

We provide a general theory of individual defections from party votes in which electoral incentives drive MP behaviour. We are certainly not the first to pursue such an effort (see, among others Kam, 2009; Carey, 2008). Prior efforts focus on questions of individual agency amid refusals of ministerial positions (Benedetto and Hix, 2007; Kam et al., 2010; Eggers and Spirling, 2016; Piper, 1991; Tavits, 2009), individual ideology (Kam, 2001), general socialization towards acquiescence to party leaders' preferences (Crowe, 1986), strategic opposition as a function of a commitment mechanism (Dewan and Spirling, 2011), and constituent preferences on salient parliamentary issues (Schaufele, 2014; Bowler, 2010; Pattie et al., 1994; Johnston et al., 2002; Longley, 1998; Vivyan and Wagner, 2012). In contrast, we combine theorizing on government agenda control — key to studies of aggregate-level behaviour — with explanations found in the individual-level literature to build a new theory. We consider how governing parties' commitment (and ability) to change policy interacts with individual ideology to generate electoral incentives for MPs to craft an image of independence through rebellion. In doing so, we contribute to the growing literature on representation and electoral signalling through legislative votes and speech (Bäck et al., 2014; Herzog and Benoit, 2015; Proksch and Slapin, 2012).

⁵Kam (2001, 2009) looks at rebellion in both government and opposition parties, but he does not explicitly examine the effect of government agenda control on rebellion.

3.2 Ideology and Grandstanding in the House of Commons: A Theory

Our theory of rebellion in Parliament hinges on a theory of elections and representation. As many before us, we view MPs as agents of two (potentially) competing principals — their party and their voters. Electoral incentives affect the degree to which MPs are beholden to these principals (Carey, 2007; Hix, 2004). On the one hand, the Westminster system, coupling single member district plurality elections with parliamentary democracy, empowers parties. Parties exercise significant control over candidate selection and voters typically consider a vote for a particular MP as a vote for that MP’s party. Nevertheless, an MP’s name features prominently on the ballot, and MPs have a strong incentive to engage in activities that boost their name recognition among voters (Cain et al., 1987). As voters value some degree of independence among their MPs (Campbell et al., 2016; Vivyan and Wagner, 2015), rebellion is clearly one mechanism for generating individual recognition (Kam, 2009, pp. 113–117). As Kam points out, “British MPs appear to use dissent and constituency service as complementary vote-winning strategies” (Kam, 2009, p. 103). The question remains, though, under what conditions is rebellion from the party an effective strategy? We argue that the answer relates to conditions under which MPs are best able to use their dissent as a mechanism to communicate policy stances to voters for electoral gain. In short, government backbenchers, and particularly those who stake out more extreme ideological positions, are better positioned to turn dissent into an asset than opposition backbenchers and moderates.

Dissent is not a strategy that MPs can employ with too much regularity.⁶ There are real costs associated with dissent for both the party and the MP. For the party, mass dissent is embarrassing. It can water down the party’s message, potentially costing it votes at election time (Kam, 2009, Chapter 6). For governing parties, mass

⁶Throughout this section, we treat the decision to rebel as though it belongs solely to the MP. In some instances, party leaders could coordinate rebellious acts. They, too, may benefit when their backbenchers connect with constituents. Nevertheless, we believe that on the whole party leaders attempt to avoid rebellion. For the purposes of our theory and empirical results, it makes little difference if rebellion is solely at the discretion of the MP or coordinated more centrally by the party. The same MP-level incentives apply and the empirical predictions would be identical.

dissent can jeopardize the party's legislative program, and even potentially lead a government to collapse. For the dissenting MP, at the extreme the party leadership could remove the whip, kicking the MP out of the parliamentary party, or revoke support at election time. But well before taking these drastic measures, the party could sanction the MP by discounting the MP's policy priorities or overlooking the MP when considering promotions within the party hierarchy. The costs of these sanctions may vary across MPs. The sanctions are least costly to those electorally secure MPs less likely to move up the ministerial ranks who have created an electoral profile for themselves somewhat distinct from the party, thus insulating them from party punishment mechanisms. MPs must carefully weigh the benefits of dissent against the costs, and only rebel when they are able to fully exploit the electoral advantages of taking a stand that contradicts their party's main message.

A backbencher can benefit from rebellion in two different ways, and they are not mutually exclusive. The first is ideologically (or spatially), and the second is through the opportunity to communicate a policy stance to voters. We describe the ideological motivations first. Following a spatial logic, a MP may oppose a bill on ideological grounds if she prefers the legislative status quo to the policy proposed in the bill. Standard Downsian spatial voting suggests that for any reasonable set of status quo locations, only MPs holding moderate positions on a given policy would vote against the majority of their party (Downs, 1957). Suppose that a Conservative government bill is the subject of a division in parliament. This bill will likely to move policy in a conservative direction relative to the status quo. Very few members of the opposition Labour party (or other leftwing opposition parties) have an ideological incentive to support a proposal that moves policy away from the preferred position of their party. The few members of the opposition who might defect would be moderate MPs, sufficiently conservative to side with the government on occasion. Likewise, one could imagine that moderate Conservatives, who view their own government as having pushed policy too far, might vote against their party on occasion, too. In unidimensional, single issue voting, we would never expect ideological extremists to defect when moderates do not. Within ideologically well-sorted parties, spatially

motivated defections should be rare and come from the middle.⁷

The second way an MP could benefit from dissent is to use a rebellious vote as an opportunity to highlight her preferred policy position and to distinguish her stance from that of the party. She could seek to garner electoral support from an ideologically driven subset of the electorate by vocally standing up against a policy that has a reasonable chance of becoming law but that this particular ideological constituency opposes. The MP and the constituency may both prefer the status quo over the bill, and the MP may use rebellion to signal to voters her ideological discontent in a legitimate attempt to block passage of the bill. But even if an MP prefers the bill over the legislative status quo, she may rebel to signal that, in an ideal world, she would have preferred a different policy. This strategy is particularly effective when the bill has sufficient support to pass regardless of the actions taken by the individual MP. For example, an MP could advocate for a policy that goes substantially beyond the policy as stated in the bill, saying that although policy is moving in the right direction, it does not go far enough. The actual act of crossing the aisle on the division is important, as these rebellions receive significant press coverage.⁸

Thus, regardless of an MP's spatial utility for a bill, rebellion can provide an opportunity to signal a policy stance and connect with a subset of ideologically driven voters at the expense of party unity. We argue, though, that MPs' ability to benefit from rebellion in this manner is conditional on their party being in government and possessing control of the parliamentary agenda. The set of MPs who benefit from voters perceiving them as distinct from their own party differs greatly for the governing party and opposition. Rebellion when in the opposition may look like support for the government and its policy agenda. Opposition moderates, who might

⁷Note that when politics is multidimensional, it is perfectly plausible for an MP who generally holds extreme positions to possess moderate positions on specific issues. Thus, we could see individuals classified as extremists on occasion defecting for ideological reasons following a spatial logic. Nevertheless, we know from empirical literature that spatial voting models do a poor job of classifying votes in Westminster (Spirling and McLean, 2006) and rebels (or at least those in government) are generally extremists (Benedetto and Hix, 2007).

⁸Here we assume that an ideologically driven electorate cares more about the policy position the MP advocates for than the actual location of the policy outcome. In short, voters are motivated by ideology, but not spatial politics. One interpretation could be that voters are less sophisticated than politicians and are less likely to understand the position of the status quo policy. An alternative interpretation is that ideologically motivated constituents derive utility from having their views voiced, regardless of policy outcome.

on occasion support government policies, would prefer to see their own party make policy change and get credit for it. Indeed, Dewan and Spirling (2011) offer a spatial logic to suggest that even moderate opposition members can be better off by binding themselves to their party and voting strategically against the government. Among more ideologically extreme opposition MPs, it would be very difficult to connect with ideologically driven constituencies within their party by offering support to a government that usually moves policy in the wrong direction.

Government MPs, in contrast, are better able to argue that their government is generally doing the “right” thing, but happens to have gotten it “wrong” on this particular issue. A government backbencher wishing to oppose her own government could do so under two different conditions. First, the backbencher may support the bill, but feel that it does not go far enough. She wishes to say that the government should be doing more, without actually defeating the bill. Second, if a bill moves policy away from from her ideal point (e.g. a Labour government passes cuts in unemployment benefits), the MP may genuinely wish to defeat the measure. Both scenarios create opportunities for government backbenchers to demonstrate independence from the party and garner name recognition, but they have different policy implications and risks.

In both instances, MPs who occupy the ideological fringes of the party — as opposed to moderates — are most likely to rebel. In the first scenario, if an extremist MP knows with a high degree of certainty that the bill will pass regardless of her actions (moving policy in her direction), the MP may benefit by opposing her own party saying policy change does not go far enough. Such rebellion is conditional on the extremist’s ability to explain that her defection is not a preference for the status quo, but instead a preference for even larger policy shifts. In other words, ideologically extreme members of a governing party may use divisions as opportunities to “grandstand” or cast a strategic vote against their own party to signal ideological purity to voters, so long as they have a mechanism for defending that defection.

Floor debates offer a prime opportunity for MPs to explain their votes. Debates provide a good conduit for MPs to explain ideological differences. Party leaders generally lack formal mechanisms to prevent particular MPs from speaking, or to

determine what they say. MPs often use their speeches to dissent from the party line even when they vote with it, meaning that their speeches provide insight into intra-party differences (Proksch and Slapin, 2015). If an MP wishes to speak in a debate, the MP can register her desire to participate with the non-partisan Speaker of the House. The parliamentary rules of procedure give the Speaker wide latitude to control debate. Members stand to “catch the Speaker’s eye” when they wish to speak. The Speaker’s primary concern is provide partisan balance, choosing speakers from alternate sides of the aisle; not whether a speaker wishes to express a view at odds with the party leadership. While MPs may not always be able to participate in debate as they like — demand for speaking time may at times outstrip supply — if rebels demand more speaking time in particular instances, they should also participate at higher rates at these times.

In the second scenario, if a sufficient number of MPs genuinely oppose a policy, making government defeat a real possibility, rebellion becomes a riskier strategy. The costs for both the MP and the party are greater, but so is the possibility for the MP to generate press for her position. The press pays more attention to votes when there is a chance of government defeat. Here, a government backbencher may legitimately prefer the status quo over the bill, but she has to determine whether any potential spatial benefits and opportunities for grandstanding outweigh the costs imposed by the party. Depending on the nature of the issue, some MPs may prefer the status quo and use the spatial gain as an opportunity to grandstand, as well. But the benefits of grandstanding would have to be large relative to the costs imposed by the party.

Lastly, we argue that the party is less able to impose costs on MPs who generally hold extreme positions. Moderates tend to wish to climb the party ladder and they have their eyes on ministerial positions (Benedetto and Hix, 2007; Kam et al., 2010). They are also less likely to represent easily identifiable ideological groups. Extremists are likely better able to connect to ideological constituencies within the party, and any punishment the party metes out may even help foster the view of the MP as a maverick willing to show independence from the party.

The incorporation of utility from grandstanding and strategic party disloyalty among governing party members implies a different set of hypotheses than a simple

spatially-motivated account of defection. Our account of strategic party disloyalty suggests that: 1) the same MPs are more likely to rebel when their party is in government than when in opposition, 2) among governing party members, ideological extremists are the most likely to defect, and 3) those ideologically extreme governing party MPs are likely to telegraph their defection by speaking in parliamentary debate when they do so. Accordingly, differences in the distributions of party dissent and the prevalence of parliamentary speech paired with dissent among MPs when in government and opposition offer a critical test of our theory. We lay out the following hypotheses based on our theory.

Hypothesis 1: The probability of dissent increases when an MP's party is in government.

Hypothesis 2: The probability of dissent increases among more ideologically extreme governing party MPs.

Hypothesis 3: The probability of a parliamentary speech paired with a dissent increases among more ideologically extreme governing party MPs.

Before proceeding to test our theoretical argument using data on dissent and speech in the House of Commons, we briefly address the two alternative models. The first is that we find less rebellion within parties when in the opposition simply because they are smaller and more cohesive than when in government. This argument assumes that those members most likely to rebel when in government were also the most electorally vulnerable. The loss of electorally vulnerable members' seats caused the party to move from government to opposition. The remaining MPs are more ideologically cohesive. In contrast, the governing party gained seats by adding marginal members who are more likely to dissent. We rule out this argument by looking at *within-MP* changes in rebellion across time. In other words, we ask whether the exact same members were more likely to rebel when in the government than the opposition. We also examine whether more electorally secure or more vulnerable members were likely to rebel and find no evidence of electoral vulnerability mattering in a consistent manner.

A second possible argument is the purely spatial logic put forward by Dewan and Spirling (2011). They explicitly reject electoral signaling arguments such as ours as a driver of opposition cohesion. Their basic argument is that, on an issue-by-issue basis, moderates in the opposition are better off in a policy sense if they can bind themselves to vote against the government. Thus, moderates in the government are a more likely source of rebellion. Their model would predict that the identical MP should be more loyal when in opposition than when in government. We view this argument as plausible, but not necessarily contradictory to ours. It is entirely possible that on an issue by issue basis some extremists are indeed “moderates”, or stake out a position close to the opposition on a particular issue, and these are the issues where we observe defection. However, if there were no electoral signalling story, we would not expect any differences in debate activity. We would argue that if even if the spatial story holds true, government MPs are still able to use issues to connect with voters in a way that opposition members are not. Moreover, our theory can explain rebellion in instances when their theory cannot — namely, we would predict defection among government MPs when they truly take an extreme position and the status quo is likely to move in their direction, as suggested by the Hollobone anecdote in the introduction. A spatial model does not predict defection in these instances.

3.3 Data on Divisions, Defections, and Debates

To test our hypotheses, we compare individual MP behaviour on divisions and speeches when their parties move from government to opposition. We take advantage of two changes in government — the switch from the Conservative government of John Major to the Labour government of Tony Blair in 1997, and the switch from Gordon Brown’s Labour government to David Cameron’s Conservative/Liberal Democrat government in 2010. Prior to Labour winning 1997 they had been in opposition for 18 years. When the Conservatives came to power in 2010, they had been in opposition for 13 years. Because we are specifically interested in how individuals change their behaviour as a result of the change in government, we only examine MPs from the Labour and Conservative parties.

Of course, the 2010–2015 government was a coalition of the Conservatives and Liberal Democrats. We assume that the presence of the Liberal Democrats as the junior coalition partner did not drastically affect the behaviour of the Conservative party backbenchers. From the perspective of the spatial model, so long as the coalition generally preferred policies to the right of the previous Labour government, the presence of the Liberal Democrats should not change our expectations regarding Conservative party backbencher behaviour. If anything, the presence of the moderate Liberal Democrats in government makes the coalition period a particularly good parliament in which to look for evidence in support of our theory. To the extent that the Liberal Democrats moderated government proposals, we would expect extremist Conservatives to have an increased incentive to rebel, emphasizing that the government does not represent truly conservative interests.⁹

Our analysis below demonstrates that patterns of rebellion during the period of coalition government look similar to those in the earlier periods. Moreover, the number of divisions and overall percentage of rebels on those divisions look very much the patterns we find in the earlier periods for both Labour and the Conservatives. A slightly higher percentage of divisions experience 10 or more rebels but the numbers are comparable to the previous period of Conservative government (5.52% compared with 8.55%). The most notable difference in the coalition period is that the very most rebellious Conservative MPs seem to have rebelled more. These results are largely in line with initial analyses of the coalition government that find higher levels of rebellion confined to a small number of rebels. These rebellions had little impact on the passage of the government’s agenda or the overall style of government, making the coalition largely business as usual (Yong, 2012).

Data on MPs’ rebellions from their parties on parliamentary divisions were gathered from www.theyworkforyou.com for the 2005–2015 period. For the earlier period, 1992–2001, the data were parsed directly from Hansard XML files available at www.hansard-archive.parliament.uk. We identify free votes (those that are not subject to any whipping) and drop them from the analysis.¹⁰ Additionally, we

⁹We thank an anonymous reviewer for pointing this out to us.

¹⁰While there is no definitive list of all free votes, a list of known free votes from 1997 to 2015 is available from the House of Commons Library at <http://researchbriefings.parliament.uk/>

gathered information on parliamentary debate participation for debates associated with divisions. Thus, for every division, we are able to identify who rebelled against their party (defined as voting against the party majority) and who gave a speech during the debate associated with that division. Table 3.1 provides information on the number of divisions per parliament and the number of rebellious acts we record. Specifically, for both parties in each period we report rebellious acts as percentage of the total number of votes cast (excluding free votes); the percentage of divisions experiencing one or more rebels; the percentage of divisions experiencing greater than 10 rebellions; the percentage of MPs who rebelled at least once; and number of times the median and maximum MP (with respect to rebellion) rebelled. These data (and all subsequent analyses) drop any MP who switched party during the period of observation.¹¹

Table 3.1: Summary Statistics

		1992– 1997	1997– 2001	2005– 2010	2010– 2015
No. of Divisions		1249	1245	1233	1204
% Rebellions	Labour	0.46	0.52	0.66	0.64
	Conservative	0.50	0.59	0.66	0.54
% Divisions with => 1 Rebel	Labour	14.25	15.26	36.98	15.53
	Conservative	22.02	10.12	15.25	36.71
% Divisions with => 10 Rebels	Labour	3.04	5.54	9.89	2.08
	Conservative	5.52	0.80	2.19	8.55
% of MPs who Rebel	Labour	93.23	94.49	73.29	71.96
	Conservative	86.75	96.62	88.52	83.87
No. Rebellions Median/Max MP	Labour	5/34	4/71	2/233	2/46
	Conservative	2/67	3/28	3/41	2/217

The summary data are in line with previous studies of rebellion in the UK (e.g. Kam, 2009). They demonstrate that while rebellion is rare — fewer than 1% of recorded votes are rebellious — rebellious MPs and divisions experiencing rebellion are common. Most MPs vote against the majority of their party least once over the course of a parliamentary term, and a small number do so with some frequency.

ResearchBriefing/Summary/SN04793. For the earlier period, all votes with significant levels of rebellion were checked to determine whether they may have been a free vote. Specifically, speeches related to divisions were checked for mentions of a free vote as well as media sources. We thank Raphael Heuwieser for help in identifying these votes and providing us with data.

¹¹A list of party-switchers can be found in Appendix F.

Additionally, the percentage of divisions experiencing at least one rebellious vote is reasonably high.

Others have suggested that voting patterns may differ depending on the nature of the division, when it occurs within the parliamentary agenda (Bräuninger et al., 2016; Coman, 2012), and whether a vote is recorded (Hug, 2010).¹² Using the extensive division titles provided by www.theyworkforyou.com for the later period of our study (2005–2015) we identify where and when in the parliamentary agenda these divisions occur.¹³ The vast majority of divisions are votes on clauses and amendments to bills following the second reading stage, once the bill has passed to committee. A much smaller number occur at the time of a bill’s second or third readings, either in an attempt to decline a reading, to make an amendment to the motion to hold a reading, or on the reading, itself. Lastly, divisions on opposition days — days on which the opposition controls the parliamentary agenda — are quite common. In line with our theory, though, rebellion on these divisions is very rare.

3.4 Analyses of Rebellion

We now proceed to our statistical models of rebellion. We employ fractional logit models with MP-level random effects. Our dependent variable is a proportion — the number of times an MP rebelled from her party over the total number of divisions within a parliamentary term —, making OLS is an inappropriate modelling strategy.¹⁴ An individual MP’s level of rebellion is properly viewed as a series of binomial trials coded one if a legislator rebels against her party on a division and zero otherwise. Fractional logit models take proportions in which the numerator and denominator are known and expands them out into sets of zeros and ones. For example, we

¹²Recent advances in the literature on roll call votes have focussed on analysing and accounting for selection effects (Carrubba et al., 2008; Hug, 2010; Rosas et al., 2015). We wholeheartedly agree that accounting for selection of votes is essential when attempting to measure latent characteristics of parties (e.g. cohesion and ideology) or their members (e.g. ideology and latent propensity to rebel) from votes. However, our goal is to understand the public act of rebellion, when it is more likely to occur, who is likely to engage in it, and why. In other words, we are interested in rebellion conditional on the set of votes that the political system provides us with. These votes may not provide unbiased data to use when estimating an MP’s latent propensity to rebel, but they do capture who rebels when given the opportunity.

¹³The division headings for the earlier period are not as extensive and do not allow us to identify the nature of the division. More information is available in Appendix C.

¹⁴Information on the modelling strategy can be found in Appendix G.

may observe 100 instances of an MP opposing his or her party out of 1000 votes. This implies there are 100 ones and 900 zeroes in a binary coding of that MP's opposition to her party. From this setup a standard logistic regression emerges to predict the probability of an outcome, given some attributes of the groups (in this case, legislators), but with no information about the trials (in this case, divisions) themselves. We estimate separate models for two periods, 1992–2001 and 2005–2015, each consisting of two parliamentary terms. MPs who serve in both terms during a period appear in the data twice, while those who serve in only one term appear only for the term they serve. By incorporating MP varying intercepts, we remove the between-unit variance in rebellion and concentrate on the within-unit variance, meaning we examine *within-MP* change.

We are first and foremost interested in whether MPs tend to rebel relatively more when their party is in government or in opposition, and whether some MPs are more affected by this shift than others. As we hypothesize above, we expect more ideologically extreme members to be more affected by a change in government control. Measuring MP-level ideological extremity over time in the House of Commons is very difficult. The most common approach to date has been to use measures obtained from candidate surveys (Benedetto and Hix, 2007; Kam, 2009; Kam et al., 2010). We do not take this approach for two reasons: first, response rates for these surveys are rather low, meaning scholars either rely heavily on multiple imputation methods for missing data or only examine a small subset of MPs; and second, using these data require researchers to match anonymous survey responses to individual MP parliamentary records by merging on uniquely identifying constituency level data. Data for later periods do not allow for such merging. Other approaches using Early Day Motions are harder to implement and only available for limited time periods (Kellermann, 2012).

Instead, we take three different approaches. First, previous research has demonstrated that ideologically extreme members are most likely rebel, while moderates are much less likely to do so (Benedetto and Hix, 2007; Cowley and Norton, 1999; Kam, 2009). Indeed, rebellious extremists are precisely the reason why classical techniques for scaling roll call votes do not provide measures of ideology in the UK (Spirling

and McLean, 2006), and often rebelliousness is taken as an indication of extremism. Thus, we first simply examine whether those MPs who rebel the most are more likely to alter their behaviour when in government than when in opposition. This simple measure allows us to preserve as much data as possible and allows us to understand how government agenda-setting impacts rebellious behaviour amongst those MPs with the highest propensity to rebel.

Of course, if this were the only analysis we provided we would be saying little about the role of ideology. Thus, we examine two further measures of ideology. First, some backbencher MPs within the House of Commons join ideological groups known to take positions on the ideological extreme of the party. In the case of Labour, the Socialist Campaign Group has represented the hard left wing of the party dating back to 1982. Within the Conservatives, the hard right wing has been represented by various groups over the years including the Conservative Monday Club¹⁵, the Cornerstone Group representing traditional social conservatives and the “No Turning Back Group” representing Thatcherite free marketeers. We create a dummy equaling one for any MP that we have determined to have been associated with any of these groups. A list of these MPs can be found in Appendix B.

Lastly, we estimate ideology based on upon speeches on welfare-related bills using the *Wordscores* method (Laver et al., 2003) and we examine the effect of the interaction between our ideology measure and government status on rebellion. We provide a brief description of the *Wordscores* estimation below, along with a fuller description and validity checks in Appendix A.¹⁶

The eight models in Table 3.2 offer initial evidence in favor of our theory. In models 1–4, we regress overall MP rebelliousness on two dummy variables and their interaction. *Government* takes on a value of one when an MP’s party is in government and zero when in opposition. *Most Rebellious* takes on a value of one for the 25% most rebellious MPs and zero, otherwise. The model controls for MPs’ electoral

¹⁵The party formally severed ties with the Monday Club in 2001 in response to its extreme views.

¹⁶*Wordscores* works well in this instance compared with unsupervised approaches such as *Wordfish* (Slapin and Proksch, 2008), which less suited for capturing ideology from speeches (Proksch and Slapin, 2010). *Wordscores* allows us to identify relevant reference texts to pin down the space. Additionally, by focusing solely on debate related to welfare, we ensure that we capture an ideological dimension that maps to a traditional left-right space.

Table 3.2: Effect of Government Status on Rebellion: Fractional Logit Models with Random Effects

	1992-2001		2005-2015		1992-2001		2005-2015	
	Labour Model 1	Conservative Model 2	Labour Model 3	Conservative Model 4	Labour Model 5	Conservative Model 6	Labour Model 7	Conservative Model 8
Government	-0.308*** (0.059)	-0.756*** (0.094)	0.123 (0.103)	-0.375*** (0.090)	0.271*** (0.054)	-0.148 (0.096)	0.833*** (0.080)	0.380*** (0.067)
Most Rebellious	0.807*** (0.067)	0.899*** (0.107)	1.352*** (0.124)	1.130*** (0.105)				
Group								
Majority	-0.028 (0.037)	0.131** (0.057)	-0.554*** (0.098)	-0.132 (0.102)	0.681*** (0.122)	0.335 (0.222)	1.709*** (0.305)	0.626*** (0.234)
Leader	-0.159 (0.122)	-0.457*** (0.175)	-0.843*** (0.219)	-0.569*** (0.142)	-0.131*** (0.049)	0.081 (0.073)	-0.613*** (0.115)	-0.156 (0.114)
Tenure	2.661*** (0.693)	3.068*** (0.992)	7.798*** (1.589)	3.928*** (1.107)	-0.530*** (0.139)	-1.151*** (0.195)	-1.092*** (0.248)	-0.749*** (0.150)
Gov*Rebellious	0.929*** (0.081)	1.339*** (0.126)	1.443*** (0.112)	1.615*** (0.112)	0.979 (0.979)	3.798*** (1.459)	12.064*** (2.373)	4.313*** (1.782)
Gov*Group								
Constant	-5.329*** (0.057)	-5.795*** (0.091)	-6.563*** (0.117)	-5.791*** (0.109)	0.710*** (0.081)	0.770*** (0.125)	0.912*** (0.094)	0.770*** (0.095)
N	650	449	551	460	651	449	552	460
Log Likelihood	-1591.366	-1039.613	-1314.212	-1148.745	-1894.333	-1322.457	-1544.899	-1515.199

*** p < .01; ** p < .05; * p < .1 in a two-tailed t-test

security by including their vote majority from the previous election, for holding a leadership position, and for the length of time they have served in parliament.¹⁷ Although endogenous — we regress rebellion on rebellion — the first four models offer a simple specification that allows us to demonstrate that those members who rebel the most act very differently when in government and in opposition. The positive and statistically significant effects of the interaction terms imply that, for both parties in both time periods, the members who rebel the most are even more likely to rebel when in government than in opposition. In models 5–8, we regress rebellion on our group membership dummy and the interaction of this dummy with the *Government* dummy. We find a positive coefficient on group membership which is statistically significant in three of the four models, with the exception being the earlier period for the Conservatives. On average, members belonging to these ideological groups are more rebellious. More importantly, we find a positive and statistically significant effect on the interaction term across all four models; MPs belonging to these extreme groups rebel even more frequently when their party is in government than in the opposition. We also find a strong and statistically significant effect for *Tenure*, with longer-serving MPs rebelling more frequently. As expected, leaders are much less likely to rebel, while there appears to be no clear cut pattern with respect to an MP’s electoral majority.

To give our logistic regression results some substantive meaning, we plot the probability of a rebellious vote by a party member belonging to an ideological group as the member moves between government and opposition party status using the results from models 5–8 in Table 3.2. These predicted probabilities appear in Figure 3.1.¹⁸ The predictions for Labour are lighter and those for Conservatives are darker. Circles represent predictions for group members while squares are those for non-members. The lines represent 95% confidence intervals. The figures show that MPs

¹⁷Both the *Majority* and *Tenure* variables are rescaled to help with model convergence. We rescale *Majority* by dividing by 10,000. *Tenure* is calculated as the number of years that an MP has served in the parliament at the midpoint of the time periods we investigate (1997 and 2010) divided by the number years served by the longest serving MP at that time. Leadership is coded one for any MP who was a member of Cabinet or Shadow Cabinet or Minister of State (or opposition equivalent) throughout the entire parliament. The party leadership data are taken from Proksch and Slapin (2015) for the earlier period and expanded to cover all years in our sample. We have also run models dropping leaders and looking only at backbenchers and all results hold.

¹⁸The predicted probabilities are calculated for backbenchers with mean values on the *Tenure* and *Electoral Majority* variables.

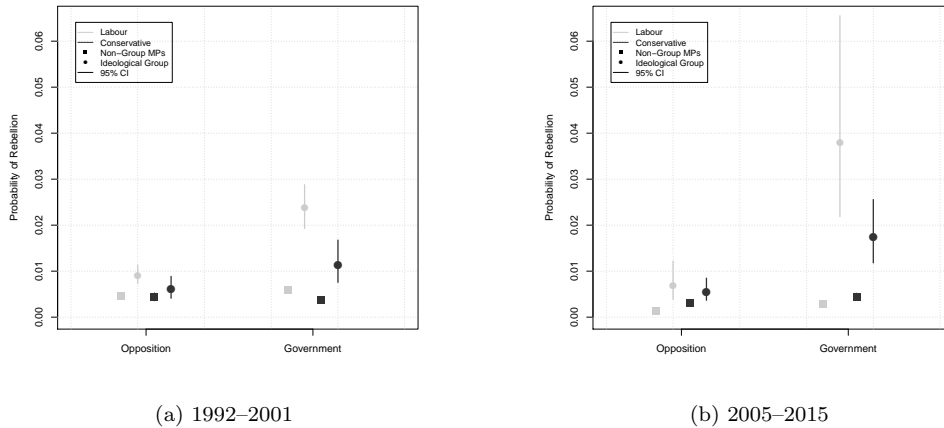


Figure 3.1: Probability of a Rebellious Vote in Government and Opposition by Group Membership

who do not belong to ideologically extreme groups tend to rebel with relatively equal frequency when in government and opposition. However, among MPs belonging to ideological groups (the circles), dissent is much more frequent when in government than in opposition. The rate of rebellion increases approximately 2.5 times.

Using data on the nature of divisions in the later period from Bräuninger et al. (2016), we have rerun the 2005–2015 models keeping only divisions on items sponsored by the governing party, excluding private member bills — in other words, items the government wants to pass. All of our results hold in this subset of divisions offering further evidence for our theory. We have examined whether any differences exist in rebellious behaviour within the Labour party when the leadership shifted from John Smith to Tony Blair and again when Tony Blair stepped down as Prime Minister, allowing Gordon Brown to take over. We find no statistical differences in the levels of rebel following these leadership changes. See Appendices D and E for more information.

3.4.1 Wordscores Ideology

While illustrative of the pattern suggested by our theory, the results in Table 3.2 can be pushed further by explicitly looking at measures of ideology. To do so, we

use *Wordscores* to estimate ideology from parliamentary speech. The estimates are based on an original collection of every speech related to welfare in the House of Commons from 1987–2007. The House of Commons is a good place to use speech data to measure legislators’ policy positions because, as discussed above, British MPs enjoy very substantial autonomy to speak as they choose.

We use speeches on welfare issues for both methodological and substantive reasons. Methodologically, by restricting the estimation to a single issue area we avoid problems that may arise when speeches from several different areas are combined. Research on scaling speech has demonstrated that estimation of ideology from multidimensional speech can be quite difficult (Lauderdale and Herzog, 2016). If the distribution of MPs’ ideologies is multi-dimensional (for instance on economic versus social issues), then some MPs could accidentally be scored as centrist simply because they take extreme but opposite positions across dimensions. Likewise, with multiple topics, there could be a danger of conflating genuine extremism (a tendency to speak in extreme ways) with a tendency or requirement to talk a lot about topics that are relatively extreme to begin with. The latter is a particular concern in a parliamentary system like the UK, where some MPs are also ministers with formal requirements to speak about their own issue area.

Substantively, the welfare state is a controversial and highly politically-charged issue that very clearly divides British political parties in a traditional left-right space, both between — and more importantly for our purposes — within each party. The Labour party originally created, and then staunchly defended, traditional welfare programs throughout most of its history. But under Tony Blair’s leadership, it introduced significant welfare reforms that included cuts to major programs and the introduction of means-testing and “welfare-to-work” initiatives (Rhodes, 2000; Clasen, 2005). Within the Labour party these reforms were hugely controversial and caused major internal strife, including the back-bench rebellions of Tony Blair’s first term as Prime Minister (1997-2001) (Cowley, 2002). Similarly, much of David Cameron’s time as Prime Minister was taken up with far-reaching welfare reforms, which caused splits within the Conservatives, between the coalition parties, and within Labour as it struggled to articulate a coherent response. Finally, since *Wordscores* is a supervised

algorithm, the choice of training data is crucial in estimation. Because welfare reform was such a charged issue throughout the period that we consider, it is easy to identify ideologically extreme factions that anchor the estimated scale, as we discuss below.

The speeches include both regular debates and scheduled question times for relevant ministries, including all questions to Ministers for Social Security, and a subset of questions to Treasury ministers that cover welfare issues. They were divided into two periods. The first runs from the 1987 election up to the death of John Smith, Tony Blair’s predecessor as Labour leader, in June 1994, when Labour largely remained a traditional social democratic party. The second runs from June 1994 up to June 2007, the era of “New Labour” under Tony Blair, when it embraced welfare reform. Each MP is represented in one or both of the two periods by a single document, consisting of all speeches they made about welfare in that time. MPs appearing in both periods feature as two separate documents, although many only feature in one period, depending on when they were in office or when they spoke on welfare issues. It is necessary to split MPs in this way due to ideological change over time amongst Labour MPs, who shifted substantially to the center under Blair. In our study, the 1987-94 speeches are used to estimate ideological extremity for MPs in the 1992–2001 period, and the 1994–2007 speeches are used to estimate extremity for the later 2005–2015 period. This division of periods not only corresponds to important changes within the Labour Party, but it also allows us to avoid issues of endogeneity as the speeches we use to estimate ideology largely pre-date the periods of rebellion we examine.

Finally, MPs whose total speeches about welfare comprised only a handful of sentences were discarded, as these documents do not contain sufficient information to estimate the MP’s position. Because of this, and because some MPs did not make a single speech about welfare, we estimate positions for only a sample of all MPs who held office over the period. Nonetheless many of the most prominent names are included, both ministers and backbenchers, and there is very substantial ideological diversity among the MPs. The appendix contains more information on those MPs included.

Wordscores requires the identification of reference texts. Our reference documents

were chosen based on membership in the ideological groups described earlier; they were not selected by pre-examining the speeches. For Labour, the left-wing reference document consists of all speeches made by members of the far-left “Socialist Campaign Group” during the pre-Blair era, when the party as a whole was more left-wing. It contains many famous figures from the Labour left, including Diane Abbott, Tony Benn, Jeremy Corbyn and George Galloway. In total, 23 Socialist Campaign Group MPs were included in the reference document. On the right, we used speeches made by Secretaries of State in the later period who were responsible for the welfare state, all of whom were close to Tony Blair, supported welfare reforms, and were clearly situated on the right of the party (Alistair Darling, Andrew Smith, David Blunkett, Harriet Harman and John Hutton). By definition, their rhetoric in parliament supported the more centrist Blair administration.

For the Conservatives, the left-wing reference document consists of all MPs (in both periods) who were members of the “Tory Reform Group”. This is a moderate faction that has advocated for moving the Conservatives to the center, and is associated with socially progressive, pro-European views. Its membership includes a number of famous moderates, including Kenneth Clarke, Michael Heseltine and Douglas Hurd, as well as MPs who defected to either Labour or the Liberal Democrats, including Alan Howarth and Emma Nicholson. The right-wing reference document contains members of the Thatcherite ‘No Turning Back’ group. As the name suggests, this group argues for a continuation of Margaret Thatcher’s conservative economic policies, and includes famous names from the right, including Iain Duncan-Smith, John Redwood and Liam Fox.

Our *Wordscores* measures of ideological extremism display statistically significant, albeit moderate, bivariate correlation with the number of rebellions in each party and period. In Table 3.3, we present results from a multilevel fractional logit model with varying intercepts for MPs predicting rebellion as a function of party status in government, MPs’ ideological extremity, and critically, and interaction of these two covariates. Extreme MPs generally rebel more frequently with the exception of the Conservatives in the early period. Most importantly, the interaction term across all models is positive and statistically significant. Ideological extremists in the Labour

and Conservative Parties react to their governing party status in precisely the same way in both time periods; namely, by becoming more rebellious. Like the previous models, these results also control for MPs' recent vote share, tenure and leadership. Overall, our evidence strongly support our contention that ideologically extreme MPs become more likely to rebel when their party becomes the governing party.

Table 3.3: Effect of Government Status on Rebellion: Fractional Logit Models with Random Effects (Extremism Scores)

	1992–2001		2005–2015	
	Labour	Conservative	Labour	Conservative
	Model 9	Model 10	Model 11	Model 12
Government	0.469*** (0.166)	-0.084 (0.123)	1.477*** (0.090)	0.307*** (0.090)
Extremism Score	0.558 (0.366)	-1.672*** (0.516)	1.124** (0.448)	1.448*** (0.488)
Majority	-0.155 (0.102)	0.191* (0.104)	-1.224*** (0.143)	0.138 (0.161)
Leader	-1.123*** (0.205)	-0.753*** (0.258)	-1.015*** (0.294)	-0.877*** (0.173)
Tenure	6.362*** (2.187)	2.758 (2.583)	16.556*** (4.217)	8.405*** (3.116)
Gov*Score	0.569** (0.230)	3.398*** (0.421)	0.946*** (0.214)	1.109*** (0.222)
Constant	-5.755*** (0.271)	-5.779*** (0.197)	-6.994*** (0.332)	-6.551*** (0.319)
N	215	177	300	207
Log Likelihood	-677.422	-501.155	-889.254	-683.803

***p < .01; **p < .05; *p < .1 in a two-tailed t-test

To facilitate the interpretation of the coefficients in Table 3.3, we again plot the predicted probability of a rebellion by both moderate and extreme MPs for the period 1992–2001 and 2005–2015 in Figure 3.2. We differentiate within the plot between rebellion rates when these MPs are in government and in the opposition. As the figure makes plain, changes in rebellion by moderate MPs as their party switches between government and opposition are quite small in magnitude. In contrast, the likelihood of ideological extremists' rebelling significantly increased moving from opposition to government. Thus, both in terms of statistical significance and substantive magnitude, ideological extremists have strong reactions to change in governing party status that

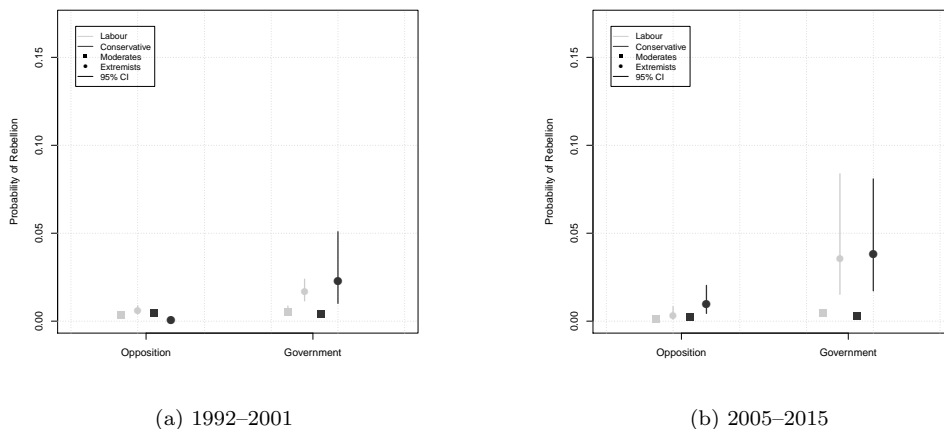


Figure 3.2: Probability of a Rebellious Vote in Government and Opposition by Extremism (*Wordscores*)

are in line with our theoretical expectations.

These analyses allow us to make two key points. First, the most rebellious MPs and those belonging to groups known to harbor more extreme ideological views rebel in substantively different ways than other MPs. Namely, they do so relatively more frequently when in government. Second, using a measure of ideology based on speech content, we show that the most rebellious MPs tend to be ideological extremists who are also more likely to rebel when in government. We suggest that this pattern emerges because extremists use rebellion to develop individual identities distinct from their party, helping signal a sort of ideological purity to ideological constituencies.

3.4.2 Rebel Speeches

Our theory suggests that when ideological extremists rebel in government, they ought to try to explain that rebellion by pairing dissent on divisions with a speech on the floor of parliament. That is, they are likely to defend their rebellion in a public forum as part of their efforts to signal their ideological position to voters. Of course, we do not believe that voters pay any direct attention to parliamentary debate. Rather MPs may highlight their participation on the floor when communicating with constituents in other ways, such as emails, newsletters, or perhaps social media. MPs often craft

their message on the floor of parliament in terms of their constituency and their voters. Using a simple dictionary, we find that a minimum of 20–25% of all speeches during debates linked to divisions contain constituency language, with only little variation between party and parliamentary term.¹⁹

Table 3.4 predicts the probability that an MP gives a speech during a debate in which she has cast a rebellious vote (i.e. engages in grandstanding) conditional on her overall speechmaking activity. In other words, our dependent variable is $\frac{\text{Total Speeches on Rebel Votes}}{\text{Total Speeches}}$. As in our previous analyses, we model this proportion using a fractional logistic regression with varying intercepts for individual MPs. As independent variables, we include a dummy variable noting whether a particular MP’s party is the governing party, whether the MP is one of the 25% most rebellious members of her party (we use the 25% most rebellious variable here so as to preserve as much data as possible, having already demonstrated above that ideological extremists are more likely to rebel), an interaction of these two variables, and controls for a member’s previous electoral vote share, whether the MP held a senior (or leadership) role, and the MP’s length of tenure. If our expectations are correct, the most rebellious members should be more likely to pair a rebellious vote with a speech, and to do so more often when their party controls government.

As in our earlier models, we differentiate between the period 1992–2001 and 2005–2015 to allow for any temporal heterogeneity in response to changes in government control. The results in Table 3.4 show that MPs are more likely to dedicate a higher proportion of their speeches to rebellious votes when in government. This effect is captured by the coefficient on the Government dummy variable and suggests that even for moderate members, the move from opposition to governing party implies an increased need to defend rebellions from the party line through speech. In line with our theory, the most rebellious members of both parties also make a higher proportion of their speeches on divisions when they rebel. We have run models using the *Wordscores* extremism variable and the results are substantively the same. But

¹⁹Our dictionary includes the following terms: “my constituen*”, “I represent”, “where I live”, “my area”, “my surgery”, “my voters”, “my elector*”. Keyword-in-context searches reveal that these phrases capture references to constituents and constituencies. However, other constituency language not captured by these phrases almost certainly comes up in speech, making our estimate a conservative one.

note that in this model, the 25% most rebellious variable has a clear interpretation — we wish to know whether rebellious members attach a higher proportion of their speeches to rebellion. Interestingly, the interaction term is positive and significant in the earlier period, but not the later period. Rebels tend to couple their rebellion with speech at higher rate both in and out of government (but, of course, they rebel much less frequently when in opposition).

Table 3.4: Effect of Government Status on Rebellious Speech: Fractional Logit Models with Random Effects

	1992–2001		2005–2015	
	Labour	Conservative	Labour	Conservative
	Model 13	Model 14	Model 15	Model 16
Government	0.683*** (0.243)	0.726*** (0.271)	1.740*** (0.288)	1.521*** (0.314)
Most Rebellious	1.296*** (0.241)	1.392*** (0.294)	2.981*** (0.289)	2.294*** (0.322)
Majority	-0.166 (0.146)	0.239* (0.141)	-0.324* (0.181)	-0.042 (0.221)
Leader	-1.019** (0.511)	-0.884* (0.493)	-1.292** (0.614)	-1.810** (0.745)
Tenure	7.573*** (2.529)	8.547*** (2.376)	6.797*** (2.245)	8.011*** (2.061)
Gov*Rebellious	0.856*** (0.293)	1.012*** (0.339)	-0.426 (0.307)	0.153 (0.339)
Constant	-5.780*** (0.259)	-6.429*** (0.277)	-6.243*** (0.275)	-6.123*** (0.337)
N	650	449	551	460
Log Likelihood	-499.742	-460.432	-463.207	-468.966

***p < .01; **p < .05; *p < .1 in a two-tailed t-test

Figure 3.3 plots the predicted probability of a rebel vote-speech pair out of all speeches for typically loyal and typically rebellious members of each party when in opposition and in government based on the coefficients reported in Table 3.4. The figure shows that the predicted probability of a rebel vote-speech pairing increases when a member moves from opposition to government, but highest probability of such a pairing comes from rebels in government. This probability is not just the likelihood of a rebel vote-speech pair in absolute terms, but rather the probability of a rebel vote-speech pair out of total speeches given. These changes in the probability of a

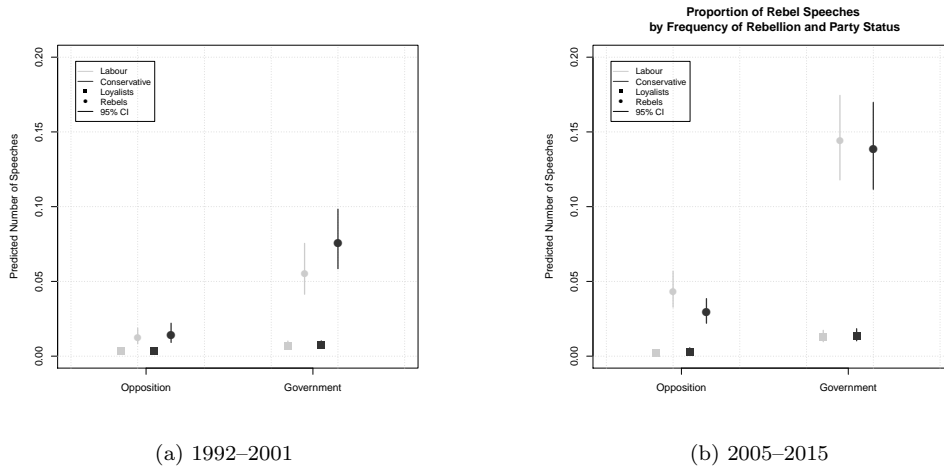


Figure 3.3: Probability of a Rebellious Speech as a Function of Rebellion on Divisions

rebel vote-speech pair are quite large. For example, in the latter time period under study, a rebellious member of the Labour Party uses just under 5% of her speeches during times of rebellion. However, this same member uses nearly 15% of her total speeches to discuss rebellion when in government. Not only do we find rebellious behaviour at odds with extant models, but we find that the most rebellious MPs speak about that rebellion at unusually high rates. It is not just that extremists (or rebels) speak frequently, and not even that they speak frequently when in government, but that they speak frequently in government when they rebel, compared both to how frequently they speak when in opposition, and how frequently they speak when they do not rebel.

In sum, the evidence from the parliamentary record suggests that the most rebellious MPs rebel even more when their party is in government. Those same rebellious MPs tend to be ideological extremists, and they are more likely to pair rebellion on divisions with a speech on the floor. These patterns offer strong support for our theory that these extremists engage in this rebellion for reasons of position-taking. Such patterns are unlikely to be explained through models focused on policy spaces, balancing between proposals and status quo locations, or commitments to party politics. Instead, the patterns fit with a theory which suggests that rebellion provides a means for MPs to differentiate themselves from their party, perhaps to

connect with constituents for electoral gain.

3.4.3 Evidence for a Constituency Connection

We have provided evidence that ideologues rebel more often when in government and participate in debates when they do so. We next look for evidence of a link between constituency characteristics and rebellion on divisions. Specifically, we examine rebellions within Tony Blair’s Labour government during its first term on divisions related to welfare state politics; Blair’s first term was particularly notable for the government’s “welfare-to-work” initiatives. We use information from Cowley (2002) to code every Labour MP who rebelled on at least one division related to welfare politics. We then relate rebellion to the proportion of each MP’s working-age constituents using benefits. This measure has a direct link to the bills brought by Blair, which cut back or restricted access to working-age benefits. There is significant variation in the use of benefits across constituencies ranging from 6% to 39%, so the percentage receiving benefits offers a clear measure of constituents’ needs. The earliest these benefits data are available is 2000, making this the year that we use. This slightly post-dates most of the welfare bills, but the measure changes very little over subsequent years. In a bivariate logit model with rebellion as the dependent variable, we find that the percentage of working-age constituents using benefits correlates strongly with rebellion on these welfare-related divisions. The relationship is statistically significant ($p = 0.016$) and moving from the first decile of the *constituency benefits* variable to the ninth decile increases the likelihood of rebellion by approximately 11 percentage points, from approximately 14% to 25%. Of course, this correlation cannot provide evidence of a causal link between constituency characteristics and rebellion, but combined with evidence from survey experiments regarding the values that voters place on rebellion (Campbell et al., 2016) it is plausible that Labour MPs in these constituencies view rebellion as a means to connect with voters.

3.5 Discussion: The Labour Party under Corbyn

We expect our findings to hold under what we consider to be the normal working conditions of a Westminster parliament. Our theory of party cohesion rests in part on the assumption that party leaders depend on the support of their parliamentary party to remain in power and that they represent mainstream views within the party. The vote of no confidence — if passed — normally would result in the removal of an unpopular or ineffective leader in either government or opposition. The Labour Party under Jeremy Corbyn represents an important exception to this general rule. A change to the procedure for party leader elections effectively removed the requirement that a leader be vulnerable to the vote of no confidence.²⁰ Jeremy Corbyn received the minimum number of nominations from the parliamentary party (just 35 out of 232 Labour MPs) to be placed on to the ballot for election by the wider party membership, and the Parliamentary Labour Party (PLP) never truly viewed him as a legitimate candidate. After less than a year as leader, Corbyn suffered a mass resignation of his shadow cabinet, and a vote of no confidence over his handling of the EU referendum campaign. However, Corbyn's right to automatic inclusion on the ballot for what was to be his second successful leadership election campaign confirmed the inability of the PLP to act decisively with regard to its own leadership.

The imposition of a leader on the PLP affects our expectations for the ideological source of rebellions and for the overall maintenance of party discipline. Corbyn is a left-wing ideologue with a record of voting against Labour positions and no experience whatever in frontbench politics. Under Corbyn, the position of the party leadership has moved to the left, with fewer rebellions from the ideological extreme of the party. This is likely the case simply because front bench positions have been filled by leftist MPs loyal to Corbyn, thereby reducing the number of possible backbench rebellions from the left. Regular rebels since Corbyn's election come from the ideological right

²⁰Past Labour leadership elections followed an electoral college design in which the parliamentary party held a one-third weighting in the result. Reform to this process removed this requirement, instead opting for a pooled vote of the entire Labour and Trade Union membership. The required number of nominations for entry to the ballot was raised to 15% of the parliamentary Labour party, which was thought to be high enough to preclude the entry of candidates from the party's extreme left.

of the party. Frank Field, Graham Stringer and Kate Hoey (MPs with more socially conservative views) are now the most rebellious members in the Labour Party.

From the point of view of our model, we would argue that Corbyn’s leadership is an historical anomaly. While preferences amongst MPs remain at odds with party policy determined by principals external to parliament, we expect to see high levels of rebellious activity and breakdowns in party discipline, more broadly.

3.6 Conclusion

This study has provided the first analysis of the UK House of Commons to systemically evaluate how individual-level voting behaviour changes as function of the interaction between government agenda control and individual-level ideology. It does so over four different parliaments by examining two changes in governing party. We link our findings on rebellion to debate on those same rebellious divisions. In doing so, we believe we have created the most extensive database on voting behaviour and speech in the House of Commons for the period under investigation. Lastly, this represents one of the very few studies to examine rebellion among opposition parties — a necessary step, we believe, to understand the level and importance of dissent within governing parties.

Our results suggest that those ideological extremists who rebel the most engage in even more rebellion when their party controls government. Moreover, they advertise their rebellion through legislative speech. Coupled with existing findings that British voters value some level of rebellion (Campbell et al., 2016; Vivyan and Wagner, 2012; Vivyan and Wagner, 2015), we take this as evidence that they engage in this behaviour to advertise their position to constituents who likely agree with them.

While we have provided preliminary empirical evidence that MPs engage in rebellion to represent constituents, future work will need to look at exactly how MPs use rebellion and rebellious speech to connect with voters. Studies could look at the content of legislative speech to try to ascertain its intended audience — e.g the constituency or the party. Or they could examine how voters react to (the advertisement of) rebellion, and whether this reaction varies if the rebellious MP is

in the government or opposition and whether rebellion affects policy outcomes. A more micro-level examination of such strategies goes beyond the scope of this study. Nevertheless, we believe our findings provide a platform for studies of dissent going forward.

Chapter 4

Talking the talk: Parliamentary Debate and Early Career Progression Among British Members of Parliament

This Chapter examines patterns of career progression among MPs in the British House of Commons. Its purpose is to bridge a gap in the knowledge of political careers in Westminster systems by assessing the extent to which legislative behaviour – as measured in parliamentary speech – impacts upon the first promotions of MPs to front-bench positions.

Whereas studies on political careers in presidential systems tend to focus on the individual behaviours of progressively ambitious politicians (Schlesinger, 1966; Hibbing, 1986; Herrick and Moore, 1993; Carey et al., 2009; Treul, 2009; Victor, 2010), studies of careers in parliamentary democracies tends to focus on the selection

and deselection of cabinet ministers from a prime minister's perspective (Laver and Shepsle, 1994; Strøm et al., 2003; Dowding and Dumont, 2008; Allen and Ward, 2009; Dewan and Myatt, 2010; Kam et al., 2010; Dowding and Dumont, 2014). This approach, which is arguably appropriate to parliamentary democracy, nevertheless does not accredit politicians in parliamentary and Westminster systems with the same level of agency as do studies of legislators in presidential systems.

By focusing on the behaviour of individual politicians, studies of the consequences of political ambition in parliamentary democracy may reveal more than the patterns of behaviour which lead to the attainment of higher office. They may also yield valuable insights into how ambitious politicians approach representation (Sieberer and Müller, 2017). This study builds on the literature tracking the career patterns of individual legislators in parliamentary democracies (Piper, 1991; Kam et al., 2010; Smith and Martin, 2017; Sieberer and Müller, 2017) with a particular focus on the impact of parliamentary behaviour. This approach is novel because it tracks the impact of individual legislative behaviour on career outcomes. It also takes a wider view of careers in parliament, analysing a range of frontbench roles as well as cabinet ministers.

To test the impact of parliamentary behaviour on career progression, I track the entire parliamentary careers of 847 MPs between 1945 and 2010, and test the association between the quantity and content of parliamentary speechmaking and appointments to front-bench positions. I argue that the study of parliamentary debate and career progression is important for the following three reasons: first, a key attribute of ministerial skill is parliamentary ability in debate (Norton, 2005, p. 65; Thatcher, 1993, p. 317). Second, previous studies of parliamentary behaviour and political careers (Piper, 1991; Benedetto and Hix, 2007; Kam, 2006) have been limited to the study of parliamentary voting patterns and party loyalty. The measurement and comparison of the patterns of parliamentary debate with respect to career progression is now a feasible empirical task thanks to the development of quantitative text analysis techniques. This presents a wider range of opportunities for theorisation and measurement, as this Chapter will show.

Third, in parliamentary systems with high levels of party unity, parliamentary

speech conveys a large amount of information about the individual behaviours of MPs, which would not be visible when looking at voting patterns (Spirling and McLean, 2007; Proksch and Slapin, 2015). The further study of speech patterns in parliamentary debate is slowly revealing that the differences between U.S. style legislative behaviour and parliamentary legislative behaviours are matters of degree rather than of kind (Slapin et al., 2018; Kirkland and Slapin, 2017; Sieberer and Müller, 2017). This Chapter follows on in this vein, showing the importance of legislative speech in determining the trajectory of political careers.

After controlling for several explanatory covariates including previous career, age, education, party and gender, I find strong evidence that the volume of speeches made by early-career parliamentarians is positively associated with the likelihood of promotion, negatively associated with time to first promotion, and is most strongly associated with promotions to parliamentary roles that require strong debate skills. I find weaker associations to support the hypothesis that the content of speeches (here measured in the form of policy specialisation, focus on local issues, and confident word usage) also affects the career progression of MPs in their early career. Crucial to the causal claim of this Chapter is the finding that higher levels of speech participation, higher levels of confident use of language, and lower levels of local focus, all positively affect the likelihood of appointment to ministerial type roles (appointments of undersecretaries of state, the lowest rank of minister, are particularly sensitive to speechmaking). However, the role of whip – a position that prohibits holders from taking the floor – remains unaffected by any measure of parliamentary speech.

4.1 Literature: Ambition and Office Seeking

Across Legislative Systems

The value in studying office-seeking behaviour is in subjecting the underlying preferences for foundational theories of political science to closer examination (Sieberer and Müller, 2017; Downs, 1957; Riker, 1962). Schlesinger's (1966) analysis of politicians in the United States identifies three types of ambition: (i) discrete ambition in which

representatives see politics as instrumental to pursuing other career goals; (ii) static ambition – in which MPs aim to stay in their position for as long as possible; and (iii) progressive ambition – where MPs seek higher political office. Analyses examining the consequences of progressive ambition (Hibbing, 1986; Herrick and Moore, 1993; Carey et al., 2009; Treul, 2009; Victor, 2010) show that the career pathways available to progressively ambitious politicians have important implications for their approach to representation. For example Victor (2010) shows that in the US House of Representatives, legislators with progressive ambition tend to specialise in particular policy arenas in order to improve their chances of re-election and legislative success while only generalising their political behaviour when they seek election to higher office.

However, analysis of political careers in parliamentary systems tends to focus on the causes and consequences of selection and deselection of cabinet ministers (Laver and Shepsle, 1994; King, 1994; Strøm et al., 2003; Kam, 2006; Benedetto and Hix, 2007; Dowding and Dumont, 2008; Allen and Ward, 2009; Dewan and Myatt, 2010; Kam et al., 2010; Dowding and Dumont, 2014; Klein and Umit, 2016; Smith and Martin, 2017). These studies are important in illuminating the criteria considered by prime ministers in promoting and demoting senior politicians, a subtly different empirical and theoretical question to the promotion of early-career MPs. Nevertheless, these studies provide context for this Chapter in two important areas: first, they illuminate the incentive structure for political career progression particular to the Westminster system. Second, they highlight those characteristics that may motivate prime ministers and party leaders to choose ministers from the pool of available candidates.

In terms of the structure of political careers, parliamentary systems and the Westminster system in particular differ to presidential regimes in how the executive are appointed. Firstly, the Westminster system fuses two goals deemed central to a legislator's success: office and policy (see Kam (2006) citing Strøm and Müller (1999)). Individual MPs have little opportunity to change the policy landscape without the support of the governing party, and influence within the governing party is highly dependent on position. Therefore, MPs with ambitions beyond re-election should attempt to achieve promotion to the frontbench in order to achieve these goals.

Indeed, it has been argued that the dual monopoly held by party leaders over policy and the allocation of frontbench positions is the primary explanatory factor behind the high levels of party cohesion observed in Westminster systems (Piper, 1991; Kam, 2006; Benedetto and Hix, 2007).

Secondly, the relative lack of checks and balances on Westminster governments, combined with the convention that executives are chosen from within the legislature has resulted in long-term screening processes to select suitable leadership candidates from elected MPs (Saalfeld, 2003; Strøm et al., 2003; Strøm, 2000, p. 629). According to De Winter (1991, p. 48), British MPs spend the longest time in the legislature before being selected to the cabinet when compared with other Western European democracies. This screening time, though somewhat diminished in recent years (Cowley, 2012; Atkins et al., 2013), is seen as crucial to the selection of ‘good types’ (Fearon, 1999) to execute public policy effectively and accountably. In sum, relative to other political systems, MPs in a Westminster system have a greater incentive to seek office in order to achieve policy goals. Additionally, they must seek the approval of party leaders who retain an effective monopoly over office allocation and policy direction, and they must also serve a long apprenticeship before taking on a senior role.

But what are the necessary criteria for ministerial selection? A common strand in studies of ministerial selection is that they are theorised in principal-agent terms (Dowding and Dumont, 2014; Kam et al., 2010; Strøm et al., 2003). There is, however, some debate about whether it is party leaders or parties themselves that take the role of principal. Since the electorate delegates to a parliamentary party, which then delegates to a prime minister who in turn delegates ministerial positions back to the legislature, a prime minister’s choice of cabinet colleagues is not as free as it may seem. Kam et al. (2010) show that ideological proximity to the ideological centre of the party is a more reliable predictor of ministerial selection than is proximity to the party leader. Other studies of the Westminster system also theorise ideological positioning as the driving force behind ministerial selection. Allen and Ward (2009) approach the selection of Westminster cabinets in a multidimensional policy space, in which the objective of selection is to ensure that the prime minister retains the

median (and therefore decisive) position in cabinet policy discussion. Indridason and Kam (2005; 2008) argue that cabinet reshuffles can be theorised as a means to reduce agency loss caused by ministers' policy preferences drifting in the direction of their assigned department.

However, policy preferences are not the only criteria to consider when allocating ministerial appointments. King (1994, p. 224) argues that the majority of cabinet ministers are not strong policy advocates in any direction, and so position themselves in order to make their progression to high office as smooth as possible. Therefore, whilst policy positioning is important, it is unlikely to be sufficient for promotion to high office. Dewan and Myatt (2010) argue that as the tenure of a government progresses, the pool of ministerial talent declines. Prime ministers maximise utility on the effectiveness of the government given the size of the talent pool, selecting qualified candidates for ministerial positions independently from ideal policy positioning. Quiroz-Flores and Smith (2011; 2016) consider the importance of ministerial ability in democracies cf. autocracies, finding that electoral competition forces parties to select competent ministers at the cost of political stability. Huber and Martinez-Gallardo (2008) show that other institutional factors such as the constitutional power of ministers, coalition attributes and the average seniority of new ministers – all measures associated with adverse selection – affect the duration of individual ministers across 19 parliamentary democracies.

Finally, when analysing the individual characteristics of candidates for ministerial selection, Klein and Umit (2016) show that a strong electoral majority is also an important factor associated with ministerial selection: strong parliamentary majorities from the outset improve the chances of promotion, though improved majorities go unrewarded on average. Similarly, Smith and Martin (2017) argue that the informational advantage bestowed on the sons and daughters of former cabinet ministers affects the likelihood of their selection to the cabinet. Indeed, the prior experience and background of MPs before entering parliament has a strong conditioning effect on the likelihood of ministerial selection (Rose, 1971; Cowley, 2012). This is a phenomenon that increasingly advantages 'career politicians' whose careers have been exclusively in the field of politics.

Whilst the above contributions to the study of ministerial selection are analogous to the study of early career MPs, important gaps remain in our understanding of early career progression among politicians in Westminster democracy that this Chapter aims to address. Sieberer and Müller (2017) explore the attitudinal effects of progressive ambition in 15 parliamentary democracies using MP surveys. They find clear differences between progressively ambitious and statically ambitious MPs. Similarly, Searing (1994) finds that ministerial aspirants are distinct in their motivations for power and influence, but unclear in their intended course of action. Sieberer and Müller argue that to further explore the consequences of individual political ambition in parliamentary democracy, we must analyse the behaviours (as well as attitudes) of ambitious politicians to gain a sense of how progressive ambition impacts upon political careers and on representation more broadly, a suggestion followed by this chapter.

4.1.1 The Differential Effect of Speechmaking on Parliamentary Role Allocations

Often, the goal of text analysis in political science is to show an underlying ideological dimension (Laver et al., 2003; Slapin and Proksch, 2008; Benoit et al., 2016), yet left-right ideology is far from the only data generating process behind political text, especially political speech (Austen-Smith and Banks, 2000; Beauchamp, 2011; Kim et al., 2014). Arguably, of the observable legislative behaviours in the Westminster system, speechmaking is one of the few ways to compare politicians on their likelihood of obtaining higher office. Parliamentary speech in the House of Commons conveys a comparatively large amount of information on individual differences (O’Grady, 2016; Slapin et al., 2018), as opposed to legislative voting, where party unity is high (Poole, 2005; Spirling and McLean, 2007). Backbench MPs, despite being constrained at the ballot box, are relatively free to make speeches to the House (Proksch and Slapin, 2015, p. 164). In the following section, I argue for the importance of parliamentary debate in determining political career progression and then point to four patterns of parliamentary speech behaviour that should capture these effects.

A major requirement of frontbench ministerial roles is parliamentary debate. Oratory skill in defence of government policy in parliament is so important that, according to Norton (2005, p. 65): “there is the danger that parliamentary skills may be elevated over skills that may be just as necessary to control and lead a government department.” Norton (2005, p. 65). We should therefore expect that ministers are chosen in part for their ability at the despatch box and that such ability may be measurable in the content of their political speeches.

However, early career progression among new MPs may take many forms in the first instance other than selection to the cabinet. In fact, it is quite rare for MPs to be promoted to the cabinet on their first appointment to the frontbench, as Table 4.1 shows. MPs are more likely to first take on junior or mid-ranking ministerial roles, or become party whips or parliamentary private secretaries; each of these roles requires different skills and MPs may be chosen in these roles on the basis of quite different criteria than those applied to cabinet ministers.

Whips, for example, differ markedly from ministers in their Parliamentary responsibilities. They are “paid to listen” (Critchley, 1978, p. 468) and by convention do not speak at all in the Chamber. Indeed, when in Parliament, whips are engaged in monitoring and reporting on the performances of others in the chamber for the purposes of minister evaluation and prospects for promotion. Given that the parliamentary roles of whips and ministers are entirely different, position allocation should reflect behaviour and performance according to the requirements of a given role. Therefore, I refine my argument: speechmaking in Parliament should matter for the selection of ministers at all levels but should not matter for the selection of whips, for whom speechmaking is not required.

A differential effect of speechmaking on types of parliamentary career is important because it demonstrates the specific linkage between roles and their required competencies. Whilst this study is observational and cannot make a claim that speech is exogenous to role allocation, a keen association between speechmaking and promotion to specific roles bolsters any causal claim about the effect of speechmaking on parliamentary careers. For instance, it would rule out claims that speechmaking among early-career backbenchers is simply a reflection of an individual’s pre-existing general

Table 4.1: First appointments by role 1950-2015 (opposition equivalents in brackets)

Position	Freq.	Percent
Cabinet Ministers (Shadow Cabinet)	27	2.6
Ministers of State (Shadow Ministers)	63	6.2
Parliamentary Secretaries and Under Secretaries (Shadow Spokespeople)	262	25.7
Assistant Whips	169	16.6
Remained Backbenchers	498	48.9

Source: UK Parliament - Members' Names Data Platform

stature within the party. If that were the case, we might expect all progressively ambitious MPs to behave in the same way, with similar patterns of parliamentary behaviour.

4.1.2 Participation

The incentive for aspiring MPs to speak was wryly acknowledged by Julian Critchley – a former Conservative MP and political commentator. He argues that the ambitious Tory should speak regularly, not to be discouraged by a lack of interest in their participation, or that the potential audience is small: “Politics, like show business and the church, is a performing art. We are as good as our last speech: some of us are even better” (Critchley, 1978, p. 469). This assertion of the importance of debate and parliamentary skills provides justification for the general hypothesis that ambitious new MPs should participate in parliamentary debate, either to showcase their skills, or to learn the trade.

With regard to the skills required by ministers in the Westminster system, speech-making is considered central. Questions to Ministers – departmental versions of the better known Prime Minister’s Questions – form a large proportion of the day-to-day monitoring of government activity. According to Margaret Thatcher: “Norman [Tebbit] was . . . one of the Party’s most effective performers in Parliament . . . the fact that the Left howled disapproval confirmed that he was just the right man for the job.” (Thatcher, 1993, p. 317).

Additionally, spending time making speeches in Westminster, as opposed to being

in their constituency, may be an early signal of intent from progressively ambitious politicians that they intend to rise in national politics. Practising debate, making good impressions, developing contacts and generally ‘making a mark’ are identified as key modus operandi of ministerial aspirant MPs (Searing, 1994, p. 87). Indeed, spending more time in the constituency is a hallmark of backbench MPs, not frontbench MPs (Norris, 1997) and so spending more time in their constituency may represent a significant opportunity cost relative to participating in the legislative process in Westminster. Accordingly, I present the following hypothesis.

Hypothesis 1 (H1): Higher levels of debate participation improves prospects for promotion to the frontbench.

In the empirical section, apply three tests for this hypothesis. First, I argue that increased participation in parliamentary debate will improve the likelihood (H1a) of an eventual promotion to the frontbench. In addition, I argue that speechmaking will only affect the likelihood of promotion to ministerial posts. Accordingly, I predict that the position of Assistant Whip will not be affected by participation in debate, since their role does not include speechmaking (H1b). Finally, I predict that the waiting time for promotion will be decreased by increased debate participation (H1c).

4.1.3 Specialisation

The second proposed speech characteristic is a measure of policy specialisation. Literature on American politics argues that ambitious members should seek to specialise on policy (Herrick and Moore, 1993; Victor, 2010). Victor (2010) states that ambitious politicians ought to specialise during normal time in order to show competence and be perceived as effective on policy issues relevant to their own constituents, only generalising their political interests immediately before seeking election to higher office.

From the point of view of the Westminster system, however, specialisation may in fact be a hindrance to ministerial selection. Firstly, over-specialisation may be

harmful due to the relative lack of *ex post* monitoring of minister behaviour. King (1994, p. 204) gives an example of Richard Crossman, who was “thought to know too much about education” and was therefore made minister for housing and local government. Specialisation might also be undesirable because the talent pool for potential ministers is small and resignations can happen quickly and often due to unforeseen circumstances (Berlinski et al., 2010; Berlinski et al., 2012). Under such circumstances, a general competence is certainly preferable to a specialised one. The collective responsibility of cabinets, in which each minister must vote on every act of the government, also requires that ministers have a broad range of policy knowledge. Indeed, the ultimate generalists in the political hierarchy are the prime minister and opposition party leaders. Consequently, specialisation is likely to be negatively associated with career progression in the British Parliament:

Hypothesis 2 (H2): Higher levels of policy specialisation in debate decreases the prospects of promotion to the frontbench.

Similarly to H1, I divide my analysis in to three parts. H2a expects a negative association between specialisation and promotion to the frontbench in general. H2b tests for negative associations between specialisation and promotion to different parliamentary roles (with the specific expected null effect on promotion to the role of Assistant Whip). Finally, H2c tests for a positive association between specialisation and the duration of time taken to be promoted to the frontbench.

4.1.4 Focus on Local Issues

Similarly to policy specialisation, the role of local representation in the Westminster system differs from the American context. Local representation in Britain is largely seen as a matter of the ‘redress of grievances’ (Searing, 1994), with MPs responding to constituents on *ad hoc* issues of importance, rather than general policy. MPs wishing to support their local constituency often do so not by introducing legislation, but by taking soundings from the community in regular MP’s surgeries, solving issues personally where possible, and relaying matters of importance to the government,

either in the House or in direct correspondence with relevant ministers.

The degree to which MPs are ‘constituency members’ (Searing, 1994, p. 121) is significant for party leaders looking to select suitable candidates for promotion. The basic premise for this consideration is the possibility of role conflict between local and national representation (Searing, 1994, p. 325). In the House of Commons – a body primarily set up to discuss issues of national policy – ambitious MPs are encouraged to behave in a manner that minimises the significance of the constituency, and maximises opportunities to be seen as ‘ministers in waiting’.

The connection between focus on local issues and speech may be captured by backbencher questions to the government. Many backbench MPs speak regularly in the Commons on local issues in order to put local issues to the government. MPs may then present coverage of these questions as proof of representation. However, an excessive focus on local issues may betray an unwillingness or inability on the part of an MP to take on frontbench roles, which require a strong focus on national rather than local policy agendas. Therefore, the following hypotheses suggest a negative relationship between focus on local issues and career progression in the House of Commons:

Hypothesis 3 (H3): Focus on local issues decreases the prospects of promotion to the frontbench.

As above, H3a expects a negative general association between focus on local issues and promotion to the frontbench; H3b expects negative associations between promotions to ministerial positions, with no effect on promotions to the Whip’s Office; H3c expects increased focus on local issues to be associated with increased duration to first promotion.

4.1.5 Confidence

In the wider social science literature, the value of appearing confident for the purposes of career progression is well documented in both psychology (Anderson et al., 2012; Johnson and Fowler, 2011; Borgen and Betz, 2008) and labour economics (Whitley

et al., 1991; Dacre Pool and Sewell, 2007; McQuaid, 2006). However, political science, and in particular legislative studies, has largely left alone such subtleties of communication. Anecdotal evidence suggests that communication style is crucial to political success but difficulties in measurement and an academic focus on content over delivery have restricted its study.¹

This Chapter provides an opportunity to test studies of social and political psychology in the arena of career promotion in the House of Commons. In practice, many speeches in parliamentary debate are choreographed for political content, as MPs have clear incentives to toe the party line, but the style of delivery in large part reflects personal taste. Furthermore, such idiosyncrasies in delivery style should be more authentic in early career backbenchers, since they do not usually have access to speechwriters, a privilege generally reserved for ministers and party leadership. Therefore the measurement of confidence in speech behaviour in the House of Commons, especially in the early careers of politicians, may be considered a novel and potentially fruitful opportunity to bridge a gap between literatures in the social sciences.

Hypothesis 4 (H4): Higher levels of confident language increases the prospects of promotion to the frontbench.

This hypothesis is also subdivided into 3 empirical tests: H4a expects confident language to be positively associated with promotion to the frontbench; H4b tests the effect of confident language on different parliamentary roles with a null-effect expectation for whips; finally, H4c expects that confident language will decrease the duration between entry to parliament and first promotion to the frontbench.

¹But see Fausey and Matlock (2011), who note the effect of how the ostensibly apolitical framing of political messages affects interpretation. Nuances as subtle as changing the tense from the perfect (did, went) to the imperfect (was doing, was going) can have significant effects in the perceptions of the electorate in terms of voting intention; Hermann and Milburn (1977) and Hermann (1980) for analysis of the effect of personality types (as measured in speeches) on foreign policy decision making.

4.2 Evidence from Early-Career MPs in the UK

House of Commons

This study measures the career paths of 847 MPs from 1945-2010. Cases for analysis were selected based on the following criteria: first, I follow Schlesinger (1966) in placing emphasis on analysing the entire careers of politicians, in order to see the full picture. I therefore restrict the analysis to those MPs who left the House before 2010, and have not returned since. Furthermore, limitations to the availability of important background information detailed below restrict observations to those members who serving as MPs at any point between 1992 and 2001. Additionally, I restrict the analysis to MPs of the Conservative and Labour parties, since they are roughly comparable in size. Smaller parties have a shorter promotion ladder, with fewer prospects of achieving high office in government.

4.2.1 Dependent Variable: First Promotions to the Frontbench Among British MPs

I take three measures of an MP's first promotion to the frontbench in any official parliamentary capacity either in opposition or in government. The first measurement (A) is binary: whether or not an MP is selected in their entire parliamentary career. The second measurement (B) is a categorical specification of the types of role that MPs are promoted to on their first appointment. Table 4.1 shows the distribution of first appointments. Note that promotions to junior ministerial positions and whips dominate first promotions, while direct promotion from the backbench to the position of party leader do not occur in the present sample. Sub-cabinet ministerial positions are further divided into Ministers of State (ministers with sub-departmental responsibility), and parliamentary undersecretaries (directly subordinate to a cabinet minister). Finally, the categorisation includes assistant whips, who are frontbench officials responsible for ensuring party discipline. A notable exception to the classification scheme is the parliamentary private secretary. While such appointments are sometimes seen as important for parliamentary career progression (Searing, 1994),

their unofficial ‘private’ status as assistants to ministers makes the data difficult to obtain reliably, and are therefore not included within the analysis. The third measure of promotion (C) is the duration from the end of an MP’s first term until the point they are either promoted or leave parliament.

4.2.2 Measuring Speech Patterns in Parliamentary Debate

The primary resource for researchers looking to access the Parliamentary record is *Hansard*,² and a full record from 1935 is available in an online directory on the website They Work For You, a subsidiary of My Society³. With this raw data, I wrote custom scripts in Python to group and manage the data into documents of the complete debate performance of an MP over the course of their first parliamentary term. The following paragraphs discuss the operationalisation of the text based measurements used to analyse political signals relevant to ministerial selection.

Participation: Debate participation is defined as the word count of each MP during their first term of debates in the House of Commons, and is obtained by counting the number of words spoken by each MP. Other studies of parliamentary participation tend to use the number of speeches made (Baumann et al., 2015; Proksch and Slapin, 2015; Bäck et al., 2014), but in the case of the Hansard data, the number of speeches made may not necessarily reflect overall participation, as the data contain many interjections, lasting only a few words, which would be classified at the same level of participation as a prepared speech. For this reason, and for the reason that the variables defined below are derived from token based statistics, the study proceeds by operationalising participation as word count.

Policy Specialisation: Policy specialisation is defined as the number of policy areas mentioned per parliamentary term relative to the estimated mean of logged tokens spoken by each MP. The 46 policy areas were collected from the website of the

²*Hansard*, begun in the late 18th Century, was named after one of its principal founders Thomas Curson Hansard. At the time, the simple act of reporting the proceedings of government, something we now regard as a vital element of governance and even trivial or mundane, was akin to an act of treason. After a century of censorship and unofficial clandestine reports – often veiled under the pretence of recording the minutes of outlandish secret societies. Titles such as *Proceedings of the Lower Room of the Robin Hood Society* and *Debates of the Senate of Magna Lilliputia* were common at the time and even earlier in the 18th century. Parliament finally took on the production and publishing of verbatim debates itself in 1909.

³<http://www.theyworkforyou.com/pwdata/scrapedxml/debates/>

British Government⁴, and converted into a dictionary. I created a relation (0,1) matrix with MPs on the rows, and policy areas in the columns. The number of policy areas mentioned by each MP over the course of a term were then counted, and combined in linear regression with the overall logged number of tokens. The residuals from this regression were saved and used to create a normally distributed variable of policy specialisation. This measure of specialisation differs from the roll-call measures often used in non-Westminster institutions (Herrick and Moore, 1993), but is similar to that employed by Victor (2010) in that it is derived from floor speeches. The steps taken to derive the measure are visualised in Figure 4.1. The first graph [upper left] shows the relationship between the number of policy areas mentioned and debate participation (participation measured as overall word count). The second graph [upper right] shows the same relationship with the natural log of the number of tokens. The bottom two graphs show that the residuals of the regression are normally distributed (but not independent of word count). The final values for policy specialisation correspond to the residual value from a regression drawn through the data [upper right] and then inverted, since positive residuals actually represent policy versatility.

Focus on Local Issues: A measure of an MP's focus on their own constituency was created by following Kellermann (2016) in measuring the ratio of mentions of the word stem '*constituen**' relative to overall word count. Creating a more expansive dictionary for this variable proved difficult, as the inclusion of more words such as constituency names merely increased the inconsistency of measurements. It is no longer clear if an MP who mentions the constituency name '*Bolsover*' is talking with reference to their own constituency for local purposes, or for the purpose of discussing some issue of national policy, which has the local dimension '*Bolsover*' included within it.

Confidence: A measure of confident language usage is taken from the psychometric dictionary Linguistic Inquiry and Word Count (LIWC) (Pennebaker et al., 2001).⁵ The LIWC dictionary includes a measure of certainty, comprised of a dictionary with around 100 words and word stems in the lexical field of certainty, and confidence is

⁴<https://www.gov.uk/government/topics>

⁵For a thorough explanation of the dictionary development process, see Pennebaker et al. (2007, p. 7)

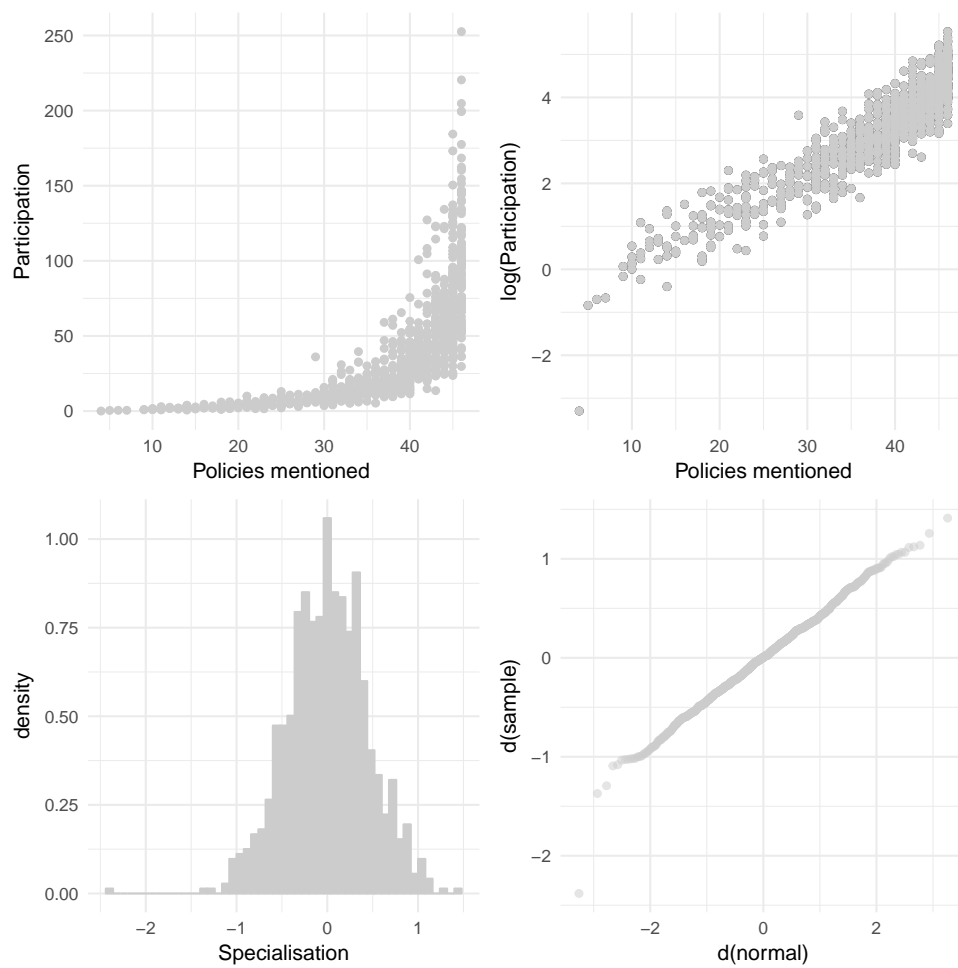


Figure 4.1: Measuring policy specialisation from speech participation

included among them. LIWC is a proprietary resource, and so the full dictionary may not be made available in this study. However a illustrative sample of the dictionary is permissible within the licence:

absolute, absolutely, altogether, always, certain, clear, clearly, commit, commitment*, commits, committ*, complete, completed, completely, completes, confidence, confident, confident, truly, truth*, unambigu*, undoubt*, unquestion*, wholly.*

This measure is calculated similarly to the localism measure by taking the ratio of the number of times words included in the dictionary appear relative to overall word count.

4.2.3 Control Variables

Information on the background of MPs is also important for understanding the career prospects of new entrants into the House of Commons. The inclusion of co-explanatory variables such as age of entry to Parliament, and educational privilege (a dummy coded as 1 if the MP attended Oxford or Cambridge) are motivated by other recent quantitative studies of ministerial selection (Berlinski et al., 2012; Dalvean, 2012). Historically, entry at a relatively young age was of particular importance, since the median number of years' parliamentary experience before selection to the cabinet stood at 14.2 years during the period 1868-1968 (Willson, 1959; Willson, 1970). Ambitious MPs needed to have been relatively young on entry to Parliament, in order to avoid being seen as too old for promotion by the time they had enough experience to be considered for promotion.

Other measures such as whether or not the MP had a previous political occupation in politics (the variable named *Politico*, coded as 1 if an MP's primary prior occupation was political in nature, 0 otherwise) is inspired by previous work on the changing professional make-up of the House (Cairney, 2007; Cowley, 2012; King, 1981). The expected relationship is that prior political experience improves chances of promotion. The inclusion of gender is motivated by the consideration that party leaders may feel obliged to promote more women in order to make up for their under-representation in

the house as a whole (Norris, 1995). Data on professional and educational backgrounds are taken from Cowley and Norton in their work on rebellions in the House (Norton, 1997; Cowley and Norton, 1999; Cowley, 2002). Data on date-of-birth and gender are taken from the Member’s Names Data Platform of the British Government (UK Parliament, 2015).

Controlling for party, term length and the date of entry to parliament are necessary for the improved comparison of observations. Promotion practices may vary between political parties, because of differences in political culture, and because it cannot be assumed that government and opposition recruit in the same manner. Controlling with a dummy variable for a Labour MP effectively controls for both differences in party as well as differences between government and opposition at the same time. Term length has an important effect on behavioural variables, since the length of the term is related to the number of words spoken in that term by each MP; by controlling for the length of the parliamentary term, the analysis allows comparison between terms. Related to term length is entry date. Including the date of entry for each MP controls for the effects of unobserved changes over time to the political system, and also promotion practices.

4.2.4 A: The Likelihood of Promotion

Table 4.2 displays results of a binary logistic regression. The response variable is measured as 1 if an MP is promoted to a frontbench position in their parliamentary career, and 0 otherwise. The models provide initial evidence to support the association between parliamentary debate and first promotions of MPs in the House of Commons. Participation (H1a) – the measure of overall speechmaking – is calculated as the number of words spoken by a member in their entire first term in parliament. This is then divided by 1000, to aid readability of regression results. When included in Models 1 and 5, the coefficient is positive and statistically significant, robust to the inclusion of background information and other parliamentary signals. The coefficients for policy specialisation (Specialist), focus on local issues (Localism) and the use of confident language (Confidence) are all statistically significant and in the expected directions. Higher specialisation leads to lower rates of promotion (H2a), as does a

focus on local issues (H3a). Confident language improves the probability of ministerial selection (H4a).

However, these variables lose statistical reliability when included with participation. A possible exception might be confidence, which remains close to statistically significant at the 5% level (z -score=1.86). This loss of statistical confidence is due to the high level of dependence between word count (participation) and the other measures of speech, a problem that accordingly affects the coefficients and standard errors of speech-based variables in model 5. Therefore, a conservative conclusion to results interpretation must be that the quantity of participation (H1a) is a robust indicator, while measures of speech content (H2a, H3a and H4a) are far less reliable determinants of career progression.

Background explanatory variables such as age of entry, having been to Oxford or Cambridge, and a previous career in politics are all predictive and highly statistically significant – indicating a general preference for younger, elite educated (Oxbridge) career (Politico) politicians. Interestingly, in the sample measured for this study, female MPs are not promoted to the frontbench more or less often than men. This does not provide evidence against gender based discrimination *within* ministries (for example women being restricted to ‘social’ or ‘soft’ portfolios, see Curtin et al. (2014)) – but suggests that women may not be hindered in achieving some sort of government or opposition frontbench appointment.

Figure 4.2 shows substantive changes in probability distributions for varying levels of the four speech variables (taken from Table 4.2, Model 5), holding all other estimates at their means (or proportions for binary variables). For each speech variable, three probability distributions are estimated, with uncertainty corresponding to the likelihood of selection to the frontbench, given a specified level of the speechmaking variable in question. The white distributions estimate values of speech variables fixed at a low level (25th percentile), grey distributions a medium level (50th percentile) and black at a high level (75th percentile). The lines within the distributions show the 95% interval. Note that while evidence can be seen for movement towards separation of distributions for Localism and Confidence, the same cannot be said for Specialisation. Only in the case of Participation do the 25th percentile and 75th

Table 4.2: Logistic regression models of promotion to the frontbench.

	(1)	(2)	(3)	(4)	(5)
Participation	0.010*** (0.003)				0.010*** (0.003)
Specialist		-0.420** (0.177)			0.072 (0.226)
Localism			-1.962*** (0.685)		-1.148 (0.716)
Confidence				0.736** (0.311)	0.615* (0.330)
Female	0.369 (0.339)	0.390 (0.340)	0.306 (0.343)	0.318 (0.341)	0.316 (0.343)
Entry Age	-0.109*** (0.013)	-0.112*** (0.013)	-0.118*** (0.013)	-0.113*** (0.013)	-0.113*** (0.014)
Oxbridge	0.568*** (0.169)	0.584*** (0.169)	0.564*** (0.169)	0.570*** (0.169)	0.502*** (0.172)
Politico	0.713** (0.283)	0.681** (0.281)	0.696** (0.281)	0.718** (0.281)	0.721** (0.284)
Labour	0.090 (0.162)	0.153 (0.160)	0.189 (0.160)	0.262 (0.162)	0.151 (0.166)
Entry Date	0.00004* (0.00002)	0.0001*** (0.00002)	0.0001*** (0.00002)	0.0001*** (0.00002)	0.0001** (0.00002)
Term Length	-0.001*** (0.0002)	-0.001*** (0.0001)	-0.001*** (0.0002)	-0.001*** (0.0001)	-0.001*** (0.0002)
Constant	4.388*** (0.568)	4.518*** (0.565)	5.127*** (0.619)	3.457*** (0.698)	3.940*** (0.806)
N	847	847	847	847	847
Log Likelihood	-508.576	-513.849	-512.374	-513.866	-504.463

*p < .1; **p < .05; ***p < .01

percentile distributions separate without an overlap of the 95% confidence intervals. That said, difference of means tests show significant differences of means between the 75th and 25th percentiles for each of the variables included. In sum, the results for the logistic regression show that parliamentary speech from the beginning of an MP's career have robust associations with later appointments to the frontbench. In particular, parliamentary participation shows a strong positive association, local focus and confident language show moderate to strong statistical effects, while the role of policy specialisation is less clear.

4.2.5 B: Promotion to Different Frontbench Roles

Turning attention to Table 4.3, a multinomial approach allows us to gain a more nuanced view of the types of parliamentary role to which MPs are appointed. Table 4.3 shows the results of a single multinomial regression of ministerial category on the full set of coefficients (previously included in Table 4.2, Model 5). The model estimates the likelihood of selection into different categories of ministerial role, relative to the baseline category, in which MPs remain career-long backbenchers.

As the results in Table 4.3 show, parliamentary speech has very different effects for different categories of frontbench position, providing further support for the theory that parliamentary speech matters for ministerial selection as a measure of aptitude for the role in question. Speech behaviour does not separate backbench members from those selected to be assistant whips in any significant manner, confirming that speechmaking competence is not a relevant skill for the Whip's Office. Conversely, speechmaking has significant effects for selection to the cabinet, ministers of state, and undersecretaries. Notable results for the background estimations suggest that Oxbridge attendees are more likely to be fast-tracked directly to the cabinet as a first appointment, whilst MPs with previous careers in politics were more likely to be granted roles in junior ministerial positions. Younger entrants were more likely to be selected to all positions, in line with the expectation that younger MPs have a longer parliamentary career ahead of them. Finally, women were marginally more likely to be selected to an executive (rather than the Whip's Office), though the coefficients are statistically insignificant.

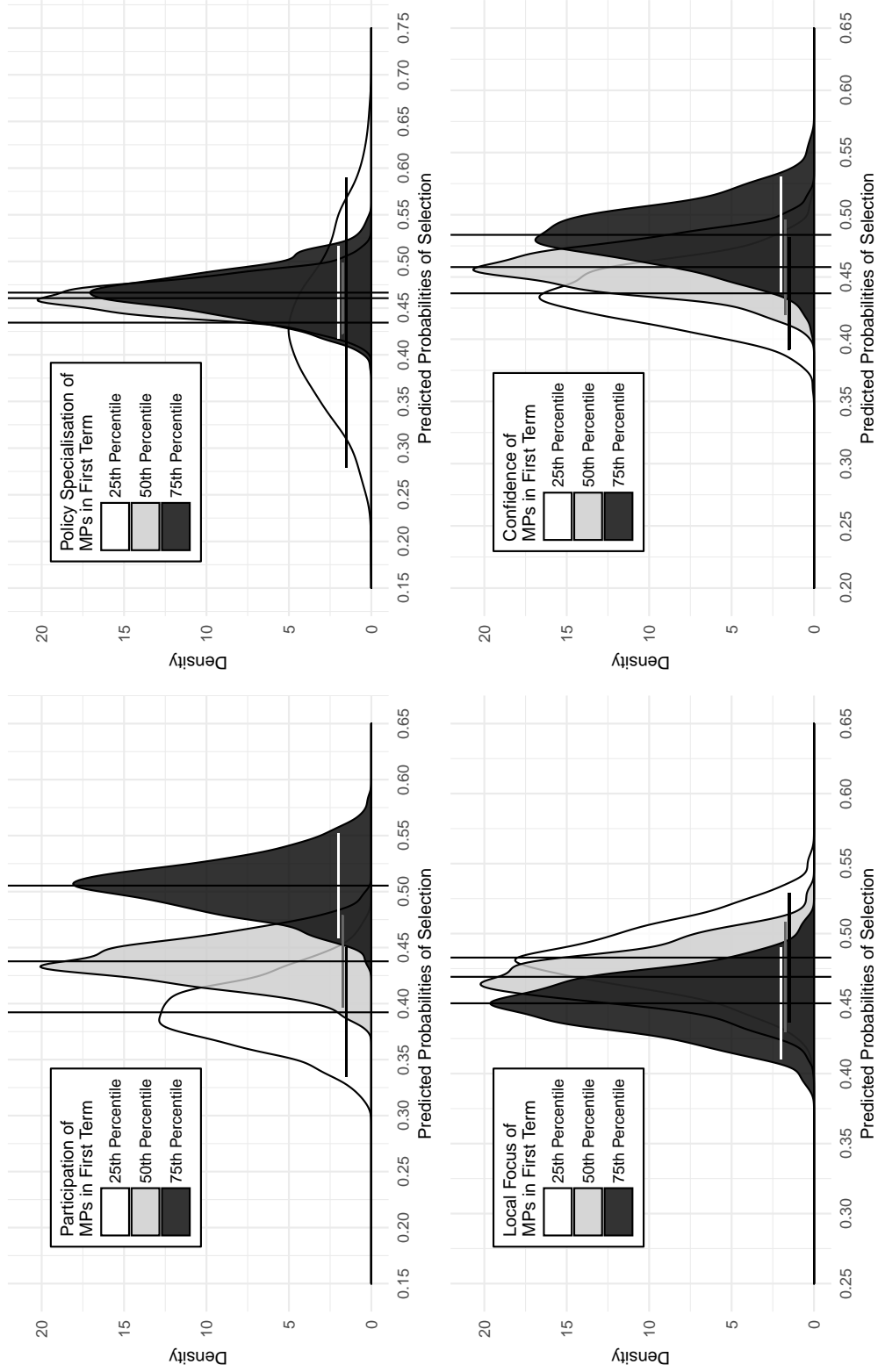


Figure 4.2: Predicted probabilities for 25th, 50th, and 75th percentiles of parliamentary speech behaviour taken from Table 4.2, Model 5.

Table 4.3: Multinomial logit estimation of ministerial selection from the backbench.

	Ministerial Role			
	Cabinet	Minister of State	Under Secretary	Assistant Whip
Participation	0.010 (0.007)	0.015*** (0.006)	0.011*** (0.004)	0.004 (0.005)
Specialisation	-1.055 (0.703)	0.256 (0.429)	0.115 (0.274)	0.168 (0.325)
Localism	-5.538* (3.269)	-1.049 (1.391)	-1.844* (0.95)	-0.118 (0.89)
Confidence	2.323** (0.935)	0.894 (0.627)	0.646 (0.405)	0.079 (0.471)
Female	1.057 (0.849)	0.896 (0.561)	0.558 (0.417)	-0.627 (0.646)
Entry Age	-0.164*** (0.041)	-0.115*** (0.026)	-0.133*** (0.017)	-0.070*** (0.019)
Oxbridge	1.326*** (0.466)	0.484 (0.325)	0.593*** (0.204)	0.155 (0.252)
Politico	0.421 (0.704)	0.808* (0.479)	0.556* (0.336)	1.012*** (0.353)
Labour	0.816* (0.464)	0.637** (0.322)	0.138 (0.203)	-0.206 (0.243)
Entry Date	0.023** (0.009)	0.000 (0.006)	0.005 (0.004)	0.012** (0.005)
Term Length	-0.001* (0.001)	-0.001*** (0)	-0.001*** (0)	-0.001*** (0)
Constant	-1.479 (2.171)	1.495 (1.486)	3.752*** (0.959)	1.240 (1.105)

Notes: The reference category is backbench MPs who are never selected for higher office. The multinomial logit was estimated using a Vector Generalized Linear Model (Yee, 2015). N=847. Significance stars: ***p < .01; **p < .05; *p < .1.

Substantive effects for multinomial models are particularly difficult to interpret, since they depend not only on a single vector of coefficients for each category, but also on the coefficients from the other categories, and so further discussion of speech effects are given in reference to Figure 4.3. The graphs show first differences, defined as the difference in simulated distributions of predicted probabilities between the 75th and 25th percentiles of each speech measure. For each graph, a vertical line bisects 0 on the x-axis, denoting no change in probability of the event from the 25th percentile to the 75th. Distributions above the line show a positive effect on the probability of selection to the given category, while distributions below the line show a negative effect.

The findings show a remarkable range of probability distributions for different roles. For example, increased participation makes a backbench career around 10 percentage points less likely, whilst increasing the likelihood of becoming an undersecretary by around 8 percentage points. Participation also has no effect on becoming a whip (H1b) and only a small effect on becoming a cabinet minister (though becoming a cabinet minister from the backbench is a relatively rare event with few data points). Specialisation has little decisive effect (I therefore find no evidence to support H2b). Taking a local focus in speeches sees MPs more likely to remain backbenchers, and much less likely to take a position as a parliamentary undersecretary (providing support for H3b). Finally, confident language shows a very similar profile to participation (though with roughly half the effect size), making backbench positions less likely, and executive positions more so (providing support for H4b).

In summarising the multinomial analysis, it appears that speechmaking has an effect because of its particular relevance to competences required of different frontbench roles, rather than simply being a function of party preferment. If increased speechmaking is simply indicative of being ‘closer’ to, or more trusted by the party leadership, the role of the whip should be affected in the same way by speechmaking as are other frontbench appointments. The finding that those who are appointed to be whips are average performers in speech suggests that speechmaking in parliament is a skill that is acknowledged by party leaders when allocating first promotions to backbenchers: frequent and confident speakers are more often selected for ministerial

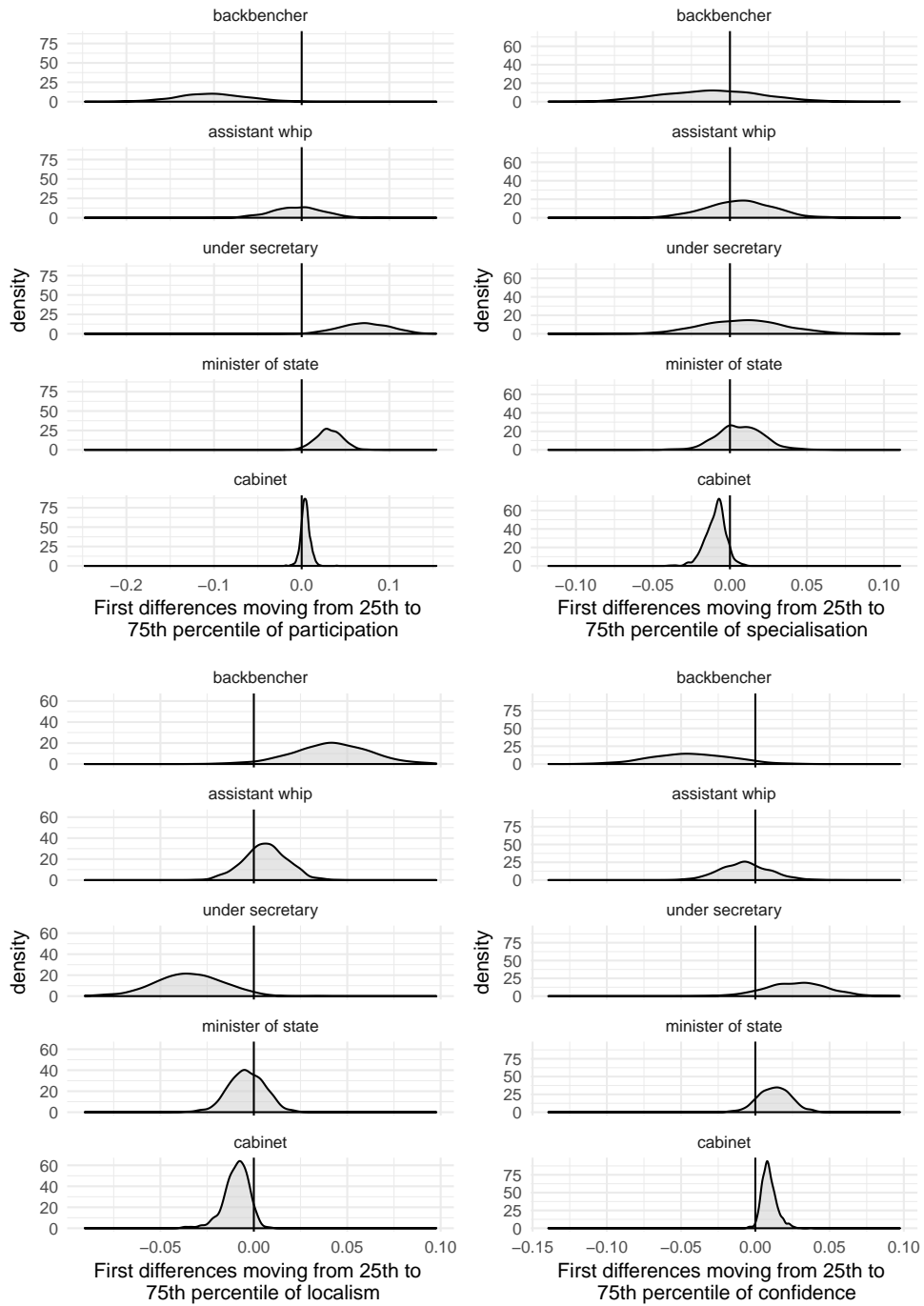


Figure 4.3: First differences for categories of ministerial selection

positions, while average speakers are more likely to be appointed as whips, perhaps making use of other organisational or interpersonal skills.

4.2.6 C: Time to First Promotion

Table 4.4: Cox Proportional Hazards Models of Time to Promotion

	(1)	(2)	(3)	(4)	(5)
Participation	0.006*** (0.001)				0.005*** (0.002)
Specialist		-0.283** (0.118)			-0.001 (0.147)
Localism			-1.436*** (0.491)		-0.920* (0.501)
Confidence				0.490** (0.206)	0.408* (0.218)
Female	0.351 (0.230)	0.353 (0.230)	0.308 (0.230)	0.310 (0.230)	0.319 (0.230)
Entry Age	-0.068*** (0.009)	-0.069*** (0.009)	-0.074*** (0.009)	-0.071*** (0.009)	-0.071*** (0.009)
Oxbridge	0.359*** (0.110)	0.369*** (0.110)	0.342*** (0.110)	0.356*** (0.110)	0.306*** (0.111)
Politico	0.472*** (0.155)	0.462*** (0.154)	0.453*** (0.154)	0.453*** (0.154)	0.468*** (0.154)
Labour	0.044 (0.111)	0.092 (0.110)	0.121 (0.109)	0.173 (0.111)	0.099 (0.113)
Entry Date	0.0001*** (0.00001)	0.0001*** (0.00001)	0.0001*** (0.00001)	0.0001*** (0.00001)	0.0001*** (0.00002)
Term Length	-0.0004*** (0.0001)	-0.0002** (0.0001)	-0.0003*** (0.0001)	-0.0002* (0.0001)	-0.0004*** (0.0001)
N	847	847	847	847	847
R ²	0.142	0.134	0.138	0.134	0.151
Log Likelihood	-2,453.895	-2,457.700	-2,455.814	-2,457.799	-2,449.194

Notes: Raw coefficients are displayed. Take the exponent of each coefficient to give the marginal effect on hazard ratio. For example, a one unit increase in Participation (1000 words) increases the hazard ratio of promotion to higher office by $e^{0.005} \approx 1.005$ or an increase of 0.5%. Significance stars: *p < .1; **p < .05; ***p < .01

Finally, the analysis turns to the estimation of how long MPs wait after their first term to be selected into a frontbench position. Table 4.4 gives the results of Cox proportional hazards regressions in a similar manner to Table 4.2, measuring individual speech effects with a fully specified model at the end. Regarding the parliamentary speech variables, we again see similar results to the logit models, with the significant and expected direction of effects (H1c, H2c, H3c, H4c), but dominated

by the effect of participation (H1c) in the fully specified Model 5. To gain a better understanding of the interpretation of these abstract continuous speech measures, Figure 4.4 displays the change in the hazard ratio of ministerial selection from the minimum to the maximum values of the speech variables (taken from Table 4.4, Model 5), holding other variables at their means. The horizontal line fixed at 1 shows the baseline hazard. The ribbons show the 95% confidence intervals at each level of the x-axis. Significant increases to the hazard rate result from high levels of participation (H1c). Increases in confident language (H4c) also show increases in the hazard ratio, though when specified in Table 4.4, Model 5, estimates become unreliable (z -score = 1.87). Similarly, as expected, the hazard ratio declines with increased local focus (H3c) but here too, the estimate is unreliable (z -score = -1.838). Finally, Model 5 finds little to no evidence for the impact of specialisation (H2c) on the hazard ratio. In summary, the results from the Cox regression corroborate the findings from the logistic regression and give weight to the finding that debate participation is strongly associated with career progression. They also suggest some support for H2c, H3c and H4c but, similarly to the logistic regression models, these measures are unreliable when included in a model with participation.

The coefficient for the control variable ‘Entry Date’ indicates that the waiting time among new MPs for a first promotion has indeed reduced significantly over time (corroborating the findings of Cowley (2012)). Whether this is explained by shorter screening times, or simply an increase in the supply in ministerial positions (which has certainly been the case for the opposition) is, however, unclear from the present analysis. For the background explanatory variables, there is a similar interpretation to the logit models, with a clear preference towards promoting younger, educated and politically experienced candidates before other MPs. Taking the exponent of the Oxbridge coefficient in model 5, the marginal effect of attendance increases the hazard by 36%, while having prior professional political experience increases the hazard by 59%. The marginal effect of entering parliament one year older decreases the hazard by 7%, suggesting that youth is particularly critical for those MPs who enter the House without immediate prospects of selection, since entering at an older age both reduces potential career longevity, while making the wait for promotion longer. Again

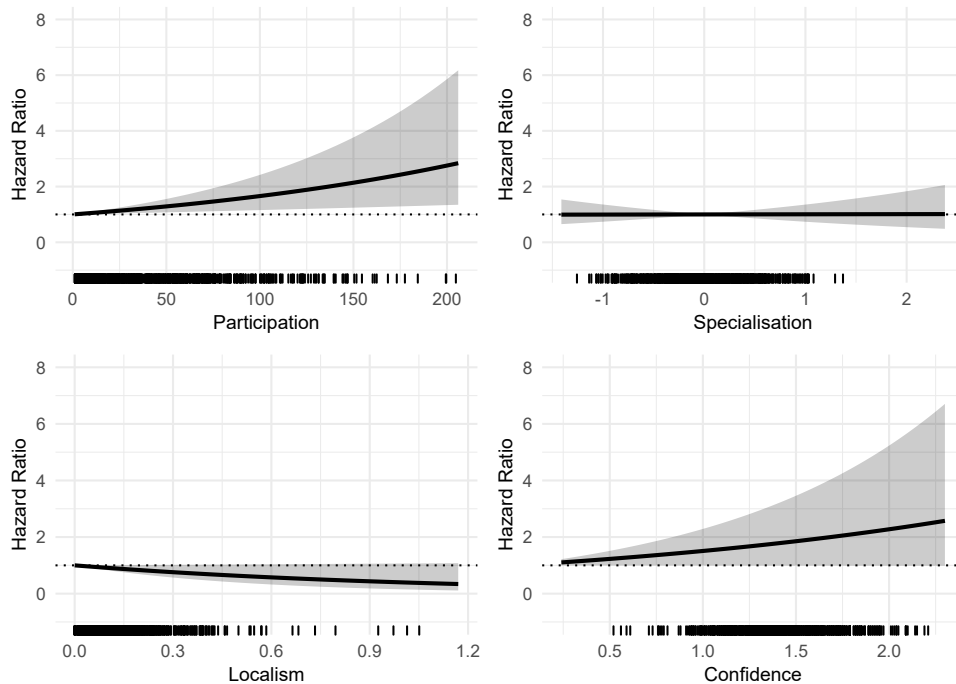


Figure 4.4: Marginal effects of patterns of speechmaking on hazard ratio (promotion to the frontbench)

in line with other results, women do not experience significantly different waiting times to men.

4.3 Conclusion

This Chapter has demonstrated that parliamentary speechmaking has strong associations with promotion to the frontbench among early career MPs. This general finding complements previous findings of the effect of parliamentary behaviour (in the form of legislative voting) and career progression in the British House of Commons (Piper, 1991). In particular, the higher the participation in parliamentary debate, the greater the likelihood is that an individual will be selected into ministerial positions, which require good oratory skills in order to promote or defend party policy to the House. This central finding is accompanied by results suggesting that the content of speeches may also have an important role to play in career progression, though based on the evidence above, the relationships may be too complicated to be captured by

the simple text measures developed here.

Crucially, the results show that parliamentary debate only affects the likelihood of promotion to positions that require strong skills in parliamentary rhetoric. I find no evidence to suggest that any speech-based measure has a statistical association with appointment to the role of whip, a position with no requirement for parliamentary speech. This finding is important because it demonstrates the potential for a causal relationship between speechmaking and ministerial selection. It suggests that party leaders are allocating promotions, not simply on the basis that participation in debate shows general competence or commitment, but also because participation in parliamentary debate is particularly appropriate for ministers, but less important for whips.

An important implication of this study is that in analysing the actions of early career politicians in the legislature, we uncover a deeper understanding of how ambitious politicians approach political life, and political representation in general. Searing's ministerial aspirants were anxious to spend as much time in Westminster as possible, in order to network, to be seen and to prove their value (Searing, 1994). As this study shows, MPs who are eventually promoted to the ministerial ranks are spending more of their first terms debating in the chamber than their peers, and possibly also downplaying the significance of local representation in their parliamentary activity.

Furthermore, this relative focus on Westminster on the part of ambitious MP's provides a colourful example of the micro-processes of power delegation in the Westminster system (Strøm et al., 2003). Once elected to parliament, parties must delegate to increasingly smaller circles of national executive power. The behaviour of successfully promoted politicians demonstrated here resonates with the focus on centralisation, parliamentary activity and national (rather than local) policy agendas that are required for successful power delegation following a general election to the appointment of government.

This research also makes a contribution to the growing literature making use of parliamentary speech for the measurement of non-ideological latent dimensions (Killermann and Proksch, 2013; Proksch and Slapin, 2015; Killermann, 2016). The

finding that parliamentary debate may also reflect the underlying politics behind political appointments gives further credence to the use of parliamentary debate as a means by which to measure meaningful parliamentary behaviour.

Finally, this Chapter opens the possibility for further study into the implications of political ambition and career progression in parliamentary democracy. Further studies may combine speechmaking with other important determinants of career progression such as electoral majority (in single-member district systems), ideology and parliamentary voting. Future studies may also refine the use of text analysis in order to better capture the latent dimensions discussed in this chapter, or to theorise entirely new measures. In closing, the study of the behavioural consequences of ambition in parliamentary democracy has the potential to explain much about the workings of parliamentary democracy, and this Chapter provides a basis on which to proceed.

Chapter 5

Could Rainfall have Swung the Result of the Brexit Referendum?

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Torrential rainfall on the day of the Brexit referendum severely affected parts of the United Kingdom, particularly South East England, London and Northern Ireland. The Met Office issued an amber warning and the London Fire Brigade reported that it had responded to more than 400 incidents, including rescuing residents by boats (London Fire Brigade, 2016). The BBC published images of water “up to six inches deep” at polling stations (BBC News, 2016a) as reports emerged throughout the day that several referendum polling stations had closed because of flooding (Smith, 2016) and that rainfall had caused severe damage to property in the Kent districts of Canterbury, Swale and Thanet (ESWD, 2017). As a result of extensive rail disruption, thousands of commuters were stuck at central train stations across London before the polls were closed. Most notably, Waterloo train station in London, which serves up to 250,000 passengers per day, was closed after rainfall threw services into chaos

(Tran, 2016). The severity of rain on polling day caused media reports to question whether the weather could affect the turnout of the referendum (Knapton, 2016; Aron, 2016). Following press speculation and several studies of the electoral effects of rainfall,¹ we address the question: could rainfall have changed the result of the UK’s EU referendum?

In this study we use fine-grained radar data on rainfall between 6 am and 10 pm on 23rd June 2016, a measurement window that allows us to measure the effect of rainfall just before and during voting hours (7 am to 10 pm). Rainfall was highly variable across the UK with much of the day’s rain concentrated around London the South-East, Northern Ireland and parts of western Scotland, all areas which predominantly supported remain. The district of Hartsmere, some 15 miles north of London, experienced the heaviest downpour with 22 mm of rain over the 16 hour period, nearly half the total expected rainfall in June of around 50 mm (Met Office, 2016).²

The distribution of rainfall on polling day warrants proper investigation of the intriguing question posed originally by media commentary, but also poses sizeable challenges to estimate the effect of rainfall at the district level and to assess its effect on the referendum result itself. We employ techniques developed to accurately model compositional electoral data (Tomz et al., 2002). We leverage recent innovations in statistical analysis (Fong et al., 2017; Imai and Ratkovic, 2014) to improve balance on pretreatment covariates – a problem caused by the lopsided distribution of rainfall. We also use post-estimation techniques that allow us to determine the effect of rainfall on vote share through both differential turnout and by the recently defined ‘vote-shift’ channel (Horiuchi and Kang, 2017), by which rainfall causes undecided voters to change their mind through its effect on mood.

Our findings suggest that rainfall had a statistically significant but substantively inconsequential effect on the referendum. Our estimated rainfall effect is slightly in excess of existing estimations in the literature. More interestingly, we find that rainfall

¹See Gomez et al. (2007), Persson et al. (2014), Eisinga et al. (2011), Knack (1994), Horiuchi and Kang (2017), Bassi and Williams (2017), Fraga and Hersh (2011), and Gatrell and Bierly (2002)

²Rainfall over the 24 hour period showed even greater extremes, with 50 mm (roughly 2 inches) or more experienced by 8 London Boroughs.

affected the leave vote more acutely than remain. This result refutes the conventional wisdom that leave supporters were more committed than remain supporters. Indeed, Nigel Farage – UK Independence Party (Ukip) leader and persistent campaigner to leave the EU – claimed that his voters would “crawl over broken glass” to vote for Brexit (BBC News, 2016b). Despite this, we find that a counterfactual election day in which no rain fell would have produced a slightly altered but much the same substantive result – a win for Vote Leave by a margin exceeding 1 million votes.

5.1 Rainfall, Elections and the EU Referendum

Rainfall is among a set of variables commonly believed to affect the propensity to vote through its impact on the cost of voting as described in the rational voter model (Merrifield, 1993; Downs, 1957; Riker and Ordeshook, 1968). Accordingly, dedicated studies of rainfall and elections generally find a negative effect on turnout, but the extent to which rainfall substantively changes election results is far less certain. Eisinga et al. (2011) measure the effect of rainfall in the Dutch context between 1971-2010 and find that 25 mm of rainfall is indicative of a 1.02% percentage point decrease in the level of voter turnout. In the case of the United states, Gomez et al. (2007) find that an inch of rainfall decreases turnout by 0.98%, Horiuchi and Kang find a turnout decrease of 1.16% for every inch of rainfall and Gatrell and Bierly (2002) find that rainfall depressed turnout in Kentucky Primary elections. However, Persson et al. (2014) integrate the posited costs of high rainfall into the rational voter model and find that rainfall had no substantive negative effect on turnout in Swedish elections between 1976-2010.

The discrepancy in findings is likely due to a number of factors, notwithstanding considerable variation in data collection and measurement. Firstly, voter characteristics may contribute to heterogenous treatment effects. Studies of differential turnout argue that differences in voter commitment between US political parties condition how damaging rainfall is to voter turnout in each political group (Gomez et al., 2007; Horiuchi and Kang, 2017). According to Gomez et al., “bad weather may be the last straw for peripheral voters, and according to the conventional wisdom, these voters

may be disproportionately inclined to support the Democratic presidential candidate” (Gomez et al., 2007, p. 658). Similarly, Knack (1994) finds that the negative effect of rainfall on turnout is limited to voters with low levels of civic duty, contributing to the expectation that parties relying on such voters in greater numbers will be more susceptible to the effect of inclement weather.

Secondly, electoral systems and circumstances appear to matter. Where systems are proportional and political participation is high (Persson et al., 2014), the cost of voting is lower than in other systems, since all votes count equally towards the total. In such cases, voters are less likely to conclude that the discomfort caused by a walk in the rain is futile. In single member district systems, voters may only feel the same level of motivation in districts where the election race is considered close (Fraga and Hersh, 2011; Shachar and Nalebuff, 1999), diminishing the effect of rainfall in marginal districts. Thus, in typical single member district elections, rainfall may have a significant effect on vote share in safe districts without affecting the results for tightly contested seats.

Recently, researchers have extended the analysis of weather events beyond the differential turnout hypothesis to suggest that rainfall may also systematically affect the vote choice of undecided and moderate voters (Bassi and Williams, 2017; Horiuchi and Kang, 2017). The conjecture is that inclement weather affects mood, which according to the predictions of prospect theory (Kahneman and Tversky, 2013) affects risk aversion, resulting in a vote-shift towards candidates seen as the least risky option. Where political options are considered distinct in terms of risk – as is the case in the USA where Democrat candidates are considered the riskier option (Kam and Simas, 2010) – estimates of a vote-shift channel of the rainfall effect are estimated to account for at least two thirds of the Republican rainfall advantage (Kam and Simas, 2010).

The literature on euroscepticism in Britain provides important information on the demographic structure and political motivation on the Vote Leave campaign, and so sheds light on expectations for differential turnout. On the one hand, the EU referendum provided the British electorate a vote on an issue substantially different from general elections. Some reports suggested that Vote Leave may have stood to profit from decreased turnout, since it was claimed that Brexiteers had arguably

more strongly held beliefs vis-a-vis the European Union and would therefore be more enthused about the prospect of voting (Twyman, 2016; Dunford and Kirk, 2016). Some of this dedication was reflected in the reportage of the referendum itself, with pro-leave voters urging each other to mark ballots with pen instead of the pencils provided in the belief that corrupt election officials would attempt to re-assign pencil marked ballots (Griffin, 2016). If, as discourse suggests, pro-leave voters were more dedicated to their cause, then adverse weather conditions may have given an advantage to the Vote Leave campaign.

However Ford and Goodwin (2014, p. 152) note that the demographic support for Ukip (the pro-Brexit party) is “anchored in a clear social base: older blue-collar voters, citizens with few qualifications, whites and men”. Low education and social class are typically associated with reduced political engagement in Britain (Hansard Society, 2017) and in other advanced industrial economies (Lijphart, 1997; Gallego, 2010; Kasara and Suryanarayan, 2015), but were strong predictors of Brexit support in the lead-in to the referendum (Twyman, 2016). Studies have shown that once people have become accustomed to voting regularly, they are less likely to be deterred by factors such as rainfall impacting upon their decision to vote (Aldrich et al., 2011; Gerber et al., 2003). The relative lack of voting habit among important demographics of the pro-Brexit support shows a greater susceptibility of the leave vote to differential turnout in rainy conditions.

Another factor which may indicate a negative effect of rainfall on differential turnout is that older and poorer voters are potentially more likely to be physically deterred by poor weather for reasons of safety or reliance on public transport or walking (Knack, 1994; Eisinga et al., 2011; Gomez et al., 2007, p. 191), though there is little conclusive evidence for this in statistical analysis. Nevertheless, the theoretical expectation remains that the preponderance of older voters in the pro-Brexit camp could have lead to a differential turnout caused by a deterrent effect of rainfall on the elderly.

With regard to vote-shift (where marginal voters change their vote choice due to rainfall), the expected direction of effect is clear. Remain, as the least risky *status quo* option (Harries, 2016; Clarke et al., 2017, p. 4), should have a significant advantage

over undecided voters in rainy conditions (Bassi and Williams, 2017; Horiuchi and Kang, 2017). This expectation is magnified by the parallel expectation that the high issue salience of the referendum should have reduced the effect of rainfall on turnout (Persson et al., 2014). The combination of these expectations is that rainfall may affect the vote share of leave and remain more than it affects turnout. In such a situation, differential turnout cannot account for the entire effect of rainfall on vote share and therefore vote-shift must logically account for some of the difference. In this case we expect vote-shift to benefit the remain vote share – i.e. we expect marginal voters to switch their vote choice from leave to remain because of the poor weather.

We form three hypotheses linking rainfall to the UK’s EU referendum result. Our first hypothesis follows the literature on rainfall and elections (**H1**: rainfall reduces referendum turnout).

Our theoretical expectations for vote share are split into two subcategories: differential turnout and vote-shift. Theoretical expectations of the effect of rainfall on differential turnout are in conflict – on the one hand, media commentary on the referendum indicated that issue salience and voter commitment was stronger among leave supporters (**H2a**: rainfall reduces the remain vote more acutely than the leave vote). On the other hand remain supporters were more likely to have formed voting habits, and were less likely to be physically deterred from voting by rainfall. We therefore set a competing hypothesis (**H2b**: rainfall reduces the leave vote more acutely than the remain vote).

Conversely, our theoretical expectation for the vote-shift channel is clear, as choosing to remain in the EU was considered the least risky option (**H3**: rainfall causes voters to change vote choice from leave to remain).

5.2 Analysis

In the following section, we describe the data collection process and discuss balancing on pre-treatment covariates. We start our estimation using OLS on turnout and leave share separately. Next, we run Seemingly Unrelated Regression (SUR) models on compositional electoral data. These models allow us to estimate the impact of rainfall

on both turnout and vote share jointly. Based on these latter estimates, we then estimate the counterfactual referendum result on a day without rainfall, the extent to which the rainfall effect was caused by differential turnout or vote-shift, and the effect of postal voting on the rainfall effect. We conclude with a brief application to election forecasting, showing that the inclusion of rainfall significantly reduces forecasting errors of leave share in the EU Referendum.

5.2.1 Data

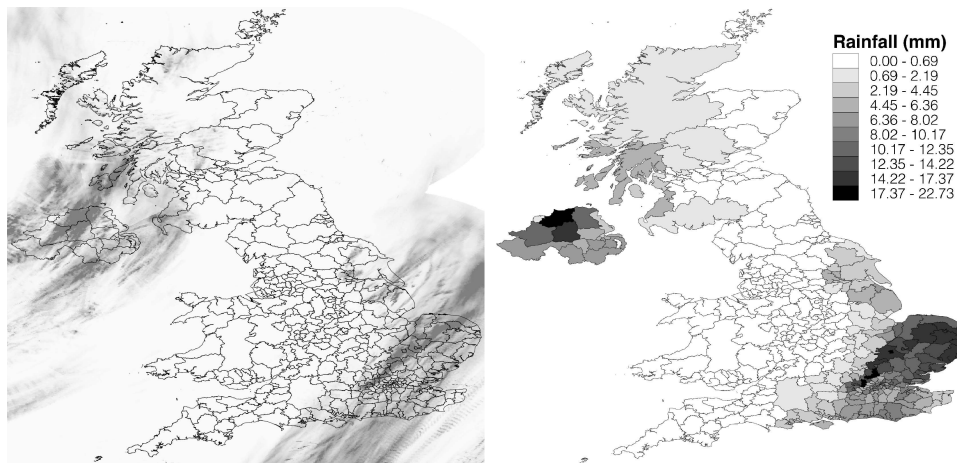


Figure 5.1: Rainfall between 06:00 am and 10:00 pm on 23 June 2016 using radar measurements and referendum counting districts

Our measurement of rainfall on 23 June 2016 relies on data from the Met Office’s NIMROD System (Met Office, 2003; Thomas, 2015). The NIMROD System collects radar data for rainfall every five minutes at a resolution of 1 km^2 . We then transformed the radar data to Environmental Systems Research Institute (ESRI) ASCII raster format. In order to measure rainfall for the voting period, we limited the time period from 6 am and 10 pm (official voting hours were between 7 am and 10 pm), yielding 192 separate raster images extracted from the NIMROD radar data, which were then summed up to provide accurate measurements of rainfall within the period 6 am-10 pm. We also measured rainfall for the period 12 midnight to 10pm.³ The vector polygons for referendum districts (seen in Figure 5.1) are taken from ESRI.

³alternative model estimations using the longer time window are included in the Appendix. Results do not substantively change our key findings.

These polygons did not originally include district level divisions for Northern Ireland (nor indeed did the official election results according to the Electoral Commission). However, we were able to identify voting districts in Northern Ireland by constituency, as the BBC's Referendum coverage (BBC News, 2016c) included a constituency level breakdown of Northern Irish results. We took the BBC's Northern Ireland results and then georeferenced them to polygons for each of Northern Ireland's parliamentary constituencies, adding these polygons to our data.

The referendum results data were available from the Electoral Commission (2017). As discussed above, additional results were taken from the BBC referendum results website. Majority remain areas were grouped around London and other significant urban areas such as Liverpool and Manchester. Scotland and Northern Ireland also voted in opposition to England and Wales with majority remain results for both nations. The majority of leave votes were spread through rural and suburban Britain. Two counting districts, Shetland and Orkney (pop. 45,000) and Gibraltar (pop. 32,000) were dropped from the analysis due to the lack of available rainfall data - both voted heavily in favour of remain. This is unlikely to affect the overall conclusion due to the small population size of both districts.

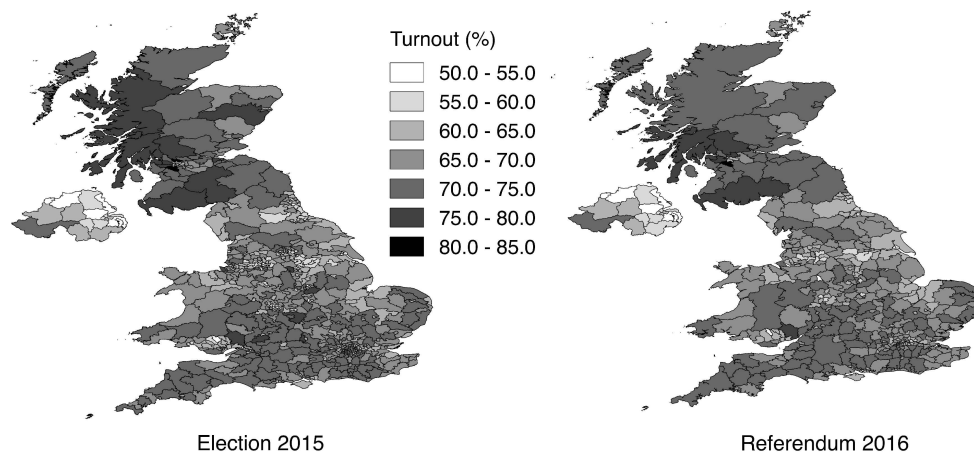


Figure 5.2: Turnout in the 2015 General Election (left) and the 2016 EU Referendum (right).

We then collected data for a number of covariates to create predictive models of turnout and vote-share. First, we created a measure of political engagement by

including turnout from the previous General Election of 2015 (Figure 5.2, left). Due to the fact that the counting areas of the EU referendum and constituency boundaries of the 2015 general election do not correspond to one another, we adopted a zonal statistics approach to transform the 2015 election data to the referendum units. First, we transformed vector data for the 2015 elections to raster data. Then, we overlaid the referendum polygons onto this raster and used zonal statistics to calculate an average value for turnout in each referendum district. This solution was not necessary for Northern Ireland as the referendum polygons and 2015 parliamentary election constituencies are the same. We used the election data directly from the Electoral Commission for Northern Ireland. Figure 5.2 shows the levels of turnout in the 2015 general election and the EU referendum (national levels of turnout are 66.1% and 72.2% respectively). At the district level, the two are positively correlated (0.68 Spearman correlation).

The vote share of Ukip in the 2014 European Parliamentary elections was also included (Electoral Commission, 2017) as a measure of underlying support for the leave vote. Due to Northern Ireland electing MEPs via a Single Transferable Vote system, electoral results report a single district for the whole of Northern Ireland (3.9%). In order to avoid under-reporting variance for the region, we allowed this vote share to vary by generating a truncated normal distribution with a minimum of zero, and a maximum value equal to the maximum value for Ukip vote share in Scotland, whose overall reported vote share was similar. We iterated this distribution until the expected value for the Ukip vote share in Northern Ireland fell between 3.9%-3.95%.

We also included demographic variables from census data and official labour market statistics sources (Nomis, 2011; DfE, 2015) and from the Northern Ireland Statistics and Research Agency. Five demographic variables were collected including median age, gender balance, the percentage of residents with a first degree or equivalent, logged population density, and the percentage of residents with lower social grade.⁴ Finally, we collected data measuring the level of postal voting during the referendum in order to test an ancillary hypothesis about the possible mediating influence of postal votes on the rainfall effect.

⁴Grades D and E, according to the classification of the Office for National Statistics (ONS, 2011)

5.2.2 Balancing on Pre-Treatment Covariates

One of the challenges to estimating the average treatment effect (ATE) from the data collected is the pre-treatment imbalance caused by the geographical distribution of rainfall across the country on polling day. As Figure 5.1 makes clear, rainfall was largely confined to the south eastern part of England, as well as the majority of Northern Ireland. This is an issue for inference because the correlation between rainfall and other important covariates could bias our estimates. Column 3 of Table 5.1 illustrates this issue. Rainfall has strong associations with median age, population density and social grade, indicating that rain fell more often on younger, poorer and more urbanised districts. In order to correct for this imbalance, we use non-parametric Covariate Balancing Generalised Propensity Scores (npCBGPS), developed as a means to solve imbalance problems with continuous treatment (Fong et al., 2017). The method works by varying observation weights in order to minimize the association between the treatment (rainfall) and other covariates.

When applied to the EU Referendum data, we are able to reduce the Pearson correlation association between treatment and covariates substantially, with a mean absolute Pearson correlation coefficient of 0.03. A common strategy to further improve balance is to progressively prune observations contributing most to imbalance (Ho et al., 2007; King et al., 2017). When applying this method to the present data by progressively deleting observations with the smallest weights, we found that imbalance increased, contrary to our expectation. We therefore did not seek to further improve balance on our selected treatment.⁵ Once found, balancing weights are integrated into our statistical analysis with weighted least squares (WLS) regression in the first instance, and then into the SUR by multiplying both the dependent variable \mathbf{Y} and the covariate matrix $\mathbf{X} = (1, X_1 \dots X_k)$ by $\mathbf{W}^{1/2}$ (the square root of the diagonalised matrix of observational weights) to allow for estimation of the WLS estimator $(\mathbf{X}^T \mathbf{W} \mathbf{X})^{-1} \mathbf{X}^T \mathbf{W} \mathbf{Y}$ within the SUR framework.

⁵This finding is not a universal property of npCBGPS weights, as we found pruning improved balance with other treatment specifications

Table 5.1: Summary statistics and measures of pre-treatment covariate balance.

	1. Mean	2. SD	3. Correlation with Treatment	4. Correlation with Treatment (npCBGPS)
Outcomes				
Turnout (%)	73.214	5.521	0.032	—
Leave (%)	52.717	10.629	-0.131	—
Remain (%)	47.283	10.629	0.131	—
Treatment				
Rain 6am-10pm (mm)	3.841	4.983	1	1
Covariates				
Turnout 2015 GE (%)	67.136	4.852	-0.076	-0.014
UKIP 2014 EP (%)	28.029	10.600	-0.039	-0.007
Median Age	40.440	4.282	-0.220	-0.039
Women (%)	50.913	0.738	-0.082	-0.014
Low Social Grade (%)	25.102	6.961	-0.287	-0.054
Higher Education (%)	26.768	7.604	0.241	0.045
ln(Pop. Density)	1.701	1.491	0.184	0.033
Postal Votes (%)	21.175	6.292	-0.213	-0.036
England	0.819	0.385	0.143	0.027

Note: Column 3 shows Pearson correlations between rainfall and controlling covariates. Column 4 shows Pearson correlations after weighting observations with npCBGPS weights (Fong et al., 2017).

5.2.3 OLS and WLS estimates

We first present conventional OLS estimates of the effect of rainfall on the turnout and vote share of the EU Referendum. Unlike SUR, OLS models estimate turnout and vote-share separately, as if these two are independent. Although this assumption is clearly wrong, we nevertheless start with OLS and WLS because these models are simple to interpret.⁶

Table 5.2 shows the results from estimations of the turnout, and leave vote share. We adopt two modelling strategies for each dependent variable. Models 1 and 3 estimate ordinary least squares with country-level fixed effects, while Models 2 and 4 estimate weighted least squares (WLS) using the npCBGPS observation weights described above. We find that the models perform similarly to each other in the estimation of the effect of rainfall. When predicting turnout, both Models 1 and 2 find a statistically significant effect (in support of **H1**), with Model 2 estimating the larger of the coefficients. Models 3 or 4 find negative rainfall effects on vote share, though only Model 4 is significant, therefore only tentative conclusions can be drawn from OLS estimates on the association between rainfall and vote share.

Turning to the effects of covariates, support for Ukip in the 2014 European Parliament elections significantly increased leave vote share, but also increased turnout, consistent with reports of differential issue saliency between campaigns (Dunford and Kirk, 2016; Griffin, 2016; Twyman, 2016). This finding is accompanied by the similar coefficients of median age and the England dummy variable in Models 2 and 4. These both show, as is now well known, that support for the referendum and support for the Brexit option was higher among older English voters. These coefficients are mirrored in 2015 General Election turnout and Higher Education, both of which increase turnout but decrease leave vote share.

⁶The OLS and WLS marginal effects are directly interpretable from the estimated coefficients, while the SUR models we later present require logarithmic transformation and visualization.

Table 5.2: OLS estimates of UK EU Referendum turnout and vote share.

	Turnout (%)		Leave (%)	
	Model 1	Model 2	Model 3	Model 4
Rain 6am-10pm (mm)	-0.05*	-0.06**	-0.05	-0.09*
	(0.02)	(0.02)	(0.04)	(0.04)
Turnout 2015 GE (%)	0.40***	0.30***	-0.35***	-0.38***
	(0.03)	(0.03)	(0.07)	(0.06)
UKIP 2014 EP (%)	0.14***	0.18***	0.34***	0.37***
	(0.02)	(0.02)	(0.05)	(0.04)
Women (%)	-0.02	0.08	-1.34***	-1.37***
	(0.15)	(0.16)	(0.34)	(0.34)
Low Social Grade (%)	-0.33***	-0.37***	-0.28***	-0.32***
	(0.03)	(0.03)	(0.07)	(0.06)
$\ln(\text{Pop. Density})$	-0.51***	-0.52***	0.14	0.68**
	(0.11)	(0.11)	(0.24)	(0.23)
Higher Education (%)	0.03	0.05	-0.94***	-0.92***
	(0.03)	(0.03)	(0.07)	(0.06)
Median Age	0.18***	0.13**	0.45***	0.60***
	(0.04)	(0.04)	(0.09)	(0.09)
England		1.96***		4.39***
		(0.42)		(0.91)
Constant	44.98***	45.88***	149.99***	141.29***
	(6.99)	(7.38)	(15.64)	(16.14)
Fixed Effects	✓		✓	
npCBGPS Weights		✓		✓
R ²	0.91	0.90	0.87	0.87
Adj. R ²	0.90	0.89	0.87	0.87
Num. obs.	398	398	398	398
RMSE	1.71	0.09	3.82	0.20

Note: Significance stars at *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Models 1 and 3 include country level fixed effects (England, Scotland, Wales and Northern Ireland), while Models 2 and 4 include npCBGPS weights to correct for imbalance across the dataset including whether or not a district is located in England. Instead of country-level fixed effects, WLS models include a dummy variable indicating whether the electoral area is England or not. This is done because Scotland, Wales and Northern Ireland contain too few districts to achieve acceptable balance without dropping observations.

5.2.4 Compositional Analysis with Seemingly Unrelated Regression

Next, we follow Tomz et al. (2002) and Horiuchi and Kang (2017) in estimating two regression equations simultaneously via SUR. The estimation technique solves two problems with the single equation estimation. The first problem, inherent in all uses of OLS to estimate compositional data (data in which outcomes are expressed as proportions adding up to 1), is that OLS could predict a turnout of above 100%. The second problem, as indicated previously, is that single equation regressions cannot estimate all three election results (remain, leave and the rate of abstention) at once, leading one to make inferences over a single outcome (leave vote share), ignoring the fact that an effect on one outcome (turnout) automatically affects another. This makes analysis over phenomena such as differential turnout all but impossible. The method applied here corrects both problems through the use of the multinomial logistic transformation and SUR.

Instead of estimating single outcomes, the method estimates logged ratios of election outcomes relative to a baseline outcome. In this case both leave and remain (measured as the percentage relative to the electorate of each district) are expressed as separate outcomes relative the rate of abstention. We therefore create two dependent variables:

$$R_A = \ln \left(\frac{\text{Remain (\%)}}{\text{Abstain (\%)}} \right); L_A = \ln \left(\frac{\text{Leave (\%)}}{\text{Abstain (\%)}} \right) \quad (5.1)$$

We then estimate these dependent variables simultaneously in a system of two regression equations using SUR. When evaluating this model, we recover predicted values by applying the inverse logistic function in terms of percent leave (\hat{L}), percent remain (\hat{R}) and percent abstain (\hat{A}).⁷

$$\hat{L} = \frac{e^{L_A}}{1 + e^{L_A} + e^{R_A}}; \hat{R} = \frac{e^{R_A}}{1 + e^{L_A} + e^{R_A}}; \hat{A} = \frac{1}{1 + e^{L_A} + e^{R_A}} \quad (5.2)$$

Table 5.3 shows the results of Models 5 and 6 in reduced form.⁸ Model 5 shows a

⁷In all cases $\hat{L}_i + \hat{R}_i + \hat{A}_i = 1$.

⁸Full regression tables provided in the Appendix

Table 5.3: SUR estimates of logged ratio Referendum results.

	Model 5		Model 6	
	R_A	L_A	R_A	L_A
Rain 6 am-10 pm (mm)	-0.0027* (.0012)	-0.0046** (0.0016)	-0.0030** (0.0011)	-0.0066*** (0.0015)
Controls	✓	✓	✓	✓
npCBPS Weights			✓	✓
Fixed Effects	✓	✓		
R ²	0.91	0.89	0.91	0.87
Adj. R ²	0.90	0.88	0.90	0.87
RMSE	0.10	0.13	0.01	0.01
Num. obs.	398	398	398	398

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Note: Significance stars at *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Models 5 and 6 show summarised results from simultaneous estimations of leave share and remain share relative to the rate of abstention (see Equation 5.1).

fixed effects model in an analogous configuration to Models 1 and 3, while Model 6 gives estimates of SUR regression with balancing weights. Both models find statistical significance for the effect of rainfall, though Model 6 suggests a greater magnitude of effect.

We display meaningful interpretation of Model 6 in Figure 5.3. Here we take predicted first differences of a change in rainfall from 0 mm rainfall to 25 mm (approximately 1 inch) between 6 am and 10 pm. We simulate 1,000 coefficient vectors according to a multivariate normal distribution with means set at the coefficient point estimates and sigma set to the variance-covariance matrix of the coefficients. We then multiply the simulated coefficients with rainfall set to 25 mm and then with rainfall set to 0 mm (all other X values are set at their respective means) and subtract one from the other. We display the means of these distributions as point estimates and the 97.5th percentile and the 2.5th percentile as upper and lower bounds.

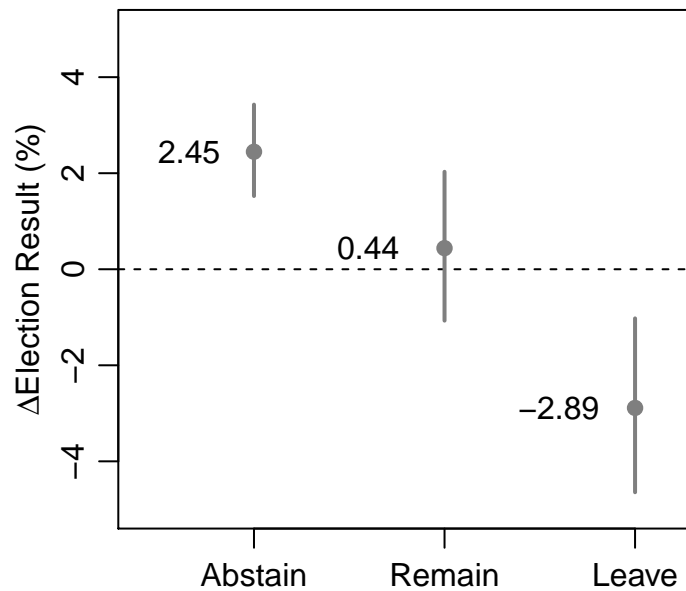


Figure 5.3: First difference estimates of referendum results from Model 6 at the district level according to a 25 mm increase in rainfall

A first difference of 25 mm rainfall is above the maximum value of rainfall in the time period measured, but we estimate it to compare with estimates of the rainfall effect from the literature (Gomez et al., 2007; Eisinga et al., 2011; Horiuchi and Kang, 2017). We find a relatively high effect on turnout with approximately 1 inch of rainfall equating to a 2.45% rise in the rate of abstention compared with roughly 1% elsewhere. However, these estimates are not directly comparable because of the

fact that we are able to restrict our measurements to actual voting hours (a 16 hour window) whereas previous studies had to rely on full 24 hour measurements, including rainfall after the polls had closed. We can make a simple adjustment to our estimate by multiplying our estimate by $2/3$ (since 16 hours is two-thirds of a full day), giving a 1.6% effect on turnout. This figure is still high but close to the standard findings in the literature. Figure 5.3 also shows that rainfall, perhaps surprisingly, affected the leave vote share more than the remain vote share. An increase in rainfall of 25 mm shows a significant decline in the leave vote (-2.89%), while the change to the remain share is smaller (0.44%) and statistically insignificant at the 95% level.

Differential Turnout or Vote-Shift? Decomposition of the Rainfall Effect

According to recent research connecting psychology with electoral studies (Horiuchi and Kang, 2017; Bassi and Williams, 2017; Meier et al., 2016), poor weather may impact on voting patterns in different ways. Conventional thought has it that rainfall affects elections by deterring supporters of one party more than it does another, but compositional analysis of elections shows that this cannot always be the case. Under certain conditions, at least some proportion of the rainfall effect must come through a vote-shift channel, where according to theory, adverse weather conditions cause undecided voters to become temporarily more risk-averse, thus voting for the least risky candidate.

Regarding the EU referendum, our theoretical expectations were split into two parts. Under differential turnout, predictions for the direction of effect were complicated by conflicting arguments about voter commitment. We show in Figure 5.3 that the effect of rainfall on remain vote share was insignificant (allowing us to reject **H2a**), while the effect on leave vote share was negative and significant (supporting **H2b**). Under vote-shift, we hypothesised that the remain result would benefit because it represented the *status quo* option (**H3**).

In order to explore how much of the remain advantage was due to either differential turnout (**H2b**) or vote-shift **H3**, we must rely on calculating the upper and lower bounds of the vote-shift channel, since it is not possible to report this precisely from

the regression model.⁹ First, we find the theoretical upper and lower bounds of the vote-shift channel using the first differences calculated from Model 6:

$$U.B. = \Delta\hat{R}(0.44) - \Delta\hat{L}(-2.89) = 3.33 \quad (5.3)$$

$$L.B. = U.B(3.33) - \Delta\hat{A}(2.45) = 0.88 \quad (5.4)$$

Where the upper bound is the entire remain advantage, and the lower bound subtracts $\Delta\hat{A}$ from the upper bound. Under conditions in which the $U.B.$ (remain advantage) $> \Delta\hat{A}$, the vote-shift channel must account for some proportion of vote share advantage, since the decrease in turnout is not enough to explain the entire remain advantage. However, where $U.B.$ (remain advantage) $< \Delta\hat{A}$, differential turnout may explain all of the difference in vote share, meaning that the existence of a vote-shift channel cannot be confirmed. According to Model 6, the lower bound is above zero and we therefore find that the explanation for the remain advantage was mixed. At least 26% of the remain rainfall advantage was due to vote-shift (voters choosing to change vote due to inclement weather).

We also find evidence to suggest that differential turnout (**H2b**) could have been driven by factors identified in our theoretical discussion: social class and age. We run three interactive models (full results in the Appendix) showing that the interactions of rainfall with age and social class had a stronger effect for Brexit supporters, suggesting that rain may have had the effect of physically deterring older and poorer voters. Voting habit (turnout in the previous General Election) also impacted the rainfall effect on turnout but these effects were evenly spread between leave and remain voters. This leads us to conclude that a likely contributor to differential vote share in the EU Referendum was a deterrent effect of rainfall upon older and poorer voters.

Since our chosen method of measuring rainfall in Model 6 is more or less conventional, we recognise that there could be better ways to test for the existence of a vote-shift channel. Since vote-shift is said to occur via a psychological mechanism, it may be more effective to measure rainfall in terms of length of exposure, rather than

⁹See Horiuchi and Kang (2017) for thorough explanation of the method

measured amounts. Measurement in millimetres could easily equate a typical rainy day with an otherwise sunny day punctuated by a rainstorm, while the psychological effects of these alternatives could be very different. Motivated by measurements in Bassi and Williams (2017), we test an alternative aggregation of the radar data by calculating the average number of minutes’ rainfall experienced by each voting district within voting hours. Taking predicted values, we find $\Delta\hat{A} = 0.64$, $\Delta\hat{R} = 0.7$ and $\Delta\hat{L} = -1.34$.¹⁰ We calculate a vote-shift upper bound of 2.04, and a lower bound of 1.4. This suggests when measuring for timed exposure to rainfall, the estimate for the minimum proportion of the remain advantage explained by vote-shift raises to 68%. Such alternative measurements of rainfall may be of use in further investigations of the vote-shift channel, as well as studies which seek to link non-political events to electoral outcomes through their effect on mood (for example Busby et al., 2016).

In summary, we find evidence in support of both differential turnout (**H2b**) and vote-shift (**H3**) as drivers of the remain rainfall advantage. Although we cannot reject the possibility that vote-shift accounted for the entire remain advantage (due to the constraints of decomposition), it is most likely that the two factors acted in combination. Interactive models show that the likely explanation for differential turnout was not difference in voting habits between the two groups of supporters. Rather, the rainfall had a disproportionate effect on older and poorer voters, disadvantaging the Vote Leave campaign.

What if the Referendum Had Happened on a Sunny Day?

One of the immediate questions raised by studies of rainfall and elections is the ‘sunny day’ counterfactual question: what if it didn’t rain? Indeed Gomez et al. (2007) answered this question to speculate that rainfall may have swung the Electoral College vote in 2000’s closely contested U.S. Presidential Election. We now use estimates from Model 6 to show how the referendum results might have been affected if no rain fell in any part of the UK on polling day, showing that despite relatively large estimates of the rainfall effect, it had little substantive impact on the referendum outcome.

¹⁰see full results in the Appendix

We subtract the product of beta and the rainfall measurements for each district from the recorded referendum results $Y_i - \beta^{Rain} X_i^{Rain}$. This results in predicted values for the model output where rainfall is equal to 0 in all districts. From this we calculate 1,000 estimates of $\hat{L}_{(rain=0)}$, $\hat{R}_{(rain=0)}$ and $\hat{A}_{(rain=0)}$ and display the resulting vote share distributions as mean point estimates with 95% confidence intervals in Figure 5.4.

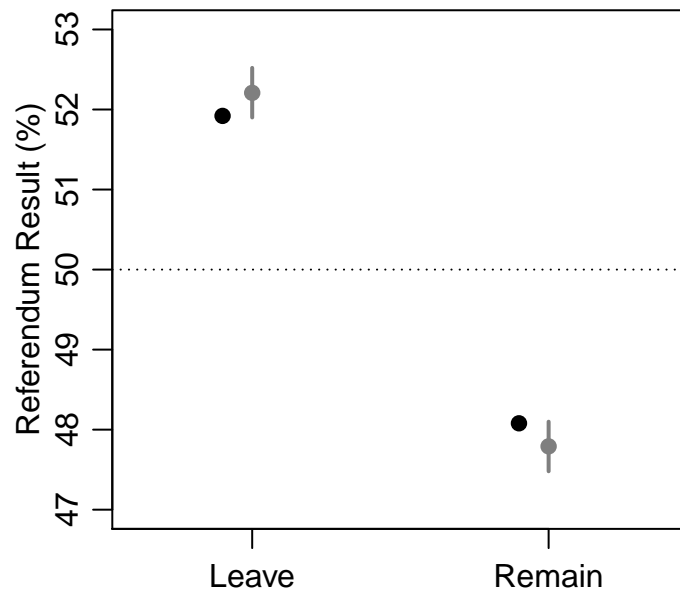


Figure 5.4: Estimates of the referendum result under conditions with no rainfall (grey dotted segments) compared with the actual referendum result (black dots).

The conclusion evident from Figure 5.4 is that rainfall could not have swung the result of the EU referendum. Even by a generous estimation for the remain vote (taking the upper bound of the confidence interval) we calculate that the referendum would have produced a win for Vote Leave: 51.9% to 48.1%, a result almost identical to the actual results, a margin of approximately 1.29 million votes. The more likely ‘sunny day’ scenario (taking the point estimates in Figure 5.4) would increase the advantage for Vote Leave: 52.2% - 47.8%, a margin of 1.48 million votes.

The counterfactual sunny day question also allows us to make estimations of the number of votes lost to rainfall in each district. Table 5.4 shows the five districts in

#	District	Region	Remain votes lost to rainfall
1	Hackney	London	558
2	Lambeth	London	461
3	Lewisham	London	247
4	Wandsworth	London	212
5	Camden	London	210
#	District	Region	Leave votes lost to rainfall
1	Hillingdon	London	4,618
2	Havering	London	2,791
3	Harrow	London	2,494
4	Medway	South East	2,282
5	Basildon	East	2,195

Table 5.4: The top 5 districts most affected by rainfall for both remain and leave

which rainfall had greatest impact for both leave and remain. Unsurprisingly, rain caused the most disruption in terms of lost votes in London and the South East where rainfall was highest. This, combined with the relatively large populations of London boroughs resulted in the largest losses of leave votes - with over 4,000 votes lost in Hillingdon. Whilst remain losses were also concentrated in London, the numbers of votes lost due to rainfall were far smaller.

Rainfall and Postal Votes: The Cost of Turning Out

A notable characteristic of the EU referendum was the increased adoption of postal voting. The Electoral Commission (2017) reports that more than 8.5 million people (18.4% of the electorate) requested a postal vote for the referendum, the highest level ever for an election in the UK. Of the 33.6 million votes cast, 26.3 million were cast in person, and the rest were postal or by proxy. 21.79% of all valid votes cast in the referendum were postal. Therefore, the question of whether postal voting could be suppressing the effect of rainfall requires further investigation, as postal votes are not affected by polling day weather. The question is of wider significance to scholars of voting patterns, since postal voting has been shown to eliminate some of the costs associated with voting in person (Karp and Banducci, 2000; Wass et al., 2017; Schelker and Schneider, 2017). The findings we present below contribute tentatively to this body of evidence.

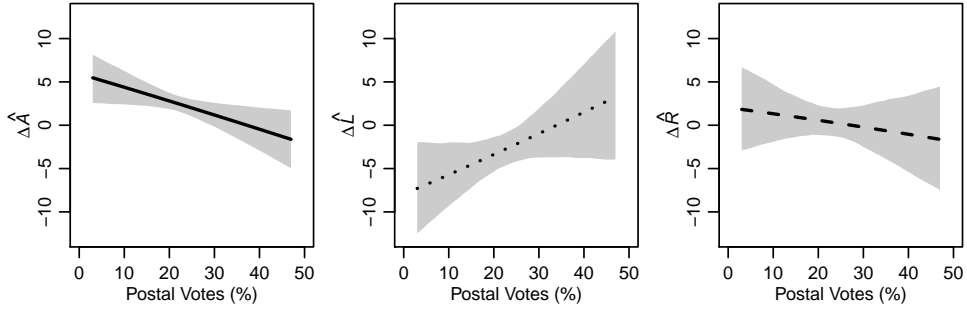


Figure 5.5: The effect of 25 mm rainfall on referendum results as a function of postal voting. The solid line represents change in the level of abstention ($\Delta\hat{A}$), the dotted line represents change in leave share ($\Delta\hat{L}$) and the dashed line represents change in remain share ($\Delta\hat{R}$).

To test for the impact of postal voting, we include the percentage of postal votes returned in each district into an interactive model with rainfall, otherwise identical to Model 6. We find a significant direct effect of postal voting on R_A , and a significant interactive effect on L_A .¹¹ Figure 5.5 illustrates this finding in terms of predicted impact on vote share, revealing that increased postal voting significantly reduces the magnitude of the rainfall effect on both the rate of abstention ($\Delta\hat{A}$) and leave share ($\Delta\hat{L}$). Put simply, districts with high levels of postal voting were less impacted by rainfall than those with low postal vote uptake. These findings support the argument that postal voting eliminates costs associated with voting in person to a degree that is empirically detectable.

Validation: Rainfall in the Error Term of Referendum Forecasting.

Our final piece of analysis is a robustness check, using pre-referendum forecasts of leave share to test whether the addition of rainfall improves vote share prediction. We hypothesise that if our models are correct, rainfall should be contributing to the error in pre-referendum forecasting, causing a slight overestimation of leave share. We take forecasts from a district level polling study using multilevel regression with post-stratification (Lauderdale et al., 2017). Forecasts were made in 379 districts and found a high level of predictive accuracy (.92 Pearson correlation coefficient). We first run a bivariate OLS regression of final leave share results on forecast results in each

¹¹See the Appendix for full regression results

district. We then regress the errors of this regression on rainfall, finding a statistically significant negative coefficient equal to a 0.11% reduction in leave share for each 1 mm rainfall. Leave vote share falls by 2.74% per inch of rainfall (25 mm) according to how much error in polling forecasts is due to the unforeseen impact of rainfall. When compared directly with the first difference estimate leave share of Model 6, we come to strikingly similar conclusions. A 25mm increase in rainfall reduces leave share by 3.33% according to Model 6 (once accounting for the rate of abstention). For this reason, we are confident that the rainfall effect is robust to out-of-model applications such as reducing polling error. If election forecasters infer the expected direction and magnitude of rainfall effects from the results of past elections, they may be able to reduce polling error considerably, especially when heavy rain is forecast on election day.

5.3 Conclusion

In this chapter, we have incorporated fine grained radar data into the most comprehensive national level analysis of the UK's EU referendum of 2016. We achieved a lower level of voting district disaggregation than the official results, and to our knowledge we present the first electoral analysis of rainfall to restrict the measurement of rainfall to voting hours. Our central conclusion is that rainfall had a substantial effect on voting in several districts, but that the effect was too small to have decisively swung the referendum's final result.

Our key findings for the effect of rainfall on the UK's EU Referendum were as follows. First, we estimate relatively large estimates for the effect of rainfall on turnout. A 25 mm (1 inch) increase in rainfall over 6 am - 10 pm results in a 2.45% decrease in turnout, adjusted to 1.6% for the 24-hour period. Second, contrary to the prediction of Ukip Leader Nigel Farage, we show that leave supporters were in fact more likely to be deterred by rainfall than remain supporters. Third, we show that a counterfactual referendum day without rainfall would most likely have widened the gap between leave and remain, conclusively answering any question of whether rainfall (or lack thereof) could have changed the result.

We also find results of wider interest to election specialists. First, we find that postal voting suppressed the effect of rainfall on turnout and leave share, indicating that postal voting has the effect of nullifying the potential hindrances to voting on polling day. Electoral commissions could therefore do more to reduce the rainfall effect by encouraging alternative voting methods such as free postal voting. Second, we find evidence to support the psychological effects of rainfall on vote share (vote-shift). Third, we find evidence to show that polling analysts may be able to reduce forecasting error by taking into account rain forecasts when the expected direction of effect is known.

What do our findings tell us about the relationship between elections and rainfall in general? Most importantly, our findings suggest that rainfall probably cannot swing the results of referendums or proportionally allocated parliamentary elections unless those elections are extremely close. However, given that we find several districts were likely to have lost thousands of votes in the EU Referendum that was seen as particularly divisive, highly salient and ‘close’ (at least before the fact), our study shows that there is room for conjecture on the impact of rainfall in close elections elsewhere.

On the one hand, Fraga and Hersh (2011) show that the effect of rainfall in the U.S. Electoral College is confined to elections that are not close, arguing that the weight of get-out-the-vote campaigning in close states helps voters to overcome election day costs. On the other hand, our findings, combined with new psychologically motivated studies of vote-shift (Horiuchi and Kang, 2017) and the impact of apparently irrelevant events on political outcomes (Busby et al., 2016) suggest that the question of the rainfall effect in close elections ought to be revisited – particularly outside the US, where election campaigns are less well funded. Targeted studies of rainfall in close elections may be able to show substantive result altering effects.

Chapter 6

Conclusions

This thesis has taken a rigorous approach to the analysis of political behaviour in the United Kingdom and presents novel findings that improve our understanding of British Politics. Here, I reflect upon the findings of each individual chapter, before discussing the wider connections and contributions of the thesis within the field of political science. I then conclude by considering the importance of data collection and analysis to the study of British politics.

Chapter 2 studies the effect of plenary access on partisanship in Prime Minister's Questions. The results of a natural experiment show that decreased access to the floor has the effect of increasing the proportion of questions that aim to directly admonish a political opponent. These findings align with expectations of the 'plenary bottleneck' theory of legislative organisation. Of course, the plenary bottleneck theory (Cox, 2006) explains the slow moving development of party discipline and the gradual removal of the rights of backbench MPs to delay the passage of legislation, whereas the study in Chapter 2 deals with parties' fluctuating access to parliamentary debate. However – in both empirical examples – analogous mechanisms underlying the activation of party discipline apply. In the case of the slow development of the government-opposition dynamic in 19th century Britain, low levels of party discipline and fewer restrictions on the rights of individual members to delay the passage of bills brought Parliament to deadlock. The legislature could not meet the growing

requirement for more legislation to keep up with the pace of modernisation across the country, necessitating anti-dilatory reforms in order to improve the efficiency of governance.

In the case of access to the floor in PMQs, a similar logic applies at the party level. As a party's access to the floor in PMQs is removed, demand for plenary time outstrips supply. In the situation where access to the floor is scarce, the members chosen by random ballot to speak on behalf of their party must converge on an approach that broadly represents the party's position in the most efficient way. As previous studies of parliamentary voting have shown (Dewan and Spirling, 2011; Hix and Noury, 2016), parties in Westminster style systems generally achieve this efficiency by voting in a partisan government-opposition manner. Chapter 2 shows much the same manifestation of efficiency in parliamentary speech: as access to speaking time is curtailed, speech becomes more partisan.

Chapter 3 – which examines strategic party disloyalty among backbench MPs – chooses from two theories competing for the explanation of why party disloyalty is higher for governing parties than it is for opposition parties. On first glance, the theorisation is simple: governing parties have greater difficulty with disloyalty because they are larger, more ideologically diverse, and contain a greater number of new MPs from marginal constituencies who may seek to stake out a centrist position in the legislature. Our analysis shows that this theory is not supported by the evidence. Firstly, it is incumbent MPs who drive increases in party disloyalty when their party moves from opposition to government. Secondly, instead of increased rebellions in Parliament being driven by centrist, non-partisan MPs, it is MPs from the extreme wings of either the Labour Party or the Conservative Party who rebel more often. Finally, marginality – the extent to which an MP's seat in parliament is electorally secure – also has no effect on the likelihood of rebellion.

Our theory suggests that the explanation for this empirical pattern is based in the relationship many ideologically extreme Members of Parliament have with the voters in their constituency. MPs who see their political base as somewhat more extreme than the centre of their party have the incentive to signal their ideological independence to their base at every opportunity. However, when a party is in opposition, a vote

against one's own party is by definition a vote for the policy of the government. Ideologically extreme MPs would far rather oppose a government's bill than oppose their own party. It is only when in government that the incentive to rebel against the party aligns with the electoral interests of more ideologically extreme MPs. In this case, a centrist government proposal may be portrayed as a betrayal of the party's values, and so provides an opportunity for extreme MPs to signal their independence. In fact, we show that not only do ideologically extreme MPs rebel more often when in government, they are almost three times more likely to attach an explanatory 'grandstanding' speech to explain their vote to the base.

Chapter 4 analyses early career progression and first promotions among MPs in the House of Commons, finding new evidence to support a link between legislative behaviour at the individual level and eventual career prospects, complementing previous research into the effect of party loyalty in voting and career progression in Britain (Piper, 1991; Kam, 2006; Benedetto and Hix, 2007). Chapter 4 also makes a contribution to the growing literature that makes use of parliamentary speech for the measurement of non-ideological latent dimensions (Killermann and Proksch, 2013; Proksch and Slapin, 2015; Killermann, 2016). The finding that parliamentary debate may also reflect the underlying politics behind political appointments gives further credence to the use of parliamentary debate as a means by which to measure meaningful dimensions of parliamentary behaviour.

The strongest results in Chapter 4 show that the higher the participation in parliamentary debate, the higher the likelihood of ministerial selection. This central finding is accompanied by results suggesting that the content of speeches may also have an important role to play in career progression. The key argument for a causal effect of speechmaking on career progression is that speeches affect the likelihood of progression to parliamentary roles that require strong skills in speech, while the role of whip remains unaffected by any form of political speech measure, as whips are not permitted to speak in the House.

Chapter 5, which considers the effect of rainfall on voting in the referendum on membership of the European Union, provides a detailed and innovative answer to a perennial question asked of close elections: "could the rain have swung the result?".

Our study combined highly detailed radar-based rainfall data (tailored specifically to polling station opening hours) with a complete electoral analysis of the referendum vote across the United Kingdom. We overcome several methodological challenges in measuring the effect of rainfall on the result of the referendum. First, our sample contained a relatively small number of observations and no repeats of observations over time. Since previous studies rely on time-series estimations of the effect of rainfall, we had to find an effective way for accounting for the confounding effects of spatial dependence of rainfall across the country. We apply a recently developed balancing procedure that reduces the dependence between pre-treatment covariates and a continuous treatment (Fong et al., 2017), allowing for an unbiased estimate of the effect of rainfall on the referendum results. Second, since a shift in the election result due to rainfall could have been mediated through a swing in vote choice or through suppressing turnout differentially, we applied compositional analysis with seemingly unrelated regression estimation.

Our results showed substantial estimates for the negative effect of rainfall on turnout. A 25 mm (1 inch) increase in rainfall over 6 am - 10 pm results in a 2.45% decrease in turnout, adjusted to 1.6% for the 24-hour period. We found that the effect of rainfall was more detrimental to the leave vote than it was for remain, and convincing evidence in line with psychological theory that rainfall caused groups of people to become more risk-averse in their decision making, which resulted in voters switching their vote choice from leave to remain. We found that, if no rain had fallen on the day of the referendum, the gap between leave and remain would have been greater than the actual referendum result. We also showed that the effect of rainfall was less pronounced in districts with a greater uptake of postal voting, implying that electoral commissions may be able to minimise the impact of election day shocks by encouraging the uptake of postal voting. Finally, we found that rainfall data made small but significant improvements to the estimates of a polling day forecast of the referendum results.

6.1 The Necessity of Comparison in Single-Country Studies

One of the seductions of producing political science research on a single country is the danger of failing to recognise and apply the general contributions of the international discipline. A primary lesson of this thesis is that the politics of one democratic country must be seen in the context of others: that cross-national differences are usually incremental, not categorical or essential. In writing this Ph.D, a common finding has been how readily theories of political processes apply to the British case:

Chapter 2 adapts a general theory of legislative organisation to show that party cohesion in the House of Commons depends in part on the demand for parliamentary speech time (Cox, 2006). This finding is new in the study of British politics, but the principles applied here could be readily applied across different legislatures with proper understanding of the dynamics of parliamentary speech across legislative systems (Proksch and Slapin, 2015). Chapter 3 shows that ideologically extreme legislators in the United States House of Representatives and Britain's House of Commons behave similarly when moving between majority and minority status. When in the majority, legislators in both systems are more likely to publicly rebel against their own party. When in the minority, legislators in both systems become more loyal. Despite the fact that the House of Commons and the House of Representatives are often thought to be categorically different in terms of legislative behaviour, increasingly we find that the presumed differences between systems are sometimes due to the differences in modes of study, rather than empirical realities.

Chapter 4 approaches career progression from a perspective that is more frequently used to study American politics and the politics of presidential systems in Latin America. Whilst studies of political elites in Westminster tend to focus on cabinet politics and the selection of senior politicians, Chapter 4 theorises the legislative behaviour of new MPs in the literature. The findings help to reveal how progressive ambition in parliamentary systems manifests itself in terms of legislative behaviour and how ambitious politicians approach the task of representation. Without reference

to external applications of progressive ambition (Schlesinger, 1966; Herrick and Moore, 1993; Sieberer and Müller, 2017) and developments in the theorisation and analysis of parliamentary speech (Proksch and Slapin, 2015), this chapter would not have been possible.

Finally, Chapter 5 analyses the effect of rainfall on Britain’s 2016 EU Referendum. Despite the relative complexity of the empirical task and the fact that referendums are quite different to general elections, we found similar effects of rainfall to other studies in the field. Our overall estimate of the effect of rainfall was higher relative to other studies – which measure rainfall over a 24 hour period – but when accounting for our reduced window of measurement (between 6am and 10pm), our estimate falls within the expected range of previous studies. Our analysis also found vote-switching effects similar to those discovered in studies of American elections (Horiuchi and Kang, 2017; Bassi and Williams, 2017) in which rainfall elicits a risk-averse response from groups of voters.

In summary, this thesis has focused on British political institutions and the political behaviour therein, but it has done so with reference to – and comparison with – studies of parliamentary and presidential democracies around the world. This approach to political research not only improves the intrinsic quality of research findings – we come closer to some sense of objective social truth – but it also helps researchers who study different political systems to more easily reflect on and compare with their own cases of study. Hopefully, this thesis will contribute to the study of political behaviour both within and outside the United Kingdom.

6.2 Improving Understanding with Better Information

For each substantive chapter of this thesis, I have (in collaboration with co-authors in Chapters 2 and 4) undertaken large-scale data collection efforts in British politics. Chapter 2 collects together information on the application and use of parliamentary questions in PMQs (a first analysis of new data) which could be used to study

other important aspects of legislative behaviour, including the explanation of gender differences in participation in parliamentary debate. Chapter 3 brings together a very large data set of parliamentary speeches, voting behaviour, electoral data and a complete time-series of parliamentary careers from 1979-2016. These data is now published and in the public domain for use in further studies of British politics. Chapter 4 collects the political speeches and early paths of MPs from as early as 1945, combined with information on their social and professional backgrounds. Finally, Chapter 5 presents fine-grained radar data alongside electoral data from the whole of Great Britain and Northern Ireland. To our knowledge, this is still the most geographically inclusive statistical analysis of the EU Referendum.

Of course, no dataset is perfect and there is still much work to be done in expanding and improving the data used here and also the collection of publicly available data for the study of British politics in general. As the capacity among students of British politics to make use of quantitative data increases, so will the demand for reliable and easy-to-access data in this field. Beyond the thesis itself, I hope a lasting contribution of this project will be the efforts taken by myself and my colleagues to gather and structure data in British politics for future use in teaching and research.

Bibliography

- Aldrich, John H., Jacob M. Montgomery, and Wendy Wood (2011). “Turnout as a Habit”. In: *Political Behavior* 33.4, pp. 535–563.
- Allen, Nicholas and Hugh Ward (2009). “‘Moves on a Chess Board’: A Spatial Model of British Prime Ministers’ Powers over Cabinet Formation”. In: *The British Journal of Politics & International Relations* 11.2, pp. 238–258.
- Anderson, Cameron, Sebastien Brion, Don A. Moore, and Jessica A. Kennedy (2012). “A Status-Enhancement Account of Overconfidence.” In: *Journal of Personality and Social Psychology* 103.4, p. 718.
- Aron, Jacob (2016). *Will Bad Weather Have an Impact on Today’s EU Referendum Vote?* URL: <https://www.newscientist.com/article/2094884-will-bad-weather-have-an-impact-on-todays-eu-referendum-vote/> (visited on 07/05/2016).
- Atkins, Judi, Timothy Heppell, and Kevin Theakston (2013). “The Rise of the Novice Cabinet Minister? The Career Trajectories of Cabinet Ministers in British Government from Attlee to Cameron”. In: *The Political Quarterly* 84.3, pp. 362–370.
- Austen-Smith, David and Jeffrey S. Banks (2000). “Cheap Talk and Burned Money”. In: *Journal of Economic Theory* 91.1, pp. 1–16.
- Bächtiger, André, Markus Spörndli, Marco R Steenbergen, and Jürg Steiner (2005). “The Deliberative Dimensions of Legislatures”. In: *Acta Politica* 40.2, pp. 225–238.
- Bäck, Hanna, Marc Debus, and Jochen Müller (2014). “Who Takes the Parliamentary Floor? The Role of Gender in Speech-Making in the Swedish Riksdag”. In: *Political Research Quarterly*, pp. 504–518.

- Bassi, Anna and Kenneth C. Williams (2017). *Weather, Mood, and Voting: An Experimental Analysis of the Effect of Weather Beyond Turnout*. URL: <http://bassi.web.unc.edu/research/publications/> (visited on 12/11/2017).
- Bates, Stephen R., Peter Kerr, Christopher Byrne, and Liam Stanley (2014). “Questions to the Prime Minister: A Comparative Study of PMQs from Thatcher to Cameron”. In: *Parliamentary Affairs* 67.2, pp. 253–280.
- Baughman, John (2004). “Party, constituency, and representation: Votes on abortion in the British House of Commons”. In: *Public Choice* 120.1-2, pp. 63–85.
- Baumann, Markus, Marc Debus, and Jochen Müller (2015). “Convictions and Signals in Parliamentary Speeches: Dáil Éireann Debates on Abortion in 2001 and 2013”. In: *Irish Political Studies* 30.2, pp. 199–219.
- BBC News (2016a). *Heavy Rain in South East England: Your Pictures*. URL: <http://www.bbc.com/news/uk-england-36606200> (visited on 09/13/2016).
- (2016b). *EU Referendum: Final Push for Votes on Last Day of Campaign*. URL: <http://www.bbc.co.uk/news/uk-politics-eu-referendum-36594834> (visited on 07/05/2016).
- (2016c). *EU Referendum Results*. URL: http://www.bbc.co.uk/news/politics/eu_referendum/results (visited on 09/30/2016).
- Beauchamp, Nick (2011). “Using text to scale legislatures with uninformative voting”. New York University.
- Benedetto, Giacomo and Simon Hix (2007). “The rejected, the ejected, and the dejected: Explaining government rebels in the 2001-2005 British House of Commons”. In: *Comparative Political Studies* 40.7, pp. 755–781.
- Benoit, Kenneth, Drew Conway, Benjamin E Lauderdale, Michael Laver, and Slava Mikhaylov (2016). “Crowd-sourced text analysis: Reproducible and agile production of political data”. In: *American Political Science Review* 110.2, pp. 278–295.
- Berlinski, Samuel, Torun Dewan, and Keith Dowding (2010). “The Impact of Individual and Collective Performance on Ministerial Tenure”. In: *The Journal of Politics* 72.02, pp. 559–571.

- (2012). *Accounting for Ministers: Scandal and Survival in British Government 1945-2007*. Cambridge, UK: Cambridge University Press.
- Berrington, Hugh and Rod Hague (1998). “Europe, Thatcherism and traditionalism: Opinion, rebellion and the Maastricht treaty in the backbench conservative party, 1992–1994”. In: *West European Politics* 21.1, pp. 44–71.
- Bertelli, Anthony M and Rachel M Dolan (2009). “The Demand and Supply of Parliamentary Policy Advocacy: Evidence from UK Health Policy, 1997–2005”. In: *Government and Opposition* 44.3, pp. 219–242.
- Bevan, Shaun and Peter John (2016). “Policy Representation by Party Leaders and Followers: What Drives UK Prime Minister’s Questions?” In: *Government and Opposition* 51.1, pp. 59–83.
- Binder, Sarah A. (1996). “The Partisan Basis of Procedural Choice: Allocating Parliamentary Rights in the House, 1789-1990”. In: *The American Political Science Review* 90.1, pp. 8–20.
- Borgen, Fred H. and Nancy E. Betz (2008). “Career Self-Efficacy and Personality: Linking Career Confidence and the Healthy Personality”. In: *Journal of Career Assessment* 16.1, pp. 22–43.
- Bowler, Shaun (2010). “Private Members’ Bills in the UK Parliament: Is There an ‘Electoral Connection’?” In: *The Journal of Legislative Studies* 16.4, pp. 476–494.
- Bräuning, Thomas, Jochen Müller, and Christian Stecker (2016). “Modeling Preferences Using Roll Call Votes in Parliamentary Systems”. In: *Political Analysis* 24.2, pp. 189–210.
- Busby, Ethan C., James N. Druckman, and Alexandria Fredendall (2016). “The Political Relevance of Irrelevant Events”. In: *The Journal of Politics* 79.1, pp. 346–350.
- Cain, Bruce, John Ferejohn, and Morris Fiorina (1987). *The Personal Vote: Constituency Service and Electoral Independence*. Cambridge, MA: Harvard University Press.
- Cairney, Paul (2007). “The professionalisation of MPs: Refining the ‘politics-facilitating’ explanation”. In: *Parliamentary Affairs* 60.2, pp. 212–233.

- Campbell, Rosie, Philip Cowley, Nick Vivyan, and Markus Wagner (2016). “Legislator Dissent as a Valence Signal”. In: *British Journal of Political Science*, pp. 1–24.
- Carey, John M. (2007). “Competing Principals, Political Institutions, and Party Unity in Legislative Voting”. In: *American Journal of Political Science* 51.1, pp. 92–107.
- Carey, John M (2008). *Legislative voting and accountability*. Cambridge, UK: Cambridge University Press.
- Carey, John M., Richard G. Niemi, and Lynda W. Powell (2009). *Term Limits in State Legislatures*. Ann Arbor, MI: University of Michigan Press.
- Carrubba, Clifford J., Matthew Gabel, and Simon Hug (2008). “Legislative voting behavior, seen and unseen: A theory of roll-call vote selection”. In: *Legislative Studies Quarterly* 33.4, pp. 543–572.
- Casalicchio, Emilio (2017). *John Bercow: Prime Minister’s Questions Should Last an Hour*. URL: <https://www.politicshome.com/news/uk/politics/news/88980/john-bercow-prime-ministers-questions-should-last-hour> (visited on 01/14/2017).
- Clarke, Harold D., Matthew Goodwin, and Paul Whiteley (2017). *Brexit*. Cambridge, UK: CUP.
- Clasen, Jochen (2005). *Reforming European Welfare States: Germany and the United Kingdom Compared*. Oxford, UK: Oxford University Press.
- Coman, Emanuel Emil (2012). “Legislative Behavior in Romania: The Effect of the 2008 Romanian Electoral Reform”. In: *Legislative Studies Quarterly* 37.2, pp. 199–224.
- Coronel-Brizio, H. F., A. R. Hernández-Montoya, Fabio Rapallo, and Enrico Scalas (2008). “Statistical Auditing and Randomness Test of Lotto K/N-Type Games”. In: *Physica A: Statistical Mechanics and its Applications* 387.25, pp. 6385–6390.
- Cowley, Philip (2002). *Revolts and Rebellions: Parliamentary Voting under Blair*. London: Politico’s.
- (2005). *The Rebels: How Blair Mislaid His Majority*. London: Politico’s.
- (2012). “Arise, Novice Leader! The Continuing Rise of the Career Politician in Britain”. In: *Politics* 32.1, pp. 31–38.

- Cowley, Philip and Philip Norton (1999). “Rebels and Rebellions: Conservative MPs in the 1992 Parliament”. In: *The British Journal of Politics & International Relations* 1.1, pp. 84–105.
- Cox, Gary W. (1987). *The Efficient Secret: The Cabinet and the Development of Political Parties in Victorian England*. Cambridge, UK: Cambridge University Press.
- (2006). “The Organization of Democratic Legislatures”. In: *The Oxford Handbook of Political Economy*. Ed. by Barry R Weingast and Donald Wittman. Oxford, UK: Oxford University Press, pp. 141–61.
- Cox, Gary W. and Mathew D. McCubbins (2005). *Setting the agenda: Responsible party government in the US House of Representatives*. New York, NY: Cambridge Univ Press.
- (2007). *Legislative Leviathan: Party Government in the House*. Cambridge, UK: Cambridge University Press.
- Cox, Gary W. and Keith T. Poole (2002). “On Measuring Partisanship in Roll-Call Voting: The U.S. House of Representatives, 1877-1999”. In: *American Journal of Political Science* 46.3, pp. 477–489.
- Critchley, Julian (1978). “How to Get on in the Conservative Party”. In: *The Political Quarterly* 49, pp. 467–73.
- Crowe, Edward (1986). “The web of authority: Party loyalty and social control in the British House of Commons”. In: *Legislative Studies Quarterly* 11.2, pp. 161–185.
- Curtin, Jennifer, Matthew Kerby, and Keith Dowding (2014). “Gender, Representation and Power in the Executive Branch”. In: *ECPR 2014 Annual Meeting Paper*.
- Dacre Pool, Lorraine and Peter Sewell (2007). “The Key to Employability: Developing a Practical Model of Graduate Employability”. In: *Education+ Training* 49.4, pp. 277–289.
- Dalvean, Michael C. (2012). “The Selection of Cabinet Ministers in the Australian Federal Parliament”. PhD thesis. Australian National University.
- De Winter, Lieven (1991). “Parliamentary and Party Pathways to the Cabinet”. In: *The Profession of Government Minister in Western Europe*. Ed. by Jean Blondel and Jean-Louis Thiébault. London: Palgrave Macmillan UK, pp. 44–69.

- Depauw, Sam and Shane Martin (2009). “Legislative Party Discipline and Cohesion in Comparative Perspective”. In: *Intra-Party Politics and Coalition Governments*. Ed. by D. Giannetti and K. Benoit. London: Taylor & Francis, pp. 103–120.
- Dewan, Torun and David P. Myatt (2010). “The Declining Talent Pool of Government”. In: *American Journal of Political Science* 54.2, pp. 267–286.
- Dewan, Torun and Arthur Spirling (2011). “Strategic Opposition and Government Cohesion in Westminster Democracies”. In: *American Political Science Review* 105.02, pp. 337–358.
- DfE (2015). *ASHE by NI Geographies, by Place of Work and Place of Residence, Department for the Economy, Northern Ireland*. URL: <https://www.economy-ni.gov.uk/publications/ashe-by-ni-geographies-by-place-work-and-place-residence-2015-provisional-and-2014> (visited on 07/11/2016).
- Diermeier, Daniel and Timothy J. Feddersen (1998). “Cohesion in Legislatures and the Vote of Confidence Procedure”. In: *American Political Science Review* 92.3, pp. 611–621.
- Döring, Herbert (1995). “Time as a Scarce Resource: Government Control of the Agenda”. In: *Parliaments and majority rule in Western Europe*. Ed. by Herbert Döring. Frankfurt, Germany: Campus, pp. 223–46.
- (2001). “Parliamentary agenda control and legislative outcomes in Western Europe”. In: *Legislative Studies Quarterly*, pp. 145–165.
- Dowding, Keith and Patrick Dumont, eds. (2008). *The Selection of Ministers in Europe: Hiring and Firing*. London: Routledge.
- eds. (2014). *The Selection of Ministers around the World*. London: Routledge.
- Downs, Anthony (1957). “An economic theory of political action in a democracy”. In: *Journal of political economy* 65.2, pp. 135–150.
- Dunford, Daniel and Ashley Kirk (2016). *How Did Turnout Affect the EU Referendum Result?* URL: <http://www.telegraph.co.uk/news/2016/06/24/how-did-turnout-affect-the-eu-referendum-result/> (visited on 07/26/2016).
- Eggers, Andrew C and Arthur Spirling (2014). “Ministerial Responsiveness in Westminster Systems: Institutional Choices and House of Commons Debate, 1832–1915”. In: *American Journal of Political Science* 58.4, pp. 873–887.

- (2016). “Party Cohesion in Westminster Systems: Inducements, Replacement and Discipline in the House of Commons, 1836-1910”. In: *British Journal of Political Science* 46.3, pp. 567–589.
- Eisinga, Rob, Manfred Te Grotenhuis, and Ben Pelzer (2011). “Weather Conditions and Voter Turnout in Dutch National Parliament Elections, 1971–2010”. In: *International Journal of Biometeorology* 56.4, pp. 783–786.
- Electoral Commission (2017). *Electoral Data Files and Reports*. URL: <https://www.electoralcommission.org.uk/our-work/our-research/electoral-data/electoral-data-new> (visited on 12/14/2017).
- ESWD (2017). *European Severe Weather Database - Selected Data from the Database*. URL: <https://www.eswd.eu/> (visited on 12/22/2017).
- Fausey, Caitlin M. and Teenie Matlock (2011). “Can Grammar Win Elections?” In: *Political Psychology* 32.4, pp. 563–574.
- Fearon, James D. (1999). “Electoral Accountability and the Control of Politicians: Selecting Good Types versus Sanctioning Poor Performance”. In: *Democracy, Accountability and Representation*. Ed. by Adam Przeworski, Susan C. Stokes, and Bernard Manin. Cambridge, UK: Cambridge University Press.
- Figlio, David N (1995). “The effect of retirement on political shirking: Evidence from congressional voting”. In: *Public Finance Quarterly* 23.2, pp. 226–241.
- Fong, Christian, Chad Hazlett, and Kosuke Imai (2017). “Covariate Balancing Propensity Score for a Continuous Treatment: Application to the Efficacy of Political Advertisements”. In: *Annals of Applied Statistics, Forthcoming*.
- Ford, Robert and Matthew J. Goodwin (2014). *Revolt on the Right: Explaining Support for the Radical Right in Britain*. London: Routledge.
- Fraga, Bernard and Eitan Hersh (2011). “Voting Costs and Voter Turnout in Competitive Elections”. In: *Quarterly Journal of Political Science* 5.4, pp. 339–356.
- Friedman, Jerome, Trevor Hastie, and Robert Tibshirani (2001). *The Elements of Statistical Learning*. Berlin: Springer.
- Fukumoto, Kentaro and Akitaka Matsuo (2015). “The Effects of Election Proximity on Participatory Shirking: The Staggered-Term Chamber as a Laboratory”. In: *Legislative Studies Quarterly* 40.4, pp. 599–625.

- Gaines, Brian J. and Geoffrey Garrett (1993). “The Calculus of Dissent: Party Discipline in the British Labour Government, 1974–1979”. In: *Political Behavior* 15.2, pp. 113–135.
- Gallego, Aina (2010). “Understanding Unequal Turnout: Education and Voting in Comparative Perspective”. In: *Electoral Studies* 29.2, pp. 239–248.
- Garner, Christopher and Natalia Letki (2005). “Party structure and backbench dissent in the Canadian and British Parliaments”. In: *Canadian journal of political science* 38.02, pp. 463–482.
- Gatrell, Jay D. and Gregory D. Bierly (2002). “Weather and Voter Turnout: Kentucky Primary and General Elections, 1990-2000”. In: *Southeastern Geographer* 42.1, pp. 114–134.
- Gerber, Alan S., Donald P. Green, and Ron Shachar (2003). “Voting May Be Habit-Forming: Evidence from a Randomized Field Experiment”. In: *American Journal of Political Science* 47.3, pp. 540–550.
- Giannetti, Daniela, Luca Pinto, and Andrea Pedrazzani (2016). “Setting Parliamentary Calendars: How Parties Allocate Time for Plenary Debates on Bills”. In: *Political Studies* 64.4, pp. 1016–1035.
- Goetz, Klaus H and Jan-Hinrik Meyer-Sahling (2009). “Political time in the EU: dimensions, perspectives, theories”. In: *Journal of European Public Policy* 16.2, pp. 180–201.
- Gomez, Brad T., Thomas G. Hansford, and George A. Krause (2007). “The Republicans Should Pray for Rain: Weather, Turnout, and Voting in U.S. Presidential Elections”. In: *Journal of Politics* 69.3, pp. 649–663.
- Goodwin, Matthew J and Oliver Heath (2016). “The 2016 referendum, Brexit and the left behind: an aggregate-level analysis of the result”. In: *The Political Quarterly* 87.3, pp. 323–332.
- Griffin, Andrew (2016). *Leave Supporters Are Very Suspicious about the Pencils at Polling Stations*. URL: <http://www.independent.co.uk/news/uk/home-news/eu-referendum-brexit-how-to-vote-own-pens-polling-station-polls-live-latest-mi5-conspiracy-fears-a7097011.html> (visited on 09/13/2016).

- Grimmer, Justin (2013). *Representational Style in Congress: What Legislators Say and Why It Matters*. Cambridge University Press.
- Grimmer, Justin and Brandon M. Stewart (2013). “Text as Data: The Promise and Pitfalls of Automatic Content Analysis Methods for Political Texts”. In: *Political Analysis* 21.3, pp. 267–297.
- Grofman, Bernard, Robert Griffin, and Gregory Berry (1995). “House Members Who Become Senators: Learning from a ‘natural Experiment’ in Representation”. In: *Legislative Studies Quarterly* 20.4, pp. 513–529.
- Hansard Society (2014). *Turned-In or Turned Off? Public Attitudes to Prime Minister’s Questions*. URL: https://assets.contentful.com/u1rlvvs33ri/v5KOp60C60s0y2MYiMYyg/da0ce4465c346bb592fde93de3550b3c/Publication_Tuned-in-or-Turned-off-Public-attitudes-to-PMQs.pdf (visited on 06/13/2016).
- (2017). *Audit of Political Engagement 14*. URL: <https://www.hansardsociety.org.uk/research/audit-of-political-engagement> (visited on 12/29/2017).
- Harries, Matthew (2016). “Brexit and Political Malpractice”. In: *Survival* 58.3, pp. 31–40.
- Heller, William B (2001). “Making Policy Stick: Why the Government Gets What It Wants in Multiparty Parliaments”. In: *American Journal of Political Science* 45.4, pp. 780–798.
- Heppell, Timothy (2013). “Cameron and liberal conservatism: Attitudes within the parliamentary Conservative Party and conservative ministers”. In: *The British Journal of Politics & International Relations* 15.3, pp. 340–361.
- Hermann, Margaret G (1980). “Explaining Foreign Policy Behavior Using the Personal Characteristics of Political Leaders”. In: *International Studies Quarterly* 24.1, pp. 7–46.
- Hermann, Margaret G. and Thomas W. Milburn (1977). *A Psychological Examination of Political Leaders*. New York: Free Press.
- Herrick, Rebekah and Michael K. Moore (1993). “Political Ambition’s Effect on Legislative Behavior: Schlesinger’s Typology Reconsidered and Revised”. In: *The Journal of Politics* 55.03, pp. 765–776.

- Herzog, Alexander and Kenneth Benoit (2015). “The Most Unkindest Cuts: Speaker Selection and Expressed Government Dissent during Economic Crisis”. In: *Journal of Politics* 77.4, pp. 1157–1175.
- Hetherington, Marc J. (2001). “Resurgent Mass Partisanship: The Role of Elite Polarization”. In: *American Political Science Review* 95.3, pp. 619–631.
- Hibbing, John R (1986). “Ambition in the House: Behavioral consequences of higher office goals among US representatives”. In: *American Journal of Political Science*, pp. 651–665.
- Hix, Simon (2004). “Electoral Institutions and Legislative Behavior — Explaining Voting Defection in the European Parliament”. In: *World Politics* 56.2, pp. 194–223.
- Hix, Simon and Abdul Noury (2016). “Government-opposition or left-right? The institutional determinants of voting in legislatures”. In: *Political Science Research and Methods* 4.2, pp. 249–273.
- Hix, Simon, Abdul Noury, and Gérard Roland (2005). “Power to the Parties: Cohesion and Competition in the European Parliament, 1979–2001”. In: *British Journal of Political Science* 35.02, pp. 209–234.
- Ho, Daniel E., Kosuke Imai, Gary King, and Elizabeth A. Stuart (2007). “Matching as Nonparametric Preprocessing for Reducing Model Dependence in Parametric Causal Inference”. In: *Political Analysis* 15.3, pp. 199–236.
- Horiuchi, Yusaku and Peter John (2016). “Opportunities in Parliament and Political Careers: A Natural Experiment in the United Kingdom”.
- Horiuchi, Yusaku and Woo Chang Kang (2017). “Why Should the Republicans Pray for Rain? Electoral Consequences of Rainfall Revisited”. In: *American Politics Research*, pp. 1–21.
- Huber, John (1996). “The Vote of Confidence in Parliamentary Democracies”. In: *American Political Science Review* 90.2, pp. 269–82.
- Huber, John D. and Cecilia Martinez-Gallardo (2008). “Replacing Cabinet Ministers: Patterns of Ministerial Stability in Parliamentary Democracies”. In: *American Political Science Review* 102.02, pp. 169–180.

- Hug, Simon (2010). “Selection Effects in Roll Call Votes”. In: *British Journal of Political Science* 40.1, pp. 225–235.
- Imai, Kosuke and Marc Ratkovic (2014). “Covariate Balancing Propensity Score”. In: *Journal of the Royal Statistical Society: Series B (Statistical Methodology)* 76.1, pp. 243–263.
- Indridason, Indridi H. and Christopher Kam (2005). “The Timing of Cabinet Reshuffles in Five Westminster Parliamentary Systems”. In: *Legislative Studies Quarterly* 30.3.
- (2008). “Cabinet Reshuffles and Ministerial Drift”. In: *British Journal of Political Science* 38.04, pp. 621–656.
- Inglehart, Ronald and Pippa Norris (2016). “Trump, Brexit, and the rise of populism: Economic have-nots and cultural backlash”. In:
- Johnson, Dominic D. P. and James H. Fowler (2011). “The Evolution of Overconfidence”. In: *Nature* 477.7364, pp. 317–320.
- Johnston, Ron, Philip Cowley, Charles Pattie, and Mark Stuart (2002). “Voting in the House or wooing the voters at home: Labour MPs and the 2001 general election campaign”. In: *Journal of Legislative Studies* 8.2, pp. 9–22.
- Kahneman, Daniel and Amos Tversky (2013). “Prospect Theory: An Analysis of Decision under Risk”. In: *Handbook of the Fundamentals of Financial Decision Making: Part I*. London: World Scientific, pp. 99–127.
- Kam, Christopher (2001). “Do ideological preferences explain parliamentary behaviour? Evidence from Great Britain and Canada”. In: *Journal of Legislative Studies* 7.4, pp. 89–126.
- (2006). “Demotion and dissent in the Canadian Liberal Party”. In: *British Journal of Political Science* 36.3, pp. 561–574.
- Kam, Christopher J. (2009). *Party Discipline and Parliamentary Politics*. Cambridge, UK: Cambridge University Press.
- Kam, Christopher, William T Bianco, Itai Sened, and Regina Smyth (2010). “Ministerial selection and intraparty organization in the contemporary British parliament”. In: *American Political Science Review* 104.2, pp. 289–306.

- Kam, Cindy D. and Elizabeth N. Simas (2010). “Risk Orientations and Policy Frames”. In: *The Journal of Politics* 72.2, pp. 381–396.
- Karp, Jeffrey A. and Susan A. Banducci (2000). “Going Postal: How All-Mail Elections Influence Turnout”. In: *Political Behavior* 22.3, pp. 223–239.
- Kasara, Kimuli and Pavithra Suryanarayan (2015). “When Do the Rich Vote Less Than the Poor and Why? Explaining Turnout Inequality across the World”. In: *American Journal of Political Science* 59.3, pp. 613–627.
- Kellermann, Michael (2012). “Estimating ideal points in the British House of Commons”. In: *American Journal of Political Science* 56.3, pp. 757–77.
- (2016). “Electoral vulnerability, constituency focus, and parliamentary questions in the House of Commons”. In: *The British Journal of Politics and International Relations* 18.1, pp. 90–106.
- Killermann, Kira and Sven-Oliver Proksch (2013). “Dynamic political rhetoric: Electoral, economic, and partisan determinants of speech-making in the UK Parliament”. In: *Annual Meeting of the American Political Science Association, Chicago, IL*.
- Kim, In Song, John Londregan, and Marc Ratkovic (2014). “Voting, Speechmaking, and the Dimensions of Conflict in the US Senate”. In: *Annual Meeting of the Midwest Political Science Association*.
- King, Anthony (1981). “The Rise of the Career Politician in Britain—and Its Consequences”. In: *British Journal of Political Science* 11.03, pp. 249–285.
- (1994). “Ministerial Autonomy in Britain”. In: *Cabinet Ministers and Parliamentary Government*. Ed. by Michael Laver and Kenneth A. Shepsle. Cambridge, UK: Cambridge University Press, pp. 204–225.
- King, Gary, Christopher Lucas, and Richard A. Nielsen (2017). “The Balance-Sample Size Frontier in Matching Methods for Causal Inference”. In: *American Journal of Political Science* 61.2, pp. 473–489.
- Kirkland, Justin H and Jonathan B Slapin (2017). “Ideology and strategic party disloyalty in the US house of representatives”. In: *Electoral Studies* 49, pp. 26–37.
- Klein, Elad and Resul Umit (2016). “The electoral connection of ministerial selection in the UK”. In: *The Journal of Legislative Studies* 22.2, pp. 276–294.

- Knack, Steve (1994). “Does Rain Help the Republicans? Theory and Evidence on Turnout and the Vote”. In: *Public Choice* 79.1-2, pp. 187–209.
- Knapton, Sarah (2016). *EU Referendum Turnout Could Be Dampened by Bad Weather*. URL: <http://www.telegraph.co.uk/science/2016/06/23/eu-referendum-turnout-could-be-dampened-by-bad-weather/> (visited on 07/05/2016).
- Krehbiel, Keith (1993). “Where’s the Party?” In: *British Journal of Political Science* 23.2, pp. 235–266.
- (2010). *Pivotal politics: A theory of US lawmaking*. Chicago, IL: University of Chicago Press.
- Lauderdale, Benjamin E, Delia Bailey, Jack Blumenau, and Douglas Rivers (2017). *Model-Based Pre-Election Polling for National and Sub-National Outcomes in the US and UK*. URL: <http://benjaminlauderdale.net/files/papers/mrp-polling-paper.pdf> (visited on 12/21/2017).
- Lauderdale, Benjamin E. and Alexander Herzog (2016). “Measuring political positions from legislative speech”. In: *Political Analysis* 24.3, pp. 374–394.
- Laver, Michael, Kenneth Benoit, and John Garry (2003). “Extracting policy positions from political texts using words as data”. In: *American Political Science Review* 97.2, pp. 311–331.
- Laver, Michael and Kenneth A. Shepsle (1994). “Cabinet Ministers and Government Formation in Parliamentary Democracies”. In: *Cabinet Ministers and Parliamentary Government*. Ed. by Kenneth A. Shepsle and Michael Laver. Cambridge, UK: Cambridge University Press.
- Lijphart, Arend (1997). “Unequal Participation: Democracy’s Unresolved Dilemma”. In: *The American Political Science Review* 91.1, pp. 1–14.
- Linz, Juan J (1998). “Democracy’s time constraints”. In: *International Political Science Review* 19.1, pp. 19–37.
- Loewen, Peter John, Royce Koop, Jaime Settle, and James H. Fowler (2014). “A Natural Experiment in Proposal Power and Electoral Success”. In: *American Journal of Political Science* 58.1, pp. 189–196.

- London Fire Brigade (2016). *Brigade Receives over Five Hundred 999 Calls as Heavy Rain and Thunderstorms Hit London*. URL: <http://www.london-fire.gov.uk/> (visited on 12/22/2017).
- Longley, Neil (1998). "Legislative systems with absolute party discipline: Implications for the agency theory approach to the constituent-legislator link". In: *Public Choice* 97.1-2, pp. 121–141.
- Lynch, Philip and Richard Whitaker (2013). "Where There is Discord, Can They Bring Harmony? Managing Intra-party Dissent on European Integration in the Conservative Party". In: *The British Journal of Politics & International Relations* 15.3, pp. 317–339.
- Martin, Lanny W (2004). "The government agenda in parliamentary democracies". In: *American Journal of Political Science* 48.3, pp. 445–461.
- McQuaid, Ronald W. (2006). "Job Search Success and Employability in Local Labor Markets". In: *The Annals of Regional Science* 40.2, pp. 407–421.
- Meier, Armando, Lukas Schmid, and Alois Stutzer (2016). *Rain, Emotions and Voting for the Status Quo*. SSRN Scholarly Paper ID 2868316. Rochester, NY: Social Science Research Network.
- Merrifield, John (1993). "The Institutional and Political Factors That Influence Voter Turnout". In: *Public Choice* 77.3, pp. 657–667.
- Met Office (2003). *1 Km Resolution UK Composite Rainfall Data from the Met Office Nimrod System*. NCAS British Atmospheric Data Centre. URL: <http://catalogue.ceda.ac.uk/uuid/27dd6ffba67f667a18c62de5c3456350> (visited on 12/15/2016).
- (2016). *UK Climate*. URL: <http://www.metoffice.gov.uk/public/weather/climate/> (visited on 07/20/2016).
- Nomis (2011). *UK Key Statistics - Census 2011 - Home - Nomis - Official Labour Market Statistics*. URL: https://www.nomisweb.co.uk/census/2011/key_statistics_uk (visited on 07/11/2016).
- Norris, Pippa (1995). *Political Recruitment: Gender, Race and Class in the British Parliament*. Cambridge, UK: Cambridge University Press.

- (1997). “The puzzle of constituency service”. In: *The Journal of Legislative Studies* 3.2, pp. 29–49.
- Norton, Philip (1997). *Dissension in the House of Commons 1979-92*. Oxford, UK: Oxford University Press.
- (2005). *Parliament in British Politics*. London: Palgrave Macmillan.
- O’Grady, Tom (2016). “Careerists Versus Coal-Miners: How British MPs’ Social Backgrounds Affect Their Support for Welfare Reform”. In: *Unpublished paper*.
- Olson, Mancur (1965). *The Logic of Collective Action*. Cambridge, MA: Harvard University Press.
- ONS (2011). *The National Statistics Socio-Economic Classification (NS-SEC)*. URL: <https://www.ons.gov.uk/methodology/classificationsandstandards/> (visited on 12/14/2017).
- Pattie, Charles, Edward Fieldhouse, and Ronald J Johnston (1994). “The price of conscience: the electoral correlates and consequences of free votes and rebellions in the British House of Commons, 1987–92”. In: *British Journal of Political Science* 24.03, pp. 359–380.
- Pennebaker, James W, Roger J Booth, and Martha E Francis (2007). *Linguistic Inquiry and Word Count: LIWC [Computer Software]*. URL: <http://liwc.wpengine.com/> (visited on 04/03/2016).
- Pennebaker, James W, Martha E Francis, and Roger J Booth (2001). *Linguistic Inquiry and Word Count: LIWC 2001*. Vol. 71. Mahwah, NJ: Lawrence Erlbaum Associates.
- Persson, Mikael, Anders Sundell, and Richard Öhrvall (2014). “Does Election Day Weather Affect Voter Turnout? Evidence from Swedish Elections”. In: *Electoral Studies* 33, pp. 335–342.
- Pettersson-Lidbom, Per (2012). “Does the Size of the Legislature Affect the Size of Government? Evidence from Two Natural Experiments”. In: *Journal of Public Economics* 96.3, pp. 269–278.
- Phillips, Miranda and Ian Simpson (2015). “Politics: Disengaged and disconnected? Trends in attitudes towards politics”. In: *British Social Attitudes: the 32nd Report*, pp. 122–145.

- Piper, J Richard (1991). "British Backbench Rebellion and Government Appointments, 1945-87". In: *Legislative Studies Quarterly*, pp. 219–238.
- Poole, Keith T. (2005). *Spatial Models of Parliamentary Voting*. Cambridge, UK: Cambridge University Press.
- Proksch, Sven-Oliver and Jonathan B. Slapin (2010). "Position taking in European Parliament speeches". In: *British Journal of Political Science* 40.3, pp. 587–611.
- (2012). "Institutional Foundations of Legislative Speech". In: *American Journal of Political Science* 56.3, pp. 520–537.
- (2015). *The Politics of Parliamentary Debate: Parties, Rebels and Representation*. Cambridge, UK: Cambridge University Press.
- Quiroz Flores, A (2016). *Ministerial Survival During Political and Cabinet Change: Foreign Affairs, Diplomacy and War*. London: Routledge.
- Quiroz-Flores, Alejandro and Alastair Smith (2011). "Leader Survival and Cabinet Change". In: *Economics & Politics* 23.3, pp. 345–366.
- Rhodes, Martin (2000). "Desperately Seeking a Solution: Social Democracy, Thatcherism and the 'Third Way' in British Welfare". In: *West European Politics* 23.2, pp. 161–186.
- Riker, William H (1962). *The Theory of Political Coalitions*. New Haven, CT: Yale University Press.
- Riker, William H. and Peter C. Ordeshook (1968). "A Theory of the Calculus of Voting*". In: *American Political Science Review* 62.1, pp. 25–42.
- Rosas, Guillermo, Yael Shomer, and Stephen R. Haptonstahl (2015). "No News Is News: Nonignorable Nonresponse in Roll-Call Data Analysis". In: *American Journal of Political Science* 59.2, pp. 511–528.
- Rose, Richard (1971). "The Making of Cabinet Ministers". In: *British Journal of Political Science* 1.04, pp. 393–414.
- Saalfeld, Thomas (2003). "The United Kingdom: Still a Single 'chain of Command'? The Hollowing out of the Westminster Model." In: *Delegation and Accountability in Parliamentary Democracies*. Ed. by Torbjörn Bergman, Wolfgang C. Müller, and Kaare Strøm. Oxford University Press.

- Salmond, Rob (2014). “Parliamentary Question Times: How Legislative Accountability Mechanisms Affect Mass Political Engagement”. In: *The Journal of Legislative Studies* 20.3, pp. 321–341.
- Schaufele, Brandon (2014). “Dissent in Parliament as Reputation Building”.
- Schelker, Mark and Marco Schneider (2017). “The Elasticity of Voter Turnout: Investing 85 Cents per Voter to Increase Voter Turnout by 4 Percent”. In: *Electoral Studies* 49, pp. 65–74.
- Schlesinger, Joseph A (1966). *Ambition and Politics: Political Careers in the United States*. Skokie, IL: Rand McNally.
- Schonhardt-Bailey, Cheryl (2003). “Ideology, party and interests in the British Parliament of 1841–47”. In: *British Journal of Political Science* 33.04, pp. 581–605.
- Searing, D. (1994). *Westminster’s World: Understanding Political Roles*. Cambridge, MA: Harvard University Press.
- Shachar, Ron and Barry Nalebuff (1999). “Follow the Leader: Theory and Evidence on Political Participation”. In: *American Economic Review*, pp. 525–547.
- Sieberer, Ulrich (2006). “Party Unity in Parliamentary Democracies: A Comparative Analysis”. In: *The Journal of Legislative Studies* 12.2, pp. 150–178.
- Sieberer, Ulrich and Wolfgang C. Müller (2017). “Aiming higher: the consequences of progressive ambition among MPs in European parliaments”. In: *European Political Science Review* 9.1, pp. 27–50.
- Slapin, Jonathan B, Justin H Kirkland, Joseph A Lazzaro, Patrick A Leslie, and Tom O’Grady (2018). “Ideology, Grandstanding, and Strategic Party Disloyalty in the British Parliament”. In: *American Political Science Review* 112.1, pp. 15–30.
- Slapin, Jonathan B and Sven-Oliver Proksch (2008). “A scaling model for estimating time-series party positions from texts”. In: *American Journal of Political Science* 52.3, pp. 705–722.
- Smith, Daniel and Shane Martin (2017). “Political dynasties and the selection of cabinet ministers”. In: *Legislative Studies Quarterly* 42.1, pp. 131–165.
- Smith, Mikey (2016). *UK Weather: Polling Station Chaos as Flooding Storm Batters South of England*. URL: <http://www.mirror.co.uk/news/uk-news/uk-weather-polling-station-chaos-8263371> (visited on 07/05/2016).

- Spirling, Arthur and Iain McLean (2006). “The Rights and Wrongs of Roll Calls”. In: *Government and Opposition* 41.4, pp. 581–588.
- (2007). “UK OC OK? Interpreting Optimal Classification Scores for the UK House of Commons”. In: *Political Analysis* 15.1, pp. 85–96.
- Spirling, Arthur and Kevin Quinn (2010). “Identifying intraparty voting blocs in the UK House of Commons”. In: *Journal of the American Statistical Association* 105.490, pp. 447–457.
- Strøm, Kaare (2000). “Delegation and Accountability in Parliamentary Democracies”. In: *European Journal of Political Research* 37.3, pp. 261–290.
- Strøm, Kaare, Torbjörn Bergman, and Wolfgang C. Müller (2003). *Delegation and Accountability in Parliamentary Democracies*. Oxford, UK: Oxford University Press.
- Strøm, Kaare and Wolfgang C. Müller (1999). “Political Parties and Hard Choices”. In: *Policy, Office, or Votes?: How Political Parties in Western Europe Make Hard Decisions*. Ed. by Wolfgang C. Müller and Kaare Strøm. Cambridge Studies in Comparative Politics. Cambridge University Press, pp. 1–35.
- Tavits, Margit (2009). “The making of mavericks local loyalties and party defection”. In: *Comparative Political Studies* 42.6, pp. 793–815.
- Thatcher, Margaret (1993). *The Downing Street Years*. London: Harper Collins.
- The Electoral Commission (2017). *Report on the 23 June 2016 Referendum on the UK’s Membership of the European Union*. URL: http://www.electoralcommission.org.uk/__data/assets/pdf_file/0008/215279/2016-EU-referendum-report.pdf (visited on 12/17/2017).
- Thomas, Richard (2015). *Python Module to Extract Data from UK Met Office Rain Radar NIMROD Image Files*. URL: <http://richard-thomas.github.io/> (visited on 12/17/2017).
- Tomz, Michael, Joshua A. Tucker, and Jason Wittenberg (2002). “An Easy and Accurate Regression Model for Multiparty Electoral Data”. In: *Political Analysis* 10.1, pp. 66–83.
- Tran, Mark (2016). *EU Referendum Voters Wade through Water as Floods Hit South-East*. URL: <https://www.theguardian.com/uk-news/2016/jun/23/torrent>

- ial-rain-and-flooding-in-london-and-south-east-on-referendum-day (visited on 07/05/2016).
- Treul, Sarah A (2009). “Ambition and party loyalty in the US Senate”. In: *American Politics Research* 37.3, pp. 449–464.
- Tsebelis, George (2002). *Veto Players: How Political Institutions Work*. Princeton, N.J.: Princeton University Press/Russell Sage.
- Twyman, Joseph (2016). *Analysis: The Impact of Turnout on the EU Referendum*. URL: <https://yougov.co.uk/news/2016/05/21/assessing-impact-turnout-eu-referendum/> (visited on 07/26/2016).
- UK Parliament (2015). *Members’ Names Data Platform*. URL: <http://data.parliament.uk/membersdatapatform/referencedata.aspx> (visited on 04/03/2016).
- (2018). *Question Time*. URL: <https://www.parliament.uk/about/how/business/questions/> (visited on 05/24/2018).
- Victor, Jennifer N. (2010). “Legislating versus Campaigning: The Legislative Behavior of Higher Office-Seekers”. In: *American Politics Research* 39.1, pp. 3–31.
- Vivyan, Nick and Markus Wagner (2012). “Do voters reward rebellion? The electoral accountability of MPs in Britain”. In: *European Journal of Political Research* 51.2, pp. 235–264.
- (2015). “What do voters want from their local MP?” In: *Political Quarterly* 86.1, pp. 33–40.
- Wass, Hanna, Mikko Mattila, Lauri Rapeli, and Peter Söderlund (2017). “Voting While Ailing? The Effect of Voter Facilitation Instruments on Health-Related Differences in Turnout”. In: *Journal of Elections, Public Opinion and Parties*, pp. 1–20.
- Whiteley, Paul, Harold D Clarke, David Sanders, and Marianne Stewart (2016). “Why do voters lose trust in governments? Public perceptions of government honesty and trustworthiness in Britain 2000–2013”. In: *The British Journal of Politics and International Relations* 18.1, pp. 234–254.
- Whitely, William, Thomas W. Dougherty, and George F. Dreher (1991). “Relationship of Career Mentoring and Socioeconomic Origin to Managers’ and Professionals’ Early Career Progress”. In: *Academy of Management Journal* 34.2, pp. 331–350.

- Willson, FMG (1959). “The Routes of Entry of New Members of the British Cabinet, 1868–1958”. In: *Political studies* 7.3, pp. 222–232.
- (1970). “Entry to the Cabinet, 1959–68”. In: *Political Studies* 18.2, pp. 236–238.
- Yee, Thomas W (2015). *Vector generalized linear and additive models: with an implementation in R*. London: Springer.
- Yong, Ben (2012). “The Coalition in Parliament”. In: *The politics of coalition: how the Conservative-Liberal Democrat government works*. Ed. by Ben Yong and Robert Hazell. Oxford, UK: Hart Publishing, pp. 92–115.