Appendices
Playing to the Gallery:
Emotive Rhetoric in Parliaments

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Contents

A UK Parliament and the Devolved Legislatures

The Parliament of the United Kingdom is the supreme legislative body of the United Kingdom, the British overseas territories and the Crown dependencies (henceforth, the UK Parliament). It is the primary law-making institution and has two chambers: the House of Commons, made up of elected Members of Parliament (MPs); and the House of Lords, made up of appointed members (Betsy and Goldsmith, 2019).

Scotland, Wales, and Northern Ireland have separate devolved governments and legislatures. Certain policy matters remain the responsibility of the UK government and the UK Parliament, including international relations and defense, national security, immigration, the UK tax system, and employment and social security (except Northern Ireland). Devolved legislatures have legislative powers in a number of policy areas, including health, education, housing and infrastructure, although this varies across the different nations. Scotland has the most powerful devolved legislature with the power to legislate over most areas of Scottish life (Cairney and McGarvey, 2013). As per the Scotland Act 1998, the Scottish Parliament can make primary and secondary legislation in areas not reserved to the UK Parliament (Lazarowicz and McFadden, 2018). The Northern Irish legislature can also pass secondary legislation in areas which are not reserved for Westminster. However, only the Scottish Parliament can legislate on criminal justice, criminal law and policing, whereas the Northern Ireland Assembly cannot (Mitchell and Wilford, 1998). The National Assembly for Wales is less powerful, and only has legislative competence in certain areas, where it can make its own laws, known as "Measures" (Watkin and Greenberg, 2018). Acts passed by the UK Parliament at Westminster–the House of Commons and the House of Lords– can apply to the whole of the United Kingdom including Scotland. Yet, following devolution, many Acts do not automatically apply to Scotland and may be matched either by equivalent Acts that apply to Scotland alone or by legislation passed by the Scottish Parliament relating to devolved matters (Gordon, 2015).

The analysis presented in this article focuses on the lower house of the UK Parlia-

ment, the House of Commons. We examine differences in emotive rhetoric across different types of debates (e.g., PMQs, the Queen's Speech debate, Ministerial Question Time, Urgent Question debates etc). These debates differ significantly with regards to the expected audience. The type of debates in the devolved legislatures share many similarities with those in the House of Commons. Looking at the Scottish Parliament, for example, the debates also vary significantly in terms of media attention and audience exposure. The First Minister's Questions (FMQs), equivalent to PMQs in the House of Commons, is the most important debate in the Scottish Parliament. It takes place at 12 noon on Thursdays, lasts for up to 45 minutes and it is broadcasted live. The first few questions are from the leaders of the opposition parties and there is a head-to-head debate between the First Minister and the leaders of the opposition parties. Similar to Ministerial Question Time in the House of Commons, the Scottish Parliament also hosts the so-called ministerial statements. During these sessions, ministers announce what they consider important measures or actions, which is then followed by a discussion with other Members of the Scottish Parliament (MSPs). Ministerial statements in the Scottish Parliament, as Ministerial Question Time in the House of Commons, receive less attention than FMQs. Other type of debates receive less media attention and hence the size of the audience is generally smaller. Topical questions, general questions and portfolio questions are debate sessions during which MSPs bring up an issue that has not yet been discussed. These debates receive less media coverage. They are often used by MSPs to discuss issues of concern to their own constituents. Finally, as in the House of Commons, the Scottish Parliament also hosts emergency questions debates (equivalent to the Urgent Questions in the HoC), which start when an MSP considers that a question is urgent and that the matter needs to be answered that day (Lazarowicz and McFadden, 2018, 80-81, 129-131).[1]

To illustrate the different types of debates across the different assemblies, Table

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[1]The aforementioned debates are only the most prominent debates held at the Scottish Parliament. Other debates include the Scottish Parliamentary Corporate Body Questions, which relate to the property, staff and services of the Holyrood Parliament; or Inspired Questions, which are debates initiated by the Scottish Government in order to provide information to the Parliament.

A1 provides several examples of high-profile and low-profile legislative debates. Our argument in the article is tested using the House of Commons, but, as Table A1 shows, it may well be extended to other legislatures within the UK or indeed outside the UK (as shown in the analysis of speeches from the lower chamber of the Irish Parliament).

Table A1: Legislative assemblies in the United Kingdom and examples of high-profile and low-profile debates

	UK Parliament: House of Commons	Welsh Parliament - Senedd Cymru	Northern Ireland Assembly	Scottish Parliament - Pàrlamaid na h-Alba
Description of legislature	Lower house of the UK Parliament. 650 MPs (Members of Parliament)	Devolved, unicameral legislature of Wales. 60 MSs (Members of the Senedd)	Devolved, unicameral legislature of Northern Ireland. 90 MLAs (Members of the Legislative Assembly)	Devolved, unicameral legislature of Scotland. 129 MSPs (Members of the Scottish Parliament)
Examples of high-profile debates	Prime Minister's Questions or The Queen's Speech debate	First Minister's Questions	First Minister's Questions	First Minister's Questions
Examples of low-profile debates	Topical Questions or Adjournment debates	Adjournment debates or oral questions	Adjournment debates or oral questions	Portfolio Questions or SPCB (Scottish Parliamentary Corporate Body Questions)

B   Types of Debates in the House of Commons

A parliamentary debate can be defined as "a sequence of utterances pertaining to the same subject at a particular time as demarcated by parliamentary recorders" (Eggers and Spirling, 2014, 877).

Note that parliamentary procedures in the UK Parliament distinguish between debates and question times (Hutton et al., 2019). For example, the Standing Orders do

not formally denote question times as a debate (House of Commons, 2019). However, we follow the standard terminology in legislative studies, which is also used in recent work on parliamentary speeches in the UK (Bäck, Debus and Fernandes, 2021; Blumenau and Damiani, 2021; Eggers and Spirling, 2014; Lauderdale and Herzog, 2016).

Using the more inclusive definition of debates, the following main types of debates exist in the UK House of Commons (Hutton et al., 2019; Norton, 2013):

- Prime Minister's Questions

- Ministerial Question Time

- Urgent Questions

- Debate on the second reading of bills

- Debate on the third reading of bills

- Debates on the Queen's Speech

- Opposition days debates

- Committee of the House debates

- Debates on Government motions (substantive motions, adjournment motions)

C   Evidence on Variation of Attention by Debates

To provide additional evidence on the differences between high-profile and low-profile debates in the House of Commons, we seek to capture variation in the size of the audience across different types of debate. One way to measure the size of the audience is to use data on the number of persons who viewed debates on the official site of the House of Commons: *https://parliamentlive.tv/Commons*. Of course, most people will not have encountered the speeches in this way, but rather through news coverage. Nonetheless, this gives a rough indication of the differences in the level of interest

in the House of Commons debates. We focus on the data from 2015 until 2019, because the data is not available for earlier years. Figure A1 illustrates the first quartile, the median and the third quartile of the number of viewers by day. The figure shows that the number of viewers is larger on Wednesdays than on other days. This evidence supports our assumption that public attention is larger for PMQs (held on Wednesdays) than for most other debates and is in line with studies by Betsy and Goldsmith (2019, 167) and Salmond (2014).
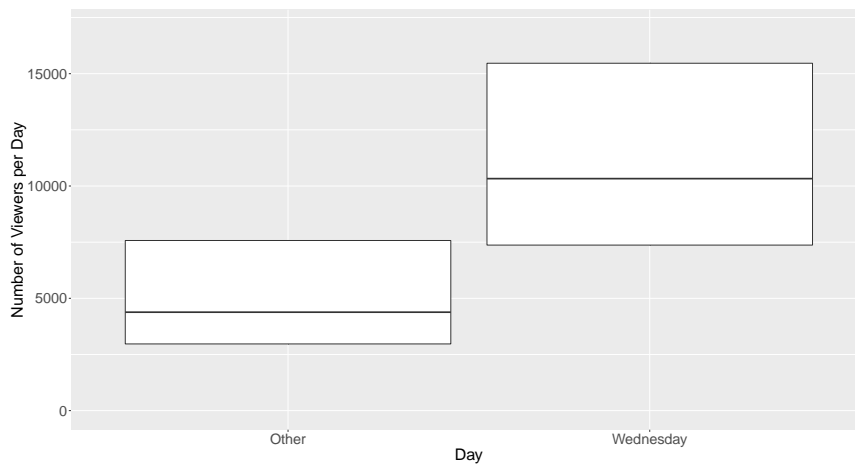

Figure A1: Number of viewers by day

D Variables: Summary Statistics and Operationalization

Table A2 reports summary statistics of the main explanatory and control variables of our analysis of House of Commons debates.

Table A2: Summary statistics: House of Commons debates

Variable	Mean	Std. Dev.	Min.	Max.
Emotive rhetoric	0.882	8.951	-75	100
PMQs	0.035	-	0	1
Queen Debate: Opening Day	0.003	-	0	1
Queen Debate: Others	0.013	-	0	1
Ministerial Question Time	0.291	-	0	1
Urgent Questions	0.039	-	0	1
Party leader	0.041	-	0	1
Prime Minister	0.028	-	0	1
Senior minister	0.058	-	0	1
Shadow cabinet	0.009	-	0	1
Minister	0.328	-	0	1
Committee chair	0.040	-	0	1
Government party	0.699	-	0	1
Female	0.213	-	0	1
Age	51.82	9.387	21	87
Electoral cycle	8.324	5.275	0.280	18.210
Linear time trend	3615.761	1929.171	0	6719
N		958925		

The variables are coded as follows:

- *Emotive rhetoric* is equal to the percentage of emotive words minus the percentage of neutral words. Note that we do not take into account NLTK stopwords in the computation of the percentages.

- *PMQs* is an indicator variable equal to 1 if a speech is held during the PMQ, and 0 otherwise.

- *Queen's Speech Debate: Opening Day* is an indicator variable equal to 1 if a speech is held during the opening day of the Queen's Speech debate, and 0 otherwise.

- *Queen's Speech Debate: Other Days* is an indicator variable equal to 1 if a speech is held during the Queen's Speech debate except the opening day, and 0 otherwise.

- *Ministerial Question Time* is an indicator variable equal to 1 if a speech is held during Ministerial Question Time, and 0 otherwise.

- *Urgent Questions* is an indicator variable equal to 1 if a speech is held in an Urgent Questions session, and 0 otherwise.

- *Party leader* is an indicator variable equal to 1 if parliamentarian is a party leader, and 0 otherwise.

- *Senior minister* is an indicator variable equal to 1, if a parliamentarian is Secretary of State for Foreign and Commonwealth Affairs, Chancellor of the Exchequer or Secretary of State for the Home Department, and 0 otherwise.

- *Shadow cabinet* is an indicator variable equal to 1 if a parliamentarian is the Leader of the Opposition, the shadow Deputy Leader of the Opposition, the shadow Secretary of State for Foreign and Commonwealth Affairs or the shadow Chancellor of the Exchequer.

- *Minister* is an indicator variable equal to 1 if a parliamentarian is a minister, and 0 otherwise.

- *Committee chair* is an indicator variable equal to 1 if a parliamentarian is a committee chair, and 0 otherwise.

- *Government party* is an indicator variable equal to 1 if a parliamentarian is member of a party in government, and 0 otherwise.

- *Female* is an indicator variable equal to 1 if a parliamentarian is a woman, and 0 otherwise.

- *Age* is equal to the year of the speech minus the year of birth.

- *Electoral cycle* is equal to the distance to the next election (in days) divided by 100.

- *Linear time trend* is a linear time trend variable that increases by 1 each day.

Figure A2 shows the distribution of our main outcome variable. As we explain in the article, the scale ranges from -100 to 100, with high values meaning higher levels of emotive rhetoric.
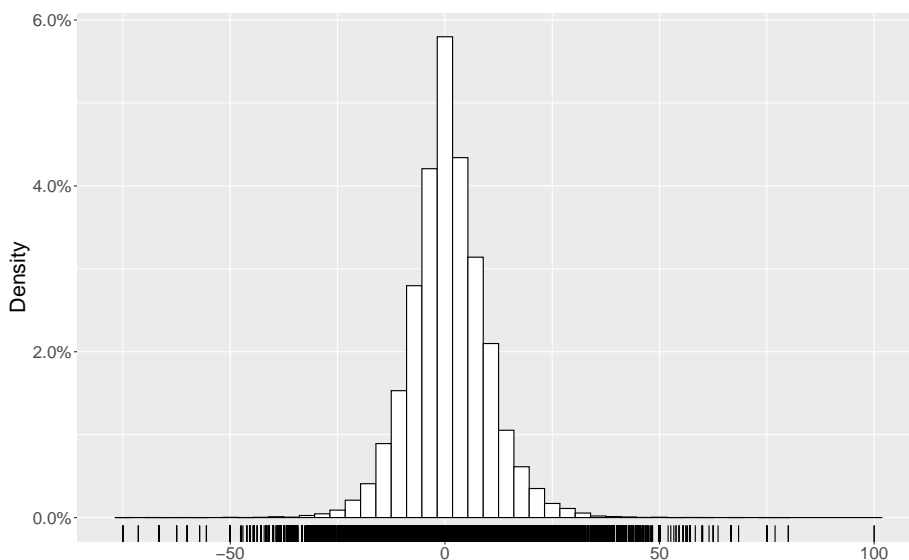
Figure A2: The distribution of emotive rhetoric

Table A3 reports summary statistics of the main explanatory and control variables of our analysis of the speeches in Dáil Éireann.[2]

E   Main Results

This section reports the full regression output of the models presented in the article.

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[2]Note that we removed 5,559 speeches held in Irish from the data of Herzog and Mikhaylov (2018). We identified these speeches using the *textcat* R package (Hornik et al., 2013).

Table A3: Summary statistics: Dáil Éireann debates

Variable	Mean	Std. Dev.	Min.	Max.
Emotive rhetoric	-3.274	9.577	-100	100
Leaders' Questions	0.028	-	0	1
Taoiseach	0.033	-	0	1
Tánaiste	0.030	-	0	1
Minister	0.319	-	0	1
Minister of State	0.071	-	0	1
Electoral cycle	9.050	4.882	0.240	18.150
Linear time trend	1996.758	1116.664	0	3796
N		945734		

Table A4 presents the results on the regression analysis of speeches held in the House of Commons. As explained in the manuscript, Model 1 includes the explanatory variables, Model 2 adds a linear time trend. Model 3 incorporates a linear time trend and MP fixed effects. Model 4 includes a linear time trend, party fixed effects and the control variables. Finally, Model 5, includes a linear time trend, MP fixed effects and weights the observation by speech length.

Table A5 summarizes the output of the regression model using topic fixed effects. Table A6 includes the results of the regression analysis of the speeches held in the lower house of the Irish Parliament, the Dáil Éireann.

Note that we created the expanded dictionary using the skip-gram model with hierarchical softmax. In the paper, we present the results using a vector size of 250 and a window size of 10. We run the model for 20 epochs. Otherwise, we use the default parameters. We assess the validity by inspecting the word vectors and the new words added to the dictionary.

Furthermore, we re-run the analyses using different measures and models. Appendices F and G present these results. We have implemented multiple analyses to assess stability (Rodriguez and Spirling, 2021). For example, we re-run the model using different values of the downsampling parameter (e.g., 0.00075) and different number of epochs (e.g., 10). In all of these tests, our main empirical results are robust.

Table A4: OLS regression analysis of emotive rhetoric

	(1)	(2)	(3)	(4)	(5)
PMQs	2.226**	2.198**	1.562**	1.618**	1.663**
	(0.128)	(0.124)	(0.137)	(0.167)	(0.214)
Queen's Speech Debate: Opening Day	2.172**	2.166**	1.943**	2.061**	2.064**
	(0.214)	(0.208)	(0.180)	(0.194)	(0.166)
Queen's Speech Debate: Other Days	0.581**	0.623**	0.515**	0.643**	1.090**
	(0.106)	(0.104)	(0.083)	(0.095)	(0.078)
Ministerial Question Time	-0.293**	-0.354**	-0.433**	-0.378**	-0.207**
	(0.074)	(0.072)	(0.053)	(0.069)	(0.057)
Urgent Questions	0.610**	0.148	0.009	0.162	0.044
	(0.116)	(0.105)	(0.089)	(0.099)	(0.096)
Linear time trend		0.000**	0.000**	0.000**	0.000**
		(0.000)	(0.000)	(0.000)	(0.000)
Party leader				0.778*	
				(0.325)	
Prime Minister				-0.073	
				(0.554)	
Senior minister				0.546	
				(0.371)	
Shadow cabinet				-0.406	
				(0.280)	
Minister				-0.640**	
				(0.146)	
Committee chair				-0.256	
				(0.260)	
Government party				1.668**	
				(0.179)	
Woman				1.401**	
				(0.151)	
Age				0.000	
				(0.007)	
Electoral cycle				-0.015**	
				(0.005)	
Constant	0.850**	-0.075	0.033	-1.664**	0.188*
	(0.072)	(0.101)	(0.082)	(0.361)	(0.080)
Linear time trend		X	X	X	X
MP fixed effects			X		X
Party fixed effects				X	
Controls				X	
Weighting by speech length					X
N	958925	958925	958925	958925	958925
R^2	0.003	0.006	0.041	0.014	0.094

Standard errors, clustered by speaker, in parentheses.
[+] $p < 0.10$, [*] $p < 0.05$, [**] $p < 0.01$

Table A5: OLS regression analysis with topic fixed effects

	(1)	(2)	(3)	(4)	(5)
PMQs	2.020**	1.995**	1.426**	1.383**	1.525**
	(0.156)	(0.117)	(0.143)	(0.153)	(0.208)
Queen's Speech Debate: Opening Day	2.298**	2.287**	2.012**	2.132**	2.303**
	(0.221)	(0.216)	(0.171)	(0.201)	(0.154)
Queen's Speech Debate: Other Days	0.554**	0.605**	0.491**	0.628**	1.033**
	(0.096)	(0.094)	(0.080)	(0.087)	(0.073)
Ministerial Question Time	-0.436**	-0.489**	-0.539**	-0.492**	-0.319**
	(0.063)	(0.061)	(0.045)	(0.060)	(0.049)
Urgent Questions	0.390**	-0.094	-0.168*	-0.068	-0.111
	(0.108)	(0.097)	(0.084)	(0.091)	(0.086)
Linear time trend		0.000**	0.000**	0.000**	0.000**
		(0.000)	(0.000)	(0.000)	(0.000)
Party leader				0.809*	
				(0.315)	
Prime Minister				0.122	
				(0.478)	
Senior minister				0.324	
				(0.414)	
Shadow cabinet				-0.143	
				(0.236)	
Minister				-0.554**	
				(0.129)	
Government party				1.467**	
				(0.162)	
Woman				1.067**	
				(0.145)	
Age				0.001	
				(0.006)	
Committee chair				-0.284	
				(0.240)	
Electoral cycle				-0.015**	
				(0.005)	
Constant	0.908**	-0.069	-2.571**	0.899+	-2.513**
	(0.064)	(0.089)	(0.085)	(0.517)	(0.079)
Linear time trend		X	X	X	X
MP fixed effects			X		X
Controls				X	
Weighting by speech length					X
Topic fixed effects	X	X	X	X	X
N	958925	958925	958925	958925	958925
R^2	0.048	0.052	0.078	0.057	0.158

Standard errors, clustered by speaker, in parentheses.
$^+$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table A6: Regression analysis of emotive rhetoric in the Irish Parliament

	(1)	(2)	(3)	(4)	(5)
Leaders' Questions	4.591**	4.573**	3.975**	3.792**	2.497**
	(0.302)	(0.296)	(0.249)	(0.263)	(0.243)
Linear time trend		0.000	-0.000	0.000	-0.000*
		(0.000)	(0.000)	(0.000)	(0.000)
Taoiseach				-0.429	
				(0.283)	
Tanaiste				0.443	
				(0.459)	
Minister				-3.094**	
				(0.251)	
Minister of State				-1.697**	
				(0.328)	
Electoral cycle				-0.002	
				(0.011)	
Constant	-3.404**	-3.577**	-3.209**	-2.429**	-1.929**
	(0.164)	(0.302)	(0.214)	(0.206)	(0.293)
Linear time trend		X	X	X	X
MP fixed effects			X		X
Party fixed effects				X	
Controls				X	
Weighting by speech length					X
N	945734	945734	945734	945734	945734
R^2	0.006	0.006	0.038	0.030	0.123

Standard errors, clustered by speaker, in parentheses.
$^+$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

F   Alternative Measures and Models

In the following, we illustrate the level of emotive rhetoric over time using alternative measures.

Figure A3 uses the standard ANEW dictionary, which we rescale to measure emotive rhetoric (Bradley and Lang, 2017). The standard ANEW dictionary has a scale from 1 to 9, where 1 refers to unpleasant/unhappy/negative and 9 to pleasant/happy/positive. A score of 5 means that the word is neutral. We create a scale from 0 to 4, which captures the deviation from 5.

Figure A4 measures emotive rhetoric by examining the percentage of emotive words in a speech without subtracting the percentage of neutral words. Figure A5 uses the same approach as in the paper, but applies the scaling procedure of Lowe et al. (2011). Furthermore, we applied the Linguistic Inquiry and Word Count (LIWC) dictionary (Pennebaker et al., 2015). We use the categories on positive and negative emotions

and calculate the share of words associated to both categories (see Figure A6).

We also implemented our method by using alternative word embeddings (Rodriguez and Spirling, 2021). We illustrate our findings using two alternative word vectors. First, we compute embeddings assuming a dimensionality of 300 and a window of 10 (see Figure A7). Second, we assume a dimensionality of 250 and a window of 8 (see Figure A8). Overall, we find that the ranking and time trend are robust to different assumptions.

A closer inspection of the figures reveals that Prime Minister's Questions and the first day of the Queen's Speech debates exhibit on average a higher level of emotive rhetoric than other parliamentary debates. This evidence suggests that our findings are robust to different measurement approaches.

Finally, we examine whether our results hold for positive and negative emotions. More precisely, we use our positive and negative seed words and calculate the percentage of positive and negative words in a speech (Bradley and Lang, 2017).

Figure A9 and Figure A10 describe the evolution of positive and negative rhetoric over time. Similar to previous figures, the dots capture the average percentage of positive/negative words that were held in a half-year period. As the figures illustrate, politicians use both more positive and more negative language in PMQs and the opening day of the Queen's Speech debate.
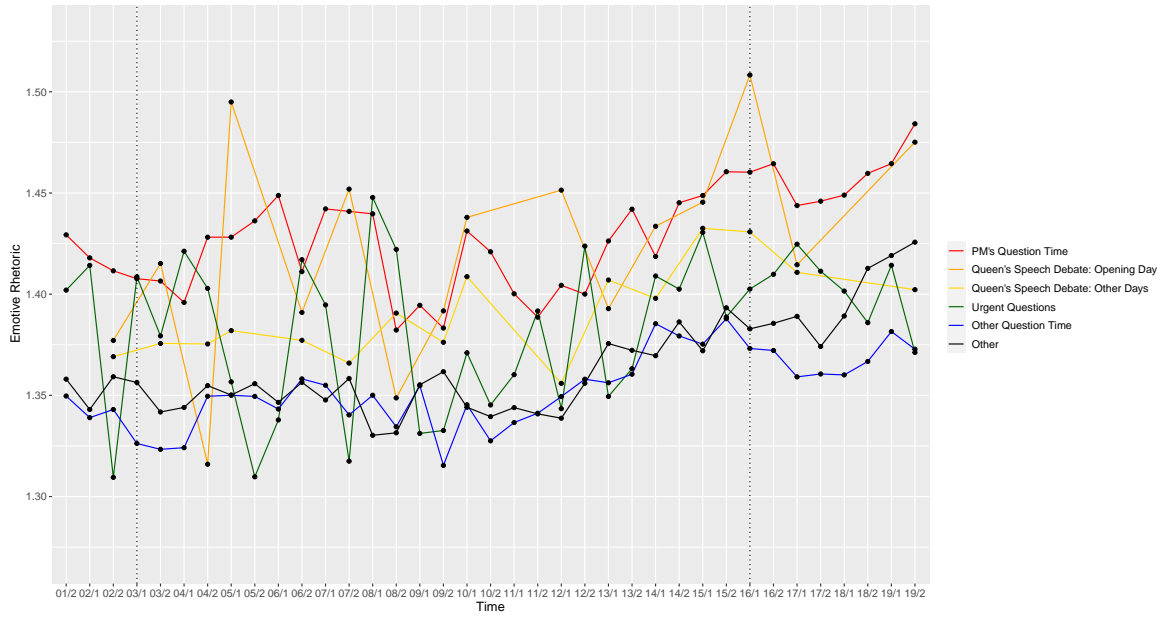
Figure A3: Emotive rhetoric by stage of debate (standard ANEW dictionary)
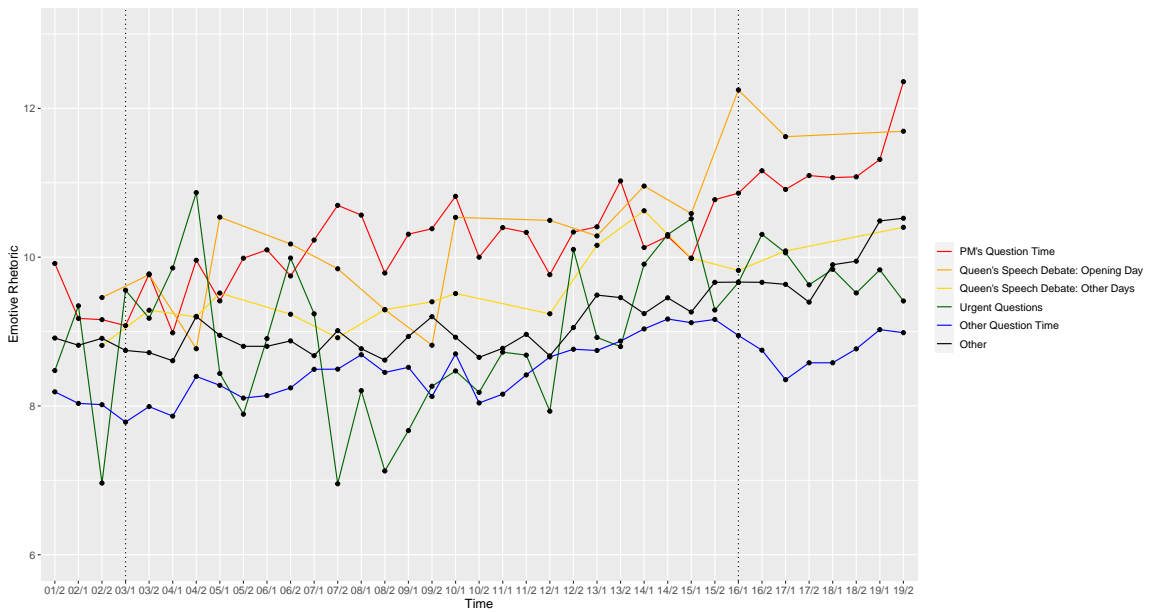
Figure A4: Emotive rhetoric by stage of debate (only emotive words)

Figure A5: Emotive rhetoric by type of debate (with Lowe et al. scale)

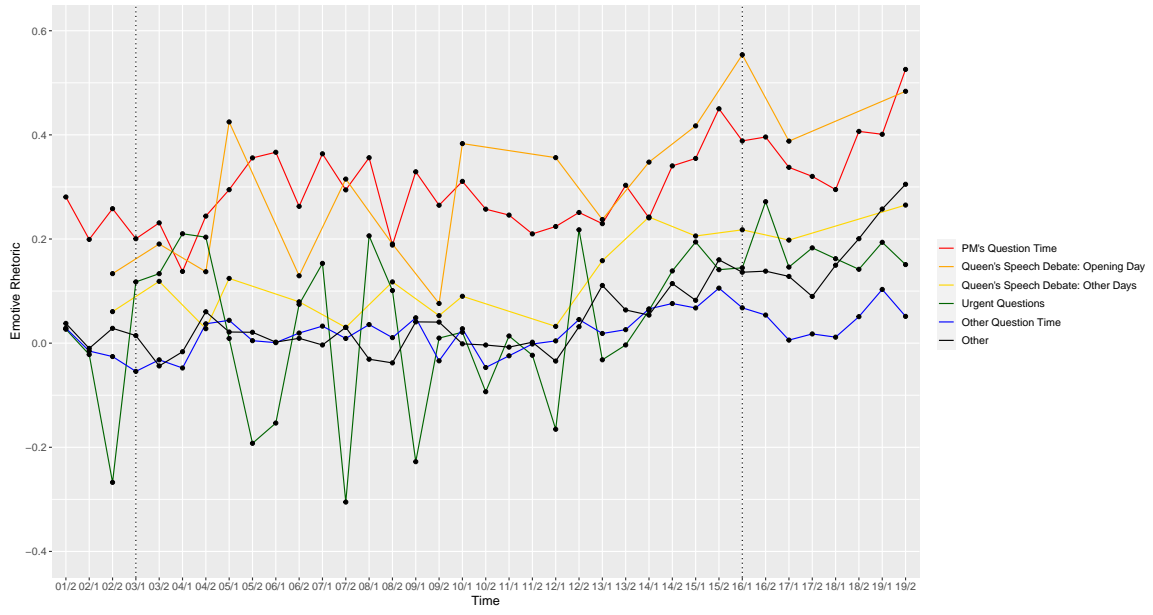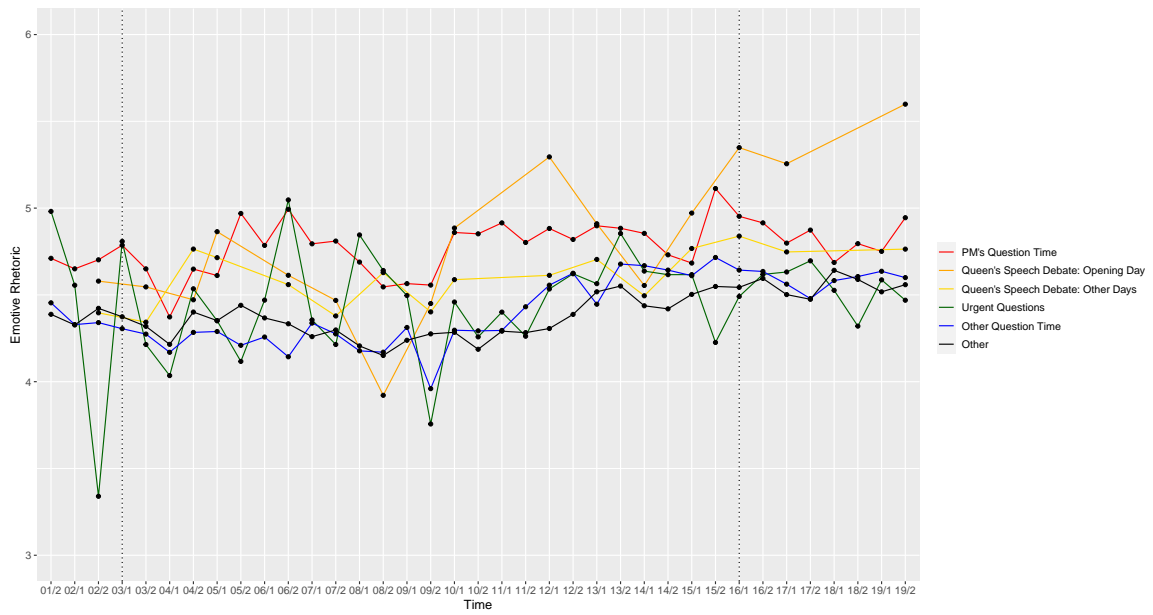Figure A6: Emotive rhetoric by type of debate (with LIWC dictionary)
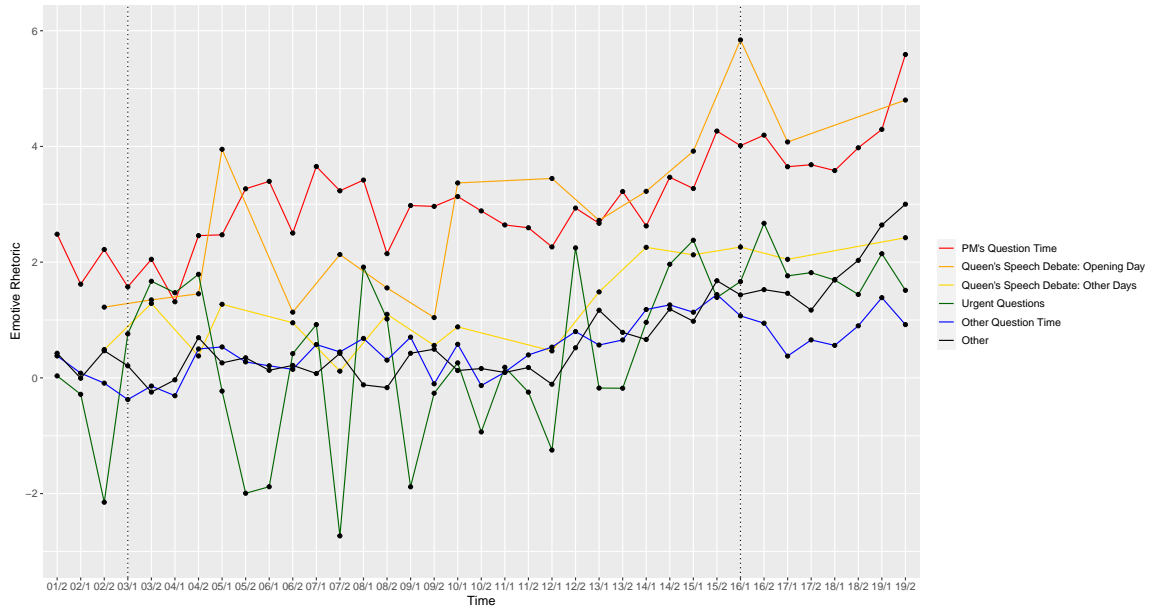
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Figure A7: Emotive rhetoric by type of debate (dimensionality: 300, window size: 10)
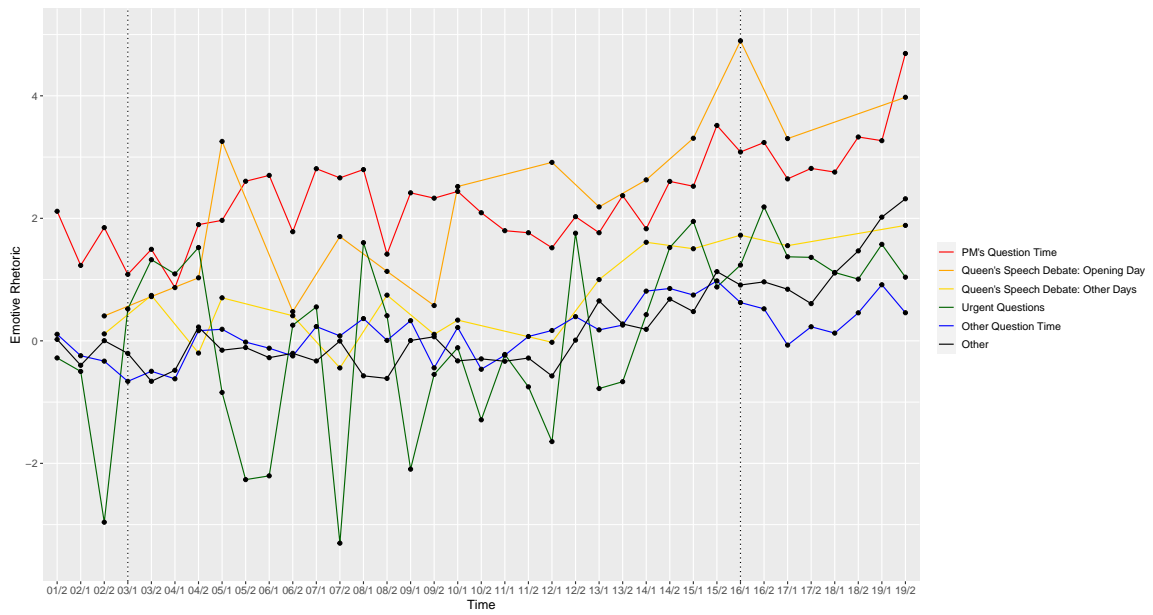

Figure A8: Emotive rhetoric by type of debate (dimensionality 250, window size: 8)
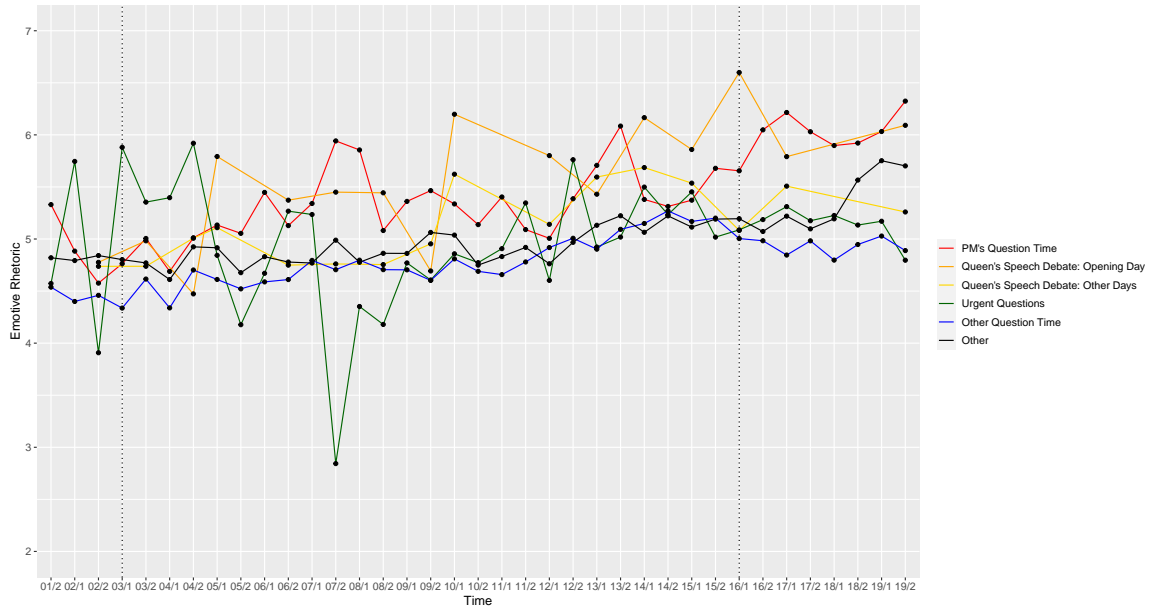
Figure A9: Positive emotions by type of debate
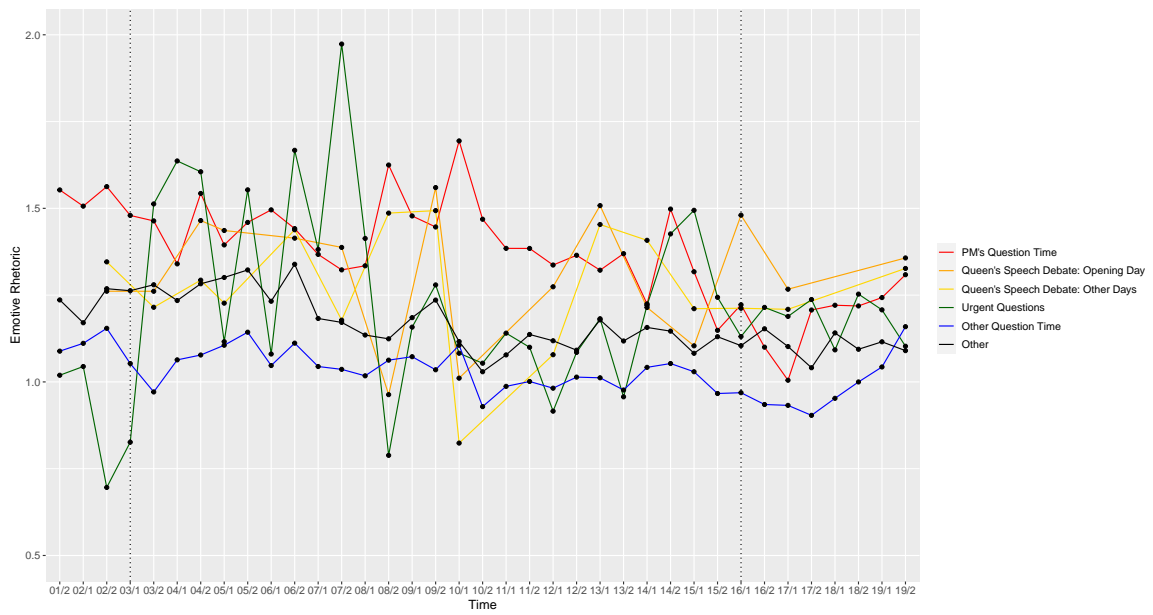
Figure A10: Negative emotions by type of debate

G   Models with Alternative Dependent Variables

This appendix re-runs our regression analysis with alternative dependent variables. In all models, we use standard errors clustered at the MP level.

Table A7 presents the results that we get when we use the percentage of emotive words as dependent variable (without subtracting the percentage of neutral words). Table A8 is based on the measure calculated with the scaling procedure of Lowe et al. (2011). Table A9 summarizes the regression results based on the LIWC dictionary.

Finally, we use an alternative statistical model: a multilevel regression model (see Table A10). Model 1 includes random intercepts at the MP level. Model 2 incorporates random intercepts at the MP and legislative period level. Model 3 includes random intercepts at the MP and party level. Finally, Model 4 considers the levels of MPs and topics.

Overall, we find that in all models the coefficients for the Prime Minister's Questions and the Queen's Speech debates are positive and statistically significant at the 0.01 level, in line with our hypothesis.

H   Number of Speeches by Topic

We use cross-domain supervised learning to estimate the topics of parliamentary speeches (Osnabrügge, Ash and Morelli, 2020). Table A11 describes the number of speeches by topics and legislative period. The frequencies refer to the topic with the largest probability in a speech.

Note that we also used alternative topic models such as LDA and find that our results are robust (Blei, Ng and Jordan, 2003).

Table A7: OLS regression analysis of emotive rhetoric (only emotive words)

	(1)	(2)	(3)	(4)	(5)
PMQs	1.171**	1.150**	0.881**	0.960**	1.139**
	(0.147)	(0.105)	(0.149)	(0.196)	(0.164)
Queen's Speech Debate: Opening Day	1.209**	1.205**	1.065**	1.172**	1.478**
	(0.168)	(0.163)	(0.144)	(0.168)	(0.124)
Queen's Speech Debate: Other days	0.451**	0.481**	0.437**	0.504**	0.919**
	(0.083)	(0.082)	(0.065)	(0.074)	(0.057)
Ministerial question Time	-0.624**	-0.668**	-0.677**	-0.630**	-0.436**
	(0.052)	(0.051)	(0.038)	(0.049)	(0.041)
Urgent Questions	0.355**	0.019	-0.004	0.091	-0.101
	(0.080)	(0.072)	(0.061)	(0.068)	(0.071)
Linear time trend		0.000**	0.000**	0.000**	0.000**
		(0.000)	(0.000)	(0.000)	(0.000)
Party leader				0.516$^+$	
				(0.271)	
Prime Minister				0.075	
				(0.445)	
Senior minister				-0.031	
				(0.282)	
Shadow cabinet				-0.529*	
				(0.263)	
Minister				-0.433**	
				(0.096)	
Committee chair				-0.011	
				(0.194)	
Government party				0.333**	
				(0.125)	
Woman				1.113**	
				(0.108)	
Age				0.002	
				(0.005)	
Electoral cycle				-0.017**	
				(0.003)	
Constant	9.169**	8.494**	8.625**	8.192**	8.937**
	(0.051)	(0.069)	(0.057)	(0.282)	(0.059)
Linear time trend		X	X	X	X
MP fixed effects			X		X
Controls				X	
Weighting by speech length					X
Topic fixed effects	X	X	X	X	X
N	958925	958925	958925	958925	958925
R^2	0.004	0.007	0.044	0.014	0.101

Standard errors, clustered by speaker, in parentheses.
$^+$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table A8: OLS regression analysis of emotive rhetoric (using Lowe et al. scaling procedure)

	(1)	(2)	(3)	(4)	(5)
PMQs	0.244**	0.242**	0.161**	0.165**	0.163**
	(0.014)	(0.017)	(0.015)	(0.017)	(0.024)
Queen's Speech Debate: Opening Day	0.244**	0.244**	0.211**	0.227**	0.228**
	(0.021)	(0.021)	(0.017)	(0.019)	(0.017)
Queen's Speech Debate: Other Days	0.068**	0.073**	0.061**	0.075**	0.126**
	(0.011)	(0.011)	(0.009)	(0.010)	(0.008)
Ministerial question Time	-0.033**	-0.039**	-0.047**	-0.041**	-0.023**
	(0.008)	(0.008)	(0.006)	(0.007)	(0.007)
Urgent Questions	0.064**	0.019	0.002	0.019^{+}	0.005
	(0.013)	(0.012)	(0.010)	(0.011)	(0.011)
Linear time trend		0.000**	0.000**	0.000**	0.000**
		(0.000)	(0.000)	(0.000)	(0.000)
Party leader				0.092**	
				(0.036)	
Prime Minister				0.001	
				(0.060)	
Senior minister				0.068	
				(0.041)	
Shadow cabinet				-0.043	
				(0.031)	
Minister				-0.070**	
				(0.016)	
Committee chair				-0.030	
				(0.027)	
Government party				0.197**	
				(0.019)	
Woman				0.137**	
				(0.016)	
Age				0.000	
				(0.001)	
Electoral cycle				-0.002**	
				(0.001)	
Constant	0.057**	-0.033**	-0.031**	-0.241**	-0.015
	(0.008)	(0.011)	(0.009)	(0.038)	(0.009)
Linear time trend		X	X	X	X
MP fixed effects			X		X
Party fixed effects				X	
Controls				X	
Weighting by speech length					X
N	958925	958925	958925	958925	958925
R^2	0.003	0.006	0.040	0.014	0.087

Standard errors, clustered by speaker, in parentheses.
$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table A9: OLS regression analysis of emotive rhetoric (LIWC dictionary)

	(1)	(2)	(3)	(4)	(5)
PMQs	0.386**	0.381**	0.437**	0.499**	0.242**
	(0.060)	(0.065)	(0.085)	(0.096)	(0.084)
Queen's Speech Debate: Opening Day	0.443**	0.442**	0.487**	0.490**	0.418**
	(0.075)	(0.074)	(0.070)	(0.078)	(0.043)
Queen's Speech Debate: Other days	0.215**	0.223**	0.198**	0.226**	0.309**
	(0.033)	(0.033)	(0.029)	(0.032)	(0.021)
Ministerial Question Time	0.047*	0.035	-0.010	0.008	0.150**
	(0.023)	(0.024)	(0.017)	(0.023)	(0.014)
Urgent Questions	0.126**	0.036	-0.007	0.007	-0.004
	(0.029)	(0.027)	(0.023)	(0.027)	(0.023)
Linear time trend		0.000**	0.000**	0.000**	0.000
		(0.000)	(0.000)	(0.000)	(0.000)
Party leader				-0.132*	
				(0.066)	
Prime Minister				-0.074	
				(0.199)	
Senior minister				-0.028	
				(0.155)	
Shadow cabinet				-0.043	
				(0.100)	
Minister				-0.097*	
				(0.041)	
Government party				0.395**	
				(0.050)	
Woman				0.155*	
				(0.066)	
Age				-0.005**	
				(0.002)	
Committee chair				-0.210**	
				(0.062)	
Electoral cycle				0.002	
				(0.001)	
Constant	4.392**	4.210**	4.293**	4.088**	4.414**
	(0.022)	(0.029)	(0.024)	(0.113)	(0.020)
Linear time trend		X	X	X	X
MP fixed effects			X		X
Party fixed effects				X	
Controls				X	
Weighting by speech length					X
N	958925	958925	958925	958925	958925
R^2	0.001	0.002	0.028	0.005	0.052

Standard errors, clustered by speaker, in parentheses.
$^+$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table A10: Regression analysis of emotive rhetoric using multilevel models

	(1) R.I.MP	(2) R.I. MP-Period	(3) R.I. MP-Party	(4) R.I. MP-Topic
PMQs	1.651**	1.465**	1.518**	1.354**
	(0.058)	(0.061)	(0.060)	(0.060)
Queen's Speech Debate	1.997**	1.881**	1.935**	1.911**
	(0.172)	(0.172)	(0.172)	(0.169)
Queen's Speech Debate: Other Days	0.504**	0.488**	0.526**	0.490**
	(0.079)	(0.079)	(0.079)	(0.078)
Ministerial Question Time	-0.399**	-0.487**	-0.417**	-0.513**
	(0.021)	(0.022)	(0.022)	(0.022)
Urgent Questions	0.225**	-0.061	0.082^+	-0.025
	(0.045)	(0.049)	(0.048)	(0.047)
Party leader		0.531*	0.147	0.164
		(0.210)	(0.128)	(0.128)
Prime Minister		-0.181	0.420*	0.734**
		(0.308)	(0.165)	(0.169)
Senior minister		1.244**	0.863**	0.611**
		(0.123)	(0.082)	(0.089)
Shadow cabinet		-0.469*	-0.354**	-0.159
		(0.213)	(0.124)	(0.125)
Minister		-0.758**	-0.427**	-0.421**
		(0.051)	(0.034)	(0.034)
Committee chair		-0.238*	-0.331**	-0.258**
		(0.107)	(0.061)	(0.060)
Government party		0.592**	1.174**	0.973**
		(0.081)	(0.048)	(0.047)
Woman		1.889**	2.099**	1.830**
		(0.113)	(0.132)	(0.124)
Age		0.018**	0.098**	0.094**
		(0.004)	(0.003)	(0.003)
Electoral cycle		-0.036**	-0.019**	-0.019**
		(0.002)	(0.002)	(0.002)
Constant	1.192**	-0.162	-4.883**	-4.240**
	(0.055)	(0.243)	(0.178)	(0.174)
N	958925	958925	958925	958925

Standard errors in parentheses. R.I. = Random Intercept and the level at which it is set.
$^+$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Table A11: Number of speeches by topic and period

Topic	2001-2005	2005-2010	2010-2015	2015-2017	2017-2019	N
Economy	21256	34659	54678	20584	24682	155859
External relations	20554	22634	27729	15452	22651	109020
Fabric of society	21933	29464	32810	13414	20006	117627
Freedom and democracy	22091	26690	29900	11647	17442	107770
No topic	152	206	162	80	91	691
Political system	44007	57759	69715	24402	32940	228823
Social groups	7669	8767	13097	5214	7144	41891
Welfare and quality of life	34024	47288	57669	25494	32769	197244

I Assessing Polarization as an Alternative Mechanism

Another potential alternative mechanism is polarization. In particular, parliamentarians might use more emotive rhetoric when polarization is high. To assess this explanation, we computed Dalton's polarization index using the RILE party positions (Budge et al., 2001; Dalton, 2008). The Dalton index is as follows for our period of analysis: 2001-2005: 4.90, 2005-2010: 5.77, 2010-2015: 5.60, 2015-2017: 6.39, 2017-2019: 5.86.

As Table A12 shows, the effect of polarization is not robust. We do not detect that high or low levels of polarization are systematically associated with high and low levels of emotive rhetoric. Thus, including polarization in the model does not change our main effects. If we use other polarization indices, we obtain the same results.

Table A12: OLS regression analysis of emotive rhetoric (with a control for polarization)

	(1)	(2)	(3)	(4)	(5)
PMQs	2.220**	2.197**	1.562**	1.616**	1.663**
	(0.109)	(0.124)	(0.137)	(0.169)	(0.214)
Queen's Speech Debate: Opening Day	2.148**	2.168**	1.943**	2.067**	2.066**
	(0.208)	(0.208)	(0.180)	(0.195)	(0.166)
Queen's Speech Debate: Other Days	0.594**	0.624**	0.515**	0.646**	1.091**
	(0.106)	(0.104)	(0.084)	(0.095)	(0.078)
Ministerial Question Time	-0.322**	-0.354**	-0.433**	-0.380**	-0.207**
	(0.073)	(0.072)	(0.053)	(0.069)	(0.057)
Urgent Questions	0.421**	0.143	0.010	0.145	0.042
	(0.113)	(0.104)	(0.088)	(0.098)	(0.095)
Polarization	0.840**	-0.091	0.008	-0.289**	-0.046
	(0.088)	(0.098)	(0.088)	(0.103)	(0.094)
Linear time trend		0.000**	0.000**	0.000**	0.000**
		(0.000)	(0.000)	(0.000)	(0.000)
Party leader				0.768*	
				(0.324)	
Prime Minister				-0.068	
				(0.554)	
Senior minister				0.544	
				(0.365)	
Shadow cabinet				-0.377	
				(0.276)	
Minister				-0.654**	
				(0.146)	
Committee chair				-0.261	
				(0.259)	
Government party				1.732**	
				(0.179)	
Woman				1.401**	
				(0.151)	
Age				0.000	
				(0.007)	
Electoral cycle				-0.014*	
				(0.005)	
Constant	-3.885**	0.390	-0.008	-0.271	0.421
	(0.489)	(0.502)	(0.456)	(0.564)	(0.490)
Linear time trend		X	X	X	X
MP fixed effects			X		X
Party fixed effects				X	
Controls				X	
Weighting by speech length					X
N	958925	958925	958925	958925	958925
R^2	0.004	0.006	0.041	0.014	0.094

Standard errors, clustered by speaker, in parentheses.
[+] $p < 0.10$, [*] $p < 0.05$, [**] $p < 0.01$

J Gender and Emotive Rhetoric

In our regression models, we use gender as a control variable and find that the variable is positively related to emotive rhetoric. This evidence is in line with existing work (Newman et al., 2008; Chaplin, 2015). One rationale for this finding may be that women use more emotive rhetoric to act in line with gender stereotypes (Eagly and Karau, 2002; Bäck, Debus and Müller, 2014; Gleason, 2020).

Another possibility could be that women speak more in debates on more emotive topics. To further explore this, we examine the association between gender and emotive rhetoric by studying variation across topics. Table A13 presents the evidence on the number of speeches held by gender and topic.[3] We classify speeches to topics using cross-domain supervised learning (Osnabrügge, Ash and Morelli, 2020). We re-run our regression models focusing on the topics "external relations", "freedom and democracy", "political system" and "economy", which are seen as masculine (see e.g., Bäck and Debus, 2019). Table A14 presents the results. We find that the effect of gender is still statistically significant, but the coefficient size is smaller.

Overall, the descriptive evidence is in line with previous work.

Table A13: Number of speeches by gender and topic

	Economy	External relations	Fabric of society	Freedom	Political system	Social groups	Welfare
Female							
Frequencies	30698	17082	28177	20765	40660	12321	54740
Percentages	15.015	8.355	13.782	10.157	19.888	6.027	26.775
Male							
Frequencies	125161	91938	89450	87005	188163	29570	142504
Percentages	16.604	12.197	11.867	11.542	24.962	3.923	18.905

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[3]Note that the table does not include the 'no topic' category as very few speeches were allocated to this category.

Table A14: OLS regression analysis of emotive rhetoric in speeches on selected topics

PMQs	0.915**
	(0.171)
Queen's Speech Debate: Opening day	2.191**
	(0.218)
Queen's Speech debate: Other days	0.410**
	(0.101)
Ministerial Question Time	-1.097**
	(0.071)
Urgent Questions	-0.008
	(0.108)
Party leader	1.058**
	(0.359)
Prime Minister	-0.306
	(0.475)
Senior minister	1.071**
	(0.383)
Shadow cabinet	0.179
	(0.257)
Minister	-0.421**
	(0.129)
Committee chair	-0.155
	(0.238)
Government party	1.674**
	(0.170)
Woman	0.532**
	(0.131)
Age	0.013*
	(0.006)
Electoral cycle	-0.016**
	(0.005)
Linear time trend	0.000**
	(0.000)
Constant	-3.137**
	(0.327)
Linear time trend	X
Party fixed effects	X
Controls	X
N	601472
R^2	0.014

Standard errors, clustered by speaker, in parentheses.
[+] $p < 0.10$, [*] $p < 0.05$, [**] $p < 0.01$

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