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The Determinants of Legislative Speechmaking on Salient Issues: The Analysis of Parliamentary Debates on Theresa May's Brexit Withdrawal Agreement Using Structural Topic Models

MA thesis

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Author's declaration

I have written this Master's thesis independently. All viewpoints of other authors, literary sources and data from elsewhere used for writing this paper have been referenced.

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THE DETERMINANTS OF LEGISLATIVE SPEECHMAKING ON SALIENT ISSUES: THE ANALYSIS OF PARLIAMENTARY DEBATES ON THERESA MAY'S BREXIT WITHDRAWAL AGREEMENT USING STRUCTURAL TOPIC MODELS

Artem Goriunov

Abstract

This thesis aims to reveal the differences in legislative speechmaking determined by the roles, which the members of parliaments (MPs) can play on the parliamentary floor, and the effects of debates stages, by the example of the parliamentary debates on the Brexit Withdrawal Agreement in the House of Commons. By adopting the strategic and partisan-rhetoric approach to legislative speechmaking and considering that the content of speeches on debates can be shaped by the policy-, office- and vote-seeking motivations imposed by the various roles MPs can play in the British parliaments, this study assumes that cabinet membership, party affiliation, personal preferences, and time effects can produce significant differences in what MPs speak about in the House of Commons during the discussions of such multi-dimensional and salient issues as the Brexit deal.

This study considers the sub-components of the Brexit deal, which were discussed in the British parliament, as topics for debates. Deriving from this assumption, the Structural Topic Models (STM) were used to reveal the hidden topic structure of the parliamentary debates on Theresa May's deal from July 2018 to July 2019 and estimate the effects of the MPs roles and time. To do so, 25559 legislative speeches were collected into a dataset using the web scraping techniques and considered as units of analysis. Moreover, the metadata for each speech was included in the analysis to apply STM and make inferences regarding the possible effects. The topic model was built with 29 topics, which reflected the topic structure of the debates on the Brexit deal, allowed to distinguish the controversial, niche, and procedural topics of discussions in the House of Commons, and to make inference regarding the most salient sub-components of the legislative debates.

As a result of the estimation of the effects, the fact that whether MPs are cabinet members or not implied the significant difference in what topics they contribute more in their

speeches. It was shown that government MPs were not able to control the most prevalent topics and let others control procedures in the House of Commons. However, government MPs were able to focus on topics favorable for Theresa May's deal, defending the results of their work, while other MPs fulfilled their role as government controllers by asking parliamentary questions.

It was inferred that party affiliation also plays a significant role in producing differences in emphases of MPs' speeches in the parliament. The MPs from parties, which belong to the same coalition, tend to speak equally a lot on topics, which divide them to achieve consensus and better policy. However, MPs from the governing Conservative Party contributed more to the controversial topics and talks, which were unfavorable for the government. It showed that the office-seeking motivations could be not so important for Conservatives, and the degree of party rebellion was too high. In turn, this thesis confirmed the theory of issue ownership by showing that, even in case of the multi-dimensional and complex issue, its sub-components can be shared by parties in accordance with their traditional policy specializations. Besides, it was proved that large parties contributed more to the discussions on controversial issues.

Personal preferences of MPs also influence the content of their speeches about the Brexit deal. By operationalizing the personal preferences through their voting profiles, two types of MPs were distinguished – those who voted consistently on the Brexit deal, and those who changed their minds along the way or was in doubt. The analysis showed that MPs in doubt are less likely to speak on the controversial topics and more focused on niche ones than MPs whose attitude towards the Brexit deal was strongly articulated. Additionally, it showed that fewer doubts MPs have, the more likely they talk on niche topics. However, the mechanisms behind such behavior remained hidden due to the specifics of the research method, but they can be examined in future studies. In turn, the hypotheses regarding the negative effects of debate stages on the saliency of controversial topics were not confirmed, but the analysis provided important insights on the evolution of the Brexit deal debates in the House of Commons.

The findings of this thesis contribute to the literature on legislative speechmaking, legislative behavior, party unity, and can be used for future studies of the Westminster systems, British politics, and Brexit.

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Introduction

Nowadays, there is increased attention to the condition of parliamentary democracies and the challenges they face. To some extent, it can be a result of openness and transparency principles applied to the work of parliaments and other political institutions worldwide. Technologies made it possible for citizens to monitor what their representatives say, which issues they actively discuss, and how they behave in front of the internal and external audiences. On the one hand, voters received open access to almost all the debates and talks made by politicians and public servants that traditionally were not available for most of the voters and took place behind closed doors. Today they exist and are distributed in a large variety of formats from written texts and visual records to large databases and interactive maps. In this case, legislative debates and legislator's speeches, which previously could be considered and modeled by scholars as 'cheap talks' (Austen-Smith, 1990, p. 125) with no particular impact, gained more attention and started playing one of the key roles in decision-making on both electoral and legislative levels.

Thereby legislative debates have become a prominent research subject for scholars, especially once data has shaped in a more convenient form to analyze. Nevertheless, legislative speechmaking remains one of the most understudied topics in contemporary political science (Bächtiger, 2014, p. 145) since scholars mostly put efforts into studying institutional and procedural settings, leaving this form of legislative behavior out of sight (Proksch and Slapin, 2012, p. 520). Considering the attention to it gained recently, status-quo should be changed.

Real politics also leaves signs of the importance of such forms of legislative behavior as debates to be studied comprehensively. A most recent example is the withdrawal of the United Kingdom from the European Union (EU), or Brexit, and the following legislative debates regarding the agreement with the EU. Following the referendum in 2016, when 51,89% of British citizens voted for leaving the European Union, the country became divided, and the government, along with parliament, started negotiations and law adjustments to make Brexit as smooth and favorable as possible for all. However, even if some scholars state that in times of crises and escalations of salient issues, parliaments tend to unite with governments helping it to achieve consensus (Blumenau, 2016, p.96) and increase the weight of public opinion by striving towards fast issue resolution

(Borghetto and Russo, 2018), right after the EU Withdrawal Act became a law on 26 June 2018, parliament received a veto-power on a ratification of government's agreement with the EU, and it led to three-time rejection of a deal proposed by Prime Minister, Theresa May, and her following resignation on 24 July 2019.

Theresa May's cabinet was in the status of minority (or 'hung') government, which is very rare for the United Kingdom, while House of Commons debates on the Brexit deal received increased attention from public not only inside but also outside of the United Kingdom. Under these circumstances, legislative speechmaking can be a key for understanding the latent processes of negotiations within parliaments and those signals members of parliaments send to voters and constituencies during the escalations of salient and multi-dimensional issues.

While scholars focus more on institutional (e.g. André et al., 2014), and procedural factors (e.g. Godbout et al., 2019) influencing legislative speechmaking and tend to analyze and compare several parliamentary terms as a whole assuming political factors held constant, this study aims to reveal the effects of those political factors, which drive differences in legislative speeches between members of parliament and variety in emphases they made debating the unique salient issues within one parliamentary term in the context of Westminster system. Shortly, this research is an attempt to answer the following question: which factors make legislators talk differently about salient issues on the parliamentary floor? Deriving from the assumptions of theories of legislative behavior, party unity, and legislative debates, this study suggests that such factors as minister status, party affiliation, personal preferences, and stages of legislative debates can be determinants of the legislative speechmaking.

In order to prove given assumptions and address the research puzzle, this thesis employs the analysis of legislative speeches made by the Members of Parliament (MPs) in the House of Commons concerning Brexit deal from the period from July 2018 to July 2019 using Structural Topic Models (STM), a form of an unsupervised machine learning algorithm and one of the topic modeling approaches within the natural language processing (NLP). To apply this method, legislative speeches for a given period are automatically collected with relevant metadata, which reflects the characteristics of individual MPs. STM allows incorporating the metadata into the analysis of the hidden

topic structure of legislative debates to reveal the differences in topic raised and attention paid to them based on MPs characteristics.

The thesis contains three main chapters devoted to 1) presentation of the theoretical expectations and assumptions on the determinants of legislative speechmaking with references to previous studies in the field, to importance of each of the potential factors, which might affect the content of debates, and to possible hypotheses and interpretations of the results; 2) outlining of the research design, overview of case selection and context of the debates on the Brexit deal, hypotheses formulation, choice of research method and its description, operationalization, and data collection; 3) description of the model selection, topic structure, and the analysis of the results.

1. Theoretical Background

Before proceeding with theoretical explanations of the effects various factors may have on legislative debates content, it is important to draw a line between this study and the achievements in the field that have been accomplished by other scholars so far, to distinguish the parts already covered by them, and to determine the theoretical framework to which this research will adhere.

In order to formulate theoretical expectations and conduct the following analysis, one of the theoretical approaches should be adopted. There are three approaches to parliamentary debates, according to Bächtiger (2014): strategic and partisan-rhetoric approach, deliberative, and discursive.

The first one relies on the assumptions of rational choice theory. Two key principles of this approach can be outlined. Firstly, debates allow revealing important information and personal MPs preferences, which otherwise would be revealed in any case using other instruments such as agenda-setting. Secondly, MPs know that debates can impact their electoral success and can be an arena for sending party and personal signals to other MPs, voters, and media based on their preferences and interests. In this case, legislative speechmaking can be an important stance for legislators for "position-taking, advertising, and credit-claiming" (Ibid., pp. 146-147). The opportunity to use this resource depends on the electoral systems: individual MPs may have various constraints on legislative speechmaking coming from the incentives of party leaders to keep party unity (Proksch and Slapin, 2012).

The deliberative approach is primarily based on deliberative theory. This approach assumes that parliamentary debates serve as an arena where legislators can make more informed, rational, reasoned, and justified decisions (Bächtiger, 2014, p.149-150). One of the most important distinctions of the deliberative approach from the rational choice lenses is that it implies the importance of debates for changing opinions and hence positions of other MPs. Even though several studies within the field of deliberation studies show that debates fail to enable policy and preferences transformations as a mode of political interaction (e.g. Landwehr and Holzinger, 2014, p. 396), they emphasize the importance of deliberative bargaining and its stages, which drive changes of preferences, and, therefore, behavior on the legislative arena.

In turn, the discursive approach is mainly focused on rituals associated with parliamentary debates, such as dialogue, symbolic language characteristics, rules, routines, etc. (Bächtiger, 2014, p. 159-160). According to the representatives of the discursive approach, the parliamentary system has an extensive influence on legislative discourse (Häussler et al., 2016), while rhetoric patterns and discourse itself predict roles, party affiliation, institutional positions of legislators and parliamentary agenda (Ilie, 2015, p. 13).

In this thesis strategic and partisan-rhetoric approach have been chosen as a core theoretical framework. It is important to add that here similarly to ideas of Kam (2009, p.17), and how they were presented in the research conducted by Bäck and Debus (2016, p.20), MPs are considered as strategic actors interested in policy-seeking (or policy-making), office-seeking (or career advancement), and vote-seeking (or re-election).

Parliamentary speechmaking has been in sight of political scientists belonging to rational choice school for a long time, but extensive growth in the numbers of research began only recently. The theoretical expectations on factors, which constitute parliamentary speechmaking and its content, are primarily based on assumptions derived from the theories on legislative behavior, party unity and competition (e.g. Bäck and Debus, 2016; Proksch and Slapin, 2015), and agenda-setting and control (e.g. Rasch, 2014). Even though speechmaking itself is a quite understudied phenomenon, factors, which might affect the content of parliamentary debates, could be found within models presented by scholars who belonged to the mentioned fields of research.

For instance, a large amount of studies is devoted to understanding the voting behavior of MPs through the analysis of roll-call data, which tend to model the legislative behavior and explain possible deviations in voting by drawing on deviations from party lines (e.g. Poole, 2005). However, some studies raise the necessity to examine speeches as well since roll-call data is not enough to explain a variety of personal and intra-party preferences (Schwarz et al., 2015). The key argument here is that the voting behavior of MPs is easy to evaluate, and, hence, to control by their party leaders and whips. It puts constraints on MPs and makes roll-call data are very inconsistent and not insightful enough to study real legislative behavior and policy positions. Parliamentary speeches, in turn, may reflect the policy preference of individuals better since sometimes, depending

on the electoral system and traditions, the control over the content of legislators' speeches lacks useful instruments (Schwarz et al., 2015, p. 380).

Nevertheless, there are several institutional instruments, which provide party leaders some degree of control over the speechmaking of backbenchers. Such factors as the electoral system, regime type, candidate selection mechanisms (Proskch and Slapin, 2012, p. 523), various parliamentary (as the time allotted to speeches) (Bäck et al., 2019; Giannetti and Pedrazzani, 2016; Godbout et al., 2019;) and electoral rules might be extremely important for legislative agenda. They maintain specific incentives for parties and MPs to behave in accordance with 'rules of the game' or limit their presence on the parliamentary floor. For instance, while some political systems (e.g. majoritarian or Westminster) do not provide strong incentives for party leaders to keep the content of legislators' speeches in line with party positions, other political and electoral systems (e.g. proportional) make it inevitable to limit the access to the parliamentary floor for potential rebels.

Other scholars point out that legislative debates can be perceived as an additional arena for electoral competition, where MPs may communicate their ideas and policy positions to their constituencies and potential voters (Bäck et al., 2019). It also relates to the notions of issue ownership and issue competition, when parties and individual MPs tend to 'own' salient issues and address them to satisfy their core voters (e.g. Budge, 2015) and to get more votes by competing for issue ownership with other parties and MPs over those issues, in which addressing their voters are interested in specific time (e.g. Green and Jennings, 2019). Besides, some scholars determine the importance of committee membership status for electoral competition (Fernandes et al., 2019): committee membership implies a possession of exclusive information and qualification in specific fields that favors parties in terms of providing specialized knowledge and expertise internally (to parties) and externally (to voters), and helps chamber to make 'good policy' (Krehbiel, 1991, p.). Moreover, when elections come closer, debates on the most salient issues intensify and make the legislature more divisive than in other periods (Martin and Vanberg, 2014, pp. 439-440).

There are scholars, who also focus on the role of such individual characteristics of MPs as gender in legislative speechmaking, which makes these studies to be closely related to

the aim of this thesis. They argue that female MPs tend to spend less time on the parliamentary floor and speak less on 'harder' issues, but there is a tendency towards cross-country variation: unexpectedly, female MPs in Scandinavian countries have less time debating than male ones, while in other European countries this distinction is not visible (e.g. Bäck et al., 2014; Bäck and Debus, 2016).

Thus, scholars are mostly interested in explanations on 1) how much time MPs spend and speak on the parliamentary floor; 2) which institutional and procedural rules affect debate participation; 3) when MPs can and want to speak; 4) and who benefits the most from speech delivery in parliaments. However, there is a shortage in studies focused on the understanding of how MPs speak and what topics are they prevalently raise on the parliamentary floor depending on their political and personal interests. This thesis aims to fill this gap.

Existing research predominantly uses computational text analysis to have an ability to analyze a large amount of textual data on debates and incorporate additional political- and personal-related variables (e.g. Magnusson et al.,2018; Proksch and Slapin, 2014). For instance, Bäck and Debus (2016) presented research, where they were able to catch the tendency of individual MPs to deviate from party line using Wordscores approach of analysis of parliamentary speeches and applying it to legislative debates in seven countries. They assumed and proved that such factors as party, MPs position within party, gender, electoral institutions, electoral contest, and constituency problems pressures, can determine not only the number of speeches delivered by MPs but also how they deviate from the party line. Moreover, Killerman and Proksch (2013) studied British parliament and, using the data on speeches in House of Commons from 1996 to 2004, they provided evidence that MPs are very responsive to changes in economic, partisan, and electoral contexts (Ibid., p. 25). Their focus is in speeches changes driven by escalations of salient issues within their constituencies (such as economic shocks): when their seats are prone to shocks related to their districts, local issue becomes more prominent for them, but when constituencies do not face any shocks, the focus shifts towards national one and related to party preferences. The same applies to the dichotomy of government-opposition parties: "decreasing national popularity of the government increases the district focus of governing MPs and increases the party/national focus of opposition MPs" (Ibid., p. 10).

Considering the content and result of these studies, it becomes possible to draw one more line between this thesis and the accomplishments of other scholars.

Most of the studies focus on analyzing the legislative debates in the context of several parliamentary terms. There are also comparisons conducted between the legislative agendas of various parliaments within one country or between several national parliaments, allowing scholars to make assumptions regarding all the issues were on parliamentary agenda. However, this study is focused on unveiling how parliamentary speeches vary in the context of one salient issue or political shock within one parliament. For instance, such an issue as Brexit deal legislation is a complex and salient issue, which evolves and cannot be resolved in one-time roll-call voting. It arises multiple discussions and consists of several sub-components, focus on which could change over time. This thesis aims to shed light on which factors make legislators emphasize different components of such issues and talk differently about them on the parliamentary floor.

Parliaments have to achieve consensus and then adopt respective laws and bills to diminish the negative effects of such salient issues, but sometimes it is not happening. As per Blamenau (2016) and Borghetto and Russo (2018), these shocks may empower and favor agenda-setters (e.g. government in case of Westminster system) and governing parties as they require political actions and weaken the role of opposition (Ibid., p. 94). However, it is not always observed, and, more specifically, it cannot be applied to cases like Brexit when political competition overweighed the potential crisis of a lack of consensus.

The further distinctions of this thesis from other studies lay in the approach employed. Firstly, even if various political factors were studied in relation to the content of parliamentary speeches, they had not been applied to the context of controversial issues. Secondly, while researchers focused mostly on analyzing data in terms of procedural and sentiment specifics of legislative speeches and texts, this study employs the notion of topic of conversation. According to Wiesner and her colleagues (2017, p.45), who studied parliamentary debates in the framework of discursive approach, "the entry of topics onto the parliamentary agenda deserves to be analyzed in terms of the heading of the topic and by whom it was initiated". They argue that new topics can be introduced from motions and amendments proposed on the parliamentary floor, but it is not always true since only

motions could not represent parliamentary debates fully. These headings are not always visible and loudly pronounced, and sometimes should be classified by the content. Parliamentary debates are not so straightforward, and various topics can be raised by MPs within the discussion on completely different agenda items. Moreover, such agenda propositions can also be refused. Other scholars also studied topics entry to parliamentary agenda from the perspective of motions and amendments by looking into the example of the UK parliament (Abercrombie et al., 2019). They managed to show that policy preferences can be derived from motions. However, as stated above, policy preferences communicated through motions and amendments cannot provide the whole picture and extract all the topics discussed during parliamentary debates. Thus, this thesis operates with topics as analytical units, and political determinants of legislative speechmaking within the context of debates on only one salient issue.

Furthermore, by taking into consideration both incentives of political actors (whether it is government, parliament, political parties, or individual MPs) derived from rational choice approach and long-term policy shocks (such as inability to achieve consensus in parliament on of the salient and multi-dimensional issues consisted of variety of sub-components), we might already hypothesize that decisions and legislation devoted to resolving such situations will go through multiple stages of negotiations, amendments, and actions of bargaining. It leads to the assumption that topics, which various MPs will be focused on while resolving this salient issue, can vary in their importance and prevalence on the legislative agenda. Moreover, it is common that issues evolve and develop through time by acquiring various emphases. This assumption is elaborated further below in Section 2.2, devoted to the formulating of research hypotheses.

To elaborate more hypotheses, one should consider three incentives of MPs derived from the strategic approach of parliamentary debates mentioned before: policy-seeking, office-seeking, and personal vote-seeking. Further, in this chapter, these incentives are applied to three roles, which MPs can play in parliament. At the same time, they can be ministers, party members, and hold their individual preferences and interests. Such an application will allow capturing differences in topics they raise on the parliamentary floor and help to conduct conceptualization of key notions used in current study.

1.1. Collective approach: the role of government in legislative speechmaking

One of the roles, which MPs can play on the parliamentary floor within the Westminster political system, is to be a part of the cabinet, or, in other words, is to be a government minister. It means that along with being a member of parliament with legislative power, they also hold a ministerial portfolio providing them with executive power. Therefore, these MPs combine two different roles, which imply various incentives and goals put on them. Considering that governments are the main policymakers and policy-seekers in contemporary political systems, they are most interested in formulating new policies and hence in adopting these policies, transforming them into laws. Besides, MPs who belong to the government should also be interested in not only keeping their seats in parliaments but also in holding ministerial offices. However, they should be re-elected to do so, and it presupposes peculiar political behavior aimed at getting more votes on the following elections. These three elements can be extrapolated on legislative behavior and legislative speechmaking as well. As mentioned above, by speaking on the parliamentary floor, MPs can articulate their positions for awareness of their competitors and make signals to potential voters. It helps them to shape behavior accordingly and to achieve the mentioned goals. In this case, the content of legislative debates can change depending on the participation of the government members since their goals and preferences comparing to those who are not a part of the cabinet might be different. Confirmations of these assumptions can be found in the theoretical literature.

First, the government is a policy-seeker, and it has several crucial instruments that are used for pushing policies on the parliamentary table and then to pass them into laws. Governments can control parliamentary agenda to do so, and, for instance, in the case of the Westminster system, governments tend to make legislative agenda their own (Bowler, 2010, p.477), while parliament's influence over agenda is extremely low (Russell and Cowley, 2016). As a collective with potentially the same goals, government MPs should be interested in setting the agenda, which favors their proposals. Agenda-setting, as proposed by Müller and Sieberer (2014, pp. 320-321), is primarily proposal power, and agenda-setter is the one who makes 'take-it-or-leave-it' proposals to other actors. In this case, government decide which bill, amendments, proposals, and hence topic, will be

discussed and voted for during the parliamentary meetings. It can be done by them using procedural agenda-setting rules parliaments have. According to Rasch (2014), such instruments as timetable control, proposal and amendments rights, veto rights and gatekeeping, and sequencing and ordering. It is also important to note that government control over the agenda can be maintained further by drafting power it possesses (Ibid., p. 469). Tsebelis and Rasch (2011, pp. 2-3) also argue that tools for agenda control can be distinguished into three methods: institutional (embedded into parliamentary procedural rules applied by agenda-setters), partisan (majority parties controlling proposals coming to parliamentary table), and positional (majority of MPs may prefer new policies over status-quo). Thus, the key factor of political influence derived from agenda control is an opportunity to determine who speak on the parliamentary floor, and what issues can be discussed (Geese, 2019; Green-Pedersen, 2010; Rasch, 2011). According to other scholars and their models (Romer and Rosenthal,1978; Cox, 2006), governments (or government MPs) as agenda-setters have both positive and negative agenda power. Positive agenda power refers to the power to propose laws, topics of discussion, or ideas that significantly change or challenge a status-quo, and to ensure that all of them emerged on the parliamentary agenda, and then properly discussed. Negative agenda power implies that agenda-setter can prevent some issues from being brought on the parliamentary agenda and to make sure that unfavorable proposals for them are not passed but delayed or canceled.

One may infer, considering these findings, that the government is more likely to control the most important and prevalent topics on the parliamentary floor. It assumes that while MPs who belong to the government might use the same strategy for policy-seeking. While government MPs control the most important topics and talk more about them, other MPs may handle more niche topics, which, considering possible negative agenda power of government, should not be too controversial.

Moreover, by considering all the tools available for government MPs and MPs without any portfolio[1] in the parliaments, one may infer that parliamentary debates consist not only of usual discussion on issues, but also include procedural, formal, and informal talks.

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[1] It should not be confused with 'ministers without portfolio', a phenomenon peculiar mostly for coalition governments and related to minister, who is technically a member of the cabinet, but de-facto does not have any specific competencies or responsibilities.

For instance, for the Westminster system, they can be such as points of order, discussion of the business of the house, various interventions, questions to MPs, and expressions of gratitude for debates. Government MPs as agenda-setters should control those and speak about them more to be able to shape the legislative agenda in a way they prefer, while MPs without executive power do not control many of them if any. The latter appears more visible for shadow cabinets in the context of the Westminster system. They tend to be latently formed from members of opposition parties, but still very weak in terms of procedural powers (Eggers and Spirling, 2018).

Second, both government MPs and those without any portfolio are office-seekers. As for their motivation, government MPs would like to keep their offices, while MPs without office strive to gain offices in the future, and thus, they both adopt various strategies to achieve these goals. To keep their offices, governments MPs should consider the role of the whole government in propositions and law-making. Since all of them work together and coordinate their actions, cabinet MPs do not have any incentives to vote against the government's proposal and speak on issues unfavorable for the government as a whole (Rasch, 2014; Bäck and Debus, 2016). Otherwise, ministers do risk to lose their office by being suspended, while the government takes a chance not to survive until the next election. Thus, government leaders and ministers have enough motivation to stay in the same positions all the time and speak only in favor of government proposals.

To strengthen its position in front of the parliament, government MPs can also use such a tool of agenda control as the request for a vote of confidence. If governing parties and other members of parliament shows their confidence in government by voting, the government will proceed with its responsibilities with more agenda power and impose more discipline on backbenchers (Bergmann et al., 2018).

Nevertheless, pattern of legislative speechmaking for those MPs with and without portfolios can be explained further by the concept of so-called 'mega seats' (Bäck and Debus, 2016, pp. 38-40). By holding or seeking for ministerial positions as examples for these 'mega seats', MPs might be different in a way the behave and speak on the parliamentary floor. Those who are ministers are motivated to speak in favor of government proposals, as assumed above. However, it is not so simple for MPs who are not related to government positions. They can be distinguished into two groups:

backbenchers from governing parties and MPs from opposition parties. For backbenchers, as MPs without mega seats, it can be crucial to support government proposals in parliamentary debates, but only for those, who are keen to gain office on the next elections (Becher and Sieberer, 2008). However, there are those backbenchers who do not seek to participate in government and hold any executive office along with opposition MPs. For the latter, likely, they are not going to speak in favor of government proposals, while, for first ones, it is assumable that they will speak more on niche topics not interfering in government's business.

Thus, government MPs should fully support legislative proposals made by them on the parliamentary floor, while MPs without executive power might be different in what they speak about. For the latter, contextual factors and, for instance, party discipline should be considered to make inferences. However, for Westminster systems where seats are divided almost equally between government and opposition parties and backbenchers have less incentives to be tied with party labels, it can be the case that MPs without any ministerial portfolio talk more about topics unfavorable for government proposals or niche ones, as suggested above, since they are not so interested in ministerial portfolios but other political gains.

Thirdly, regardless of whether MPs are in government or not, they are interested in being re-elected. However, ministerial and non-ministerial roles may imply completely different emphases while speaking on the parliamentary floor. Presumably, these incentives are primarily related to policies the government put on the legislative agenda and their general effect on status-quo. The most important notions regarding vote-seeking of MPs are parliamentary control over government, and hence instruments provided for this purpose (Müller and Sieberer, 2014, pp. 323-324). The key strategic tools during legislative debates for opposition MPs and some other MPs without executive power are questioning and interventions or interpellations (Otjes and Louwerse, 2018; Vliegenthart et al., 2010).

According to Martin and Vanberg (2014) and Vliegenthart and Walgrave (2011), the opposition is more likely to ask questions on salient issues than government parties and speak significantly more on issues that divide government and opposition. They tend to use the resource of questions to distinguish themselves from government positions. In this

case, it can also be applied to MPs who do not belong to the government. If it is common for MPs from opposition parties, backbenchers from governing parties might also use this resource to take positions far from government ones to seek votes in cases when government or party's popularity decreased. Besides, non-ministerial MPs from governing parties may also use questions for policy advocacy: by asking right questions to government MPs, they can help them to defend their positions (Vliegenthart et al., 2010). In this case, one may infer that legislative speeches provide an opportunity for defending government positions by responding to questions and explain the prosperities of government proposals (Rasch, 2011), while non-ministerial MPs can take the parliamentary floor to criticize government, intervene government speeches to diminish their persuasive effect, and appeal to backbenchers to make them allies (Vliegenthart and Walgrave, 2011).

Thus, it can be inferred that government MPs and those without a ministerial portfolio have incentives to speak differently on the parliamentary floor, considering their policy, career, and vote-seeking goals. Since party differences in legislative speeches have been slightly mentioned above, it is important to go on to explain more on how the role of party affiliation can affect the legislative speechmaking of MPs.

1.2. Between collective and individual: coalitions, parties and issue ownership

Political parties can be considered as unitary actors in the political arena, while their MPs are delegates of these parties on the parliamentary floor (Bergmann et al., 2018, p. 6). In this case, party affiliations of MPs might play a key role in the explanation of differences between how they focus on various salient issues, and what makes them speak in particular ways during the legislative debates. Moreover, parties themselves meet the necessity to push policies they propose in parliament, increase the possibility to allocate their members to government positions, and receive more votes on the election. Party positions in the legislature can also be supported with speeches they make, and proposals or amendments they put forward. Since it helps parties in terms of 'position-taking' within parliaments, and signals they send to voters, it can be assumed that legislative speechmaking is crucial for them to achieve those goals.

From the perspective of policy-seeking, it is important to outline that in contemporary democracies parties tend to create coalitions or parliamentary party groups to get a majority and make changes to status-quo happen (Giannetti and Benoit, 2008). Constraints put on parties do not allow them to freely adopt laws they prefer but create incentives to negotiate with other parties to achieve consensus and, hence, the support of the majority if the government faces a minority stance (Martin and Vanberg, 2014, pp. 437-439). According to Vliegenthart and Walgrave (2011, p. 1055), members of coalitions and respective MPs are less likely to ask questions to the government than the opposition on the parliamentary floor. However, 'position-taking' is something that divides members of the coalition: they prefer to speak significantly more on issues, which make them distinct from each other (Martin and Vanberg, 2008), and allow to show voters how active are they on the parliamentary floor in defending their interest. Nevertheless, one can assume that parties from the same coalition tend to talk equally (in terms of amount of time) on topics, which divide them. In terms of policy-seeking, it means that by speaking on these issues, they are trying not only send signals to voters but also to resolve possible internal misunderstandings and conflicts. Otherwise, if one compares issues raised by parties from different coalitions, these parties presumably should differ significantly in the emphases they make since they do not strive to the same policy goals.

Furthermore, parties might be arenas for their members to promote themselves in terms of career advancement, and, therefore, government office. The motivation for office-seeking behavior is primarily embedded in government-opposition parties' dichotomy. It can be assumed that in Westminster systems incentives to be promoted can be quite high for members of governing parties, while for members of opposition parties it strongly depends on the next elections, this and cannot have too much impact on their legislative behavior, and, hence, legislative speechmaking. However, it is crucial for further analysis to determine if there is any mechanism to influence legislative speechmaking within governing and opposition parties.

As per Slapin and Proksch (2014), parties are motivated to support the same policy positions in the parliament and in front of the external audience to capture votes and keep the office they currently hold. As it was discussed concerning government MPs, the most important tool is control over the agenda. Here one should go down from the level of a government position to the positions within parties. Since the agenda controlled by

various actors is often pre-determined, there is no window of opportunity for parties and their members to emphasize or de-emphasize topics within it (Ibid., p.133). In turn, Saalfeld and Strøm (2014) distinguish the characteristics of parties from the lenses of the principal-agent framework, as it was also elaborated further by Proksch and Slapin (2015) who added party brand at the core of their conception. They argue that party actors are strongly dependent on hierarchies built within parties, and, hence, party leaders and intra-party relationships affect their incentives and legislative behavior sufficiently. In this model party leaders are perceived as principals, while backbenchers are considered agents. For legislative speechmaking, it means that there can be a variety of instruments, which party leaders and, for instance, whips, can use to get their co-members coordinated and motivated to act and speak according to the party line. It refers to the notions of party unity, cohesion, and discipline.

There are two strategies for party leaders to keep agenda safe from the deviations from the party line either by avoiding discussion on topics that divide party members or by imposing discipline on them (Kam, 2014, p.403). The first strategy refers to negative agenda power, which is discussed above. In turn, the usage of this strategy strongly depends on the electoral system and the incentives it provides for MPs. As it was noted by Killerman and Proksch (2013), party label and its value within the electoral system are key to understanding the actions of party leaders towards enhancing party discipline. If this label is important for electoral success, as it can be for a proportional system, party leaders will be concerned about what their party members speak on the parliamentary floor and will try to eliminate the possibility for party rebels to participate there. In turn, in majoritarian systems (for example, in the United Kingdom), where MPs are strongly tied with their constituencies, party leader won't risk to lose positions in constituencies rebellion MPs are from, and will allow them to speak freely in parliament, even if there is a possibility of damaging party label (Ibid., p. 7). It means that deviations from the party line in a proportional system are less likely than in majoritarian systems. In the latter case, backbenchers should be more active speakers, and less afraid of being punished for their speeches.

However, the issue of office-seeking still cannot be resolved for majoritarian systems, considering these findings. Governing parties under the first-past-the-post electoral system are keen to apply positive agenda power, to which the second strategy refers, to

resolve this issue and protect government offices. The most powerful instrument there is an ability of government to put forward a motion of confidence, on which members of governing parties should vote (Kam, 2014, pp. 403-404). Besides, the opposition also has an opportunity to propose a no-confidence motion to vote against the government. In both cases, it implies the same: the necessity for party leaders to discipline their members. For governing parties, it significantly more important since this action directed mostly to its members. If the government loses confidence motion, it suggests snap elections, and, hence, that party members will lose all their positions and gains they have from being in the office or parliament. In cases of confidence votes, MPs from governing parties are often not ready to accept such losses and have to vote for the government that eventually leads to the more extensive support for government proposals from the backbenchers (Kam, 2014, p. 404-405). By ensuring the confidence coming from their party members, governing parties make them more motivated to speak in favor of government proposals, or not to speak at all. It means that if the government survived the vote of confidence, backbenchers, and thus all members of government parties should be more motivated to speak in favor of government proposals. By doing so, leaders of governing parties do both: preserve their offices and control what can be discussed by backbenchers on the parliamentary floor. This case is also similar for opposition parties: if it loses the vote of no-confidence against the government, the government will improve its position within parliament, but for the opposition, it usually does not affect party leadership.

Moreover, it means that after each of the votes of confidence, which government wins, government proposals should be discussed in a more 'disciplined' way. Considering that most of the controversial proposals may end up with government winning vote of confidence, it can be assumed that more votes of confidence won by the government on the way to passage of their proposals, the more incentives MPs have to talk in favor of these proposals, or to talk less on controversial topics. This assumption will be further a basis for one of the hypotheses of this research.

However, if the vote of confidence works predominantly to ensure government survival in office and party discipline, so-called selective incentives work for both governing and opposition parties to make their members comply with the party line on the parliamentary floor (Kam, 2014, pp. 410-411). One of these selective incentives related to office-seeking is that parties and their leaders are responsible for career pathways and

promotions, respectively. In this case, party leaders may impose incentives for backbenchers by promising (whether directly or indirectly) position in government in the future. Since it usually implies high costs for backbenchers to rebel against a party in these circumstances, they will most likely support government proposals. The risk for a party member to be suspended is also important since being a party member is one of the most crucial, even required, steps to government position (Ibid., p. 411).

Thus, by taking also into account the idea of party-system agenda proposed by Green-Pedersen and Mortensen (2010), opposition MPs always tend to criticize government proposals during parliamentary debate 'on whatever issues they deem advantageous' (Ibid., pp. 262-263), while governing parties, considering all the instrument party leaders there have at their disposal for discipline maintenance, will mostly speak in favor of government proposals.

From the perspective of vote-seeking, some of the parties can be perceived by voters as being better on some issues since parties tend to 'own' some of the issues while ignoring others (Slapin and Proksch, 2014, p. 129-131). Scholars also refer to this phenomenon as policy specialization (e.g. Saalfeld and Strøm, 2014) or issue ownership (e.g. Budge, 2015; Green and Jennings, 2019). To provide some examples, one may think of green parties as to the best choice for those caring about ecology and environmental issues, or labor parties as being better in social policy and on labor market issues. According to Sigelman and Buell (2004), one should expect parties to diverge in attention to various issues. Parties might have the best reputation at dealing with some of them, and hence they 'own' them, it implies electoral gains. Electoral advantages come into place due to the exclusive ability of parties to address issues, which cannot be addressed or spoken by any other party. By pushing such issues to the legislative agenda, eventually, parties can get more support from their voters.

Wagner and Meyer (2004) argue that the decision towards choosing issues to focus on is strategic. Scholars argued on the role of party organization for issue ownership and summarized that large parties tend to 'ride the wave' and choose issues to speak on following the contextual factors, while smaller parties focus more on niche issues they handle the best since they do not have enough resources to compete with large ones. Thus, they distinguished two strategies: to address issues, which currently concern voters in a

given time, or to address issues, which party has ownership over (Ibid., p. 1022). Klüver and Sagarzazu (2016) presented an evidence that 'ride the wave' strategy is dominant nowadays, especially in Germany.

For the current study, there is an important finding that issue ownership can be extracted and estimated from legislative speeches (Green-Pedersen and Mortensen, 2010; Vliengethart and Walgrave, 2011). Besides, as it was argued by Vliengenthart and Walgrave (2011), one of the ways for the party to establish ownership over issues is party manifesto. However, manifestos are not enough to examine the latent positions of MPs. They also argue that opposition parties are more likely to stick with the party manifesto in their speeches than MPs from government parties (Ibid., pp. 1038-1039). Opposition parties sometimes are not large enough to affect the decision-making substantially, and, in this case, they tend to 'own' one certain issue and win seats by preserving this ownership on the parliamentary floor.

Moreover, large parties tend to adjust their policy positions to the saliency of the issue for voters or themselves (Abou-Chadi et.al., 2019). It refers to the concept of the issue saliency, which is widely used in the context of this thesis. Salient issues are those issues, which concern voters and politicians most in a given time, and significantly affect the political situation. Such salient issues might also have subcomponents, which are also can have various levels of saliency depending on the context. For instance, in the case of this thesis, only one complex salient policy issue has been chosen for examination, and the core idea is to determine sub-components, which produce division in how MPs talk about this salient issue depending on their roles in parliament. The saliency of the issues can be changed over time under the pressure of political or exogenous shocks (such as change of public opinion), or endogenous factors (such as an economic situation) (Bergmann et al., 2018). Thus, even if some issues are stated as prominent in the party manifesto, it does not mean that it will be so over the whole parliamentary term, and legislative speeches may reflect the shifts of positions better (Ceron and Greene, 2019). Parties may shift their positions not only in response to shocks but also in response to issues other parties own. It refers to the concept of issue competition. This competition implies that to get more votes, parties should carefully select which issues to emphasize, and how to make opponents' issues leave the agenda. Moreover, parties tend to speak on issues they are competent in and let others speak on issues out of their competence (Green-Pedersen,

2010). If there are issues, which concern voters, but interested parties do not have enough competence, they will probably try to get it to face challenges.

Besides, one may assume that in the context of parliamentary debates on salient issues, parties will tend to speak more on issues they own, and by responding to political shocks, large parties can be inclined to mix issues they own with those on the agenda. To provide the list of most common issues that parties might own in contemporary politics, one can refer to the study of Bäck and Debus (2016, p. 30). They determined that (1) socialist and social democratic parties are related to labor and welfare issues, (2) conservative parties tend to own issue related to finances, law, foreign policy, domestic policy, and justice, (3) green parties are owners of environmental and climate change issues, (4) while economic issue, some topics of justice, law, and citizen rights mostly belong to liberal parties. Also, there are parties, which represent citizens based on nationalities and territories, such as the Scottish National Party in the UK or New Flemish Alliance in Belgium.

Thus, the theory provides us with expectations that MPs from specific parties may tend to speak more on topics their parties own and consider salient in a given time because it helps them to attract more voters and keep the core electorate. In turn, large parties might mix the attention to recently emerged salient issues with attention to those issues they traditionally own since they have more resources and competence to debate on them, while smaller parties remain on their traditional positions.

1.3. Individual approach: backbenchers and personal preferences

So far, MPs have been observed in this study as political actors, which can play two roles in parliament: the role of minister and party member. However, according to the rational choice approach, MPs might also have personal preferences shaping their legislative behavior and legislative speechmaking. Nevertheless, MPs are often constrained by the public opinion in constituencies and office responsibilities in parliament or government. It can be so that they affect legislative speechmaking significantly, especially considering the role of a backbencher. In Westminster system, backbenchers can be considered as 'pivotal voters', since government and opposition are rarely successful without the

support of their party members who seat behind them (Krehbiel, 1998; Russell and Cowley, 2016).

It should be stated that concerning personal preferences, MPs without incentives to deviate from the party line are not the ones this study focuses on. It is assumed that the preferences of complete supporters or opponents of the government and its proposals in each particular case are primarily determined by the factors discussed above. Even if MPs who have a sustained opinion on issues can be used for comparison between those who made a decision and those still in doubt, they are not central for further analysis. In turn, backbenchers have more potential incentives to deviate from the party line and speak differently on the parliamentary floor than others. Thus, the latter is outlined in this section as one of the theoretical expectations of this research. To evaluate the possible effect of personal preferences on legislative speechmaking, one should consider the arguments related to constraints backbenchers might have and their goals related to policy-, office-, and vote-seeking.

From the perspective of policy-seeking, backbenchers might be interested in their policy ideas to be implemented since most of them are committee members in Westminster parliaments. A powerful committee system creates an opportunity for backbenchers to influence policies according to their preferences, but at the same time, it implies fewer incentives to deviate from the party line (Kam, 2014, pp. 411-412). In this case, party leaders provide backbenchers with an ability to influence policies by appointing them in the parliamentary committee, but, at the same time, party leaders continue to control their legislative speechmaking. Party leaders are interested in backbenchers from committees as experts in specialized policy fields, who possess knowledge and information required for party success, and these backbenchers are allowed to speak mostly on niche topics they are competent in (Fernandes et al., 2019, p. 29). Thus, party leaders resolve two issues at the same time – they strengthen party unity and narrow down the number of topics backbenchers can raise on the parliamentary floor. For backbenchers and their policy-seeking motives, it means that if they speak on controversial topics or vote against party, they can lose their office, and hence an influence over policymaking. Backbenchers can also affect policymaking by proposing private members' bills (PMBs) to parliamentary agenda. However, according to Bowler (2010), even if in the Westminster system these are widely used by MPs, only a few bills pass the parliamentary voting. He

argues that this tool is more aimed at gaining attention from constituencies to gain more votes, and rebellion expressed in roll-call votes or speeches is more effective than policy proposals (Ibid., p. 477). Backbenchers might also switch parties to get an opportunity for more extensive policymaking (Mershon, 2014), but it can be considered as last resort and mostly applicable members of small parties.

The same situation can be seen with motivations of backbenchers towards office-seeking. Since committee membership (as committee membership can be perceived as 'mega seat') imposes the same disciplinary rules on office-seeking backbenchers, they will speak on the parliamentary floor in the same way as discussed above. If there are no incentives for them to become committee members, then there is nothing for backbenchers to do to get the government office but supporting party leaders and negotiate. However, this motivation to support government can only appear in a situation, when the government proposes office to the backbencher in exchange of parliamentary votes and support on debates. It can happen as a result of bargaining and negotiations – one of the tools the government actively applies to overcome uncertainty (Rasch, 2014). It can take various forms of "persuasion, problem-solving, compromise, side-payments, and logrolling" (Ibid., p. 471). Additionally, when the government or party leaders are not able to bargain, they may try to anticipate the preferences of their party members and draft bill accordingly. For backbenchers in Westminster system, it means they can rebel against their party during voting or debates, but if they want to get the high office, or if they negotiated with party leaders on being promoted, they are less likely to deviate from party line and more likely to speak on niche topics than other backbenchers. Thus, backbenchers should sacrifice their positions to have an opportunity to affect policy or get a higher office. This trade-off can be explained more by considering the vote-seeking motives of MPs.

MPs can preserve their seats in parliaments only by being re-elected in their constituents. If they are not elected, they won't be able to express policy- and office-seeking behavior efficiently. Most often this is the reason why vote-seeking opportunities and the role of constituency overweigh all other incentives, and MPs still prefer to rebel against their parties on the parliamentary floor and during voting. It assumes that backbenchers are predominantly vote-seekers, which is confirmed by a variety of scholars especially for majoritarian and Westminster systems, where incentives for personal votes are stronger

(André et al., 2014; Burean, 2015; Høyland and Søyland, 2019; Kam, 2014). Regarding such MPs, party leaders also have tools to constrain and manage the content of their legislative speeches. As per Tromborg (2019), party leaders tend to impose discipline on district-oriented MPs by managing issues they can raise on the parliamentary floor. If party leaders consider some issue salient for them, they are interested in sanctioning district-targeted behavior on this issue. On the contrary, if the issue is not salient for the party, they "do not sanction district-targeted position taking among their candidates" (Ibid., p. 321). Thus, backbenchers, who are strongly concerned in supporting the interests of their constituencies to be re-elected in the future, are limited in their access to the parliamentary floor with speeches on controversial topics, but free to express an opinion on niche topics.

It can be inferred that despite personal preferences and goals of backbenchers, their behavior on the parliamentary floor is monitored and controlled by the party leaders in the comparatively same way, which leads to the same implications for legislative speechmaking. Here one may assume that considering salient and complex issues, which can be discussed for a long time and go through the large amounts of reconsiderations, changes, and amendments to be proposed and voted for, personal preferences of backbenchers and their changes over time are quite hard to detect. For analysis, such backbenchers can be conceptualized as MPs, who are in doubt towards the government proposals put on agenda. It is also can be called as the spatial 'error' (Carroll and Poole, 2014), which is out of the line of spatial preferences (Bräuninger et al., 2016; Poole, 2005). However, if scholars considered these 'errors' as deviations from personal MPs' ideological standpoints, here it is assumed as a deviation from party and government standpoints. Their doubts can be determined by examining a way they vote, and this is the case when roll-call votes can shed light on MPs' positions. If a salient policy is taken together with several important votes cast for or against it, then MPs, who are in doubt, can be revealed. In the process of legislative decision-making, it can be the case that once party leaders detect the rebellion against the party line, they will start to actively impose disciplinary measures. Consequently, the closer the end of discussion on salient issues, the more likely backbenchers are disciplined in both speechmaking and voting, and hence the more they will favor government proposals. This assumption distinguishes backbenchers in doubt, for whom personal preferences can play a key role, from

backbenchers who fully support or oppose government proposals and should not be disciplined regardless of party affiliation. If one aims to examine how personal preferences and constraints make a difference for legislative speechmaking on specific policies, it is important to capture those backbenchers, who express their doubts through legislative voting behavior. Thus, MPs can be considered as being in doubt towards government proposal, if they vote inconsistently for proposals in legislature and change their preference over time, by so producing a spatial 'error'. For instance, the more votes backbenchers cast in favor of the policy proposals, the less they doubt it. For parties it can also mean the following: backbenchers from government parties can be considered in doubt if they voted against the government even once, and for opposition backbenchers, it happens when they vote for government policies despite the negative position of their party towards the government proposal.

Regarding legislative speechmaking, one should consider that party discipline and doubts are things that can be determined in both static and dynamic ways. As for a static way, one may assume only a parliamentary voting profile without considering time. That is, if MPs vote inconsistently towards one complex issue, it reveals their backbencher status and implies that they could be targets of party discipline. By adding theoretical expectations on personal preferences and legislative speechmaking, it can be suggested that generally, MPs in doubt tend to speak more on niche topics and raise constituency specific issues than MPs who consistently vote for or against government proposals.

As for a dynamic way, one should consider the bargaining process, issue evolution, and other effects of time. Debates on the multi-dimensional issues can take much time and require voting on a substantial amount of amendments. Between these events, there are windows for party leaders to receive information on rebels and impose discipline on party members accordingly. This implies that by the end of the discussion and voting on government proposal, there will be full information available, and by comparing how many votes for and against this proposal were cast, one can infer who was in doubt in less or more degree. For legislative speechmaking, it means that more MPs are in doubt, the less time they were affected by disciplinary actions, and, hence, the more they spoke on controversial topics. The last assumption here is that to less degree MPs are in doubt towards government proposal, the less controversial topics they raise on the parliamentary floor.

For both static and dynamic circumstances, party discipline is constant and considered as intervene variable. Disciplinary measures will be imposed on backbencher if any signs of voting rebellion are observed. In turn, such a rebellion is an indicator of MPs' doubts. Considering that, according to the theoretical expectations, disciplinary measures could potentially lead to the more niche topics discussed by backbenchers, the assumptions above are made.

Since all possible theoretical explanations presented regarding legislative speechmaking and its determinants, research design and hypotheses can be elaborated.

2. Research Design and Data

This study employs a quantitative single-case research design. To be more precise, it means that only one case – parliamentary debates on Theresa May's Brexit Withdrawal Agreement (Brexit deal) - is chosen for analysis, but since a large number of legislative speeches are analyzed in this context, and the results can be generalized only on legislative speechmaking related to this particular case (or Westminster systems), quantitative approach can be used for testing hypotheses.

This thesis is dealing with the research puzzle implying that parliamentary discussion on the Brexit withdrawal agreement can be considered as a deviant case. Such an assumption derives from the unmet expectations: the British parliament is an ideal representation of Westminster system, under which government should have a strong control over agenda (e.g. Russell and Cowley, 2016) and all governing party members, including backbenchers and potential rebels, should unite around government in response to political shocks to preserve their political presence (or to survive), and send persuasive signals to voters (e.g. Bergmann et al., 2018; Blamenau, 2016; Borghetto and Russo, 2018). In the case of the UK-EU negotiations over Brexit, Theresa May was not able to unite governing party members and potential supporters from other sides around her to pass the proposed Brexit deal through parliament. It was caused by the legislative deadlock, which can be considered as an endogenous political shock. From this perspective, the Brexit deal, which was discussed on the parliamentary floor for more than one year, is an example of complex salient issues MPs faced. In turn, Theresa May's lost in parliament regarding the Brexit deal could be seen from the dynamic of parliamentary debates.

This assumption is made because on debates MPs can pursue their own goals, persuade others, and express opinion, legislative speeches may shed light on differences between them in terms of on what topics they speak on and how are they talking about various issues (e.g. Bäck and Debus, 2016: Proksch and Slapin, 2015). By adjusting the fact that the Brexit deal is salient and multi-dimensional issue for legislators with the importance of legislative debates for policy-, office, and vote-seeking, it can be suggested that MPs can speak more differently on such an issue than they usually do. One may assume that there are factors, which make legislators focus on completely different sub-components

of a salient issue at the same time and hold different positions on them. The argument of this thesis is that such factors as roles MPs play in parliament and effect of time should determine those differences. Legislative debates usually consist of topics of discussion put on the agenda, and one may assume that it is the layer, where the problem is located. Different political and personal preferences, along with the effects of time and party discipline, may affect what topics are discussed and by whom, which could imply divisions within the legislature. Thus, the research question is which factors make legislators talk differently about salient issues on the parliamentary floor?

The case of legislative debates on the Brexit deal is chosen not only because this issue represents one of those multi-dimensional and salient issues, consisting of many sub-components, but also for other reasons. Firstly, the UK parliament is a form of Westminster parliament with its peculiarities and disadvantages. Secondly, the number of intra-party rebellions was detected during legislative debates (e.g. many Conservatives opposed May's deal and favored No-deal scenario). Thirdly, the British government operated under the minority situation, when they did not have an absolute majority in parliament, and thus was forced to negotiate, to bargain, and to convince opponents in debates. The latter is very rare for Westminster parliaments.

The timeframe from July 2018 to July 2019 has been chosen. Since the starting points on the Brexit withdrawal agreement were formulated in July 2018 in the form of the so-called Chequers Agreement dedicated to outlining the main focal points of the future relationships between the UK and EU. Debates in the UK parliament started after this event, which also led to several important minsstrial resignations. In July 2019, Theresa May announced her resignation, and her proposals left out of the parliamentary sight.

Legislative speech is a unit of analysis in this study. Considering the veto power, which House of Commons obtained right after the EU Withdrawal Act became a law on 26 June 2018, legislative speeches within this chamber are examined. Legislative speeches chosen as analytical units since they are widely used in today's social and political studies in the context of research field on legislatures (e.g. Geese, 2019; Hajdinjak et al., 2019; Høyland and Søyland, 2019), they better represent what is happening with agenda-setting process, which tends to occur behind closed doors (Otjes, 2019), and comparing to roll-call data,

they provide more exact information on MPs positions and can supplement roll-call votes (Bergmann et al., 2018; Schwarz et al., 2015).

Topics, which raised by MPs on debates, may correspond to the overall topic structure by taking together and reveal the hidden agenda components. Martin and Vanberg (2014) argue that it can be done by considering words spoken as data and then by applying computational text analysis. This study applies structural topic models (STM), the extended form of Latent Dirichlet Allocation (LDA) algorithm created to extract topics from a large amount of textual data. Structural topic models provide an opportunity to include covariates (factors) into the analysis and locate specific relationships between text and its characteristics. In the case of legislative speeches, one might consider such as factors as speakers and their characteristics and estimate how these characteristics explain differences in speeches. This research method is discussed further in this chapter in more depth in section 2.3. To apply STM appropriately, data should be collected and transformed into a relevant format. The description of data and data collection process are presented further in this chapter in section 2.5.

Finally, there are some theoretical and practical limitations of this study, which must be listed. From the theoretical perspective, the key limitation is that the mechanism of dependency of legislative speeches on MPs roles and time effects is hidden. This study assumes several possible mechanisms, observed theoretically and by other scholars, and considers them constant to address such an issue. Moreover, this thesis focuses on a single case, meaning the limited external validity of the results. However, the results can be further applied to compare Westminster parliaments with each other and checked upon sustainability on similar cases related to salient issues in the context of the British parliament.

There are also two limitations, which lay between theory and practice. First, this study does not aim to estimate legislators' positions but to capture the factors, which might influence their behavior on the parliamentary floor. For instance, for the hypothesis on personal preferences, which is formulated below, roll-call data is used to determine the personal profile of MPs. However, there are scholars, who resolve this issue by applying Wordscore or Wordfish – computational text analysis techniques aimed at extracting policy positions from political texts (e.g. Bäck and Debus, 2016; Bergman et al., 2018).

Regarding the current paper, this step does not correspond with research goals and would provide results unnecessary for hypotheses testing. Second, since this study deals solely with the case of parliament debates on the Brexit withdrawal agreement, only speeches related to this case are collected for the analysis (the process is described below in section 2.5). However, in theory, debates on Brexit might also contain speeches and talks on irrelevant topics, which can be suddenly raised by MPs due to some unexpected events or other factors. If large amounts of speeches are collected for the analysis, manual or any other filtering tools cannot exclude the possibility of such talks to remain in the data.

From the practical perspective, the limitations can be the following: the choice of the number of topics for the analysis, a potential bias during the interpretation of topics, and computational limitations such as system requirements and calculation time. In addition, this thesis does not examine the speeches of those MPs who abstained from more than one meaningful vote, because STM does not operate with missing values. The possible limitations of the research method are discussed below in section 2.3. in more depth.

In this chapter, the context of parliamentary debates on the Brexit withdrawal agreement is discussed, and hypotheses formulated by taking into account both theoretical expectations and contextual features. Further, the choice of the research method is justified, and the method is described in-depth. In the last two sections, the operationalization of variables is conducted, and the collection of data is described.

2.1. Parliamentary debates on the Brexit Withdrawal Agreement: background

The research field on the parliamentary debates on the Brexit withdrawal agreement and events surrounding them are still in the state of origin. Mostly scholars deal with predicting economic consequences of Brexit (e.g. Hantzsche et al., 2019) and analyze the results of referendum (e.g. Alabrese et al., 2019), which is not quite important for the current study to consider. Thus, in this section, this thesis mostly operates with known facts to describe the case and information extracted from the official dictionaries (Glossary – UK Parliament, 2019), reports of the House of Commons (Walker, 2019), data on legislative votes derived from official sources (House of Commons Divisions, 2019) , and the recent research of Lynch and his colleagues (2019).

After a long discussion actively took place from 2014 to 2016, James Cameron's government and the House of Commons decided to conduct a referendum on the United Kingdom status within the EU. During the political campaign, the political space of the UK was divided into those who supported European politics and ideas ('Remain') and those who were against the UK being in the EU ('Leave'). While the Labour party, Liberals and Scottish National Party were complete against the UK's withdrawal from the EU and campaigned for 'Remain' vote, the UK Independence Party (UKIP) and several rebellions from the Conservative Party (e.g. Boris Johnson) represented the 'Leave' position. Conservative party remained mostly neutral to this referendum allowing their members (the same was true for the Labour party) to support any of these positions towards Brexit. Leading by predominantly economic and immigration-related arguments, the 'Leave' campaign was more successful. On 23 June 2016, 51,89% of British citizens voted for the 'Leave' campaign on the referendum regarding the UK withdrawal from the European Union. The resignation of David Cameron from the leadership of the Conservative Party, and hence, from the position of the Prime Minister, followed these events. He was succeeded by Theresa May in July 2016.

In order to deliver Brexit, there is a requirement to trigger Article 50 of the Treaty of the European Union, which is aimed at outlining the lawful procedure of negotiations and following the withdrawal of the EU member country from the Union. On 29 March 2017, Theresa May's government triggered Article 50 with the permission of parliament and started the process of the UK withdrawal from the European Union. Considering that almost all the UK laws should be adopted for the independent existence (from the EU laws) and reformulated to ensure a smooth transition, it led to the active work of parliaments and committees, including debates and internal negotiations (Lynch et al., 2019, p. 51-52). Right after Article 50 was invoked, Theresa May asked for a snap election to increase the presence of the Conservative Party in the parliament and make her negotiations go more smoothly through parliament. This goal was not achieved and led to an even worse situation for Theresa May: "It led to a single-party minority government at Westminster, opening up further opportunities for parliamentary influence" (Ibid). By establishing a coalition with Northern Ireland Democratic Union Party (DUP), Theresa May tried to improve her positions towards the Brexit-related legislation in the House of Commons. Nevertheless, this situation provided the parliament

with more power to shape the agenda and oppose the government proposals on the UK-EU negotiations.

Thus, the parliamentary floor and committees became the key arenas for discussions affecting the decision-making process on each stage of the UK government and the EU negotiations. Negotiations formally started on 19 July 2017, and the arrangements for further negotiations and formal procedures of Brexit were made. They resulted in the European Withdrawal (2018) Act, which became law on 26 June 2018 and granted the UK parliament a veto-power on ratification of the withdrawal agreement. In turn, negotiations with the EU led to the Chequers agreement (or plan). The white paper agreed and published on 12 July 2018 by the government and listed the key principles of the future UK-EU relationships regarding Brexit. As per Lynch and colleagues (2019, p. 60), the Chequers plan "finally brought Eurosceptic discontent to the fore". By being dissatisfied with this plan, Brexit Secretary and Foreign Secretary, Boris Johnson, resigned from their government offices. It became a critical juncture for further negotiations with the EU. It was not accepted by the government's opponents due to the economic principles and positions on the Irish border. On 14 November 2018, the government published the draft of the Brexit Withdrawal Agreement, and the active debates on the Brexit deal began in the House of Commons. However, Dominic Raab also opposed this draft and was the second Brexit secretary resigned in opposition to the agreement in 2018. Thus, for this analysis, it is important to rely on parliamentary speeches after the Chequers agreement was published and to take July 2018 as a starting point.

Parliamentary debates on the Theresa May's Brexit deal are associated with many amendments, statuary instruments, reconsiderations, negotiations between various parties, and several 'meaningful votes' (MV). The latter are key ones as they were aimed at parliamentary ratification of the agreement. In this regard, Theresa May lost the first MV on 15 January 2019, "with the government suffering a huge defeat, losing the vote by a majority of 230 (with 202 voting in favor of the Prime Minister's Brexit deal and 432 against)" (Walker, 2019, p. 40). Then Theresa May's government revised the deal and proposed 'Plan B' amendments. In turn, the second MV was also lost by the government on 12 March 2019 (with 242 voting in favor of the Prime Minister's Brexit deal and 391 against) (Ibid., p.47). It is crucial to note that the Withdrawal agreement was

proposed in conjunction with the Political Declaration on the future of UK-EU relationships, which was also strongly opposed by most of the Theresa May's opponents. To make the House of Commons vote on the deal again, the government removed the Political declaration from the voting agenda and motioned on the third MV only on the Withdrawal Agreement. It was an option since 29 March 2019 was a deadline for the UK to leave the EU, but the extension of the deadline was agreed with the EU in case the third MV is for government proposal. It was also done in order to be on a safe side and does not allow 'no-deal' Brexit. On the third MV, took place on 29 March 2019, government lost as well with 344 votes against to 286 for the Withdrawal Agreement. Then the government was not able to bring the new version of the Withdrawal Agreement and conduct the fourth vote. This situation led to Theresa May's resignation from the Prime Minister post and the leadership of Conservative Party on 23-24 July 2019.

Theresa May's Brexit deal was rejected by the House of Commons three times, and it shows that the government not only lost the support of the opposition but also was not successful in gaining support from the governing party backbenchers and coalition partners. So, there is a reason why parliament in this period can be called as 'backbenchers' parliament' (Lynch et al., 2019, p. 54). Nevertheless, following the results of MV, it can be stated that Theresa May was still able to articulate some degree of support. On the second MV, the government deal received more support than on the first one. The third MV was also an indication of increased support for the deal in comparison with the second one. One may assume that it can be a result of the cross-party and intra-party bargaining and, to some extent, the effect of party discipline: those MPs, who were in doubt, changed their mind over the voting stages.

To explain the ups and downs in the context of the current research, one may refer not only to legislative speeches but also to the role of the vote of confidence. Considering the positive agenda power of confidence motions won by the government (Kam, 2014, p. 404), it should be an important tool for the government. Despite Theresa May's won on the confidence vote over her Conservative Party leadership on 11 December 2018, the no-confidence vote, which was proposed by opposition on 15 January and took place on the next day, should be considered the most important in terms of party discipline. Since there were no better alternatives for Theresa May in the Conservative Party, she won this vote without any observable obstacles, but considering the huge (and even historical)

defeat on the first MV, it seems to not have an impact. Otherwise, after no-confidence vote won and Plan B amendments passed, noticeable progress was made towards party unity.

To understand what brought the division into parliament concerning the Brexit deal, one should investigate controversial topics raised on the parliamentary floor. According to the timeline (Walker, 2019), studies on the committee's activity (Lynch et al., 2019) and known facts, controversial issues can be determined. The key controversial topic was concerning the arrangements on the border between Northern Ireland and the Republic of Ireland, often referred to as the Irish backstop. It includes the issues of economic zones and customs unions, along with single-market notions. It was the issue, which divided the governing party and coalition partners from the DUP when the latter was against the government solution to this issue. Other parties were also against Theresa May's arrangements on the Irish backstop because they were sure this proposal will tie the UK to the EU for a long period and hinder the full withdrawal from the EU. Irish backstop implied Northern Ireland being the single customs territory and formally remaining as the part of the European single market (and hence under the effect of EU trade laws) until the solution would be found after the transition period. Regarding the Irish backstop and trade between the EU and the UK, increased attention was paid to the controversial food and agricultural policy related to tariffs, standards and, for example, fisheries. The arrangements for the latter was agreed to be outside of the Irish backstop plan, so fisheries should have become the subject of the normal EU tariffs.

Moreover, the discussions on No-Deal, Canada-plus, and Norway scenario also refer to controversial, since they were not in favor of government proposal. No-Deal scenario implies the UK withdrawal without any agreement and proposed by the rebellion Conservatives as an option in case of government's withdrawal agreement not passing the parliament. Canada-plus scenario implies the same trade rules for the EU as they are for Canada, while Norway-scenario is an option to join the European Free Trade Association and European Economic Area, and trade with the EU on the principles applied in Norway.

Opposition parties, namely the Labour Party, Liberal parties, and Scottish National Party (SNP), introduced and supported the idea of the second referendum on the Brexit, which

was consequently blocked by parliament on 14 March 2019 but was still under consideration. The extension of Brexit was also heavily discussed in relation to the government's inability to get the appropriate deal and deliver Brexit. Along with the overall criticism of the government, extensions of deadlines on Brexit led the government to deal with an additional overhead, which was a result of its failure to get this deal passed. Thus, the discussions of the second referendum and extension of Brexit deadlines, together with overall government criticism, brought controversy and tensions on the parliamentary floor.

Besides, the government was criticized for its economic proposals proposed in the Withdrawal Agreement. It primarily relates to the vague status of the EU citizens, who work in the UK and their relatives, and the 'divorce bill' coverage that presupposes enormous payments to the EU.

The government was also under the pressure of Scotland opposition, where most of the population voted against Brexit, and SNP (which represents the interest of Scotland in the House of Commons) opposed the government proposal accordingly in relation to the opinion of the Scottish constituencies. It also created overhead for the government since it was required to handle the issues and negotiate on the withdrawal agreement content, which potentially could affect the Scottish economy significantly.

Apart from these controversial issues, there were many other important questions to be resolved and debate on, but in the context of this study, we could consider them niche, or those favorable to government proposal, since they were not those issues, on which decision cannot be made without significant reconsiderations of the initially proposed deal.

While studying the parliamentary debates on the Brexit deal, it is also important to mention the speechmaking procedures of the House of Commons, which might influence agenda, and help both government and opposition to present their ideas on the parliamentary floor. The key procedures, according to the glossary of the UK parliament (2019) and MPs' guide to procedure (2019), can be as follows: questions to the government, business of the house discussions, points of orders, requests for legal advice, petitions readings, statutory instruments outlining, interventions. As the House of Commons is supposed to control the government, likely, government will mostly respond

to questions and set an agenda by such procedures as business of the house discussion, and statutory instrument (secondary legislation) propositions, while opposition might ask questions, use interventions, and request for a legal overview of the bills and amendments on the agenda.

Information provided in this section is enough for further investigation of the determinants of speechmaking of MPs in the UK on the Brexit deal. The knowledge of the facts and context regarding debates on the Brexit withdrawal agreement presented her supplement the formulation of the hypotheses, which is conducted in the following section.

2.2. Hypotheses

Considering the theoretical expectations outlined in the first chapter, and specifics of legislative debates on Brexit deal, the respective hypotheses can be formulated to find out what make legislators speak differently about salient issues on the parliamentary floor.

Firstly, reminding the role of government for MPs and its possible effects on legislative speechmaking, one should consider government agenda control, which is a feature of the Westminster system. In terms of agenda control, it can be expected that the government tends to control more salient issues on the parliamentary agenda (or speak more on them) and control procedural topics, such as the business of the house, statutory instruments, and others. It derives from government policy-seeking incentives. Thus, the hypotheses to be tested are the following:

H1.1. Government MPs control more (or speak more on) salient topics than MPs without a position in government.

H1.2. Government MPs control more (or speak more on) procedural topics than MPs without a position in government.

From the perspective of office-seeking incentives, theoretical expectations are that government MP should support their proposals to hold their office and, for others, it is not so important so they can speak on topics and issues unfavorable for government proposals.

H1.3. Government MPs are more likely to speak on topics favorable for the government proposal, while MPs without a position in government are more likely to cover topics unfavorable for the government's proposal.

Government MPs, as well as others, can be considered as vote-seekers. However, they have different procedural responsibilities and incentives. Government MPs should defend policies they propose to the parliament and respond to questions regarding these proposals. In turn, other MPs can use the parliamentary floor to criticize the government or intervene in their speeches (interventions are allowed in Westminster parliament), by asking more questions or casting doubts on what has been said by government MPs. In this case, it can be tested, if:

H1.4. Government MPs are more likely to respond to questions in parliament, while MPs without a position in government tend to criticize the government and use interventions.

Second, as expected from theory, party affiliation might also affect the legislative speechmaking on salient issues. MPs are tied to their party brands in various degrees, and sometimes party leaders can impose disciplinary measures on them to keep party positions safe from potential rebels on the parliamentary floor. However, one should consider the roles of coalitions in policymaking, government and opposition parties in office-seeking, and issue ownership, which helps parties to get more votes.

For parties from the same coalitions, it is important to achieve consensus, and, at the same time, to preserve their positions in front of external (voters) and internal (parliament) audiences. The latter refers to the strategy of 'position-taking', which coalitions parties use to distinguish themselves from their partners. As theory implies, coalitions parties tend to speak equally a lot on topics, which divide them for those the reasons of position-taking and consensus achievement. For instance, in the case of Brexit deal, it can be so that neither Conservatives or Democratic Union Party (DUP) control or speak more on the Irish backstop issue since the government solution to it was not met positively by DUP. Thus, the following hypothesis can be tested:

H.2.1. MPs from parties of the same coalition are less likely to differ significantly in speaking on topics that divide them during debates than MPs, whose parties are from different coalitions.

Moreover, governing parties aim to hold their offices in parliament as long as they can. To do so, they should be able to maintain party discipline. Since governing parties have very effective tools for this at their disposal, it can be assumed that MPs from the government party should speak mostly on topics, which are favorable for government proposals. Meanwhile, the opposition party does not possess any executive seats, so they are free to criticize the government and focus more on vote-seeking strategies. In this case, the hypothesis will be tested, as follows:

H2.2. MPs from the governing party are more likely to speak on topics favorable for government proposals, while MPs from opposition parties are more likely to speak on controversial and unfavorable topics.

Regarding vote-seeking, parties can be perceived as 'owners' of some issues. For instance, the Labour Party can own topics related to the social security and labor market, while Green Party owns environmental topics. Issue ownership is embedded in traditions related to parties, but if they face new and multi-dimensional issues, they should also focus on sub-components of these issues, which are closely related to those they usually own. For the case of Brexit deal, one of such important sub-components can be the mentioned Irish backstop. Moreover, as derived from theory, large parties should speak more on the most important sub-components of salient issues since they have more resources and expertise than small and niche parties. Therefore, the following hypotheses can be tested:

H2.3. MPs are more likely to speak on topics their parties own and consider more salient on the parliamentary floor.

H2.4. MPs from large parties are more likely to speak on topics related to the most important sub-components of salient issues, while MPs from small parties are mostly focused on niche topics.

Third, it is important to test if there are the effect of personal preferences on legislative speechmaking, and how successfully party leaders control their backbenchers. In section 1.3., it was argued that despite the strategies backbenchers select to achieve their personal goals, which are primarily related to vote-seeking and constituency-oriented behavior, party leaders have extensive influence over what backbenchers allowed to speak about on the parliamentary floor. In all the cases, such control leads whether to complete opposition

of backbenchers to their parties or more disciplined behavior. In turn, disciplined speechmaking of backbenchers is characterized by them speaking on niche topics or those related to district-oriented less salient issues. The concept of 'MPs in doubt' was presented in the theory section to determine those backbenchers who tend to cast doubts on party politics, i.e. vote inconsistently on proposal their party has formulated an opinion on. Voting profile of each backbencher is used to determine these inconsistencies. Besides, one may expect that MPs' doubts and party discipline can be considered as static and dynamic. Static doubts are derived from the general voting profile of MPs, and if MPs voted inconsistently even once, they would be targets of disciplinary measures of their party leaders. In this case, it is expected that generally, such MPs will speak more on niche topics than MPs who consistently opposed or supported policy solution. Thus, the following hypothesis will be tested:

H3.1. MPs in doubt are more likely to speak on topics regarding niche and regional issues than MPs who voted consistently on the government proposal.

MPs doubts and party discipline can also be considered in dynamic. For instance, in case of Brexit deal, there were three rejected meaningful votes on Theresa May's deal. However, each time she was able to get more supporters of her proposal among those in doubt. It can be suggested that after each of the vote there were negotiations and disciplinary measures implementation, which could drive such changes of minds. Moreover, the earlier she managed to get a backbencher to be supportive to her policy proposal on Brexit, the less time in total this backbencher spent to speaking on controversial issues related to Brexit. If one considers meaningful votes as a point of estimation, then the less 'Noes' MP casted on government proposal, the less opportunity she or he has to speak on topics unfavorable for Brexit deal. Then, hypothesis can be formulated, as follows:

H3.2. The fewer doubts MPs have on the government proposal, the less controversial topics (issue) they raise on the parliamentary floor

In addition to the hypotheses formulated above, the effect of time can also be examined. Sometimes bills are forgotten after the end of parliamentary session, but sometimes "bills never die" (Döring, 2001). In this case, the first assumption refers to the vote of confidence. Confidence or no-confidence motions towards government are expected to

be disciplinary measure since they show to backbenchers and other party members the costs of government resignations. Usually after government survives such motions, governing party becomes more disciplined on the parliamentary floor. In the case of Brexit, the most influential vote was the vote of no-confidence on January 16, 2019 that was proposed by opposition, but strongly encouraged by Theresa May herself. Despite that month before there was vote of confidence within Conservative party, it is argued in this thesis that the closeness of the vote of no-confidence to second and third meaningful votes was more crucial for the British government than its own confidence motion also won by May. Hence, it can be tested, if:

H4.1. MPs are less likely to speak on controversial topics after the vote of confidence than before the vote of confidence took place.

By considering possible negotiations, consensus achievement, disciplinary measures imposed by governing party leaders on backbenchers, issue evolution, and agenda control, the following hypothesis can also be tested:

H4.2. The more stages of parliamentary debates have passed, the less likely controversial topics will be discussed.

Thus, all hypotheses are formulated according to the theoretical expectations and the specifics of legislative speechmaking in Westminster system. Now it is important to describe the research method applied to test these hypotheses.

2.3. Research method

This study relies on one of the computational text analysis techniques called Structural Topic Models (STM). This method has been elaborated by Roberts and his colleagues (2014) and represents an extension of Latent Dirichlet Allocation (LDA) topic models by allowing the introduction of covariates into the model to capture the effect of this covariates on documents (Ibid., p. 1067). Along with other topic modeling techniques, this method has been applied to a testing variety of hypotheses, including those related to the legislative speeches. For instance, Geese (2019) applied STM to reveal the factors of speechmaking on the immigration-related issue in the German Bundestag. He concluded that the effect of being in a parliamentary party group explains the variance of speeches

and differences between MPs better than any individual incentives. In turn, other scholars (Hajdinjak et al., 2019), who applied STM on the parliamentary debates textual data, inferred that legislative speeches and their content are influenced by the context of a policy on the agenda. They compared the data on migration policy debates in Canada and the United States and concluded that large parties in these countries tend to emphasize different sub-components of the migration policy and own them on the parliamentary floor accordingly. Moreover, Høyland and Søyland (2019) used STM to reveal the effects of time and events on the legislative speechmaking. They successfully tested hypotheses on the influence of electoral reform on the content of parliamentary speeches. For example, they showed that electoral reform in Norway (from single-member districts to multi-member districts) led to more party cohesion on debates.

To address the research question stated above and reveal the determinants of different speechmaking attitudes, STM can be applied to the parliamentary debates on the Brexit withdrawal agreement. Since by using this method it's possible to estimate the effects of political factors (or for this thesis - roles, which MPs play on the parliamentary floor), and time effects on the topic structure of speeches and how often each topic was discussed by MPs, and since it allows to indicate the difference in topic allocation across mentioned covariates, this research method fully corresponds to the goals of this thesis.

Before proceeding with the analysis, it is important to lay out the specifics of this method and possible limitations. STM is a form of an unsupervised machine learning algorithm and one of the topic modeling approaches within the natural language processing (NLP) (Roberts et al., 2014). It was built on the advantages of LDA methods and share most of the specifications and limitations of this method. The key assumption of topic models is that it treats each text as a mixture of topics while considering each topic as a collection of certain words (Blei et al., 2003). By doing so, it estimates the distribution over words for each topic, and the proportion of a document in each topic, for each document. Therefore, it allows to examine what topics are mentioned in the corpus of documents (by interpretation of words these topic are associated with) and to reveal how these topics are distributed within each of the document (each document can consist of more than one topic). This method helps to classify the large amounts of documents by revealing the hidden topic structure of the whole corpus without a time-consuming human coding (Ibid.).

STM adds to this method the availability to estimate the effect of metadata of the documents or covariates on the topics within corpora in two ways. It presumes that topical prevalence (refers to how much of a document is associated with topic) and topical content (refers to the words used within a topic) varies across attributes of each document (Roberts et al., 2017). In this case, Robert and his colleagues (2014, p. 1068) noted that their STM model differs from LDA due to the following parameters: "1) topics can be correlated; (2) each document has its prior distribution over topics, defined by covariate X rather than sharing a global mean; and (3) word use within a topic can vary by covariate U". For the current research, the topical prevalence model fits the research aims and questions stated, while no topical content covariates should be observed. In this case, according to the authors of the model (Ibid.), the topical prevalence model implies drawing topic proportions from a logistic normal generalized linear model (GLM) based on the covariates, which allows the expected document-topic to vary across several selected covariates rather than across general mean of the corpus. For instance, in the case of the current research, legislative speeches are considered as documents, while their characteristics (such as the name of the speaker, party affiliation, time of the speech, etc.) can be considered as metadata, or covariates if included in the STM model. Thus, STM additionally allows calculating which topics are prevalent for given corpus of documents (by showing topics proportions over the whole corpus), and then to estimate the effect of covariates on these proportions. As a result of such estimation, it can be inferred how covariates explain the presence and prevalence (and to what degree) of certain topics in the documents, and thus in the whole corpus. The latter can be done by running ordinary least squares (OLS) regression with the topic-proportions outcome as a dependent variable, and covariates as independent ones.

To conduct this analysis, STM (as well as other unsupervised topic models) requires two steps: text preprocessing and selection of the number of topics (K-value). As for the text preprocessing, one may refer to the best practices listed by several scholars in the field, such as Lucas with his colleagues (2015) and Banks and others (2018). Firstly, the corpus of textual documents should be collected with the relevant metadata without any missing values and duplicates. Second, the text should be transformed into the document-term matrix (DTM). DTM is a matrix, where each column devoted to the single word and each row to the single document, while the cells contain measures on how much time the word

is used within a respective document. o construct DTM, one might assume texts and documents as 'bag-of-words', where each text is a vector of separate and unique words associated with this text (Lucas et al., 2015, p. 257) with no particular order in mind. However, to get meaningful results and eliminate the possibility of extreme sparsity and bias from the extremely frequent words (too many zeroes in DTM represent sparse terms, while most frequent words affect distribution and interpretability, according to Zipf's law), several techniques should be applied and steps made:

- Removal of invalid and duplicate texts

- Tokenization of the texts (creating vectors of unordered words or 'tokens' for each document in the corpus)

- Stop word removal (the removal of words with a high occurrence in the language of documents. For example, it can be such words as 'the', 'is', 'and' in the English language)

- Normalization (transforming all letters in words into lower case, removing white spaces, punctuation, signs, etc.)

- Stemming or lemmatization (stemming is supposed to remove the endings of conjugated verb or plural nouns, leaving just the 'stem' (Lucas et al., 2015, p.257) and very useful for analysis of English corpora, while lemmatization identifies the base form of a word and group these words together, but instead of removing the end of words, it returns 'lemma', or common form of the word identified from the origin of the word (Ibid., p. 258)).

- Sparse and most frequent terms (the process of removal of the terms, which occur rarely in documents and produce sparsity, and those commonly used words, which does not provide importance for interpretations and negatively affect distribution)

After these tasks are done, the final version of the DTM can be constructed for the analysis.

The second step towards the STM analysis is an appropriate choice of the number of topics the research assumes to be present in the corpus of documents. There are two ways to choose the value of K – theoretical expectations and statistical tests of the models, but there is no exact procedure to evaluate this confidently and the 'right' number of topics to

choose for any corpora of documents (Grimmer and Stewart, 2013). If a theory does not provide any expectations regarding the number of topics, statistical methods of model selection can be applied in 'iterative fashion' to choose the appropriate value of K, while the number between 2 and 100 topics are most reliable and interpretable for contemporary studies (Banks et al., 2018).

As for model quality, there are five statistical estimations, which allow researchers to compare and choose the most reliable model depending on their goals. By considering these statistical techniques, it is important to keep in mind the trade-off between interpretability and predictability of the models since predictability tends to negatively correlate with interpretability (Chang et al., 2019). The first measurement is the document-completion held-out likelihood (or perplexity), which refers mostly to the predictability power of the model. This test estimates the probability of words appearing within a document when those words have been removed from the document in the estimation step (Roberts et al., 2017, p. 34; Wallach et al., 2009). The second measurement is a lower bound on the marginal likelihood, which refers to the rate of model convergence (Cheng et al., 2015) and embedded into the spectral initialization applied by STM by default (Roberts et al., 2016b). Spectral initialization also allows avoiding the multi-modality (Wesslen, 2018, p. 9). The third measurement is one of the most important and refers to residuals' checks (Taddy, 2012). Since the high residuals shows the overdispersion and make results less interpretable and, to some extent, biased, indicating the necessity for larger number of topics, this measurement can be used to select the appropriate number of K. The fourth and fifth measurement are often used together – semantic coherence and exclusivity – and responsible for the interpretability of the model. Semantic coherence is a measure, which calculates the frequency with of the high-probability words co-occur together in documents, and thus depicts the internal cohesion of extracted topics (Mimno et al., 2011). Exclusivity measure refers to the estimation of the probability of words to occur within documents. Exclusivity can be considered high if the topic consists mostly of words, which occur in this topic with a high probability but with a low probability in other topics. If both measures provide high results for one topic or most of the topics in the model, this topic and model can be considered semantically meaningful and useful (Roberts et al., 2014, p. 1071). In the

current research, residuals checks, semantic coherence, and exclusivity are considered as key measurements for evaluation and selection of models and the number of topics.

After the appropriate number of topics chosen and model specified and ran, STM provides the researcher with the topic structure of the whole corpus of the documents by showing the topics by their prevalence in the corpus and words associated with these topics. To make meaningful interpretations and apply further estimations, there is a need to label these topics in accordance with words associated with them. As a supplementary procedure and validation step, documents, which are associated with topics, can be read for better inference on topic labels. Firstly, the topics should be evaluated and labeled based most frequently used words in topic and on the FREX terms, or words, which both frequent and exclusive for given topics, and have their frequency-exclusivity score (Bischof and Airoldi, 2012). For more accurate labeling, the documents with the highest proportion of words associates with given topics can also be examined. Furthermore, to allocate various topics to groups and reveal the network these topics create, topic correlations, which shows to what degree topics are close to each other in terms of words and documents within, can be used to make inferences.

Thus, STM as a research method has been chosen for the following reasons: it allows (1) to reveal the topic structure of a large number of texts without time-consuming human coding, (2) to incorporate covariates within topic model to examine the effect of covariates (extracted from metadata, or documents characteristics) on the topical prevalence; (3) to control model specification and choice of the number of topics to produce better results.

STM has many advantages, and its application is primarily possible due to the existing 'stm' package for R (statistical programming language), which was developed by Roberts and his colleagues (2017) and used for this analysis.

Despite many advantages of this method, several limitations are worth mentioning. First, STM allows only to extract topics and reveal the influence of covariates, meaning that it does not provide the possibility to measure, for example, political positions of speakers or semantic peculiarities of their speeches. Second, the choice of the optimal number of topics is an ambiguous task and often based only on the analysis of word frequencies and exemplar documents, which is worse than usual human coding. Third, topic model

analysis is not a fully computational task, and still requires the labeling and interpretation conducted by the researcher, which, considering specifics and machine learning nature of STM, is not always a straightforward and easy task to complete. Fourth, the selection of the model is always a trade-off between predictability and interpretability. Scholars should always keep in mind their research goals and pick that fits them better. In turn, this creates a risk of biased results. Fifth, STM does not estimate models, which contain any missing values in the metadata. It presupposes the high quality of data that sometimes cannot be achieved. Sixth, the text preprocessing includes techniques, which can potentially affect the meaningfulness of texts. Seventh, STM is very demanding towards the computational system and can be time-consuming, depending on the size of corpora. STM shares this disadvantage with many other machine learning and NLP models. For scholars, it always means basic computational limitations and increases the time needed to conduct an analysis.

Thus, the flow of an analysis using STM can be distinguished into the following sequential steps: (1) text preprocessing to make data feasible for exploration and transformation into document-term matrix; (2) model specification, which includes the determination of possible covariates, number of topic, and other computational settings; (3) searching for and selecting an optimal K-value (number of topics) and running a model; (4) topic labeling; (5) estimation of the covariates effects and their interpretation. By following this plan, the analysis is conducted, and the results presented in chapter 3 of this thesis.

2.4. Operationalization and model specification

To proceed with data collection and analysis, it is important to operationalize variables and specify the model for estimation of the covariate effects. Legislative speeches can be considered as units of analysis, which have own characteristics. As it was mentioned above, the topical prevalence model has been chosen to reveal the topic structure of the corpus of legislative speeches made in the House of Commons and its dependency on metadata. Considering the formulated hypothesis, the following metadata included as 'prevalence covariates' in the model:

- Whether the speaker is a cabinet minister or not (cabinet membership status)

- Party affiliation of the speaker
- The degree of speaker's (MPs') doubt towards the Brexit deal
- Time, when speech took place

Moreover, the model employs spectral initialization, which is more appropriate for better convergence and recommended by the developers of the STM method (Roberts et al., 2016b), and 500 iterations are stated as maximum for model convergence to increase the computational reliability. Besides, machine learning techniques imply the random subsetting of data, which complicates the process of replication. The seed is set to a value of 2019 to provide the replicability to the results.

To make model calculations and further effect estimations possible, the operationalization of independent variables should be conducted. Cabinet membership status is coded as a numeric and dichotomy variable, where '0' refers to MPs without executive power, and '1 refers to government MPs. Party affiliation is coded as a factor variable, where each factor refers to the party name with which the speaker associated.

Regarding the MPs in doubt, the operationalization process should be outlined in more detail. For this research, MPs in doubt are operationalized considering the MPs' voting profile, constructed based on the combination of votes they cast on the government policy. This assumption is inspired by and based on the spatial model of roll-call voting, which represents the distance between an ideal point of the legislator and proposed policy (Carroll and Poole, 2014; Poole, 2005). In the context of this thesis, this variable is a factor variable, where combinations of 'Ayes' and 'Noes' can be considered as factors. For instance, there can be three consequent meaningful votes on the same policy in a given period. If one imagines that there are only three possible combinations of sequential votes, it can be represented, as follows:

- When legislator voted three times in favor of policy – 'Aye, Aye, Aye',
- When legislator voted three times against the policy proposal – 'No, No, No',
- When legislator voted two times against the policy during the first two votes and changed his mind during the last one – 'No, No, Aye'.

In the scenario presented in the example, the latter voter will be considered as 'MP in doubt' during the analysis, since his voting profile represents the inconsistency in

legislative voting behavior. Otherwise, if MPs vote consistently on policy, it may indicate their adherence to the party or policy position. Also, this factor variable contains the sequence of votes according to the order in which votes occurred. Regarding validity, it can be inferred that this measurement fully corresponds with the theoretical explanations and research goals, but for other research, it can be considered limited due to its factor (non-numeric) nature. Regarding reliability, this measure can be used to replicate the results of this thesis without any limitations or possible errors.

Time is also coded as a factor variable, which refers to the important periods when debates took place in the following form – 'Period_#'. It comes from the assumption that there are several events, which separate the whole timeframe into meaningful periods. However, time is also operationalized through the month number with which the speech is associated. Month numbers are taken in a range from 1 to 24, where '1' refers to January 2018, and '24' refers to December 2019. This measure is transformed into a spline with 10 degrees of freedom, as suggested by authors of the STM model (Roberts et al., 2016a) to control for a non-linear relationship between the effects of time and dependent variables.

When the STM model is run, one can extract and evaluate the effects of the covariates on the topic proportions to reveal the expected topic probabilities for each of the factors, and then make inferences. All factor variables are also dummy variables in the following model, and the first categories of these variables are reference ones to estimations of which others' effects are compared (Hardy, 1993). This model also uses the method of composition, which allows to incorporate estimation uncertainty in the dependent variable. As per STM default, 'Global' method is used, which implies an approximation to the average covariance matrix formed using the global parameters (Roberts et al., 2017). One hundred simulations are conducted to estimate the result, as per model default.

Thetha (θ) is a dependent variable, which represents the topic porportions of a speech exctracted from the STM model results, while others are independent variables. Thus, such a model must be run to estimate the effects of covariate:

$$\theta_{sk} = \alpha + \gamma_{1k} * C_{s(i)} + \gamma_{2k} * P_{s(i)} + \gamma_{3k} * V_{s(i)} + \gamma_{4k} * T_{s(i)} + \gamma_{1k} * M_{s(i)}$$

where θ – the topic proportions of speech s, by MP i as the dependent variable,

γ_{nk} - coefficients for estimated difference in topics proportions for legislators' roles and time effects,

k – number of topics,

C – cabinet membership status of MP i,

P – party affiliation of MP i,

V – voting profile of MP i,

T – period, when speech of MP i was delivered,

M – month, when speech of MP i was delivered (splined).

The month number cannot be a key independent variable for topic proportions instead of a 'period' variable to evaluate effects, because it can produce a bias related to the topic prevalence. For some topics the expected topic probability can acutely increase in continuous space due to the possible sharp decline of other topics' probability. For instance, politicians may resolve some issue and stop debating on it. It will lead to 0 probability of this topic in given period, increasing the probability of others and residuals at the same time.

2.5. Research data

In order to test the formulated hypotheses and address the research question, this thesis relies on the legislative speeches related to the Brexit and Theresa May's Withdrawal agreement for the period from July 2018 (Chequers agreement) to July 2019 (Theresa May's resignation). The official and original data on all legislative speeches and other procedures, which took place in the House of Commons for the given period, is stored in Hansard (2019). Hansard is an official website of the UK parliament dedicated to providing open access to the parliamentary data.

This study uses web scraping techniques of data extracting. These are the sets of methods of automatic extracting, sorting, and collection of data from websites (e.g. Munzert et al.,

2014). Hansard website structure is not a convenient source for such techniques to be applied, and, in this case, it was decided to collect the data on legislative speeches using the website of TheyWorkForYou project (2019), the participants of which copies the Hansard data and present it in a convenient and lossless formats for extraction and examining. This project offers data on the legislative speeches in a structured format using Extensible Markup Language (XML).

All legislative speeches were parsed and then filtered in order to extract only those debates, which are related to Brexit, because this study aims at examining only one multi-dimensional and salient issue. The several attributes were parsed to do so: text of legislative speeches, their unique numbers, major and minor headings (labels provided by the UK parliament), dates of speeches, and names of speakers. Major and minor headings associated with speeches were not informative enough, but most of them contained references to the Brexit. In this case, the data was sorted by filtering these headings using keywords. For example, such keywords were used as 'Brexit', 'Article 50', 'Withdrawal Agreement', 'Deal', 'European Union', 'Backstop' and similar to them. By using these filters, all relevant speeches were added to the core dataset. However, since the mentioned headings did not represent the agenda comprehensively, the rest of the speeches were analyzed manually by reading the most informative speeches from each of the groups. If these speeches contained references to Brexit deal and relevant arrangements, all speeches under respective headings were included in the dataset. This can be considered as a limitation of this study, since there are no better techniques to extract only Brexit-related debates due to the nature of data.

As the second step, the texts were checked for mistakes and irrelevant information. First, most common typos were eliminated together with duplicated speeches. Second, the speeches, which contained only actions of MPs (e.g. 'Hon. Member rose (from the bench)'), and collective speeches ('Several Hon. Members' as speaker names) were removed since most of them included only emotional outcries and physical actions. In addition, all speeches, which consist of the less than 65 characters and more than 17000 were removed as being uninformative and too large, respectively. Third, the speeches made by Mr. Speaker, John Bercow, were also taken off from the analysis. Even though the Speaker of the House of Commons plays a key role in shaping and managing the legislative agenda, this role is neutral, and there is no hypothesis to test concerning the

Speaker influence in this study. All procedural speeches of MPs remained in the final dataset due to their importance for the analysis.

Once the dataset with legislative speeches was ready, the data on the membership in the government were added. According to the official information of the UK government (Ministers, 2019), 70 MPs held the ministerial portfolio from July 2018 to July 2019 and made speeches regarding the Brexit. Those MPs, who resigned or left their office during this period in opposition to May's deal, were not considered as government MPs.

The data on the parliamentary voting and party affiliation were extracted from the official UK parliament databases containing information on the Members of the House of Commons (2019) and House of Commons Divisions (2019). Party labels were assigned to MPs by merging two datasets by names of MPs. The members of eight political parties and independent representatives are present in the analysis: Conservative Party, DUP, Green Party, Independent, Labour Party, Labour/Co-operative Party, Liberal Democrats, Plaid Cymru, Scottish National Party.

Concerning the parliamentary voting, it was decided to extract the roll-call data on all three meaningful votes on the Brexit Withdrawal Agreement. The first one took place on 15 January 2019, the second MV – on 12 March 2019, and the third MV – on 29 March 2019. These votes are chosen since they are primarily related to the legislative behavior and MPs' positions towards the government proposal, while others only handled amendments, minor topics, extensions of Brexit deadlines, and indicative votes. Indicative votes could be considered important for the current research, but since their amount is large and reasons are completely different, it would create uncertainty of measurements and estimations for the analysis. Therefore, all votes MPs cast were merged into a combined votes variable following votes sequence (from 1st to 2nd and from 2nd to 3rd MV) and operationalization task. These combined votes represent voting profiles of MPs. It resulted in four unique voting profiles for all MPs: (1) 'Aye, Aye, Aye' – those who voted for the government proposal three times, (2) 'No, Aye, Aye' – those who voted against the governmental proposal only during the first MV, (3) "No, No, Aye" – those who voted for Theresa May's deal only during the last MV, and (4) 'No, No, No" those who voted against it on all MVs. Those who abstained from at least one vote or did

not vote at all were removed from the analysis due to the requirements of STM model, which does not operate with missing values.

Furthermore, two columns were specified regarding time effects. The first one refers to month numbers, where the first month is coded as '1' and refers to January 2018, while the last month is coded as '24' and refers to December 2019. Considering the timeframe chosen for this analysis, the month numbers in the final dataset vary from 7 (July 2018) to 19 (July 2019). The second column represents the period. The focal points for each period start and end were taken according to the hypotheses, and in association with MVs. By being coded as a factor variable, four periods were selected. The period #1 is assigned to speeches made from 2 July 2018 (the date of the first speech in the dataset) to 16 January 2019 (the next day after the first MV and a day of the no-confidence vote). The period #2 is assigned to speeches given from 17 January 2019 to 12 March 2019 (the second MV took place). Period #3 is a timeframe between the second and third MV (from 13 to 29 March 2019). The period #4 refers to the rest of the debates and include dates from 30 March 2019 to 24 July 2019 (the date of Theresa May's resignation).

To sum up, the resulting dataset contains 25559 speeches given for one year and metadata on cabinet membership status, party affiliation, and voting profiles of MPs, along with time-related characteristics. Descriptive statistics for the dataset are provided in Appendix 1. The most interesting findings are that government MPs are characterized with smaller speeches on average than MPs without portfolio. It could mean that government MPs used less words to express their ideas, and it could potentially lead to the underestimation of government proposal. However, this assumption is to be checked in other studies. In addition, MPs from Conservative Party delivered almost a half of the speeches in the data, but, simultaneously, their speeches are shorter than speeches of MPs from other parties. As for voting profile, it seems that MPs who have an established position on the Brexit deal tended to speak the most: those who voted for May's deal were 12315 times on the parliamentary floor, while those who voted against – 11230 times. However, similar to the findings above, those who favored the Brexit deal the less, spoke more in terms of the size of speeches.

3. Analysis and Results

In this chapter, the analysis and its results are presented. According to the research method specifics, the textual data prepared for the analysis at first, and then the optimal number of topics chosen, and model selected. Afterward, the topic structure of the parliamentary debates on the Brexit deal is revealed. On this step, topic labeling conducted, and the most prevalent topics are detected. Then the analysis of estimations of the effects of MPs roles and time effects on the legislative speechmaking conducted and the results are discussed and interpreted sequentially: (1) the hypotheses on the ministerial role of MPs tested and discussed; (2) then the effects of part affiliation calculated and interpreted; (3) the influence of MPs' doubts on topic proportions evaluated and interpreted; (4) time determinants of the speeches considered and analyzed.

3.1. Text preprocessing and model selection

The first step towards the analysis of the results is data preparation. In order to get the appropriate data format for the analysis based on STM, it is important to conduct a text preprocessing. By following the steps proposed by scholars (Banks et al., 2018; Lucas et al., 2015) and listed in section 2.3, the data have been transformed into DTM format.

The texts of legislative speeches were tokenized and transformed into the 'bag-of-words'. It was possible by the initial removal of irrelevant elements such as numbers, punctuation, symbols, separators, and hyphenated words. The rest of the elements left as one-level n-grams, meaning that one token of the DTM refers to one word. For example, if two-level n-grams were taken, the phrase 'Brexit deal' would go together in the matrix as 'brexit_deal' token. In the case of this research, this phrase consists of two tokens – 'Brexit' and 'deal'. Furthermore, the normalization was applied together with the removal of stop words. The stemming was carried out during the process of stop word removal. Even though the lemmatization can be considered as a more accurate method, stemming was chosen over it. The reasons for it are that this choice does not affect the overall performance of the analysis, and, considering the amount of data, lemmatization would require more computational power, estimation time, and relevant dictionaries (Grimmer and Stewart, 2013). On this stage of text preprocessing, data stored in a document-feature

matrix, which is one of the classes within the 'quanteda' package in R developed for the text mining (Benoit et al., 2018). By using this matrix, it is available to locate both the most and less frequent tokens in texts, and then remove them to avoid Zipf's law effects and sparsity, respectively. Considering the size of the corpus (25559 documents), the words appearing in less than ten documents and more than 5000 documents were removed. Besides, words consisted of less than 2 characters, were filtered out as well. Some words were additionally selected for deletion from the dataset to avoid the low interpretability of the topic models. There were also words referred to days of the weeks, MPs' titles, introductory words, and uninformative (and modal) verbs. In total, there were 158 words felt under the filtering. As a result, the words have a distribution depicted in Figure 1. The most frequent terms appear in more than 4000 documents, while the least frequent in around 15 documents. Even though the sparsity can still be large, the low-frequency words were not removed since some of them can be quite informative for the analysis of the Brexit deal usually associated with very specific vocabulary. The final vocabulary size is equal to 5740 unique stems.

*Figure 1. Hansard Debates (Legislative Speeches): Word Frequency vs. Rank*
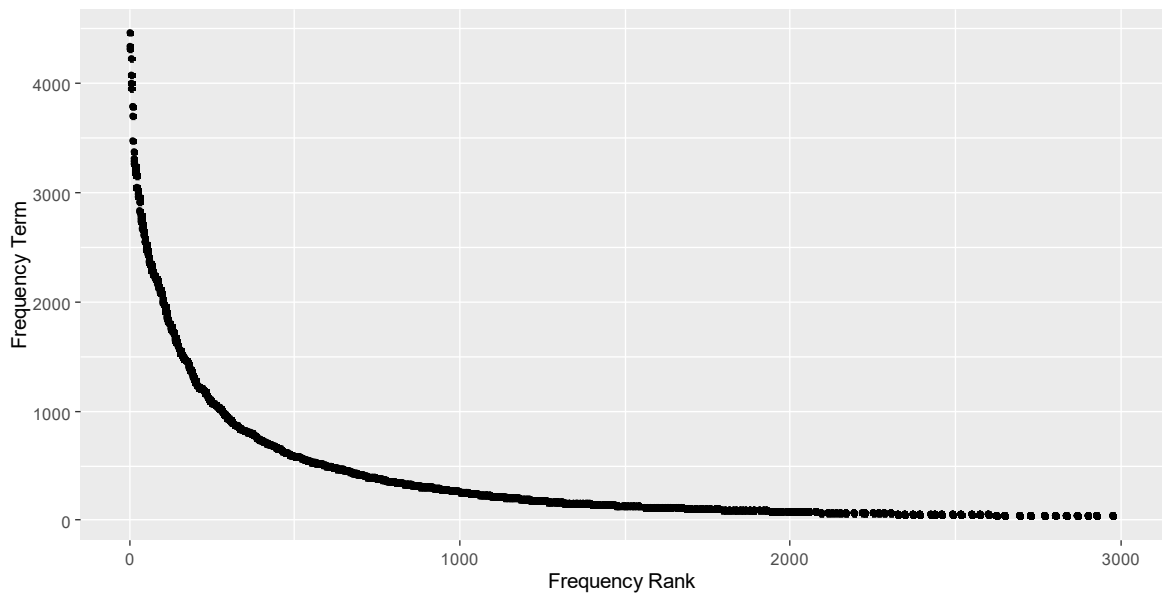
The final steps of text preprocessing were to transform the data into the DTM matrix intended for carrying out topic modeling using STM and add the relevant metadata.

The second stage of the analysis refers to the choice of the optimal number of topics and the following model selection. Beforehand one should consider the nature of data and

possible limitations to choose the value of K appropriately. Even though the issue of the Brexit withdrawal agreement is and salient, the sub-components of this issue are limited due to the chosen timeframe and logically to the existing and known aspects of this issue. As it can be derived from theory and context, the approximate number of topics might lay in the range from 20 to 30. This assumption is also reinforced by the existing trade-off between the quality and interpretability. It is embedded in the topical modeling theory that the larger values of K should produce better quality measurements, but it also implies the redundancy, which affects the interpretability (Banks et al., 2018, p. 455).

By considering these assumptions, several models were built and compared by measurements mentioned in section 2.3. Tools provided by 'stm' package (Roberts et al., 2018) allow to search for the appropriate number of K by running several models for each expected number of K and by applying spectral initialization, which helps the algorithm to select the better one automatically per convergence (Ibid., p. 14). For this analysis, the model was specified (five topic prevalence covariates added, and specification set as discussed in section 2.4) and run for numbers of topics from 20 to 30. The results of the run are illustrated in Figure 2.

Figure 2. Model Quality Measurements
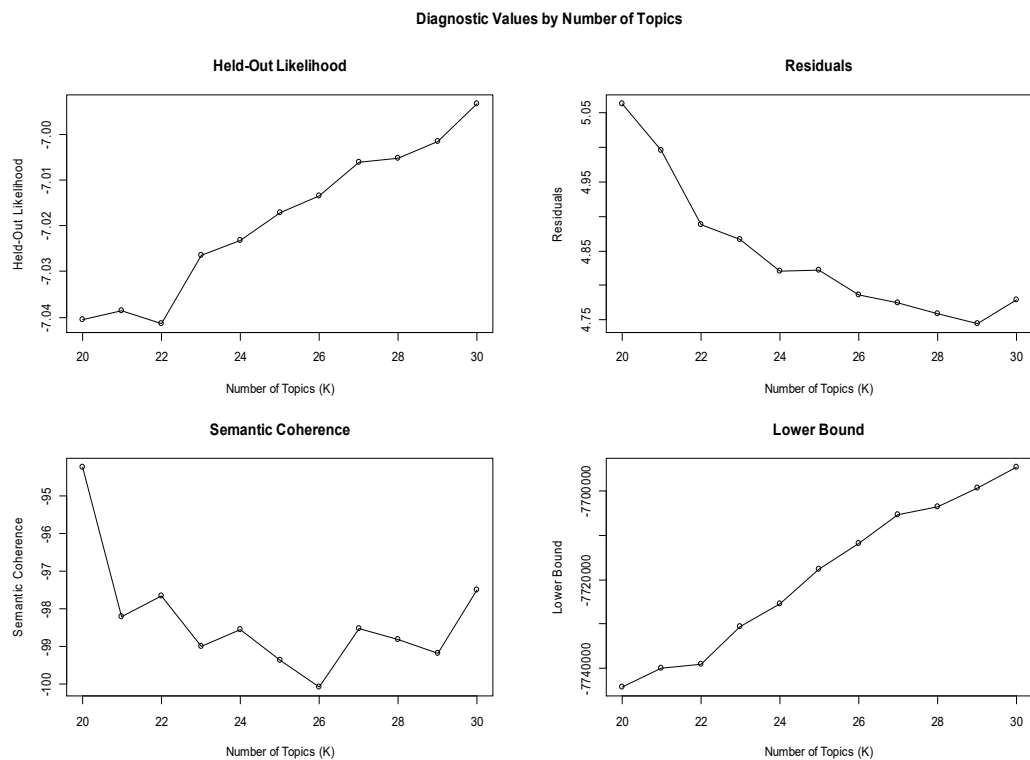
The models with 27 and 29 values of K can be better fits for given corpus of documents for several reasons. Firstly, this analysis primarily aims at estimations of covariate effects, which can be affected by high residuals. As depicted in Figure 2, the least residuals are associated with the 29 K-values. Secondly, the higher semantic coherence might result in better interpretability of the topic models. In this case, the model with 27 topics shows better performance, while the model with 29 topics has one point less in semantic coherence, which is not crucial. As for other measurements, the model with 29 K-values shows better performance in predictability and convergence. Other models show the worse performance overall, so they are not considered for further analysis. In order to evaluate the quality of both chosen models, STM models were run again, and two measures were compared – semantic coherence and exclusivity. The results for the two models are depicted in Figures 3.1 and 3.2.

Figure 3.1. Model with 27 topics
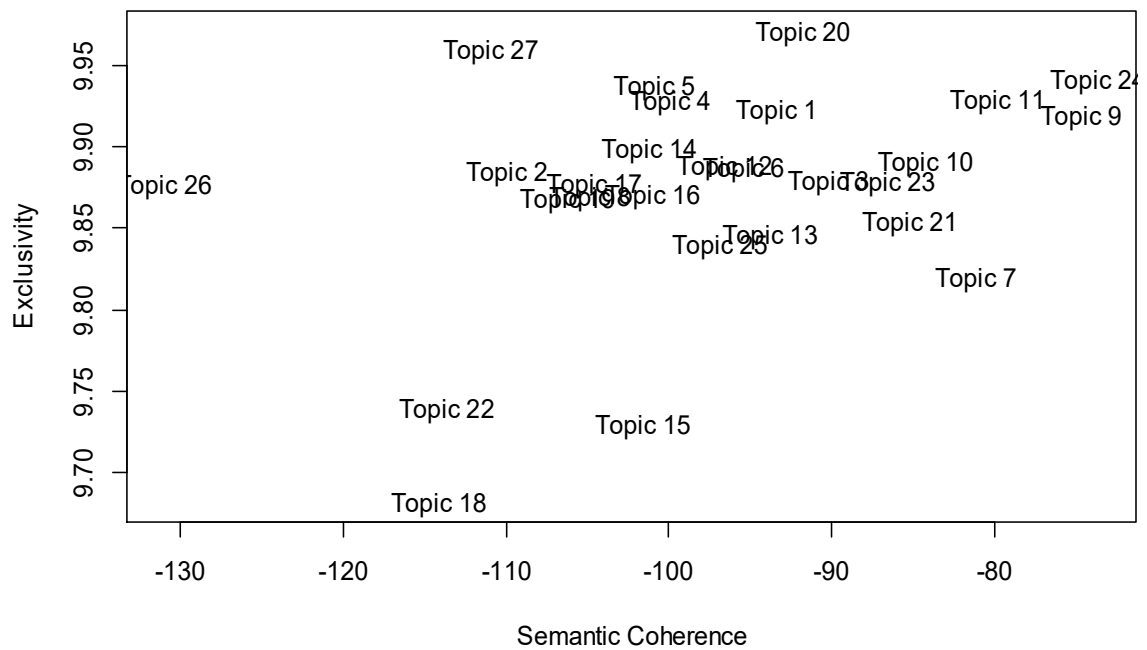
The mean semantic coherence for the model with 27 topics is equal to -97.14382, while the mean of the exclusivity measure is equal to 9.874073. It can be considered a very good result. However, it is similar to the results of the model with 29 topics (Figure 3.2.) For the model with 29 topics, the mean semantic coherence is equal to -98.37618, which slightly worse than the estimation for another model. In turn, the mean of the exclusivity is equal to 9.887448, which is a better result than the model with 27 topics obtained.

Figure 3.2. Model with 29 topics
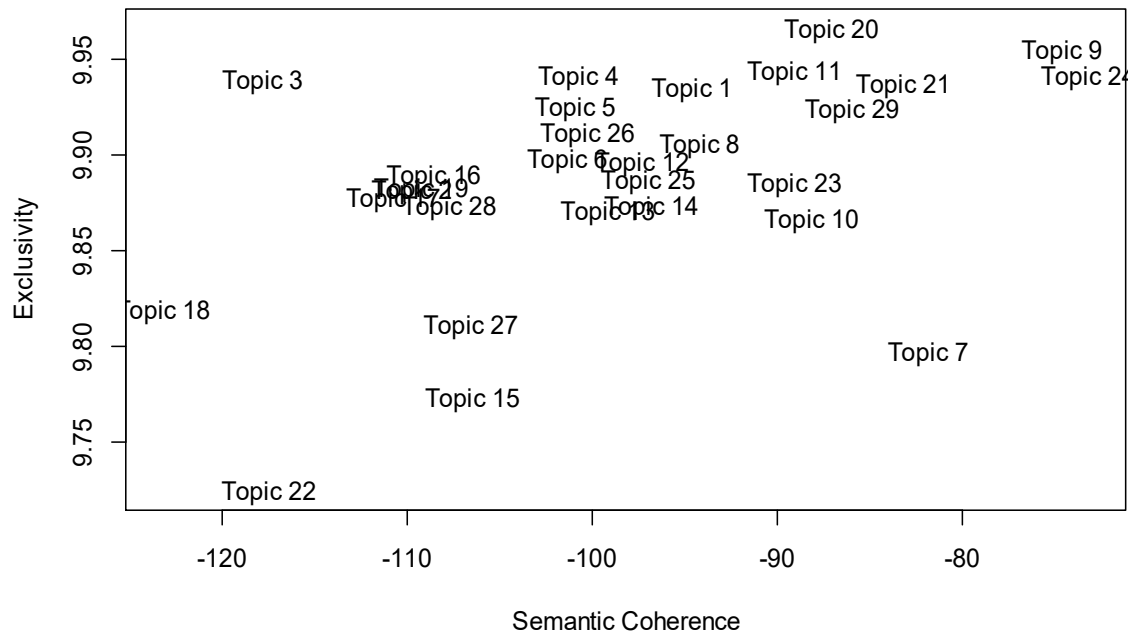
In this case, one should remind the other measurements, where the model with 27 topics loses due to the higher residuals. Thus, 29 can be considered as an optimal number of topics for this research. In the following section, the final model is run, and the topic structure of the legislative speeches on the Brexit deal is discussed.

3.2. Topic structure of debates on the Brexit Withdrawal Agreement

The model with the value of K equals to 29 was run. The final model provided words, which have the highest probability to be located within each of the topics, and so-called FREX - an aggregated measure of frequency and exclusivity of each word for each of the topics. As it was outlined in section 2.3, FREX terms can serve better for topic labeling, so they were considered in this analysis as keys to the appropriate topic labels. The results of topic labeling and all the topics produced by the model are listed in Appendix 2 (Table 2). All topics exctracted from the model can be considered as the representation of parliamentary agenda on Brexit, where each topic refers to one of the sub-components of this multi-dimensional issue.

In some cases, labeling was not a straightforward task, and the documents related to topics were examined in-depth to provide more insights and meaning. For instance, the topic labeled as *'Government Criticism/Disputes'* associated with seemingly quite meaningless

words, which mostly refer to specific parliamentary vocabulary consisted of party brands, MPs' roles, and other dichotomies. However, the exemplar documents show that this topic is associated mostly with speeches, where MPs criticize the Prime Minister, the government, and their inability to unite the parliament and manage backbenchers. For example, the following speech can be illustrative:

"The Prime Minister has lost a quarter of her Cabinet and 117 of her Back Benchers want her gone. She has experienced the biggest defeat in parliamentary history. What shred of credibility have her Government got left? For goodness' sake Prime Minister, won't you just go?" - Pete Wishart, 16 January 2019 (Hansard, 2019)

The topic labeled as *'Failed Negotiations – No-Deal/Norway Scenario'* also suffers from this issue. The analysis of documents showed that this topic consists of speeches, where MPs blamed the government in failed negotiations and tried to explain the advantages and distances of other possible options. There is also an ambiguity in topic labeled as 'Democracy and Borders': while some MPs referred to the British and EU citizens living in the UK and their possible issue with a variety of queues (for those with the EU and without the EU passports) on border control after Brexit, other MPs also consider it discriminative. In this case, this topic primarily relates to the elimination of discrimination in any form within and outside of the UK.

Furthermore, all topics were distinguished into three groups to complement the research hypotheses testing goals, which require to determine whether the topic is controversial, procedural or niche one. In order to group all the topics, the contextual factors, relevant legislative speeches, and topic correlations were taken into account. As a result, there are nine topics labeled as controversial, six topics represent procedures, and fourteen topics are niche ones.

Controversial topics are highly related to the number and content of those disputable topics, which bothered MPs in case of the Brexit withdrawal agreement: *'Irish Backstop'*, various alternatives to Theresa May's deal (respective topic is *'Failed Negotiations–No-Deal/Norway Scenario'*), the status of the EU citizens after Brexit and saliency of this to labor policy (*'Labour Policy: EU-Citizens'*), the extensions of Brexit deadlines (*'Extension of Brexit'*), the custom unions and food standards (*'Food and Agricultural Policy'*), possible economic shocks of Brexit under Theresa May's scenario (*'Economics*

Criticism'), an inability of government to pass this deal through parliament (*'Government Criticism/Disputes'*), discussions and promotions of the second referendum on Brexit (*'Second Referendum'*), and issues related to Scotland (*'Scotland'*).

Procedural topics also represent the set of lexical and topical groups related to the specific of the parliamentary process. MPs tend to use very specific parliamentary instruments, which require knowledge of specific vocabulary and can indicate the nature of each procedure in the House of Commons. There is a topic related to the business of the house, and sub-components of it (*'Business of the House'*). Moreover, MPs make a substantial amount of interventions, which can show the intensity and saliency of debates (*'Interventions'*). Second legislation proposals related to the Brexit deal or *'Statutory Instruments'* are also conceptualized as procedural proposals since discussions on them primarily based on very specific procedures and strict legal vocabulary. One of the most important procedural topics – '*Cabinet Answers to Questions'* – refers to the paramount role of the parliament in democracies to control the government. In turn, government MPs have own patterns of responses to parliamentary questions and rely on 'convincing' vocabulary. Besides, *'Legal Advice'* is also a very important instrument possessed by MPs. It allows them to ask the Attorney General for his legal opinion on laws and policies. The very interesting procedural topic is 'Thanks for Debates', which represent speeches when MPs thank each other for the debates in a certain manner.

Other topics are considered niche ones, and primarily related to the less salient sub-components of the Brexit deal issue. However, the topic *'Future Relationships-UK-EU'* is associated with legislative speeches and words, which intends to present advantages of the government deal and refer to the explanation of the Political Declaration of the withdrawal agreement. By speaking on this topic, MPs determine the most crucial point of the future relationships between the UK and EU and discuss the positive implications of further joint and cooperative actions.

One might also examine the correlations between topics to make inferences on the relationships among them and validate the grouping procedure. The results of the estimated topic correlations presented graphically in the form of a network of topics in Appendix 3. According to the network structure, the niche topics are located very close to each other on the left side of the network. They are also related to the cabinet responses

to questions. It can be logically explained by the fact that most niche topics were raised in the form of questions, and these questions themselves represent topics. One more interesting finding is that the topic *'Regional Politics'* correlates positively with most of the niche topics. It can also be explained by the multidimensionality of the Brexit deal discussions and its comprehensive influence on constituencies observable even in less salient aspects.

In the middle of the network, the most controversial topics are located, and they connect niche and procedural topics. It means that controversial topics are central for the parliamentary debates on the Brexit deal, and they constructed the whole process of legislative speechmaking on this issue. Besides, the assumptions regarding the *'Future Relationships-UK-EU'* have been confirmed: this topic is central for debates and even being favorable for the government, it also helped to shape the agenda. The one controversial topic, which is located between niche topics, is *'Labour Policy: EU-Citizens status'*. It can be explained by the specifics of these topics and its relation to other niche topics such as *'Education'* and *'Healthcare'*. In this study, contextual relevance is more important for the analysis, so such a peculiarity was not considered substantial.

All procedural topics (except *'Cabinet Answers to Questions'* due to the reasons mentioned above) are located on the right side of the topic correlation network. These topics also correlate with those controversial, which also can include discussions on procedures, legal adjustments, and rules. For instance, extensions of Brexit deadlines, the second referendum, and No-Deal should be subjects of debates on their procedural grounds, amendments, and indicative votes related to these proposals and the following decisions.

Also, STM allows us to identify and estimate the topic prevalence, or its expected proportion based on the effects of covariates. This estimation shows the saliency of each topic (or the sub-components of the issue) for the parliamentary debates through the amount of time each topic was discussed in comparison with time allocated to discussions of other topics. A sum of all expected topic proportion is equal to 1. The results of this estimation are illustrated in Figure 4. Topic proportions were also used to construct the correlation network (Appendix 3) in order to make it reflect the prevalence of each topic in the corpus of parliamentary debates by the size of nodes.

According to the results, one might infer that grouping procedure and correlation estimations are done properly, since the most prevalent topics are relatively controversial, and niche topics have lower values of expected topic proportions.

Figure 4. Topic structure and expected topic proportions

Topics of the Legislative Speeches on Theresa May's Deal

Expected Topic Proportions
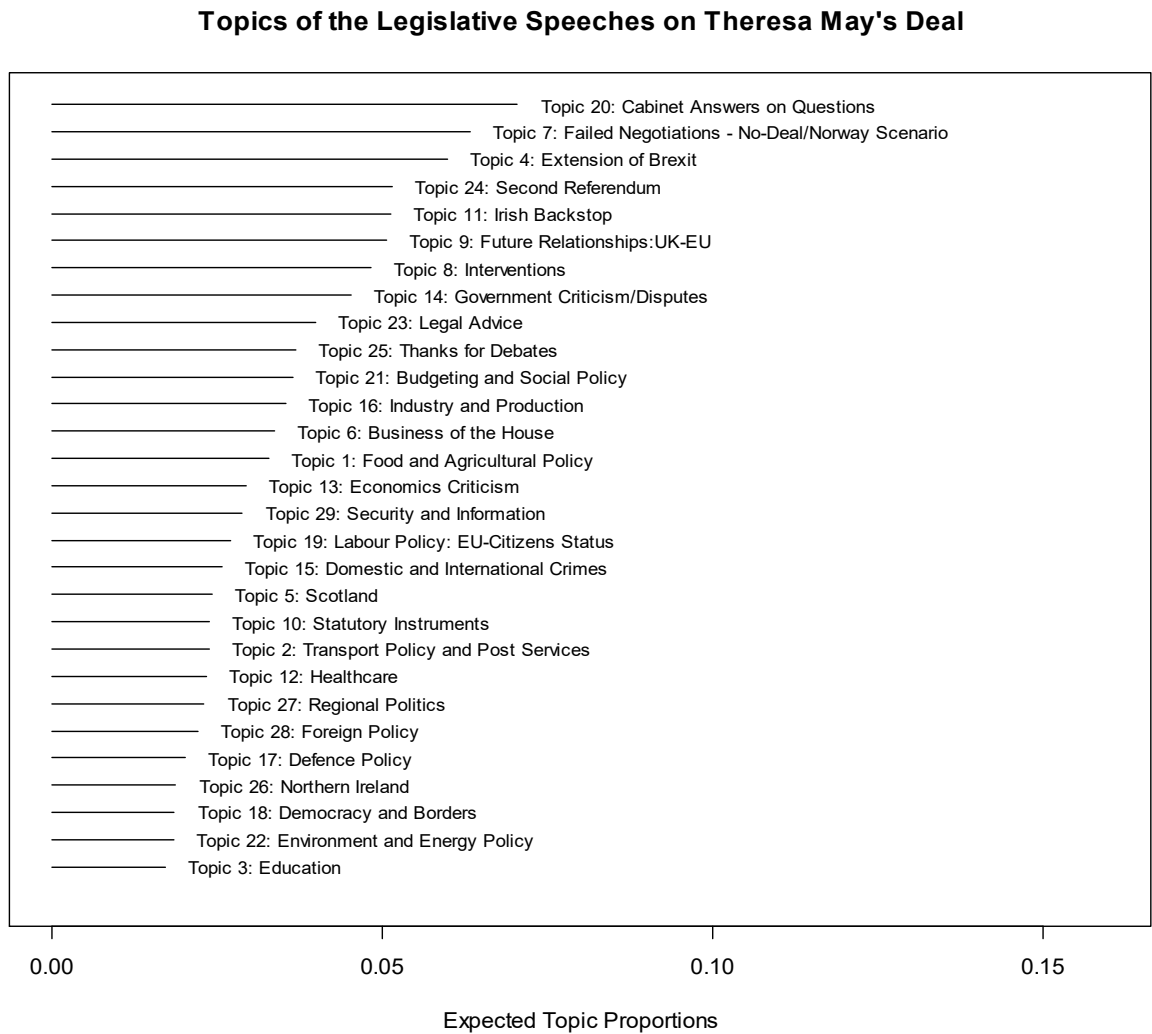
In turn, several meaningful interpretations should be made. First, the most prevalent topic is *'Cabinet Answers to Question'*. It means that the UK parliament serves its purpose of controlling the government, and most of time in the debates is devoted to the government accountability responsibilities in front of MPs. Secondly, the discussion of other alternative options to Theresa May's deal and failed negotiation with the EU is the second one among the most prevalent topics. It means that rather than discussing the government proposal itself, MPs put more efforts in offering alternatives and criticizing government. It can be also confirmed by the topics, who ranked third and fourth by their proportion -

'Extension of Brexit' and 'Second Referendum'. Theresa May's solution was not only the subject of rejection and the reason for delays in delivering the Brexit, but also a sign to citizens that Brexit is a very complex issue, and it cannot be done without huge loses for all affected. In this case, the second referendum on Brexit, which could result in its cancellation, can also be an alternative option to any withdrawal agreement. Furthermore, even though the issue of the Irish Backstop is considered to have key importance, it is only fifth in prevalence. 'Interventions' are seventh in prevalence order, which means that the parliamentary debates on the Brexit deal were quite intricate, and MPs interrupted each other very often. As a result, the first eight topics can be considered as 'salient' sub-components of the Brexit deal issue since they have the largest expected proportions and strongly differentiate from others.

In turn, some controversial issues were not discussed so often as it could be predicted from the context. The problems of Scotland are ranked nineteenth, and topics related to customs unions (*'Food and Agricultural Policy'* and *'Economics Criticism'*) and EU-citizens status have the medium expected topic proportions indices as well. At the same time, such niche issues as education and environment received the least attention from the MPs, even though these issues were widely discussed in media.

To sum up, one might remind the theoretical expectations regarding the Westminster system and agenda control (e.g. Bowler, 2010; Russell and Cowley, 2016). These expectations are that the government in the Westminster system should fully control the legislative agenda, while the parliament has a low influence on shaping it. In the case of the Brexit deal, the government allowed MPs to devote most of the speeches on the parliamentary floor to the critique of its proposal that can be seen from the proportions of controversial topics. Even though the exact and final interpretations of this peculiarity cannot be made only based on the topic proportions, it is an important finding in terms of the current study. To some extent, it correlates with an idea presented by Russel and his colleagues (2015) that the role of the Westminster parliament is overlooked because it is not always visible from published data. By revealing the hidden structure of the parliamentary agenda, this role can be examined further in more depth.

Since the topic structure of the legislative debates on the Brexit deal is outlined in this section, the effects of covariates on the topic proportions can be estimated further to test

the hypotheses. The model is run based on the specifications determined in section 2.4. All results and interpretations presented in the following section rely on outputs of regression models tabled in detail in Appendix 4. Additionally, for visualization, several topic labels were shortened to: *'Transport Policy'* for topic 2, *'Failed Negotiations (Alternatives)'* for topic 7, '*Government Criticism'* for topic 14, *'EU-citizens status'* for topic 19.

3.3.   Cabinet membership and legislative speeches

In order to address the hypotheses related to the cabinet membership of MPs, the estimated effects of this characteristic on the topic prevalence can be used for inferences. Generally, if government MPs speak significantly more on the issue than other MPs, it will be indicated by coefficients and their p-value. Numeric results of the regression run presented in Appendix 4 can also be plotted for convenience to capture the differences between covariates (see Figure 5).

According to the results, the role of MP as a member of the cabinet makes a difference for legislative speechmaking. Such an inference can be made since the proportions of most of the topics can be explained by the role of MPs, which can be whether non-cabinet or cabinet. Only eight topics were discussed in an equal manner, and their proportions do not depend on the cabinet membership of MPs. For other topics, one can choose randomly one of them and say whether non-cabinet or cabinet MP will speak more on this topic by looking at estimation results. For instance, if one takes 'Legal Advice', this topic will be more likely contained in speeches delivered by non-cabinet MP than government MP on the parliamentary floor.

Regarding the hypotheses derived from the policy-seeking motivations of MPs, they were only partially confirmed. Firstly, government MPs do tend to control very prevalent topics and thus speak on salient issues sufficiently. However, if one looks at the results, *'Cabinet Answers to Question'* is the topic mostly associated with government MPs as well as *'Statutory Instruments'*. These are procedural topics and they do not represent the issue per se but procedures of parliamentary debates. As for topics, which associated with the higher saliency and more meaningfulness, government MPs are more likely to speak about future relationships between the UK and EU and on the Brexit deadlines extensions

than non-cabinet MPs. The latter topic can also be under the government MPs control due to their important role in negotiations on the extension. Therefore, government MPs control only two salient topics. In turn, non-cabinet MPs tend more likely to speak on controversial and prevalent topics related to the discussions of the alternatives to Theresa May's deal and the critique of the government. At the same time, non-cabinet MPs are more likely to interrupt other MPs. In total, two salient topics and one important procedural topic are 'controlled' by government MPs, and the same is true for non-cabinet MPs.

Figure 5. Cabinet Membership and Topic Prevalence

Effect of Cabinet Membership on Topic Prevelance
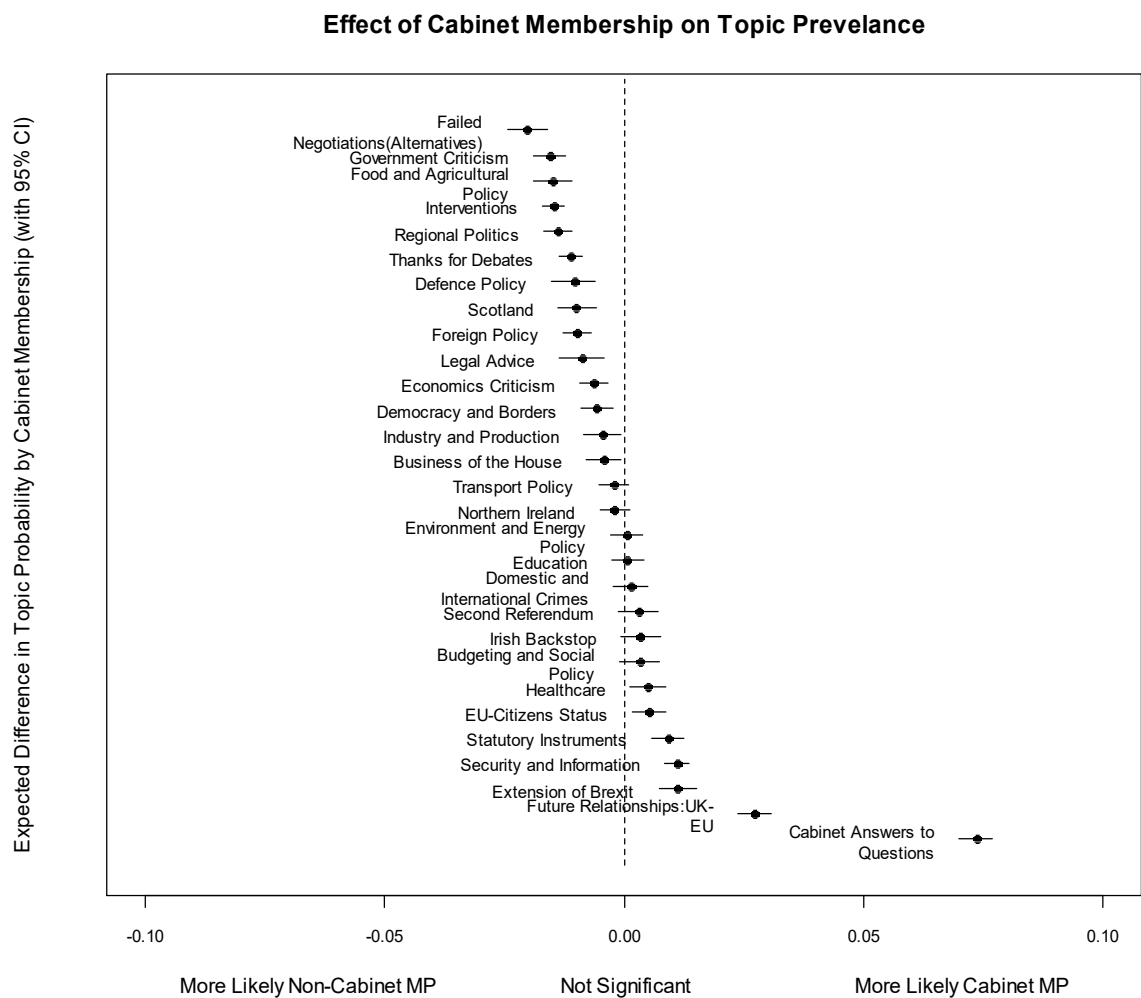
In this case, one might assume that the government failed to control the most salient topics because MPs in both roles tend to speak more on the same number of 'salient' topics. More specifically, it means that the first hypotheses of this study were not confirmed fully: government MPs are not likely to speak more on salient issues in the context of the

Brexit deal debates. However, it does not necessarily mean that the government failed in controlling the legislative agenda: other salient topics such as the Irish backstop and the second referendum are not significantly influenced by the cabinet membership role, which could be a result of government's actions, party discipline or negotiations. However, this assumption cannot be checked in this study.

Secondly, government MPs are not more likely to speak on procedural topics than MPs without a position in government. By making this inference, the second hypothesis related to policy-making motivations was disproved. Besides the fact that non-cabinet MPs are more likely to refer to more procedures in their speeches (four procedural topics are significantly associated with non-cabinet MPs), they tend to control the business of the house and, as expected from theory, influence the agenda-setting substantially. Thus, by considering only partial confirmation of the first hypothesis and rejection of the second, one should infer that Theresa May's government was not able to control the legislative speechmaking in the House of Commons to the degree expected for the Westminster system. Likely, the UK government did not pay enough attention to the shape of the legislative agenda, or they simply were incapable to control it due to the extensive critique and uncertainty. As a result, they were not able to convince the parliament to vote in favor of their withdrawal agreement. However, this assumption can be fully tested in future studies.

As for the hypothesis regarding office-seeking, it can be confirmed but with several limitations. Since it is more likely that speeches, which contain favorable topics for government such as the future relationships of the UK and EU, healthcare, security and information, and statutory instruments (secondary legislation can be considered very important for the Brexit deal), are made by government MPs than by non-cabinet MPs, one might infer that government MPs do not criticize themselves and do not want to lose their office. However, estimations also show that government MPs tend to speak more about Brexit extension and EU-citizens status in the UK, which are controversial topics in the context of this research. This can be explained by the nature of these topics. Regarding the extensions, the government is responsible for negotiations about the deadlines and ensuring that No-Deal will not happen. Therefore, the government has incentives not to allow the no-agreement scenario, because otherwise, there is a high risk of resignation. As for EU-citizen status, the proportion of this topic in the parliamentary

speeches on the Brexit deal is not large enough to consider this topic as a salient sub-component of the issue. It seems that MPs paid less attention to this topic than media or scholars. Thus, government MPs were able to take this topic under control to make it work in their favor. In turn, non-cabinet MPs do tend to speak more on topics unfavorable for government proposals. They are more likely to be associated with speeches regarding alternatives to Brexit and no-deal ruling out, criticism of the government, and economics pitfalls of Theresa May's deal. Thus, both sides speak on the parliamentary floor with 'mega-seats' in mind: while government MPs would like to keep their offices safe and not to speak against themselves, non-cabinet MPs question the government's actions as per the ordinary procedure.

These results correlate significantly with the vote-seeking behavior of MPs shaped by their cabinet membership status. If government MPs should defend their policy in order to show their performance and effort, non-government MPs tend to criticize the government to meet expectations of their voters. This assumption is proved in line with the theoretical expectations and formulated hypothesis. On the one hand, government MPs do fulfill their role of accountable servants by answering to representatives' questions a lot. In this regard, Figure 5 is a demonstrative proof of this assumption. On the other hand, non-cabinet MPs play their role of government controllers and representatives of voters by questioning the government on the controversial topics and interrupting others to get clearer points (*'Interventions'*).

To sum up, two hypotheses out of four regarding the role of cabinet membership status were completely confirmed. Generally, the fact of whether MP is a cabinet member or not affected significantly the content of legislative debates on the Brexit withdrawal agreement. It provided several implications. Theresa May's government was most probably not able to shape the legislative agenda in a way expected by the theory of Westminster systems. Government MPs did not control the prevalent amount of the salient sub-components of the Brexit deal discussion and were incapable to make non-cabinet MPs speak significantly less about controversial topics. This assumption was also confirmed by the fact that non-cabinet MPs participated more in the procedural talks and controlled the business of the house. Under these circumstances, government MPs could not achieve their policy goals. However, they were driven enough by office-seeking motivations not to speak on topics unfavorable for themselves. The same is true for vote-

seeking and non-cabinet MPs: they spoke more on controversial topics and ask questions about niche ones to address the issues of their constituencies and, eventually, to get more votes.

These findings contribute not only to the literature on legislative speechmaking, but also to the research on agenda-setting and agenda control power of the government in Westminster system, and could be a starting point for studying the Brexit arrangements from the point of parliamentary disputes. Moreover, the assumptions on the possible reasons for losing control over the policy process and on the causes of the focused attention in speeches on topics, which could help with keeping seats and gaining votes instead of policy goals, can be tested in future studies in more depth.

3.4. Party affiliation and legislative speeches

The hypotheses testing on the role of party affiliation for the parliamentary debates on the Brexit withdrawal agreement is carried out in the same manner and by keeping the similar triangle of motivations in mind. Parties are also policy-, office-, and vote-seeking actors on the political arenas. Legislative debates provide their members with an opportunity to speak in ways consistent with their goals. In this case, MPs will take roles of party members that might both put constraints on what they talk about on the parliamentary floor and create incentives to speak more on certain topics.

Considering the hypothesis related to policy-seeking motivations, it is important to note that the content of legislative speeches here depends on 'position-taking', which refers to the necessity for parties to differentiate themselves from other coalition partners in their opinions towards certain policies, not only from opposition parties. As a result, parties from the same coalition tends to speak equally a lot on those policy aspects, which divide them, to achieve consensus and differentiate themselves from each other. In order to confirm or disprove it, one might refer to the differences between the probability of topics raised by the Conservative Party and DUP. Then it is important to have a look at the significance of the topic, which divided both parties during the debates on the Brexit deal – Irish backstop. As it can be inferred from the estimation results in Appendix 4 and their illustration in Figure 6, there is no difference in probability for this topic to be raised by Conservative or DUP MPs. As for the significance of the 'Northern Ireland' topic for

DUP MPs, it cannot be considered as a divisive issue, because this topic refers to the local issues of Northern Ireland. However, it can be proof of vote-seeking motivations on the parliamentary floor since DUP owns this topic due to regional affiliation. In turn, to provide the complete proof for hypothesis on policy-seeking, one should also examine the effects on topic proportions produced by MPs, whose parties belong to different parliamentary coalitions. The most illustrative example is the difference between topics, which are raised by Conservative and Labour parties.

Figure 6. Conservative Party and DUP
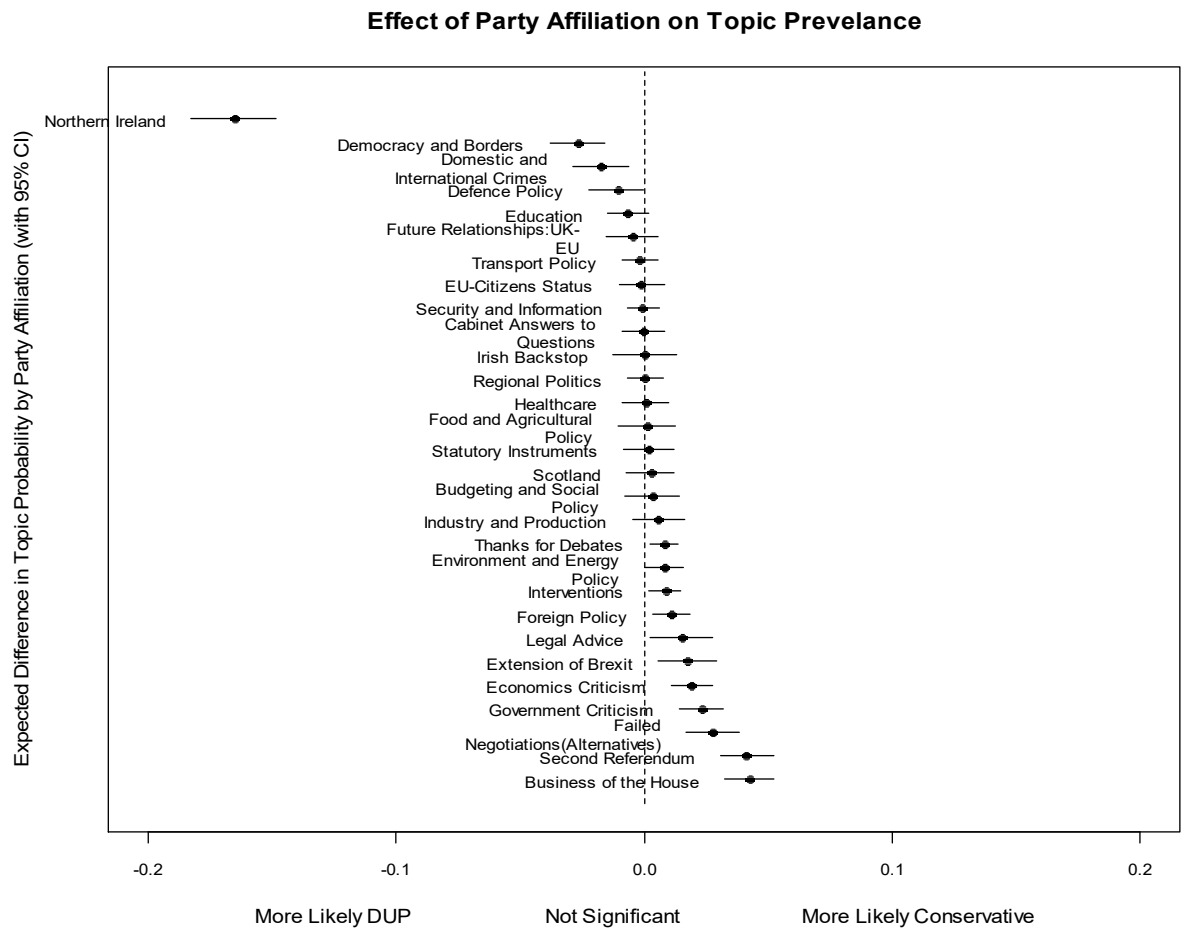
By looking at Figure 7, one might confirm that MPs, whose parties are from different coalitions, tend to speak completely different on topics, which divide them. As can be seen from the illustration, such divisive issues as the second referendum and alternatives to Brexit are owned by Conservative MPs and Labour MPs, respectively. The interesting finding is that Conservative MPs are more likely to speak about the second referendum, which was initially proposed and supported by Labour Party, while Labour MPs are more

likely to talk about alternatives such as No-Deal, which were advocated traditionally by some Conservatives. It could be caused by reversed attention: parties may critique each other's proposals and use it as an instrument in disputes, which produces more talks about opponents' weaknesses.

Figure 7. Conservative Party and Labour Party

Effect of Party Affiliation on Topic Prevelance
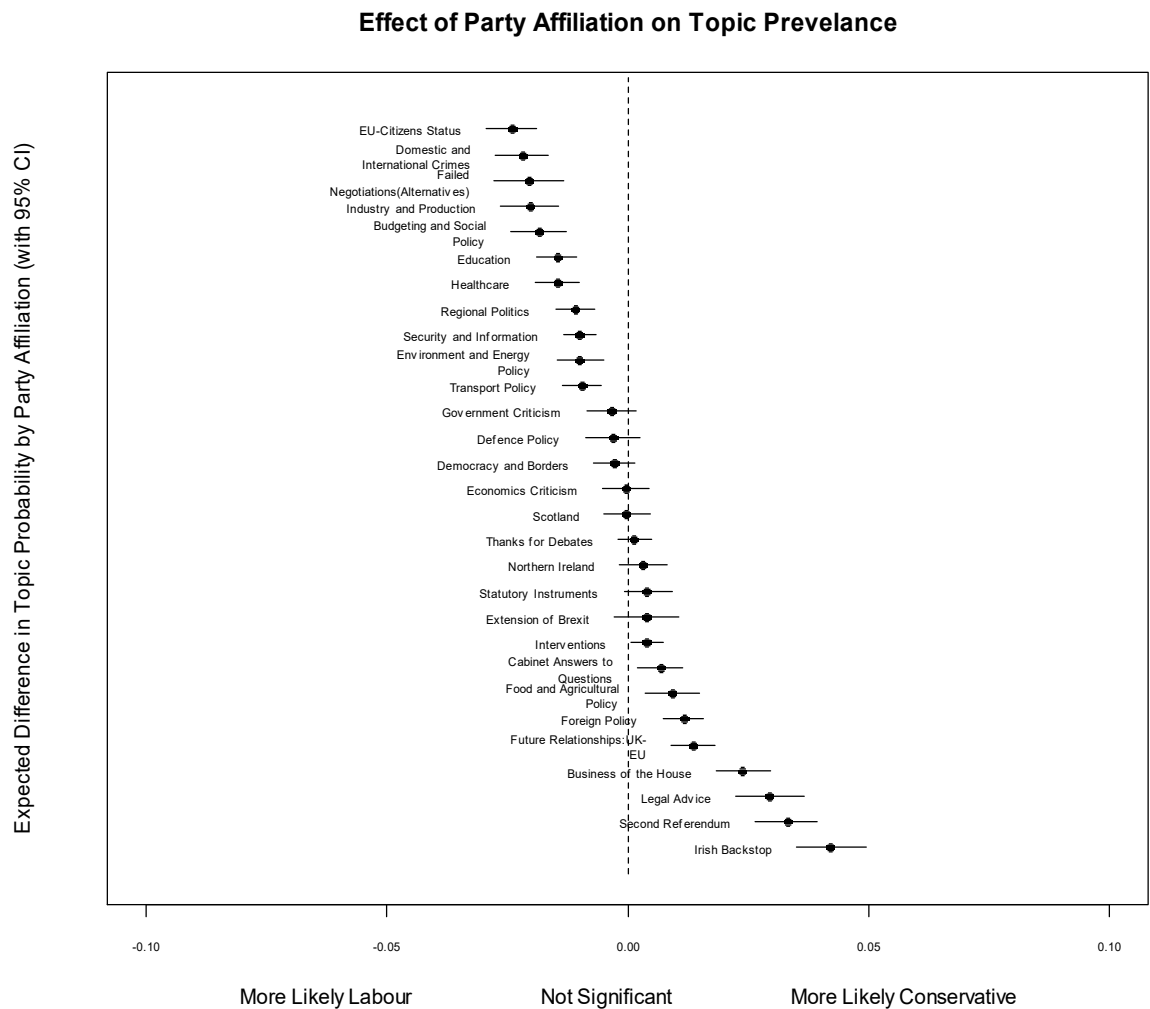
Apart from the confirmation of the hypothesis on the policy-seeking intentions of parties, these differences also shed light on the office-seeking behavior of MPs. MPs from the governing party, who are supposed to speak more on topics favorable for government proposals to help their party in offices, did not do so in case of the Brexit deal debates. According the results presented in Figure 7, Conservative MPs are more associated with such controversial topics as 'Irish backstop', 'Second Referendum', and 'Food and Agricultural Policy', while MPs from the opposition party (Labour Party) are more focused on such salient issue as possible alternatives to Brexit and less prevalent

discussions regarding EU-citizens status. Moreover, there are no significant differences between topics related to government and economics criticism and Scotland. It reveals that MPs from the governing party tends to raise the attention to controversial topics and can reduce the chances to keep their party in office. In the case of the Brexit deal, it can be explained by the role of backbenchers, who opposed Theresa May's deal. Their rebellion transformed not only into votes against the deal but also influenced what they talk about on debates. One cannot say for sure that attention to controversial topics should always mean opposition because sometimes there is nothing for MPs to do but to respond and explain the disputable points. However, as derived from the theory, if such attention implies negative consequences for the party to keep the office, then they would probably reduce this attention but do not to raise it. Therefore, the second hypothesis was not confirmed.

Parties as vote-seekers tend to 'own' some issues and consider them salient because the traditional perceptions shape voters' behavior. In order to demonstrate to voters their adherence to resolving these 'traditional' issues, MPs should speak more on topics, which are related to issues their parties traditionally own. The case of the Brexit deal is not an exception. Estimation results presented in Appendix 4 show that, for example, SNP and DUP own such topics as 'Scotland' and 'Northern Ireland' respectively that can be explained by their national orientations. In turn, Green Party owns environmental issue, Liberal Democrats spoke more about security and information, Labour parties associated more with social policy-related topics, while Conservatives prefer to discuss foreign policy. The confirmation of this can also be found in Figures 6 and 7.

Nevertheless, MPs from the large parties have more incentives, resources, and knowledge to speak about the most important and controversial sub-components of the Brexit deal. Estimation results confirm this hypothesis. For instance, MPs from the Labour Party are more likely to talk on controversial and salient topics than MPs from SNP or Labour/Co-operative Party (see Appendix 5). It follows the theoretical assumption that to get more votes on elections large parties should struggle for the attention on the salient issue so voters can detect efforts parties put into its resolution. This lets one confirm the last hypothesis regarding the role of party affiliation on the legislative speeches.

To sum up, parties did play a significant role in shaping the legislative debates on the Brexit withdrawal agreement. The results show that all hypotheses found confirmation but one. This hypothesis is related to the office-seeking strategies parties employ to keep their offices and assumes that MPs from the governing party should not raise more attention to the controversial topics in their speeches than MPs from other parties. However, in the case of parliamentary debates on the Brexit deal, it was not so. Two possible reasons for it can be tested in future studies. First, it seems that the degree of party rebellion was too high in the Conservative Party, and instruments of party discipline did not work. One might assume that office-seeking behavior lost a trade-off to vote-seeking motivations. Conservative MPs were not scared of losing office, because they could anticipate re-elections, which would lead to a better situation for them. It can be partially confirmed by the success of Boris Johnson on the 2019 parliamentary elections. The second reason lays in a trade-off between policy goals and keeping the ministerial portfolios. It could be so that for some Conservatives losing the governing status implied fewer costs than voting and speaking in favor of Theresa May's agreement. Eventually, it led to the fact that some Conservatives had no constraints to free speech against the government proposal on the debates. Nevertheless, other hypotheses confirmed. MPs from parties of the same coalitions - Conservative and DUP MPs – spoke equally about the Irish backstop that could be caused by their desire to show differences and achieve better policy solutions. Issue ownership theory also found its confirmation in the case of parliamentary debates on the Brexit deal – the most salient sub-components of this issue were owned by MPs from large parties, while niche components were associated with MPs, whose parties are their traditional owners.

These findings contribute to the understanding of MPs' legislative behavior, determinants of legislative speechmaking, and shed light on possible outcomes of party unity measures. The case of debates on Theresa May's deal could not be only the starting point to examine the relationships within British political parties, but can also be illustrative for other cases, when MPs face the similar multi-dimensional challenges as Brexit. Besides, these findings might add to the literature on Westminster systems and the role of parties and their place in government. Their role in the determination of MPs' incentives to speak in one or another way is interesting to examine in cases when widely acknowledged

motivations such as office-seeking can lose a trade-off to other motivational paradigms completely.

3.5.   Personal voting profiles of MPs and legislative speechmaking

Personal voting profiles of MPs, according to the theoretical expectations, might also reflect peculiarities of legislative speechmaking. Resulting profiles can be considered as results of both the influence of party discipline and personal preferences. These preferences may refer to all points of the triangle of motivations. Considering the limitations of the research method and the case of the Brexit deal as such, this study operates with an assumption that there are only two types of MPs – those who have a consistent and formulated opinion on the Theresa May's withdrawal agreement, and those who are in doubt. Such characteristics may potentially shape the way how MPs speak on the parliamentary floor, what topics they consider important, and, as a result, what distinguishes them. Since most of the possible mechanisms such as party discipline, negotiations behind closed doors, and psychological factors, which could affect the content of speeches of individual MPs, are hidden from the view and hold constant, one of the things that can be done is to compare the products of their influence – parliamentary speeches.

Meaningful votes on Theresa May's Brexit deal generated several voting profiles, including profiles of those, who abstained one or multiple times, or did not vote on for some reason. Since abstention is not in focus of this study, one can only consider MPs, who voted in all three meaningful votes. The data shows that there only four profiles for such MPs. The first two represent MPs, who voted consistently for or against the government proposal. The third present MPs who cast a vote against the withdrawal agreement only during the first meaningful vote. The fourth characterizes MPs, who voted against the proposal twice – on the first and the second meaningful vote. Therefore, two later profiles indicate that MPs are in doubt towards the Withdrawal Agreement.

As the hypotheses outline, there are two ways to compare the effects of 'doubts' on legislative speechmaking. The first way is to compare MPs in 'doubt' with those who in a consistent manner, so-called static way. Here it is expected that MPs in doubt regarding the Brexit deal should speak more on niche sub-components than MPs who have a 'clean' profile. The second way is to compare MPs with each other to reveal the dynamic changes

in legislative speechmaking. Here it is expected that those MPs, who have fewer doubts in May's proposal, should speak less on controversial issues.

In order to test the first assumption, the estimations of topic proportions are compared for both profiles related to MPs in doubt with the profile of those, who voted only for or against the Brexit deal. The results of these estimations presented graphically in Appendix 6. According to the results, this hypothesis found confirmation in three cases out of four. Such niche topics as *'Transport Policy', 'Domestic and International Crimes'*, *'Education', 'Defense Policy', 'Environmental and Energy Policy'* and *'Regional Politics'* are more associated with MPs in doubt. The only case, which did not comply with expectation, is the difference between MPs, who voted consistently for the government proposal, and those who voted for it only on the third meaningful vote. Such deviation can be explained by the possible effects of time. The period before the third meaningful vote is significantly larger than the period after it. It could affect the results since those MPs were in doubt for more time and could deliver substantially more negative speeches on Theresa May's deal than they managed after this period. The contextual factors also confirm this assumption: Boris Johnson, who opposed the deal for the whole period, vote 'for' the proposal on the last meaningful vote. As for those who voted for the deal three times, it is expected that they are less likely to raise controversial topics on the parliamentary floor. Nevertheless, the hypothesis that MPs in doubt paid more attention to the local and niche issues can be confirmed.

The inferences made above are also suitable for the second hypothesis. As illustrated in Figure 8, the degree to which MPs are in doubt towards the Brexit deal can predict the topics they will most likely speak about in the House of Commons.

However, the same limitations apply to this case. Those MPs who changed their minds in favor of the government proposal only for the third meaningful vote simply could have not enough time to speak in its defense. Nonetheless, if one examines the differences between MPs in doubt and those who rejected the government proposal for three times, it will become clear that voting behavior can be reflected by legislative speeches. Thus, MPs, who had fewer doubts about Theresa May's deal, also had fewer incentives to speak about controversial and salient topics.

Figure 8. MPs in doubt compared

Effect of Vote Preferences on Topic Prevelance
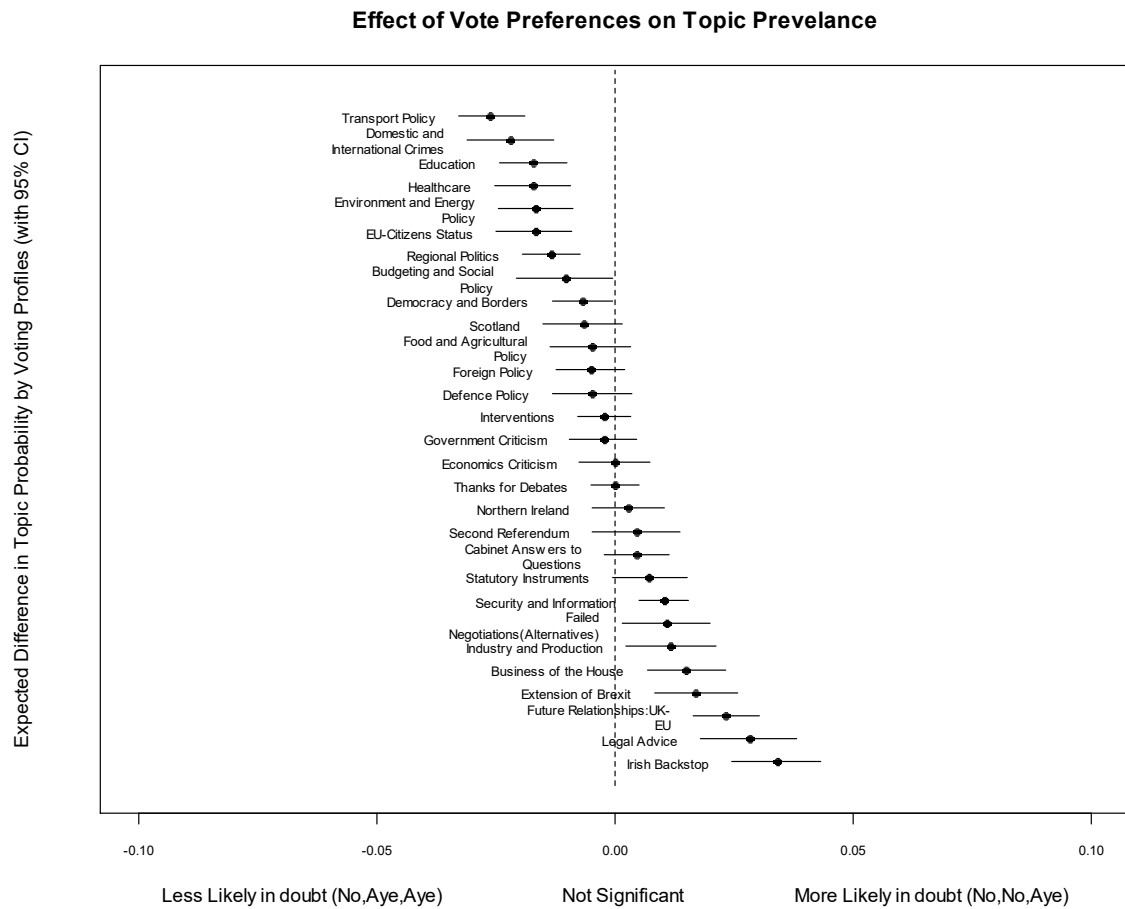
To sum up, the hypotheses regarding the MPs in doubt were confirmed, but with some important limitations. Firstly, in a static way, MPs, who voted inconsistently on the Brexit withdrawal agreement tend to be more associated with niche and local topics, while those who have a well-established opinion spoke more on the controversial and salient issue on the parliamentary floor. Secondly, from a dynamic perspective, MPs, who changed their minds towards more favorable for the Theresa May's deal earlier along the way, and thus who had fewer doubts, tend to speak more on niche topics than those who were in more doubts. Thirdly, one may infer that the effects of time play an important role in such estimations since some MPs simply have less time to contribute to topics favorable for May's deal. However, even though the theory provides several explanations for such peculiarities of legislative speechmaking, the real reasons and mechanisms cannot be explained in this study. On the one hand, it could be the effect of the party discipline in action. On the other hand, other powers could make MPs focus on niche issues instead of being busy with resolving the salient issue related to the Brexit deal such as backbencher

status, constituency links, personal qualities, etc. These suggestions can be researched in the future to provide a more comprehensive picture of the situation in the House of Commons. In general, these findings contribute to the literature not only on the British political system but also to research on both legislative speechmaking and voting. Since the voting profiles can represent the MPs' positions to some degree, it should reflect their overall opinion on policies they have to vote. In this scenario, there is a probability that it can explain how and about what MPs talk on the parliamentary floor.

3.6. The importance of time effects for the content of legislative speeches

In the previous section, the importance of time effects for legislative speechmaking has been already raised. The parliamentary discussions on the Brexit withdrawal agreement held for one year, and during this time the emphases could change under the pressure of external and internal events, as well as political positions of MPs, and the proposed policy itself.

The one-year of debates was divided into four consecutive periods by considering the dates related to meaningful votes and a no-confidence vote. The last fourth period was eliminated from the analysis since the parliamentary debates on the Brexit deal became less intense and did not lead to any meaningful results after the third meaningful vote except Theresa May's resignation.

The theory implies that after the confidence motions, which often serve as a disciplinary measure, the presence of controversial topics in MPs' speech can be reduced. To test this hypothesis, one may refer to the difference in topic probabilities between the first period (before the vote of no-confidence) and the second period (between 1st and 2nd MV). As illustrated in Figure 9, this hypothesis cannot be confirmed. On the one hand, the saliency of such controversial topics as *'Irish backstop', 'Economic Criticism'*, and *'Second Referendum'* is associated more with the period before the no-confidence vote in a statistically significant manner. On the other hand, the second period contributed more to discussions on the government's inability to deliver the appropriate Brexit deal *('Government Criticism')* and talks about EU-citizens status in the UK after Brexit *('EU-Citizen Status')*.

Figure 9. Effects of time - 1st and 2nd MVs

Effect of Vote Stages on Topic Prevelance
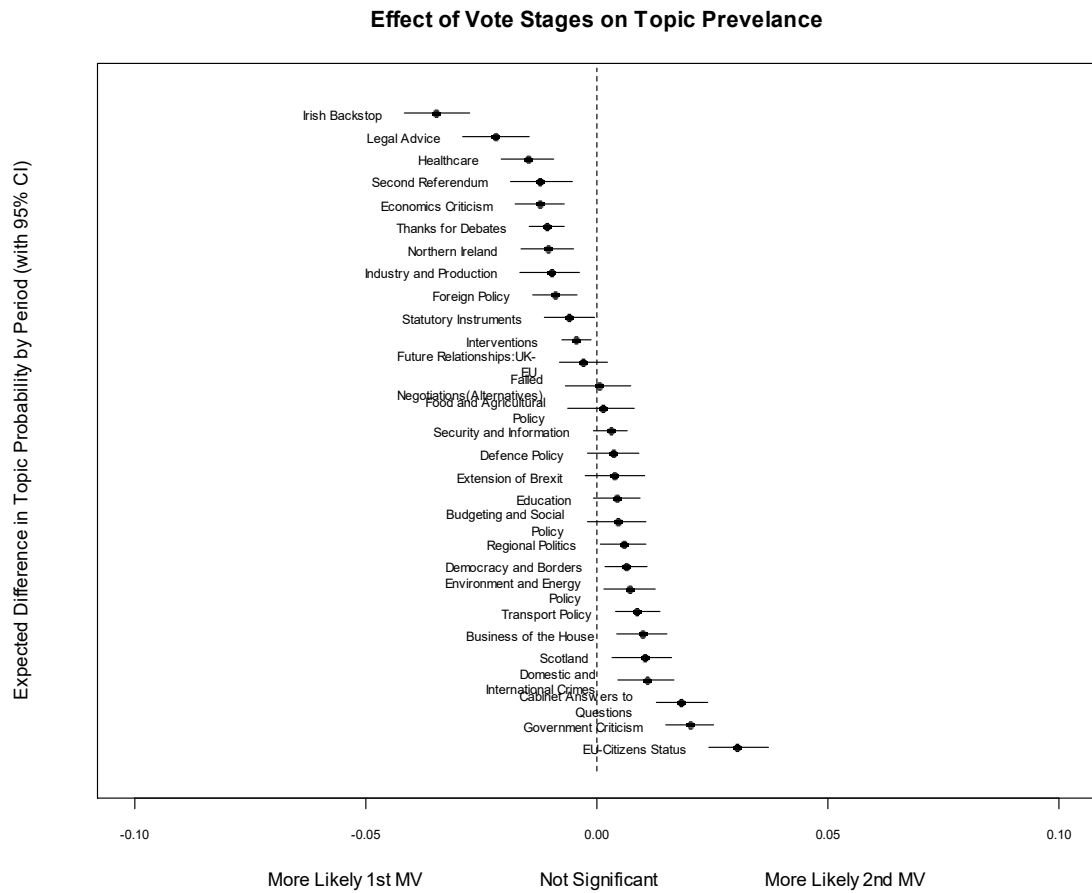
Moreover, third period marked by more explicit contribution to such controversial topics as *'Scotland', 'Extension of Brexit', Food and Agricultural Policy', 'Government Criticism',* even though this period was rather small – only 17 days, while 1st period refers to 7 months (see Figure 10 for insights). Despite that hypothesis can be disproved, several important implications derive from these findings. The initial goal was to examine if the controversial issues can lose their saliency after the no-confidence vote (which took place on 16 January, or the next day after the first meaningful vote). Even though it is impossible to detect and capture the exact mechanism by using methods this study employs, the goal was to check if such a shift takes place at all. Since one could not detect or capture the effects of time, it cannot be inferred that the confidence motion or any other factors did or did not have any influence on legislative speeches. However, in the case of the debates on the Brexit deal, the saliency of most issues was increasing from one stage to another. It seems from the results that the first period contributed comparatively more

only in the discussion of the Irish backstop, while other controversial issues could receive more attention on other stages.

Figure 10.Effects of time – 1st and 3rd MVs

Effect of Vote Stages on Topic Prevelance
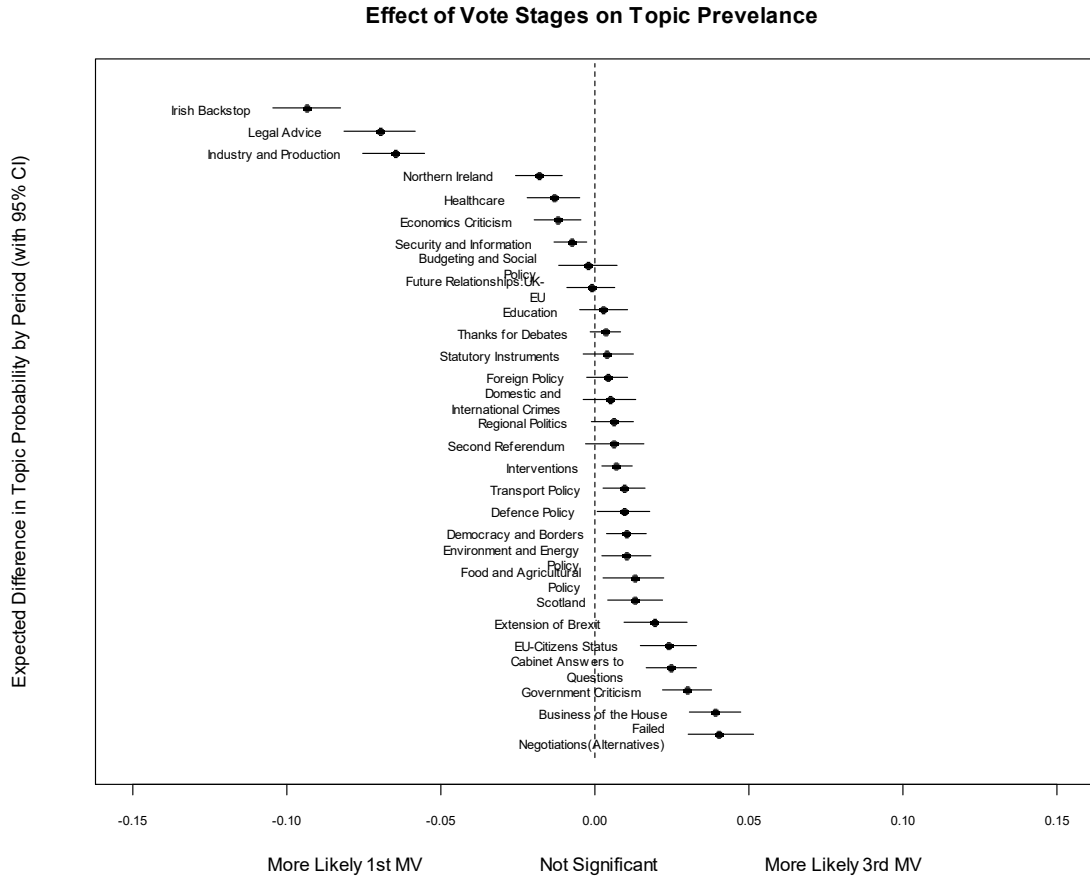
These results do not also allow to confirm the second hypothesis on losing issue saliency sequentially from one stage to another, which was inspired by the assumption of legislative behavior theory that the government can use anticipated reaction and negotiations to make its policy pass the parliament. As Figure 11 shows, during the third period, MPs contributed more in discussions on some salient and controversial topics than during the second one.

Despite that the hypotheses on the effects of time were not confirmed, one could see that there are still some peculiarities for any period, and topics distributed unevenly among them. According to the results, the period before the first MV and confidence vote contributed more to discussions on Irish backstop and the economic disadvantages of the Brexit deal. The second period was marked by the debates on such important sub-component as EU-Citizen status in the UK after Brexit and many more niche topics. In

turn, the third period was primarily devoted to the debates on alternatives to Brexit, the extension of deadlines, and the second referendum.

Figure 11. Effects of time - 2nd and 3rd MVs

Effect of Vote Stages on Topic Prevelance
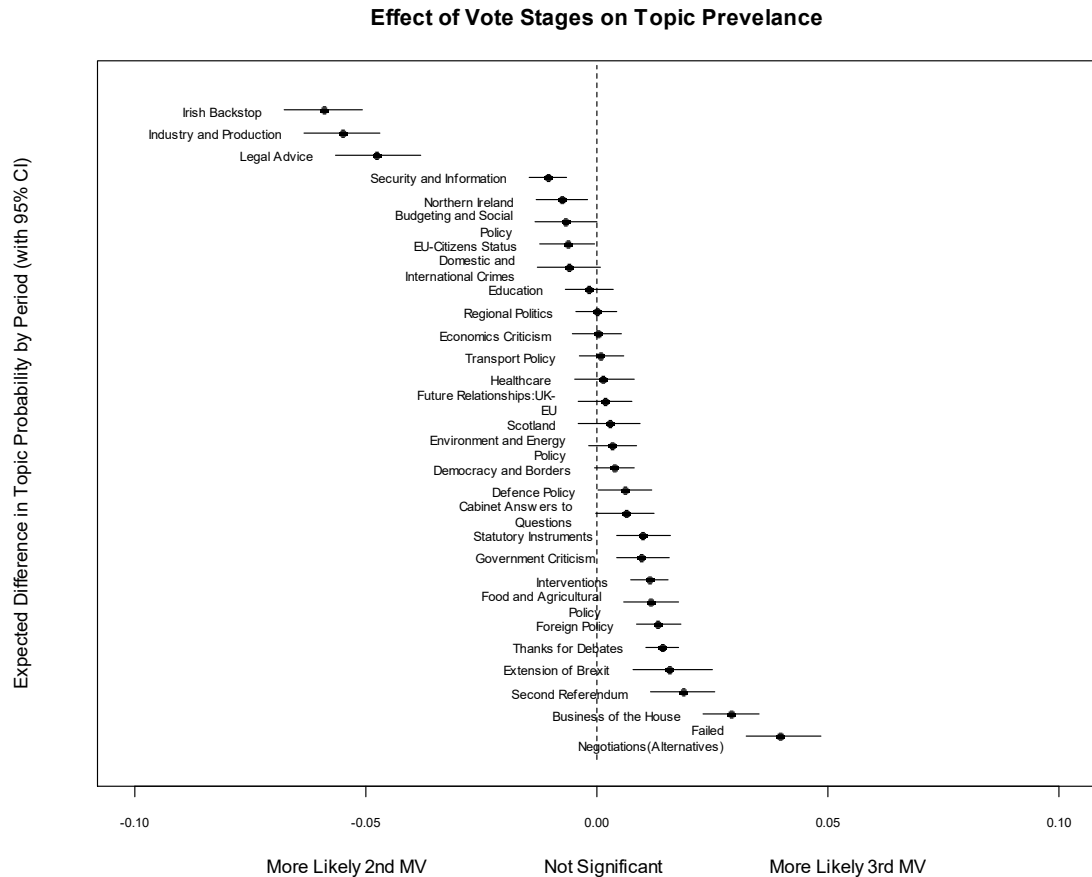
To sum up, there is no evidence that controversial topics disappear from the agenda with more stages of debates on policy passed or after the confidence votes. These results can potentially imply that there are other powers, which affected the topic distribution in time. It could be, for example, the media attention, the state of negotiations between the UK government and the EU officials, party discipline, and other political shocks and events. By considering the findings of this study regarding the topics' distributions in time among the periods of the Brexit deal debates, these assumptions can be studied in-depth in future research. Nonetheless, one should also consider the specifics of the model run here and possible lags in the effects.

Conclusion

The aim of this thesis was to reveal the determinants of legislative speechmaking, which produces significant differences in what the members of parliaments speak about on the parliamentary floor regarding one salient issue. In order to do so, the case of the parliamentary debates on the Brexit Withdrawal Agreement was selected to shed light on the differences in speeches delivered in the House of Commons.

By comparing the assumption from the theory on Westminster system that in times of crises and political shocks parliaments tend to unite with government to deliver fast and appropriate solution, with the case of debates on Theresa May's Withdrawal Agreement, one revealed that in the British case it was not true since the agreement did not pass the parliament after one year of debates and negotiations, and it follows to Theresa May's government resignation.

To address this research puzzle, this study assumed that the analysis of legislative speeches might help in understanding the differences, which divided MPs. While other studies in the field were mostly focused on procedural, electoral, and other institutional determinants of the legislative speechmaking, this thesis provides insights on the importance of roles, which MPs can preserve on the parliamentary floor. By adopting the strategic and partisan-rhetoric approach to legislative speechmaking and considering that the content of speeches on debates can be shaped by the policy-, office- and vote-seeking motivations imposed by the various roles MPs can play in the British parliaments, this study assumed that cabinet membership, party affiliation, personal preferences, and time effects can produce significant differences in what MPs speak about in the House of Commons during the discussions of such multi-dimensional and salient issues as the Brexit deal. The latter also can be considered novelty since other studies tend to reveal the patterns associated with the whole parliamentary term or focused on comparing the parliamentary agenda of different national legislature. On the contrary, this study operates in the framework of one salient and complex issue examining its components, which can be lost if one takes the big picture.

Following the assumptions formulation, legislative speeches were considered as unit of analysis, and the sub-components of the discussion on the Brexit deal were conceptualized as topics of the debates. It was decided that the most appropriate research

method to estimate the effects of MPs roles on the legislative speeches and reveal the hidden topic structure of the all debates is Structural Topic Models. The dataset consisted of 25559 legislative speeches and relevant metadata on the Brexit deal, which was deliver by MPs in the House of Commons from July 2018 to July 2019, was collected by using web-scraping techniques. By using the topic models quality measurements and validations, the model with 29 topics was selected and further analyzed.

As a result, topic structure of the debates reflected the reality. Topics, which were mostly discussed and divide MPs were considered as controversial, while other topics were considered niche. By considering the specifics of parliamentary procedure, some topics were also considered as procedural. Analysis showed that the most controversial topics at the same time appeared to be the most prevalent during the parliamentary debates.

Analysis of the role of MPs as members of cabinet showed that cabinet membership status produces the differences in legislative speechmaking of MPs. It was revealed that government MPs failed at controlling the most salient topics related to the Brexit debates and were not able to control the most important procedures. Even though the real reasons for it remained unobservable, it was inferred that the government did not achieve its goal towards creating the situation on the parliamentary floor, which would be favorable for Theresa May's proposal. However, government MPs contributed significantly more in topics, which are favorable for this proposal, and by doing so they were motivated by desire to remain in the office. In turn, government MP answered on substantial amount of questions asked by other MPs on various components of the Brexit deal. It reflected the theoretical expectations regarding the accountability of government in front of the parliament. Moreover, non-cabinet MPs were more likely to criticize the government and interrupt the speakers that depicts the intensity and saliency of disputes on Theresa May's deal. These findings contribute to the theory on agenda control and Westminster system, and cast doubt on the assumption that the government under such system fully control the parliamentary agenda.

As for MPs roles as party members, this study confirms the hypotheses derived from the theory of parliamentary coalitions and issue ownership. Regarding coalition, it was confirmed that Conservative MPs and DUP MPs speak equally a lot on the issue, which divide them – Irish backstop. Regarding the issue ownership, the findings are in line with

the theoretical expectations that parties tend to 'own' issues, which traditionally associated with them. The contribution of this study is that it proved the same behavior of MPs in the context of one multi-dimensional issue. Moreover, this study also showed that larger party have more incentives and knowledge to speak on controversial and complex issues than their small counterparts. However, MPs from the governing Conservative Party contributed more to the controversial topics and talks, which were unfavorable for the government. It showed that the office-seeking motivations could be not so important for Conservatives, and the degree of party rebellion was too high. This finding contributes to the theory of party unity and studies on the British politics by making a statement that most probably office-seeking is not so important for party members in cases of salient issues, and it loses its significance to policy goals and vote-seeking motivations.

In turn, this study employs the assumptions from the theory on parliamentary voting to conceptualize personal preferences of MPs. Deriving from the models of spatial preferences and considering contextual factors, MPs were distinguished into two groups by keeping in mind their distance to government policy – those who consistently voted on the Brexit deal and those who voted inconsistently or was in doubt. As estimations showed, MPs in doubt are less likely to contribute to controversial topics, while MPs with strong opinion towards policy were more active regarding disputable points. Even though the assumption for this were taken from the theory of party discipline, this study was not aimed at revealing the real mechanisms, which led to such behavior. It can be examined in future studies. The effects of debate stages did not confirm the relevant hypotheses but showed how the discussion evolved through stage. If Irish backstop and economics disadvantages were most important for the period before the first meaningful vote on the Brexit deal, the second period was marked by the debates on such important sub-components as EU-Citizen status in the UK after Brexit, while the third period was primarily devoted to the debates on alternatives to Brexit, the extension of deadlines, and the second referendum.

Thus, the findings of this thesis contribute to the literature on legislative speechmaking, legislative behavior, party unity, and can be used for future studies of the Westminster systems, British politics, and can be a starting point in examining Brexit phenomenon in more depth.

References

Abercrombie, G., Nanni, F., Batista-Navarro, R. T., & Ponzetto, S. P. (2019). Policy preference detection in parliamentary debate motions. In *Proceedings of the 23rd Conference on Computational Natural Language Learning (CoNLL)*, 249-259.

Abou-Chadi, T., Green-Pedersen, C., & Mortensen, P. B. (2019). Parties' policy adjustments in response to changes in issue saliency. *West European Politics*, 1-23.

Alabrese, E., Becker, S. O., Fetzer, T., & Novy, D. (2019). Who voted for Brexit? Individual and regional data combined. *European Journal of Political Economy*, *56*, 132-150.

Andeweg, R. B. (2014). Roles in legislatures. *The Oxford Handbook of Legislative Studies*, 267- 286.

André, A., Depauw, S., & Shugart, M. S. (2014). The effect of electoral institutions on legislative behavior. *The Oxford Handbook of Legislative Studies*, 231-249.

Auel, K., & Raunio, T. (2014). Debating the state of the union? Comparing parliamentary debates on EU issues in Finland, France, Germany and the United Kingdom. *The Journal of Legislative Studies*, *20*(1), 13-28.

Austen-Smith, D. (1990). Information Transmission in Debate, *American Journal of Political Science, 34*(1), 124–152

Bächtiger, A. (2014). Debate and Deliberation in Legislatures, *Oxford Handbook of Legislative Studies*, 145–166

Bäck, H., & Debus, M. (2016). *Political parties, parliaments and legislative speechmaking*. Palgrave Macmillan UK, 192 p.

Bäck, H., Baumann, M., Debus, M., & Müller, J. (2019). The Unequal Distribution of Speaking Time in Parliamentary-Party Groups. *Legislative Studies Quarterly*, *44*(1), 163-193

Bäck, H., Debus, M., & Müller, J. (2014). Who takes the parliamentary floor? The role of gender in speech-making in the Swedish Riksdag. *Political Research Quarterly*, *67*(3), 504-518.

Banks, G. C., Woznyj, H. M., Wesslen, R. S., & Ross, R. L. (2018). A review of best practice recommendations for text analysis in R (and a user-friendly app). *Journal of Business and Psychology*, *33*(4), 445-459.

Becher, M. & Sieberer, U. (2008). Discipline, Electoral Rules and Defection in the Bundestag, 1983–94', *German Politics* 17(3), 293–304.

Benoit, K., Watanabe, K., Wang, H., Nulty, P., Obeng, A., Müller, S., & Matsuo, A. (2018). quanteda: An R package for the quantitative analysis of textual data. *J. Open Source Software*, *3*(30), 774.

Bergmann, H., Geese, L., Koss, C., & Schwemmer, C. (2018). Using legislative speech to unveil conflict between coalition parties. 1-32. Retrieved from: https://doi.org/10.31235/osf.io/pgnwa

Bischof, J., & Airoldi, E. M. (2012). Summarizing topical content with word frequency and exclusivity. In *Proceedings of the 29th International Conference on Machine Learning (ICML-12),* 201-208.

Blei, D. M., Ng, A. Y., & Jordan, M. I. (2003). Latent Dirichlet allocation. *Journal of Machine Learning Research, 3*, 993–1022

Blumenau, J. (2016). *Essays in legislative politics: legislative leaders and Parliamentary behaviour* (Doctoral dissertation, The London School of Economics and Political Science (LSE)), 292 p.

Blumenau, J. *Measuring Agenda-Setting Influence from Legislative Speech.* University College London, 1-33. Retrieved from: https://www.jackblumenau.com/papers/influence.pdf

Borghetto, E., & Russo, F. (2018). From agenda setters to agenda takers? The determinants of party issue attention in times of crisis. *Party Politics*, *24*(1), 65-77.

Bowler, S. (2010). Private members' bills in the UK parliament: Is there an 'electoral connection'?. *The Journal of Legislative Studies*, *16*(4), 476-494.

Bräuninger, T., Müller, J., & Stecker, C. (2016). Modeling preferences using roll call votes in parliamentary systems. *Political Analysis*, *24*(2), 189-210.

Budge, I. (2015). Issue emphases, saliency theory and issue ownership: a historical and conceptual analysis. *West European Politics*, *38*(4), 761-777.

Burean, T. (2015). The Political Representation of Salient Issues. *Polish Sociological Review*, *191*(3), 329-353.

Carroll, R., & Poole, K. (2014). Roll call analysis and the study of legislatures. *The Oxford Handbook of Legislative Studies*, 103-124.

Ceron, A., & Greene, Z. (2019). Verba volant, scripta manent? Intra-party politics, party conferences, and issue salience in France. *Party Politics,* 701-711

Chang, J., Gerrish, S., Wang, C., Boyd-Graber, J. L., & Blei, D. M. (2009). Reading tea leaves: How humans interpret topic models. In *Advances in neural information processing systems*, 288-296.

Cheng, D., He, X., & Liu, Y. (2015). Model selection for topic models via spectral decomposition. In *Artificial Intelligence and Statistics*, 183-191.

Cox, G. W. (2006). The organization of democratic legislatures. *The Oxford handbook of political economy*, 141-161.

Diermeier, D. (2014). Formal models of Legislatures. *The Oxford Handbook of Legislative Studies*, 29-58.

Döring, H. (2001). Parliamentary agenda control and legislative outcomes in Western Europe. *Legislative Studies Quarterly 26(1)*, 145-165.

Eggers, A. C., & Spirling, A. (2014). Ministerial responsiveness in westminster systems: Institutional choices and House of Commons debate, 1832–1915. *American Journal of Political Science*, *58*(4), 873-887.

Eggers, A. C., & Spirling, A. (2018). The shadow cabinet in Westminster systems: modeling opposition agenda setting in the House of Commons, 1832–1915. *British Journal of Political Science*, *48*(2), 343-367.

Fernandes, J. M., Goplerud, M., & Won, M. (2019). Legislative Bellwethers: The Role of Committee Membership in Parliamentary Debate. *Legislative Studies Quarterly*, *44*(2), 307-343

Field, B. N., & Hamann, K. (2015). *Framing legislative bills in parliament. Party Politics, 21(6), 900–911*

Geese, L. (2019). Immigration-related Speechmaking in a Party-constrained Parliament: Evidence from the 'Refugee Crisis' of the 18th German Bundestag (2013–2017). *German Politics*, 1-22.

Giannetti, D., & Benoit, K. (2008*). Intra-party politics and coalition goverments in parliamentary democracies*. 240 p.

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

Glossary – UK Parliament. (2019). *UK Parliament Website*. Retrieved from: https://www.parliament.uk/site-information/glossary

Godbout, J. F., Vallée-Dubois, F., & Cochrane, C. (2019). Parliamentary Debates in Canada (1901-2015). *Paper presented at the Canadian Political Science Association Meeting, Vancouver, BC*, 1-34

Green, J., & Jennings, W. (2019). Party reputations and policy priorities: How issue ownership shapes executive and legislative agendas. *British Journal of Political Science*, *49*(2), 443-466.

Greene, D., & Cross, J. P. (2017). Exploring the political agenda of the European parliament using a dynamic topic modeling approach. *Political Analysis*, *25*(1), 77-94

Green-Pedersen, C. (2010). Bringing Parties into Parliament: The Development of Parliamentary Activities in Western Europe, *Party Politics*, 16 (3), 347–369.

Green-Pedersen, C., & Mortensen, P. B. (2010). Who sets the agenda and who responds to it in the Danish parliament? A new model of issue competition and agenda-setting. *European Journal of Political Research*, *49*(2), 257-281.

Grimmer, J., & Stewart, B. M. (2013). Text as data: The promise and pitfalls of automatic content analysis methods for political texts. *Political analysis*, *21*(3), 267-297.

Hajdinjak, S., Morris, M. H., & Amos, T. (2019). Migration Policy Framing in Political Discourse: Evidence from Canada and the USA. In *Computational Conflict Research*, 83-111

Hantzsche, A., Kara, A., & Young, G. (2019). The economic effects of the UK government's proposed Brexit deal. *The World Economy*, *42*(1), 5-20.

Hardy, M. A. (1993). *Regression with dummy variables* (No. 93). Sage. 90 p.

Häussler, T., Schmid-Petri, H., Adam, S., Reber, U., & Arlt, D. (2016). The climate of debate: How institutional factors shape legislative discourses on climate change. A comparative framing perspective. *Studies in communication sciences*, *16*(1), 94-102.

Hörner, J. (2012). The determinants of debate on EU affairs in national parliaments: A quantitative perspective. In *EPSA 2013 Annual General Conference Paper* (Vol. 415).

Hörner, J. M. (2017). Real scrutiny or smoke and mirrors: The determinants and role of resolutions of national parliaments in European Union affairs. *European Union Politics*, *18*(2), 307-322.

Høyland, B., & Søyland, M. G. (2019). Electoral Reform and Parliamentary De-bates, *Legislative Studies Quarterly, 44*(4), 593–615.

Ilie, C. (2015). Parliamentary Discourse. *The International Encyclopedia of Language and Social Interaction,* 1–15.

Kam, C. (2009). *Party discipline and parliamentary politics*. Cambridge University Press. 278 p.

Kam, C. (2014). Party discipline. *The Oxford Handbook of Legislative Studies*, 399-417.

Killermann, K., & Proksch, S. O. (2013, August). 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.*

Klüver, H., & Sagarzazu, I. (2016). Setting the agenda or responding to voters? Political parties, voters and issue attention. *West European Politics*, *39*(2), 380-398.

Krehbiel, K. (1991). *Information and legislative organization*. University of Michigan Press. 328 p.

Krehbiel, K. (1998). *Pivotal politics: A theory of US lawmaking*. University of Chicago Press. 258 p.

Landwehr, C., & Holzinger, K. (2010). Institutional determinants of deliberative interaction. *European Political Science Review*, *2*(3), 373-400.

Lauderdale, B. E., & Clark, T. S. (2014). Scaling politically meaningful dimensions using texts and votes. *American Journal of Political Science*, *58*(3), 754-771

Lauderdale, B. E., & Herzog, A. (2016). Measuring political positions from legislative speech. *Political Analysis*, *24*(3), 374-394.

Lauderdale, B., & Herzog, A. (2014). *Measuring Political Positions from Legislative Debate Texts on Heterogenous Topics*. Working Paper, 1-42.

Lucas, C., Nielsen, R. A., Roberts, M. E., Stewart, B. M., Storer, A., & Tingley, D. (2015). Computer-assisted text analysis for comparative politics. *Political Analysis*, *23*(2), 254-277.

Lynch, P., Whitaker, R., & Cygan, A. (2019). *Brexit and the UK Parliament: Challenges and Opportunities. Essentials*, 51–79.

Magnusson, M., Öhrvall, R., Barrling, K., & Mimno, D. (2018). Voices from the far right: a text analysis of Swedish parliamentary debates, 1-28. Retrieved from: https://doi.org/10.31235/osf.io/jdsqc

Martin, L. W. & Vanberg, G., 2008. Coalition Government and Political Communication. *Political Research Quarterly*, 61, 502–516.

Martin, L. W., & Vanberg, G. (2014). Legislative institutions and coalition government. *The Oxford handbook of Legislative Studies*, 437-454.

Mershon, C. (2014). Legislative party switching. *The Oxford Handbook of Legislative Studies,* 418-435.

Miller, J. M., Krosnick, J. A., & Fabrigar, L. R. (2016). The origins of policy issue salience: Personal and national importance impact on behavioral, cognitive, and emotional issue engagement. In *Political Psychology* (pp. 139-185). Psychology Press

Mimno, D., Wallach, H. M., Talley, E., Leenders, M., & McCallum, A. (2011). Optimizing semantic coherence in topic models. In *Proceedings of the conference on empirical methods in natural language processing*, 262-272

Moser, S., & Reeves, A. (2014). Taking the Leap: Voting, Rhetoric, and the Determinants of Electoral Reform. *Legislative Studies Quarterly*, *39*(4), 467-502.

MPs' Guide to Procedures. (2019). *UK Parliament.* Retrieved from: https://guidetoprocedure.parliament.uk/mps-guide-to-procedure

Müller, W. C., & Sieberer, U. (2014). Procedure and rules in legislatures. *The Oxford Handbook of Legislative Studies*, 311-331.

Munzert, S., Rubba, C., Meißner, P., & Nyhuis, D. (2014). *Automated data collection with R: A practical guide to web scraping and text mining*. John Wiley & Sons. 480 p.

Otjes, S. (2019). 'No politics in the agenda-setting meeting': plenary agenda setting in the Netherlands. *West European Politics*, *42*(4), 728-754.

Otjes, S., & Louwerse, T. (2018). Parliamentary questions as strategic party tools. *West European Politics*, *41*(2), 496-516.

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

Poole, K. T. (2005). *Spatial models of parliamentary voting*. Cambridge University Press.

Proksch, S. O., & Slapin, J. B. (2012). Institutional foundations of legislative speech. *American Journal of Political Science*, *56*(3), 520-537.

Proksch, S. O., & Slapin, J. B. (2015). *The politics of parliamentary debate*. Cambridge University Press, 206 p.

Quinn, K. M., Monroe, B. L., Colaresi, M., Crespin, M. H., & Radev, D. R. (2010). How to analyze political attention with minimal assumptions and costs. *American Journal of Political Science*, *54*(1), 209-228.

Rasch, B. E. (2005). Do Parliamentary Governments Control the Legislative Agenda? The Case of Norway. *unveröffentlichtes Manuskript,* 1-30.

Rasch, B. E. (2011). Legislative debates and democratic deliberation in parliamentary systems. In *Oslo-Yale International Workshop on Epistemic Democracy in Practice, Yale University, New Haven*, 1-31

Rasch, B. E. (2014). Institutional foundations of legislative agenda-setting. *The Oxford Handbook of Legislative Studies,* 456-481.

Roberts, M. E., Stewart, B. M., & Airoldi, E. M. (2016a). A model of text for experimentation in the social sciences. *Journal of the American Statistical Association*, *111*(515), 988-1003.

Roberts, M. E., Stewart, B. M., & Tingley, D. (2016b). Navigating the local modes of big data. *Computational Social Science: Discovery and Prediction*, 51-97.

Roberts, M. E., Stewart, B. M., & Tingley, D. (2017). stm: R package for structural topic models. *Journal of Statistical Software, 10*(2), 1–42

Roberts, M. E., Stewart, B. M., Tingley, D., Lucas, C., Leder-Luis, J., Gadarian, S. K., et al. (2014). Structural topic models for open-ended survey responses. *American Journal of Political Science, 58*(4), 1064–1082.

Russell, M., & Cowley, P. (2016). The policy power of the Westminster parliament: The "parliamentary state" and the empirical evidence. *Governance*, *29*(1), 121-137.

Russell, M., Gover, D., & Wollter, K. (2015). Does the Executive Dominate the Westminster Legislative Process? Six Reasons for Doubt. *Parliamentary Affairs, 69(2)*, 286–308.

Saalfeld, T., & Strøm, K. W. (2014). Political parties and legislators. *The Oxford Handbook of Legislative Studies*, 371-398.

Schwarz, D., Traber, D., & Benoit, K. (2015). Estimating intra-party preferences: comparing speeches to votes. *Political Science Research and Methods*, *5*(2), 379-396

Sigelman, L. & Buell, E. H. (2004). Avoidance or Engagement? Issue Convergence in US Presidential Campaigns, 1960–2000, *American Journal of Political Science*, 48 (4), 650–661.

Slapin, J. B., & Proksch, S. O. (2014). Words as data: Content analysis in legislative studies. *The Oxford Handbook of Legislative Studies*, 126-144.

Taddy, M. (2012). On estimation and selection for topic models. In *Artificial Intelligence and Statistics*, 1184-1193.

Tromborg, M. (2019). Issue salience and candidate position taking in parliamentary parties. *Political Studies*, *67*(2), 307-325.

Tsebelis, G. and B. E. Rasch (2011). Governments and Legislative Agenda Setting: An Introduction, in B. E. Rasch and G. Tsebelis (eds.), T*he Role of Governments in Legislative Agenda-Setting*. Oxon: Routledge. 304 p.

Uslaner, E. M., & Zittel, T. (2006). Comparative legislative behavior. In *The Oxford Handbook of Political Science*, 393–410.

Vliegenthart, R., & Walgrave, S. (2011). Content Matters: The Dynamics of Parliamentary Questioning in Belgium and Denmark. Comparative Political Studies, 44(8), 1031–1059.

Vliegenthart, R., Walgrave, S., & Meppelink, C. (2010). Inter-party Agenda-Setting in the Belgian Parliament: The Role of Party Characteristics and Competition. *Political Studies, 59*(2), 368–388.

Wagner, M., & Meyer, T. M. (2014). Which issues do parties emphasise? Salience strategies and party organisation in multiparty systems. *West European Politics*, *37*(5), 1019-1045.

Walker, N. (2019). *Brexit Timeline: Events Leading to the UK's Exit from the European Union*. House of Commons Library. Retrieved from: https://researchbriefings.parliament.uk/ResearchBriefing/Summary/CBP-7960

Wallach, H. M., Murray, I., Salakhutdinov, R., & Mimno, D. (2009). Evaluation methods for topic models. In *Proceedings of the 26th annual international conference on machine learning*, 1105-1112.

Wesslen, R. (2018). Computer-assisted text analysis for social science: Topic models and beyond. *arXiv preprint arXiv:1803.11045*. Retrieved from: https://arxiv.org/pdf/1803.11045.pdf

Wiesner, C., Haapala, T., & Palonen, K. (2017). Debates, Rhetoric and Political Action. *Practices of Textual Interpretation and Analysis-Palgrave. Reino Unido: Macmillan*. 251 p.

Zirn, C. (2014). Analyzing positions and topics in political discussions of the German Bundestag. In *Proceedings of the ACL 2014 Student Research Workshop*, 26-33.

Data sources

Hansard. (2019). *UK Parliament - The official report of all parliamentary debates*. Retrieved from: https://hansard.parliament.uk/

House of Commons Divisions (2019). *data.parliament.uk – UK Parliament*. Retrieved form: http://www.data.parliament.uk/dataset/09

Members of the House of Commons (2019). *data.parliament.uk – UK Parliament*. Retrieved from: http://www.data.parliament.uk/dataset/members-of-the-house-of-commons

Ministers. (2019). GOV.UK. Retrieved from: https://www.gov.uk/government/ministers

TheyWorkForYou. (2019). *Hansard Reports | ParlParse*. mySociety, Retrieved from: https://www.theyworkforyou.com/pwdata/scrapedxml/debates/

Table 1. Research Data. Descriptive statistics

Variables	Factors	# of speeches	Mean speech length (in characters)
Cabinet membership	Government MPs (1)	8847 (34.6%)	663.2
	MPs without portfolio (0)	**16712 (65.4%)**	**955.12**
Party	Conservative	**14419 (56.4%)**	727.5
	DUP	397 (1.6%)	1040.31
	Green	63 (0.2%)	**1169.83**
	Independent	1568 (6.1%)	1035.77
	Labour	5211 (20.4%)	1044.33
	Labour/Co-operative	845 (3.3%)	938.04
	Liberal Democrats	592 (2.3%)	925.08
	Plaid Cymru	138 (0.5%)	910.51
	SNP	2326 (9.1%)	997.74
Voting profile (combined votes)	Aye, Aye, Aye	**12315 (48.2%)**	719.47
	No, Aye, Aye	831 (3.2%)	886.47
	No, No, Aye	1183 (4.6%)	783.5
	No, No, No	11230 (43.9%)	**1006.71**
Periods	Period 1	**11685 (45.7%)**	**913.02**
	Period 2	5479 (21.4%)	828.93
	Period 3	3107 (12.2%)	839.98
	Period 4	5288 (20.7%)	758.15
Year	2018	9891 (38.7%)	853.37
	2019	**15668 (61.3%)**	**854.52**
Total		**25559 (100%)**	**854.1 (min – 65, max – 16262)**

Table 2. Topics, FREX terms, and Labels

# of topic	Label (prevalence rank)	FREX terms (n = 12)	Group
1	Food and Agricultural Policy	agricultur, tariff, fish, fisheri, market, farmer, export, food, farm, free, custom, movement, water, singl, anim	Controversial
2	Transport Policy and Post Services	rail, local, shop, offic, post, bus, driver, station, network, tram, street, closur, author, centr, railway	Niche
3	Education	pupil, school, educ, parent, teacher, sport, children, digit, loneli, colleg, onlin, teach, age, young, art	Niche
4	Extension of Brexit	extens, meaning, tomorrow, date, march, statement, box, dispatch, januari, indic, confirm, letter, februari, clarifi, offici	Controversial
5	Scotland	scotland, scottish, snp, welsh, devolut, wale, devolv, scot, perth, perthshir, nationalist, english, pete, ross, grab	Controversial
6	Business of the House (PoT, Motions and Amendments)	bill, select, committe, procedur, dorset, chair, session, pontefract, castleford, letwin, normanton, oliv, clerk, backbench, shall	Procedural
7	Failed Negotiations - No-Deal/Norway Scenario	option, compromis, consensus, reject, red, revok, clock, articl, major, tonight, line, proposit, sensibl, choic, renegoti	Controversial
8	Interventions	word, moment, ago, intervent, minut, littl, perhap, anoth, coupl, deputi, mind, least, probabl, slight, remark	Procedural
9	Future Relationships - UK-EU	futur, unit, relationship, best, kingdom, interest, partnership, posit, advantag, negoti, deliv, partner, rest, whole, abil	Niche
10	Statutory Instruments	instrument, regul, statutori, sis, legisl, chemic, draft, provis, exit, consult, bodi, authoris, financi, domest, explanatori	Procedural
11	Irish Backstop	backstop, declar, arrang, withdraw, period, bind, treati, unilater, implement, text, transit, altern, negoti, white, barnier	Controversial
12	Healthcare	nhs, patient, mental, care, cancer, health, hospit, dementia, medic, social, drug, clinic, doctor, treatment, nurs	Niche
13	Economics Criticism	economi, analysi, poorer, wors, econom, gdp, damag, forecast, bad, predict, job, hit, lose, growth, worst	Controversial
14	Government Criticism/Disputes	bench, bencher, resign, front, opposit, whip, mps, labour, shadow, leadership, leader, shambl, conserv, blame, game	Controversial

15	Domestic and International Crimes	rohingya, refuge, knife, victim, violenc, crime, investig, polic, babi, prison, death, women, camp, burma, abus	Niche
16	Industry and Production	manufactur, suppli, port, conting, chain, contract, ferri, industri, steel, automot, dover, jaguar, compani, eurotunnel, disrupt	Niche
17	Defence Policy	raf, veteran, arm, personnel, aircraft, tribut, air, armi, memori, forc, regiment, anniversari, soldier, celebr, commemor	Niche
18	Democracy and Borders	citizen, sanction, religi, christian, antisemit, racism, messag, venezuela, protest, hate, hatr, passport, human, islamophobia, regist	Niche
19	Labour Policy: EU-Citizens (and Immigration policy)	immigr, univers, visa, disabl, credit, scienc, migrat, payment, system, scheme, student, worker, fee, migrant, research	Controversial
20	Cabinet Answers to Questions	rais, awar, absolut, happi, encourag, meet, discuss, ensur, number, specif, concern, direct, cours, obvious, seek	Procedural
21	Budgeting and Social Policy	cut, budget, spend, poverti, tax, money, fund, auster, extra, homeless, incom, household, wage, million, billion	Niche
22	Environment and Energy Policy	emiss, carbon, renew, climat, slaveri, energi, petit, properti, reunion, grenfel, plastic, cornwal, electr, rent, modern	Niche
23	Legal Advice	attorney, advic, lawyer, learn, general, judgment, holborn, legal, court, pancra, starmer, interpret, opinion, advis, convent	Procedural
24	Second Referendum	referendum, elect, manifesto, democraci, second, result, honour, voter, elector, second, democrat, believ, betray, mandat, campaign	Controversial
25	Thanks for Debates	speech, listen, heard, spoke, passion, express, view, chamber, somerset, colleagu, tone, spoken, admir, mid, disagre	Procedural
26	Northern Ireland	northern, ireland, belfast, irish, republ, border, cup, assembl, footbal, féin, sinn, sea, southend, paisley, potato	Niche
27	Regional Politics	citi, region, london, project, mayor, birmingham, midland, beauti, east, yorkshir, glasgow, manchest, stoke, north, wealth	Niche
28	Foreign Policy	foreign, russia, yemen, global, influenc, intern, trump, aid, nato, saudi, diplomat, russian, syria, commonwealth, america	Niche
29	Security and Information	secur, protect, oper, data, agenc, particip, progress, gibraltar, focus, warrant, ongo, reach, smooth, prioriti, safeguard	Niche

Figure. Topics (Correlation) Network (n = 29).[2]

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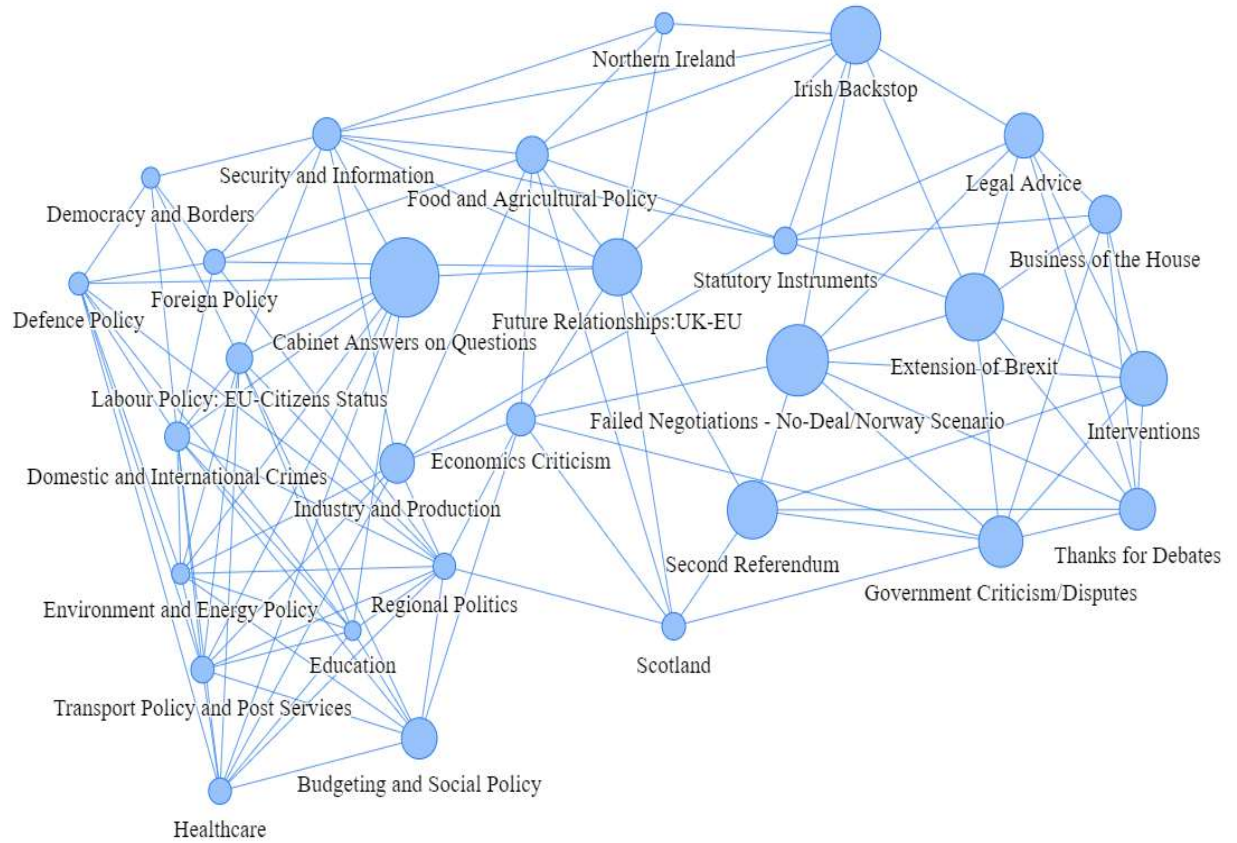
[2] The size of nodes refers to the topic proportion (prevalence) within the corpus

Table 3.1. Estimated effects of covariates on topic-proportions for topics 1-8. Topic numbers are taken from Table 2 (Appendix 2).

DV – Topic proportions (topic #)	1	2	3	4	5	6	7	8
(Intercept)	**0.0685*** (0.0028)**	**3.028e-02** (2.191e-03)**	**0.0193*** (0.0024)**	**0.019*** (0.0026)**	**7.3e-02*** (3.187e-03)**	**3.129e-02*** (2.636e-03)**	**0.0205*** (0.0027)**	**0.037*** (0.001)**
Cabinet Membership (1)	**-0.0149*** (0.0021)**	-2.159e-03 (1.54e-03)	0.0007 (0.0016)	**0.011*** (0.002)**	**-1.e-02*** (2.078e-03)**	**-4.240e-03* (1.882e-03)**	**-0.0203*** (0.002)**	**-0.0148*** (0.001)**
Party (2): DUP	-0.00095 (0.0059)	1.796e-03 (3.78e-03)	0.0066 (0.004)	**-0.0176** (0.0059)**	-2.72e-03 (4.961e-03)	**-4.2e-02*** (4.964e-03)**	**-0.0274*** (0.0057)**	**-0.0085* (0.003)**
Party: Green	0.0043 (0.013)	9.783e-03 (9.3e-03)	0.004 (0.009)	-0.0075 (0.0133)	-1.12e-02 (1.045e-02)	**-3.274e-02** (1.077e-02)**	**0.048** (0.018)**	0.0092 (0.0064)
Party: Independent	-0.0039 (0.00285)	**-8.67e-03*** (1.86e-03)**	0.0013 (0.0023)	**-0.008*** (0.003)**	**-1.e-02*** (2.417e-03)**	-3.614e-04 (2.951e-03)	**0.044*** (0.003)**	**0.0115*** (0.0017)**
Party: Labour	**-0.0092** (0.0029)**	**9.54e-03*** (2.10e-03)**	**0.0147*** (0.002)**	-0.004 (0.003)	2.736e-04 (2.535e-03)	**-2.38e-02*** (2.901e-03)**	**0.02*** (0.0036)**	**-0.004* (0.0017)**
Party: Labour/Co-operative	-0.008 ¤ (0.004)	**1.12e-02*** (3.16e-03)**	**0.024*** (0.0042)**	**-0.017*** (0.0042)**	5.045e-05 (3.673e-03)	**-2.37e-02*** (4.725e-03)**	0.009 ¤ (0.005)	**-0.005927* (0.0024)**
Party: Liberal Democrat	-0.0056 (0.0043)	3.459e-03 (3.444e-03)	**0.007* (0.0037)**	**-0.012* (0.005)**	**1.2e-02** (4.532e-03)**	**-1.9e-02*** (4.885e-03)**	**0.037*** (0.006)**	-0.0048 ¤ (0.0026)
Party: Plaid Cymru	0.0089 (0.0097)	2.110e-03 (6.098e-03)	0.0037 (0.007)	-0.002 (0.0089)	**1.1e-01*** (1.304e-02)**	**-2.560e-02** (8.356e-03)**	0.0199 ¤ (0.01)	-0.006254 (0.005)
Party: SNP	**0.0067* (0.0031)**	3.451e-03 (2.234e-03)	**0.0073** (0.0025)**	**-0.018*** (0.003)**	**9.5e-02*** (4.176e-03)**	**-3.25e-02*** (3.337e-03)**	0.0026 (0.004)	-0.002 (0.0018)
Period (3): Period 2	0.00118 (0.0036)	**8.579e-03*** (2.42e-03)**	0.004 (0.0026)	0.004 (0.0035)	**1.04e-02** (3.317e-03)**	**9.996e-03*** (2.868e-03)**	0.0006 (0.0035)	**-0.004359** (0.0017)**
Period: Period 3	**0.013* (0.005)**	**9.403e-03** (3.46e-03)**	0.0027 (0.0038)	**0.02*** (0.005)**	**1.35e-02** (4.685e-03)**	**3.926e-02*** (4.332e-03)**	**0.04*** (0.0055)**	**0.007102** (0.0025)**
Period: Period 4	-0.0135 (0.014)	-7.080e-03 (1.11e-02)	**-0.0316* (0.013)**	0.022 (0.015)	**-6.8e-02*** (1.661e-02)**	**1.472e-01*** (1.492e-02)**	**0.0945*** (0.015)**	**0.0485*** (0.007)**
Profile (4): No, Aye, Aye	-0.0033 (0.0041)	**1.98e-02*** (3.24e-03)**	**0.01*** (0.0033)**	**-0.0075* (0.003)**	**-1.44e-02*** (3.913e-03)**	**-7.406e-03* (3.490e-03)**	**-0.008* (0.004)**	**0.0086*** (0.00226)**
Profile: No, No, Aye	**-0.0081* (0.0032)**	**-6.341e-03** (2.431e-03)**	**-0.006* (0.0025)**	**0.009** (0.0035)**	**-2.08e-02*** (3.179e-03)**	**7.715e-03* (3.253e-03)**	0.0018 (0.0033683)	**0.00635** (0.002)**
Profile: No, No, No	**-0.0088** (0.003)**	**-9.112e-03*** (2.132e-03)**	**-0.0099*** (0.0022)**	**0.022*** (0.003)**	**-2.07e-02*** (2.739e-03)**	**2.101e-02*** (3.009e-03)**	**0.013*** (0.0035)**	**0.0086*** (0.0019)**

Signif. codes: 0***, 0.001**, 0.01*, 0.05¤. Reference categories for dummies: (1) 'Conservative Party' for parties; (2) 'Period_1' for periods; (3) 'Aye, Aye, Aye' for voting profile. Month numbers were excluded as not interpretable splines. Considering estimations uncertainty, they slightly change by each model run, but significance remains the same. Scientific notations were left to save space.

Table 3.2. Estimated effects of covariates on topic-proportions for topics 9-16. Topic numbers are taken from Table 2 (Appendix 2).

DV – Topic proportions (topic #)	9	10	11	12	13	14	15	16
(Intercept)	**0.06*** (0.002)**	**0.0225*** (0.0023)**	**6.03e-02*** (3.188e-03)**	**0.028*** (0.0026)**	**2.007e-02*** (2.308e-03)**	**0.033*** (0.0023)**	**0.0234*** (0.0028)**	**0.0415*** (0.0031)**
Cabinet Membership (1)	**0.027*** (0.0018)**	**0.009*** (0.0017)**	3.35e-03 (2.062e-03)	**0.0049** (0.0018)**	**-6.347e-03*** (1.494e-03)**	**-0.0154*** (0.0017)**	0.0013 (0.0018)	**-0.0046* (0.002)**
Party (2): DUP	0.0049 (0.005249)	-0.0019 (0.0055)	5.534e-05 (6.655e-03)	-0.0006 (0.0048)	**-1.902e-02*** (4.281e-03)**	**-0.0232*** (0.0043)**	**0.0173** (0.0056)**	-0.0057 (0.0056)
Party: Green	**-0.022* (0.009)**	0.0009 (0.0111)	**-6.5e-02*** (1.245e-02)**	0.0041 (0.0104)	**2.775e-02* (1.270e-02)**	**0.0247* (0.0124)**	0.0101 (0.0121)	0.0049 (0.0131)
Party: Independent	-0.0011 (0.002)	**0.0095*** (0.0027)**	**-1.6e-02*** (3.154e-03)**	-0.0022 (0.0024)	3.429e-03 (2.212e-03)	**0.0094*** (0.00217)**	-0.0034 (0.0025)	**0.0069* (0.0027)**
Party: Labour	**-0.0136*** (0.0023)**	-0.0039 (0.0025)	**-4.2e-02*** (3.711e-03)**	**0.0146*** (0.0023)**	4.269e-04 (2.418e-03)	0.003313 (0.002641)	**0.022*** (0.0027)**	**0.02*** (0.0031)**
Party: Labour/Co-operative	**-0.0138*** (0.0035)**	0.0045 (0.00372)	**-5.1e-02*** (5.022e-03)**	**0.0216*** (0.0043)**	5.738e-03 (3.901e-03)	-0.001177 (0.0039)	**0.0227*** (0.0041)**	**0.0264*** (0.0049)**
Party: Liberal Democrat	-0.0067 ¤ (0.0037)	-0.0074 ¤ (0.004)	**-4.8e-02*** (5.634e-03)**	**0.01878*** (0.0048)**	3.871e-05 (3.850e-03)	0.0042 (0.0043)	0.0034 (0.004)	**0.012* (0.0052)**
Party: Plaid Cymru	-0.0118 ¤ (0.006619)	0.0062 (0.008)	**-4.8e-02*** (9.831e-03)**	-0.0097 (0.0072)	1.753e-03 (7.404e-03)	0.0013 (0.0075)	-0.0038 (0.0083)	0.0135 (0.009)
Party: SNP	**-0.0116*** (0.0027)**	-0.0051 ¤ (0.0028)	**-6.0e-02*** (4.107e-03)**	**0.0071* (0.0029)**	5.093e-03 ¤ (2.900e-03)	**0.0226*** (0.00287)**	**0.0075** (0.0029)**	**0.0157*** (0.003)**
Period (3): Period 2	-0.0029 (0.0027)	**-0.0059* (0.0027)**	**-3.4e-02*** (3.593e-03)**	**-0.0148*** (0.0028)**	**-1.230e-02*** (2.788e-03)**	**0.02*** (0.0026)**	**0.0109*** (0.003)**	**-0.0098** (0.0033)**
Period: Period 3	-0.0011 (0.0039)	0.004 (0.004)	**-9.370e-02*** (5.575e-03)**	**-0.0134** (0.0044)**	**-1.197e-02** (3.963e-03)**	**0.029*** (0.004)**	0.00483 (0.004)	**-0.064*** (0.005)**
Period: Period 4	-0.017150 (0.012754)	**0.0315* (0.013)**	**-1.0e-01*** (1.488e-02)**	**-0.04355** (0.015)**	**-4.003e-02*** (1.205e-02)**	**0.0347** (0.0125)**	-0.0132 (0.015)	**-0.1179*** (0.017)**
Profile (4): No, Aye, Aye	**-0.0117*** (0.003)**	**-0.0066* (0.0033)**	-6.44e-03 ¤ (3.887e-03)	**0.00914* (0.0035)**	6.434e-05 (3.164e-03)	-0.01061 (0.0031)	**0.0182*** (0.0038)**	**-0.0085* (0.0039)**
Profile: No, No, Aye	**0.0116*** (0.002824)**	0.0006 (0.0026)	**2.77e-02*** (3.622e-03)**	**-0.0078* (0.003)**	1.455e-04 (2.608e-03)	-0.0032 (0.0025)	-0.0036 (0.003)	0.003 (0.0036)
Profile: No, No, No	**-0.0091*** (0.002481)**	-0.0002 (0.0026)	**2.78e-02*** (3.738e-03)**	**-0.00602* (0.0026)**	**1.435e-02*** (2.497e-03)**	**0.012*** (0.0026)**	-0.00232 (0.00278)	**-0.0086** (0.003)**

Signif. codes: 0***, 0.001**, 0.01*, 0.05¤. Reference categories for dummies: (1) 'Conservative Party' for parties; (2) 'Period_1' for periods; (3) 'Aye, Aye, Aye' for voting profile. Month numbers were excluded as not interpretable splines. Considering estimations uncertainty, they slightly change by each model run, but significance remains the same. Scientific notations were left to save space.

Table 3.3. Estimated effects of covariates on topic-proportions for topics 17-24. Topic numbers are taken from Table 2 (Appendix 2).

DV – Topic proportions (topic #)	17	18	19	20	21	22	23	24
(Intercept)	**0.034*** (0.0031)**	**0.016*** (0.0019)**	**0.0175*** (0.0024)**	**0.0396*** (0.0024)**	**3.013e-02*** (2.814e-03)**	**0.02*** (0.0025)**	**0.026*** (0.003)**	**0.0435*** (0.002)**
Cabinet Membership (1)	**-0.0104*** (0.002)**	**-0.0057*** (0.0016)**	**0.0051** (0.0017)**	**0.0735*** (0.0017)**	3.336e-03 ¤ (2.027e-03)	0.0005 (0.001)	**-0.0088*** (0.0023)**	0.0029 (0.0022)
Party (2): DUP	0.0107 ¤ (0.0056)	**0.0269*** (0.0056)**	0.0012 (0.0048)	0.0006 (0.004)	-3.271e-03 (5.634e-03)	**-0.008* (0.004)**	**-0.0149* (0.0065)**	**-0.041*** (0.0055)**
Party: Green	-0.0178 ¤ (0.01)	0.0086 (0.009)	0.0196 (0.014)	-0.008 (0.0096)	-9.449e-03 (1.229e-02)	**0.045** (0.0158)**	-0.019 (0.0143)	-0.005 (0.0137)
Party: Independent	**-0.0158*** (0.0024)**	**0.0059** (0.0021)**	**0.0168*** (0.002)**	**-0.0173*** (0.0022)**	**-1.356e-02*** (2.611e-03)**	-0.0028 (0.0023)	-0.0056 ¤ (0.0031)	**-0.0146*** (0.0029)**
Party: Labour	0.00327 (0.0027)	0.0028 (0.002)	**0.024*** (0.0026)**	**-0.0067** (0.0023)**	**1.849e-02*** (2.965e-03)**	**0.01*** (0.0024)**	**-0.029*** (0.0035)**	**-0.0329*** (0.0033)**
Party: Labour/Co-operative	0.0039 (0.0041)	0.0028 (0.003)	**0.02*** (0.0039)**	-0.0012 (0.00342)	**1.845e-02*** (4.241e-03)**	**0.0112** (0.0036)**	**-0.036*** (0.0048)**	**-0.03*** (0.0045)**
Party: Liberal Democrat	-0.00393 (0.0044)	0.0018 (0.003)	**0.0360*** (0.0054)**	0.0033 (0.00383)	-2.444e-03 (5.012e-03)	0.0056 (0.0037)	**-0.022*** (0.0057)**	**-0.015** (0.0052)**
Party: Plaid Cymru	-0.0036 (0.0079)	-0.0036 (0.0061)	**0.024** (0.0088)**	-0.0099 (0.0068)	4.560e-03 (9.052e-03)	-0.0012 (0.007)	**-0.036*** (0.009)**	-0.0155 ¤ (0.009)
Party: SNP	0.00122 (0.0032)	**0.01*** (0.0024)**	**0.034*** (0.0032)**	-0.0046 ¤ (0.0026)	3.322e-04 (3.441e-03)	0.0023 (0.0026)	**-0.028*** (0.0042)**	**-0.0271*** (0.0038)**
Period (3): Period 2	0.00354 (0.0029)	**0.0064** (0.002)**	**0.0304*** (0.0033)**	**0.0182*** (0.0028)**	4.745e-03 (3.311e-03)	**0.0071* (0.0028)**	**-0.021*** (0.0035)**	**-0.0123*** (0.0034)**
Period: Period 3	**0.0096* (0.0044)**	**0.01** (0.0032)**	**0.024*** (0.0048)**	**0.024*** (0.004)**	-1.972e-03 (4.794e-03)	**0.0106** (0.004)**	**-0.0695*** (0.0059)**	0.0065 (0.0048)
Period: Period 4	-0.0056 (0.015)	**0.0922*** (0.011)**	**0.051** (0.0155)**	0.0055 (0.0131)	7.995e-04 (1.691e-02)	0.013 (0.015)	**-0.0465** (0.015)**	-0.0172 (0.0148)
Profile (4): No, Aye, Aye	0.0009 (0.0039)	0.00317 (0.0028)	**0.008* (0.0037)**	**-0.008* (0.0031)**	5.673e-03 (4.165e-03)	**0.009* (0.0038)**	-0.0068 (0.0043)	0.0059 (0.0042)
Profile: No, No, Aye	-0.0036 (0.0034)	-0.0037 (0.0026)	**-0.0085** (0.0028)**	-0.00336 (0.0028)	-4.513e-03 (3.554e-03)	**-0.0073** (0.0027)**	**0.0215*** (0.0045)**	**0.0106** (0.0037)**
Profile: No, No, No	**-0.012*** (0.0029)**	**-0.0044* (0.002)**	**-0.0117*** (0.0025)**	**-0.0092*** (0.0024)**	-2.914e-03 (2.991e-03)	**-0.007** (0.0025)**	**0.0236*** (0.004)**	**0.0139*** (0.0036)**

Signif. codes: 0***, 0.001**, 0.01*, 0.05¤. Reference categories for dummies: (1) 'Conservative Party' for parties; (2) 'Period_1' for periods; (3) 'Aye, Aye, Aye' for voting profile. Month numbers were excluded as not interpretable splines. Considering estimations uncertainty, they slightly change by each model run, but significance remains the same. Scientific notations were left to save space.

Table 3.4. Estimated effects of covariates on topic-proportions for topic 25-29. Topic numbers are taken from Table 2 (Appendix 2).

DV – Topic proportions (topic #)	25	26	27	28	29
(Intercept)	**0.03742*** (0.00171)**	**0.0362*** (0.0026)**	**0.0374*** (0.0019)**	**0.0337*** (0.002)**	**0.03694*** (0.00195)**
Cabinet Membership (1)	**-0.0111*** (0.00129)**	-0.002 (0.0016)	**-0.014*** (0.00145)**	**-0.0097*** (0.00148)**	**0.011*** (0.0013)**
Party (2): DUP	**-0.008** (0.00295)**	**0.1654*** (0.0089)**	-0.0002 (0.0037)	**-0.01085** (0.0038)**	0.00068 (0.00329)
Party: Green	0.0002 (0.007)	-0.0139 (0.0088)	0.0094 (0.01)	**-0.0225** (0.008)**	0.005 (0.0073)
Party: Independent	**0.01319*** (0.0016)**	0.0018 (0.0024)	-0.0010 (0.002)	-0.0009 (0.0023)	0.00364 ¤ (0.00189)
Party: Labour	-0.0012 (0.0017)	-0.0031 (0.002)	**0.0108*** (0.00213)**	**-0.01156*** (0.0021)**	**0.01*** (0.00176)**
Party: Labour/Co-operative	0.00089 (0.0024)	-0.006837 ¤ (0.0035)	**0.018*** (0.0033)**	**-0.0097** (0.003)**	0.00461 ¤ (0.00243)
Party: Liberal Democrat	**0.01080*** (0.00298)**	**-0.0122*** (0.0037)**	0.0046 (0.0039)	**-0.00867* (0.0036)**	**0.00866** (0.0028)**
Party: Plaid Cymru	**-0.0127** (0.00435)**	-0.0103 (0.0064)	**0.0131* (0.00665)**	-0.00777 (0.007)	-0.0042 (0.0047)
Party: SNP	**-0.0069*** (0.0019)**	-0.0038 (0.0027)	0.0025 (0.0022)	**-0.0127*** (0.0024)**	0.00289 (0.002)
Period (3): Period 2	**-0.01087*** (0.0019)**	**-0.0105*** (0.0028)**	**0.0059* (0.0025)**	**-0.0091*** (0.0025)**	0.003 (0.0019)
Period: Period 3	0.0034 (0.00247)	**-0.018*** (0.004)**	0.00592 ¤ (0.0035)	0.00418 (0.00345)	**-0.0076** (0.0027)**
Period: Period 4	0.0139 ¤ (0.00776)	**-0.0291* (0.011)**	-0.0102 (0.0111)	0.0176 (0.01107)	-0.00614 (0.00964)
Profile (4): No, Aye, Aye	-0.0011 (0.0021)	-0.0014 (0.0034)	0.00428 (0.003)	-0.00393 (0.003)	**-0.0069** (0.0021)**
Profile: No, No, Aye	-0.001 (0.0018)	0.0015 (0.003)	**-0.0088*** (0.0022)**	**-0.00875*** (0.0026)**	0.00349 (0.0022)
Profile: No, No, No	**-0.00835*** (0.00192)**	-0.0015 (0.0025)	**-0.01287*** (0.00195)**	0.00016 (0.0022)	**-0.0122*** (0.0018)**

Signif. codes: 0***, 0.001**, 0.01*, 0.05¤. Reference categories for dummies: (1) 'Conservative Party' for parties; (2) 'Period_1' for periods; (3) 'Aye, Aye, Aye' for voting profile. Month numbers were excluded as not interpretable splines. Considering estimations uncertainty, they slightly change by each model run, but significance remains the same. Scientific notations were left to save space.

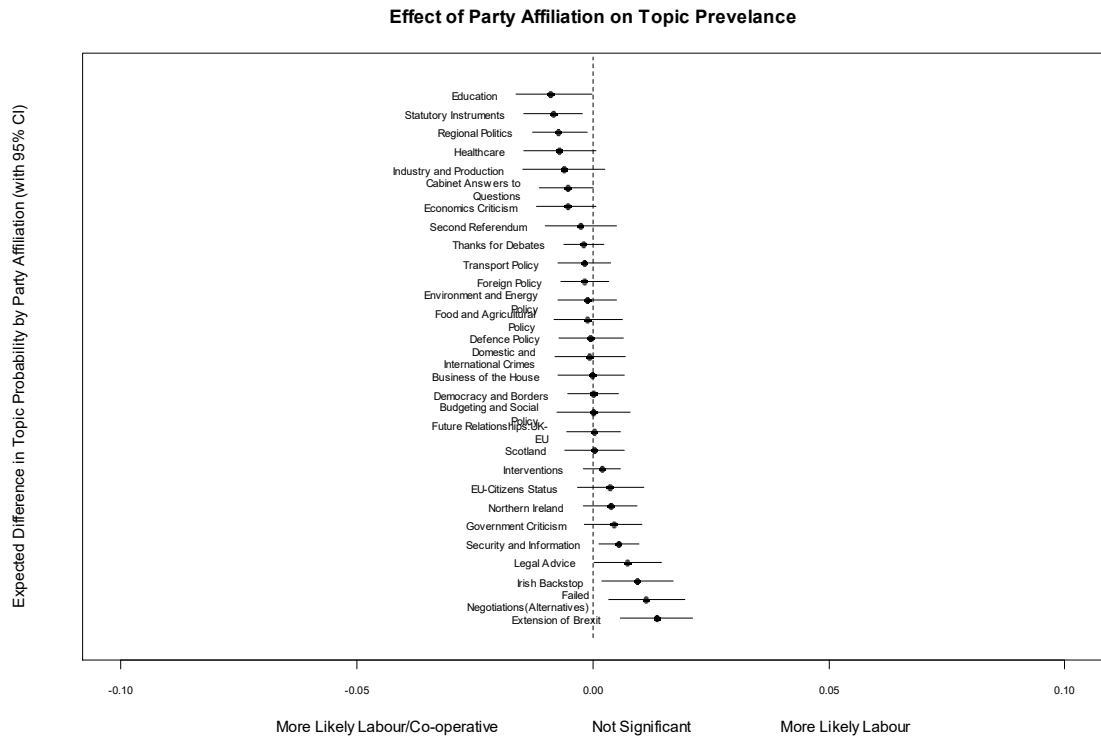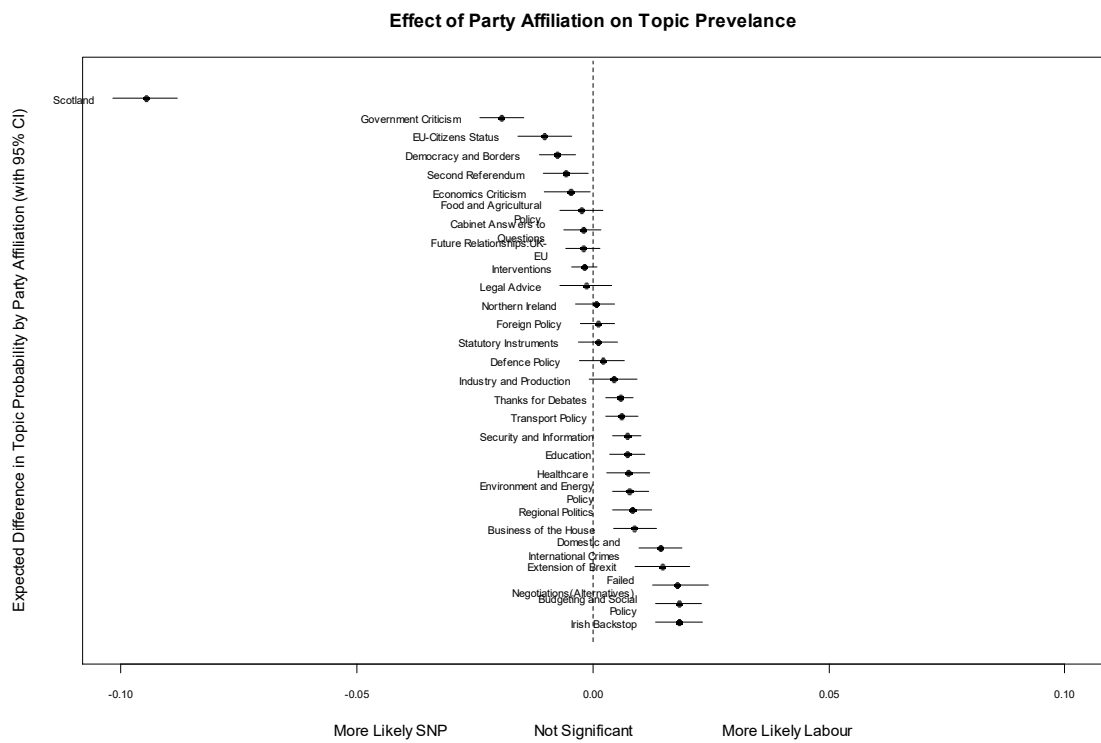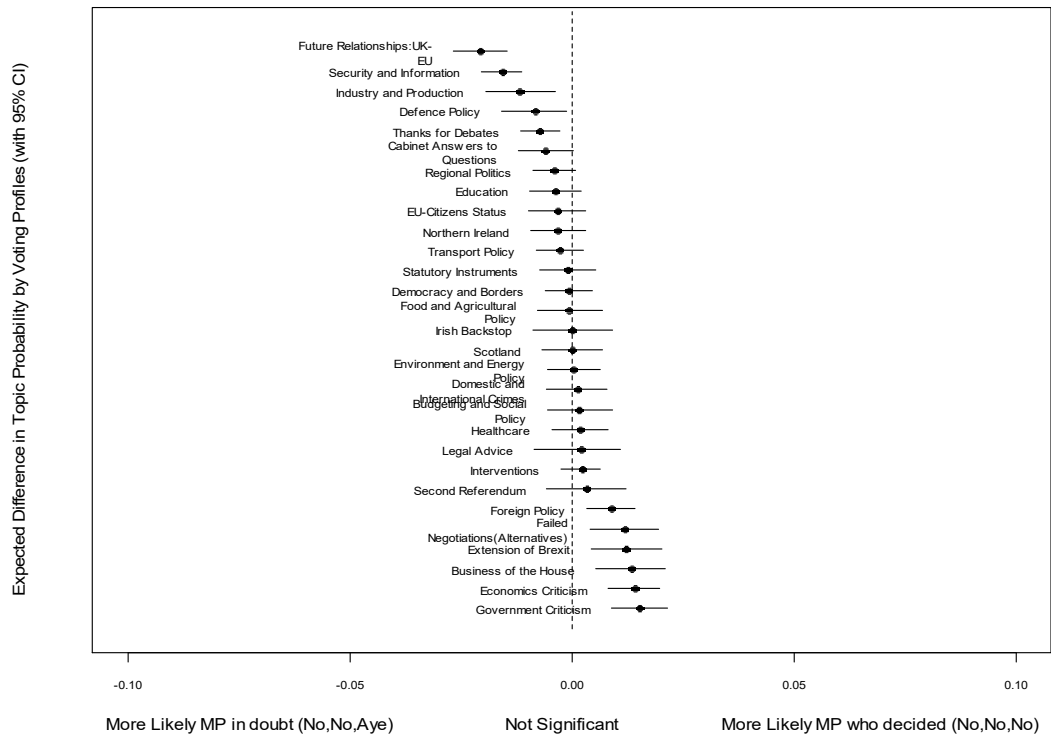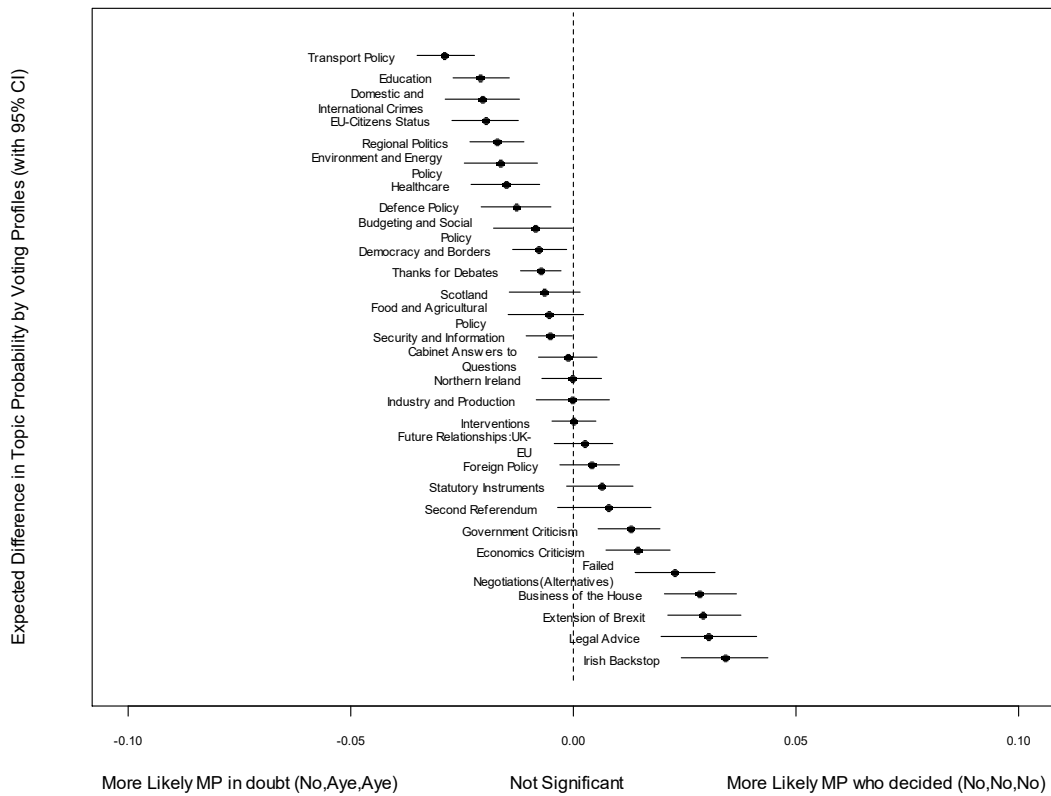*Figure. Labour Party and Labour/Co-Operative*

Effect of Party Affiliation on Topic Prevelance

Figure. Labour Party and SNP

Effect of Party Affiliation on Topic Prevelance

Effect of Vote Preferences on Topic Prevelance

Expected Difference in Topic Probability by Voting Profiles (with 95% CI)

More Likely MP in doubt (No,No,Aye)   Not Significant   More Likely MP who decided (No,No,No)

Effect of Vote Preferences on Topic Prevalence

Expected Difference in Topic Probability by Voting Profiles (with 95% CI)

More Likely MP in doubt (No,Aye,Aye)   Not Significant   More Likely MP who decided (No,No,No)

Effect of Vote Preferences on Topic Prevelance

Expected Difference in Topic Probability by Voting Profiles (with 95% CI)

More Likely MP in doubt (No,Aye,Aye)　　Not Significant　　More Likely MP who decided (Aye,Aye,Aye)

Effect of Vote Preferences on Topic Prevelance

Expected Difference in Topic Probability by Voting Profiles (with 95% CI)

More Likely No,No,Aye　　Not Significant　　More Likely Aye,Aye,Aye