

Communicative Power and the Pursuit of Political Equality

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Abstract

How can we evaluate the extent of political inequality when public opinion is influenced by elite communication? I argue that, in such contexts, a key component of political power and status is ‘communicative power’, or the power to influence public opinion. Correspondingly, an equal distribution of communicative power is a necessary condition for political equality. The extent of inequalities in communicative power is well-captured by the degree of ‘communicative representation’ – or how much, across issues, elite communication proportionately reflects and responds to citizen opinion. I introduce an empirical strategy for measuring how far communicative representation actually obtains. To illustrate its feasibility, I use this approach to analyze communicative representation in the United Kingdom (UK) between 2010 and 2019. Cumulatively, this study breaks new ground in normative democratic theory as well as empirical research on political inequality, and joins efforts to bridge the two.

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1 Introduction

Political equality – equality of political power or status across citizens – is a widely held commitment among normative political theorists of liberal democracy. This commitment also motivates much empirical research on political inequality and representation in democracies. At the same time, empirical political scientists have amassed considerable evidence that public opinion both influences and is influenced by elite speech. This dynamic, which I term ‘opinion endogeneity’, introduces additional sources of political inequality: insofar as an individual (or group) can influence public opinion in line with their own preferences, this enhances the political power and status of that individual (or group). For instance, although citizens can choose who to elect, once elected, representatives can use their privileged position to reshape citizens’ opinions in a direction more consistent with their own interests, judgments or values. I argue that the standard mechanisms of representative democracy cannot eliminate this behavior. Consequently, existing approaches to the study of political (in)equality in democracies overlook an important component of the distribution of political power and status: the presence and influence that individual political actors have within public political debate, and therefore over public opinion. In other words, their ‘communicative power’.

I argue here that a full consideration of how political power and status is distributed in a polity must therefore consider inequalities in communicative power as well. As such, an equal distribution of communicative power is necessary for the full realization of political equality. The degree of equality of communicative power is captured by the level of ‘communicative representation’ in a polity – or the degree to which, across issues, political speech by elite actors proportionately reflects, as well as responds to, the opinions of individual citizens. This is because low communicative representation implies that elite actors with certain opinions, and the citizens who share them, have disproportionate presence and influence in public debate, giving them disproportionate power over public opinion. On the other hand, if communicative representation is high, no individual’s views receive disproportionate representation, and thus communicative power is more equally distributed. This contributes to political equality even if

the voter preferences that are being represented within elite discourse are themselves, inevitably, formed endogenously – since a high level of communicative representation implies that any change in a citizen’s opinions is as likely to be reflected in subsequent elite discourse as a change in any other citizen’s opinions.

Moreover, I propose an empirical strategy for measuring how far communicative representation, thus defined, obtains in actually existing polities. I illustrate the feasibility of this empirical strategy by applying it to UK data, but the overall empirical approach is concrete, replicable and scalable to other countries, issues and years. My proposed measure of communicative representation has two components: ‘communicative congruence’ – i.e. the extent to which, across issues, the entire distribution of voter preferences is proportionately reflected in elite speech – and ‘communicative responsiveness’ – i.e., the extent to which changes in the distribution of voter preferences (appear to) produce corresponding changes in the preferences expressed in elite speech. I also propose three additional statistics that provide deeper insight into the degree and sources of unequal communicative representation in a polity: the extent of ‘communicative malapportionment’ in a polity, the ‘relative communicative presence’ of different social groups within an electorate, and elites’ ‘relative communicative responsiveness’ to these social groups. By helping us identify which social groups are relatively under- or over-represented in elite speech (and by how much), and whether elites are disproportionately responding to changes in the preferences of certain groups, these latter two statistics provide particular insight into the sources of any inequalities of communicative power that we identify. As proof of concept, I apply this empirical strategy to study communicative representation on three key issues – redistribution, immigration and European integration – between 2010 and 2019 in the UK, using parliamentary speech as a proxy for elite speech in the first instance.

The contributions of this article are fivefold. First and foremost, by taking on the question of how one can characterize, and therefore evaluate, the distribution of political power and status in the presence of opinion endogeneity, this article breaks new ground in normative democratic theory. Contemporary theorists of representation – especially those belonging to the ‘constructivist turn’ – have long recognized the centrality of ‘discursive processes’ within

the representative system, and their implications for the formation of opinions and identities (Mansbridge, 2003; Saward, 2010; Disch, 2021). However, while recognizing the potential for bias and manipulation as a consequence, work within this tradition has not focused on the question of what opinion endogeneity implies for the characterization of political power and inequality.

Second, many contemporary democratic theorists, in part motivated by evidence of opinion endogeneity, have been skeptical of the value of congruence and responsiveness as indicators of democratic quality (Disch, 2012, 2021; Sabl, 2015; Bagg, 2024). Here, I put forward an argument for the empirical and normative value of considering, at least, the level of *communicative* congruence and responsiveness in a polity, as I argue that these indicators are cumulatively informative about the distribution of political power and status in that polity.

Third, this enterprise adds to recent efforts to place democratic theory on more ‘realistic’ foundations (e.g. Bächtiger and Parkinson (2019); Lepoutre (2021); Bagg (2024)). I contend that my proposed measure of communicative representation in a polity provides a useful and important barometer of how and how far its political environment deviates from crucial aspects of the ideal of political equality at any given moment. Moreover, performance on this measure also provides us with a criterion which we can use to rank actually existing democracies, to compare their performance against a benchmark of ‘perfect’ communicative representation, and to explore the correlates of any variation in performance across countries and over time (so as to better understand variation in political inequality). Further, by helping us evaluate not just *whether* communicative power is unequally distributed, but *for the benefit of whom*, this enterprise can help us evaluate the effectiveness of various strategies which have been proposed to reduce political inequality, or to identify new ones. As such, it also responds to calls for a more ‘problem-based’ approach to democratic theory (Warren, 2017), as well as a ‘comparative’ approach to normative political theory and institutional design (Ganghof, 2013; Blum and Zuber, 2016).

Fourth, by proposing and validating a concrete, replicable and scalable empirical strategy to examine the level of communicative representation in a polity, I add to the repertoire of poten-

tial measures empirical researchers can use when assessing political inequality and democratic quality in a polity.

Finally, my analysis of the UK constitutes the first attempt to empirically estimate patterns in communicative representation in a polity. I find evidence of significant communicative malapportionment on all three issues, alongside moderate levels of communicative responsiveness overall. Across issues, I find that the opinions of women, and especially low education voters, are consistently *under*-represented in legislative speech. Meanwhile, the (more left-wing) opinions of working-class voters on redistribution, and the (more right-wing) opinions of white working-class and older voters on immigration and EU integration are also consistently under-represented in speech throughout. The patterns that I uncover align well with previous research on unequal representation in established democracies – and in particular, the descriptive and substantive under-representation of female, working-class and low education voters – including in the UK.

2 The Importance of Communicative Representation

2.1 Political Equality and Opinion Endogeneity

Political equality, or “the equality of persons qua citizens”, is widely considered by democratic theorists to be fundamental to the definition and normative value of democracy (Chambers 2024, 36). There are two ways in which this term has usually been interpreted. First, and most commonly, political equality has been thought to require that citizens have ‘equal political power’ – mainly understood as an equal opportunity to influence political decisions (Brighouse, 1996; Kolodny, 2014; Viehoff, 2019; Ingham, 2022). Mráz (2023) and Wilson (2019) refer to these approaches as the ‘equal power’ view of political equality.

Alternatively, many democratic theorists have rejected the equal power view and have instead emphasized the need to ensure each citizen’s political judgments, interests and values receive equal consideration (Verba, 2003; Christiano, 2008; Wilson, 2019). Wilson (2019) and

Mráz (2023) refer to these as the ‘equal status’ view of political equality.

Regardless of which of these definitions we adopt, the presence of ‘opinion endogeneity’ creates possibilities for political inequality. By ‘opinion endogeneity’, I refer to the widely documented tendency for citizens’ policy opinions and beliefs to be, at least partially, influenced by elite political communication. Prior work has extensively documented citizens’ tendencies to adapt their policy opinions and factual beliefs based on partisan cues and framing, in experiments (Bolsen, Druckman and Cook, 2014; Broockman and Butler, 2017; Barber and Pope, 2019) as well as in real-world contexts (Lenz, 2012; Tesler, 2018; Slothuus and Bisgaard, 2021).

Such opinion endogeneity introduces the potential for additional sources of political inequality that would not exist if citizen opinion was fully exogenous. In particular, it introduces new asymmetries of power and status into the principal-agent relationship linking representatives and constituents: given asymmetric and incomplete information, although citizens can choose who to elect, once elected, the representative can potentially reshape citizens’ opinions in a direction more consistent with their own (perhaps newly acquired) interests, judgments or values.

As Mansbridge (2003), Disch (2011, 2021) and others have argued, this may be normatively justifiable and desirable. Naturally, given constraints of time, information and expertise, many citizens will want to defer to the expertise of more informed and engaged citizens (including elected representatives). They then award those citizens more influence over their own opinions than they themselves wield over the opinions of others. In many cases, given more information and time for reflection, they would even approve of how their opinions have been reshaped through this fundamentally unequal relationship. Moreover, as this kind of opinion endogeneity occurs automatically (due to the public prominence of elected representatives, and their privileged access to expertise and other information), it does not require any strategic intent or deliberate manipulation by elite actors.

Nevertheless, these same asymmetries of power and status imply that there is no reason to expect that the resulting opinions and policies that arise from this process reflect equal

consideration of the interests or preferences of all citizens. In particular, the asymmetries of information central to this process mean that voters are very unlikely to receive the information needed to determine whether their new opinions are more aligned with their underlying interests, judgments and values than previously. They, therefore, cannot realistically ascertain whether their opinions truly reflect equal consideration of their interests. It is also not possible for an analyst, let alone a citizen, to determine if, in the counterfactual where the citizen had received the best available information and arguments from her representatives, she would arrive at the same policy opinions or electoral judgments.

2.2 Political Equality and Communicative Power

I contend that, if the policy opinions and factual beliefs of citizens are indeed endogenous to elite political communication, then genuine political equality would require that citizens have equal presence and influence within public political debate, and thus equal influence over public opinion.

This is because the presence and influence that any individual citizen has within public debate – even if only indirectly, via their representative(s) – materially affects their opportunities to influence political outcomes, via their influence on the opinions of others. As such, the presence and influence each citizen has within public debate (or their ‘communicative power’) is a core component of any measure of their political power over other citizens, including their representatives. Consequently, if we adopt an ‘equal power’ view of political equality, as discussed above, then it follows that an equal distribution of communicative power is necessary for the full realization of political equality as equal political power.

If we instead adopt an ‘equal status’ view of political equality along the lines of Verba (2003), Christiano (2008), or Wilson (2019), it remains the case that equal communicative power appears to be a precondition for genuinely equal consideration of the judgments, values and interests of each citizen, and, therefore, a precondition for political equality. This is because the presence and influence each citizen has within public debate materially affects the extent to

which their judgments and interests are taken into account in political decision-making. Thus, Verba defines political equality as a scenario where ‘voices are equally expressed and given an equal hearing’ (Verba 2003, 677). This would seem, then, to entail equality of communicative power.

2.3 Communicative Power and Communicative Representation

Given the prevalence and pervasiveness of opinion endogeneity, how can we evaluate how equally communicative power is distributed within a polity? I contend that the degree of ‘communicative representation’ in a polity reflects, and is therefore informative about, its distribution of communicative power. Here, I define the level of communicative representation in a polity as the extent to which speech by elite actors proportionately reflects, *and* responds to changes in, the entire distribution of individual preferences on each issue.¹ This is because, if communicative representation is low, it must be the case that elite actors with preferences shared by a subset of the electorate have disproportionate presence in public debate, providing them and those whose views they reflect greater opportunity than others to influence public opinion, and ultimately, political outcomes. On the other hand, high communicative representation would imply that elite opinions have a presence and influence in public debate largely in proportion to the number of citizens who share these views, implying a more equal distribution of communicative power among citizens.

Equality of communicative power, then, requires the presence of opinions in public debate *in proportion* to the number of citizens holding these opinions: it is not enough for opinions to receive merely some presence in debate. This is because, all else equal, it seems natural that the probability an individual will be persuaded by an opinion increases in the frequency with which they hear that opinion. Then, if an individual’s opinions receive less than proportional

¹In practice, measuring this for all issues is empirically impossible. However, as voters’ issue priorities, like their opinions, are known to be endogenous to elite communication (Tesler, 2015; Matthews, 2019), to obtain a more accurate picture of overall communicative representation, it is important to consider as wide a range of issues as possible rather than focusing on particularly salient issues.

representation in elite discourse, it follows that they have less communicative power than individuals whose views are then disproportionately aired. This intuition is supported by research on persuasion that has found that public opinion is more likely to be influenced by arguments that individuals have been exposed to repeatedly or disproportionately (Zaller, 1992; Chong and Druckman, 2007; Druckman, Peterson and Slothuus, 2013; O’Grady, 2022).

Crucially, the relationship between communicative representation and the distribution of communicative power holds even though the views of citizens that are therefore being represented by elites are, inevitably, themselves formed endogenously, through political and other processes. At any given moment, insofar as changes in the opinions of any individual citizen on any issue are as likely to be reflected in subsequent elite speech as changes in the preferences of any other citizen, we can say that that individual has the same communicative power as any other citizen – in that, as an individual, they have as much presence and influence within public debate as any other citizen at that moment. This is true *even if* the policy opinions and beliefs that the individual concerned currently espouses reflect the opinions and information they have received from others within their social and political environment. Likewise, if political speech disproportionately mirrors, and is more responsive to, the opinions of some individuals rather than others, those individuals can be said to have greater communicative power than others, even if the preferences of all individuals are endogenous. More generally, if A’s preferences have a causal effect on the behavior (or speech) of B, then A can consequently be said to have power over B, regardless of whether or not A’s preferences are exogenously or endogenously determined. Additionally, A can be said to have more power over B than C does, if B’s behavior responds more strongly to A’s preferences than to C’s. Moreover, this holds even if B’s preferences simultaneously have a causal effect on the preferences and/or behavior of both A and C, as A, B and C can all have (some) power over each other.

Furthermore, the connection between communicative representation and communicative power also holds even if the views which receive more representation within elite speech are not incorporated into legislation in the short term. Indeed, there may also be policy proposals that elites spend little time discussing in public, but nonetheless act upon. But, I contend

that views which are more represented in elite speech – even if these are not acted upon by those elites – nonetheless have more influence on *public opinion* than views which receive less publicity. Then, the extent to which an individual citizen’s views are represented in elite speech *does* matter for their political power and status – not because their views necessarily have more influence on policy-makers in the short term, but because their views are more likely to shape future public opinion, and so (via elections) the preferences and actions of future policymakers.

It is important to stress that a high degree of communicative representation thereby constitutes a necessary but not sufficient condition for equality of political power. The distribution of political power depends not only on who can influence public opinion, but also on how public opinion feeds through into political outcomes, which also depends upon, for example, the electoral or legislative institutions in place.

2.4 Related Concepts in the Literature

My conceptions of communicative power and communicative representation exhibit similarities to various concepts already in the literature, while differing from them in important ways. My suggestion that individuals can exercise power through the effects of their communication on the opinions of others is hardly new, and perhaps most resembles what Lukes (1974) describes as the ‘third face of power’ (later described as ‘ideological power’): the power A exercises over B by “influencing, shaping or determining his very wants” (Lukes 1974, 23). My conception of communicative power is narrower than Lukes’s ideological power, in that it is limited to the presence and influence each citizen has within public debate. This narrower definition renders communicative power much easier to measure and quantify than ideological power, and so allows me to spell out precisely the implications of political equality for the distribution of communicative power, and to propose a strategy for evaluating who, if opinions are endogenous, can be said to have more or less (ideological or communicative) power than others.

My use of the term ‘communicative power’, while related, is very distinct from its use by Hannah Arendt and Jürgen Habermas. For both Arendt (1958, 1970) and Habermas (1996),

‘communicative power’ is a form of power generated by groups of citizens when they form a collective will by communicating among themselves. By contrast, I use ‘communicative power’ to refer to the power to influence public opinion possessed by individuals or groups by virtue of their ability to communicate their opinions to others. It is also distinct from the ‘agenda-setting power’ discussed by Bachrach and Baratz (1962) and Baumgartner and Jones (1993) – i.e. the power to keep issues off the political, or partisan, agenda, by “creating or reinforcing [certain] social and political values and institutional practices” (Bachrach and Baratz 1962, 948). Compared to my notion of communicative power, agenda-setting power relates to the selection of issues for political debate, rather than to opinion formation, and constitutes a significant ‘face of power’ even if individuals’ policy opinions are entirely pre-political and exogenous.

My notions of of communicative power and communicative representation also exhibit similarities to an influential tradition in the empirical literature, which evaluates the responsiveness of legislator opinions and policy outcomes to changes in public opinion (Miller and Stokes, 1963; Erikson, MacKuen and Stimson, 2002; Soroka and Wlezien, 2009; Caughey and Warshaw, 2022) and their congruence with public opinion (Powell, 2000; Golder and Stramski, 2010). This literature also considers whether elites respond more to, or are congruent with, certain subgroups of voters than others (Gilens, 2012; Lupu and Warner, 2022; Persson and Sundell, 2024). However, my approach and its rationale diverges in key respects from this literature. First and foremost, communicative power and representation specifically concern how *speech*, rather than legislator opinions or policy, responds to changes in voter opinion, because of the significance of speech for public opinion formation – even if this speech does not influence policy in the short run. Just as communicative representation is a necessary but not sufficient condition for equality of political power, the criteria that have been prominent within empirical research on representation – such as policy responsiveness or improved descriptive representation – present complementary conditions which are also (potentially) necessary but not sufficient conditions for political equality. Second, the existing literature on congruence and responsiveness largely assumes that public opinion is exogenous to elite speech (though

it may be endogenous to policy outcomes, as in the thermostatic model proposed by Wlezien (1995) and Soroka and Wlezien (2009)) – and so is not concerned with the implications of opinion endogeneity for democratic quality. Lastly, the empirical measurement of communicative power and representation involves considering how far the entire distribution of elite speech is both congruent with and responds to the entire distribution of voter preferences, whereas work in this literature typically focuses exclusively on either congruence between legislators and voters or on responsiveness to the median voter or particular groups.

Given the relationship between communicative power and representation and existing work on congruence and responsiveness, my contention that communicative representation is an important component of political equality appears to go against the deep skepticism among many democratic theorists regarding the value of studying elite ‘responsiveness’ to voter preferences (Sabl, 2015; Disch, 2021; Bagg, 2024). In large part, this skepticism builds on the same empirical research I do, regarding the instability of voter opinions on many issues, and the role of elite communication in shaping voter preferences and identities. The appearance of congruence between public and elite opinion may be a consequence of elites’ influence over the public, rather than of genuine equality in political power.

While I accept these arguments, I contend that this does not invalidate the empirical and normative value of studying elite congruence with, and responsiveness to, the (endogenously formed) opinions of a voter, as an indicator of that individual’s political power (communicative and otherwise). This is because, as discussed in Section 2.3, if an individual’s preferences have a causal effect on the behavior of politicians (and, thereby, on political outcomes) then that individual can be said to have political power, even if their preferences are entirely endogenous to the political process. As such, the degree to which political speech reflects and responds to different citizens’ opinions is still indicative of the distribution of communicative power.

At the same time, if political speech both reflects and influences individuals’ preferences, it can be empirically difficult in practice to assess how far citizen opinions have a causal effect on political speech, rather than merely being influenced by political speech. This is conceptually identical to the econometric difficulties associated with identifying and estimating the ‘true’

causal effects of endogenous variables (i.e. correlation between citizen opinions and political speech is not the same as causation). As an, admittedly imperfect, solution to this difficulty, my empirical analysis below considers the relationship between lagged public opinion and political speech. I argue in Section 3 and Appendix A.5 that, while imperfect, this approach is still relatively informative about inequalities of communicative power.

2.5 Costs of Communicative Representation

Even if we accept that the degree of communicative representation in a polity is informative regarding the extent of political inequality, there are undoubtedly costs associated with improving communicative representation as well. Improving communicative representation may require increasing, for instance, the presence and influence of nativists or authoritarians in public debate, or the representation of opinions which would be inadmissible in an ideal deliberative setting. It would also demand that the views of experts are not over-represented within public debate, even at the cost of the public interest. By increasing the communicative power of those with illiberal and anti-democratic views, improved communicative representation may threaten democratic stability and cohesion. Moreover, research suggests that there are substantial differences between citizens' 'fully informed' preferences and those expressed in surveys (Althaus, 1998; Luskin, Fishkin and Jowell, 2002) – compounding doubts as to whether focusing on the representation of citizens' *actual* (uninformed and pre-deliberative) preferences is wise. Perfect communicative representation may even contradict how individuals *want* to be represented (Rehfeld, 2009), since citizens may perceive themselves to be less than fully informed or moral.

2.6 The Value of Communicative Representation

Nonetheless, I argue that a more equal distribution of communicative power, and thus improved communicative representation, is a worthwhile normative objective, albeit one that should not be prioritised over all other normative objectives.

My argument proceeds in two steps. First, arguments against equalizing communicative power which rely on claims regarding the epistemic or moral inferiority of some citizens also imply reservations about equalizing the non-communicative power and status of those citizens as well. Second, many standard arguments for political equality imply that we should equalize not only non-communicative power (or status) but also communicative power as well. In this sense, discussions about political equality and equality of communicative power are inseparable, and turn on each other. Therefore, a commitment to political equality – based on, for instance, a commitment to equal moral respect for all persons – entails a commitment to equalizing communicative power.

First, consider the view that citizens with illiberal, anti-democratic, nativist, or poorly informed opinions should have less communicative power than others, because of the implications for democratic stability, minority rights or for the quality of policy-making. It is immediate that the same concerns arise when it comes to equalizing the *non*-communicative political power and status of these citizens as well. For instance, eliminating bans against fascist and other anti-democratic political associations would increase the voting power of citizens who support these parties, and would increase the extent to which their views receive equal consideration, but also has potential consequences for minority rights and democratic stability in those societies.

A similar argument applies if we consider the view that citizens who are ‘more affected’ on an issue, have more intensely held opinions on an issue, or have more stable, considered and informed opinions on an issue should have more communicative power on that issue. In all these cases, one could equally argue that those citizens should also have more *non-communicative* power on the issue as well (e.g. women on abortion rights, or doctors on vaccine recommendations). Thus, any argument that suggests that opinions that are in some sense ‘higher quality’ on an issue deserve disproportionate representation in political debate tends also to suggest that the citizens holding these opinions should have more *non-communicative* power on the issue. In some such cases, inequality of both communicative and non-communicative power on an issue seems defensible; for instance, on the issue of property tax in Boston, the

opinion of Boston residents should presumably carry more weight than the opinion of New Yorkers. Crucially though, inequalities of communicative power are no more or less justifiable here than inequalities of non-communicative power.

Second, many standard arguments for political equality imply that we should strive for equality of communicative power alongside other aspects of political equality. One such standard argument follows from the recognition that, in any society, there is widespread, inevitable and reasonable disagreement over the ranking of different moral priorities, as well as over the nature of the expertise relevant for resolving this disagreement (Valentini, 2013, 184). Then, there can be no ‘generally acceptable’ basis for deciding which individuals possess more competence, expertise or virtue, and therefore no generally acceptable basis by which we can determine who should have more or less (communicative or non-communicative) political power (or, according to an equal status view, no acceptable basis on which we can give some views more consideration than others). This argument also responds to the challenge that we are not morally obligated to respond to ‘unconsidered’ or otherwise low quality public opinions on an issue, as agreement on which opinions are higher quality also presupposes an agreement on *whose* opinions are higher quality on the issue, which requires an agreement on expertise that typically cannot be reached.²

A second (epistemic) argument for political equality draws on the claim that more egalitarian decision-making procedures are ultimately better at accessing moral and political truths than, for instance, epistocratic procedures, as they draw on a wider range of perspectives, heuristics and reasons (Bohman, 2006; Estlund, 2008; Landemore, 2012). Egalitarian procedures are also less subject to certain biases that arise when delegating decision-making to experts: even if these experts are entirely altruistic, their perspectives will inevitably be biased by the characteristics and interests (aside from competence) that they also do not share with the public at large. Insofar as we accept these claims, it follows that improved communicative

²Where an agreement on expertise can be reached, as for instance, the arguable greater expertise that those in Boston have about property tax in Boston, this justifies inequalities in both communicative and non-communicative power, as discussed above.

representation should also increase the diversity of elite discourse, and helps insulate discourse from experts' particular biases, even as it reduces the communicative power of experts.³

A third and final argument for political equality emphasizes a different instrumental value of democratic decision-making: democratic institutions – such as competitive elections – tend to impede elite entrenchment, and thus help prevent state capture by minority interests (Bagg, 2018, 2024). To this, I add that improved communicative representation provides one more line of defence against state capture. By definition, low communicative representation means that the viewpoints of certain groups are *over*-represented within elite discourse, and so disproportionately influential on public opinion. This provides existing elites, and those individuals who share their views, disproportionate opportunity to steer public opinion in a favorable direction – potentially facilitating their continued political dominance and the potential (mis)use of the state in defense of their narrow interests. High communicative representation mitigates these risks to a significant degree.

Then, insofar as we accept any or all of these three arguments as valid, it follows that egalitarian considerations should motivate us to pursue a more equal distribution of communicative power alongside other forms of political equality. However, the above discussion clarifies that the pursuit of equal communicative power may have negative consequences for other valuable outcomes, such as the epistemic quality of policy-making, minority rights, democratic stability or societal cohesion. I have argued here that, to the extent that we prize political equality, equal communicative power, and thereby communicative representation, is a normatively desirable objective. This is not to say that there are no legitimate grounds on which we can argue for an unequal distribution of communicative power in some cases (based on, for example, variation in affectedness, or the greater need for expertise on some issues). Rather, I contend that this debate should turn on the importance we assign to political equality *in general* vis-a-vis other

³One might argue that greater pluralism of perspectives is sufficiently desirable that fringe opinions should receive greater consideration than they would under proportional representation. However, this is not consistently epistemically desirable: fringe opinions may be fringe precisely because they are inconsistent with the facts and so forever magnifying these opinions may prevent public deliberation from arriving at truths.

normative objectives, and on the existence of reasonable grounds for prioritizing other objectives or defending inequalities of political power and status on some issues – a debate which is beyond the scope of this article.

3 Measuring Communicative Representation

My proposed measure of communicative representation has two components: communicative congruence – the proportionate reflection of the entire distribution of voter preferences, across issues, in elite speech – and communicative responsiveness – that changes in the distribution of voter preferences (appear to) produce corresponding changes in the preferences expressed in elite discourse.

The extent of communicative congruence and responsiveness on various political issues in a country can be calculated by combining survey data on voter opinion and text data on elite speech on these issues. Using established text scaling methods, the discourse of an elite actor (e.g. a legislator or journalist) on a particular issue can be situated on a ideological scale. By combining this with survey data on public opinion and using a bridging approach elaborated below, elite discourse on various issues can be compared with public opinion on those issues. For instance, we can infer the fraction of the public that is more left-wing on an issue than the opinion expressed by an individual elite actor, or the fraction of elite discourse overall that is more left-wing on an issue than the views held by much of the public.

Then, for each issue, by combining data on elite discourse and public opinion from multiple periods for a country, we can calculate the level of communicative congruence and responsiveness which obtains on that issue. In brief, communicative congruence is the extent to which, in a given time and place, the distribution of elite discourse on an issue ideologically mirrors the distribution of public opinion on that issue. Communicative responsiveness is the extent to which changes in public opinion on an issue are followed by similar changes in elite discourse. As I discuss below, it is also possible to use this approach to measure the relative communicative power of various social groups: that is, the extent to which elite discourse mirrors and

responds to changes in the preferences of particular groups.

Combining data on elite speech with survey data on public opinion, and measuring communicative congruence and responsiveness on an issue, ultimately involves six distinct steps, which I now discuss in turn.

Step 1: Measuring Voter Preferences on an Issue

To first measure the preferences of voters on a range of issues, I use survey data, using sampling weights where available to ensure that the distribution of preferences I obtain is representative of the electorate at large. Ideally, survey questions where respondents were asked to place themselves as well as political parties on specific issues are preferred, as we can then use voter placements of parties to anchor legislators and voters on the same scale (Step 4).⁴

Step 2: Identifying Elite Speech on that Issue

In this article, in order to study elite speech on these issues in the same time frame, I use legislative speech as a proxy for all elite speech, as this has already been labelled and digitized by researchers for a large number of countries and years – for instance, in the ParlSpeech dataset (Rauh and Schwalbach, 2020) or the ParLEE Plenary Speeches dataset (Sylvester, Greene and Ebing, 2022). Thus, a similar approach can easily be allowed to other issues, countries and periods for which labelled and digitized legislative speech data exists. However, in principle, the same approach (Steps 3-6) can straightforwardly be applied to elite speech by other actors and in other domains as well, such as the media. In Appendix A.2, I discuss how far legislative speech is informative about the messaging the public receives from elites.

Step 3: Estimating the Ideological Slant of Elite Speech

In order to estimate the policy preferences on an issue expressed in each legislator’s parliamentary speech, we require text scaling methods. In this article, I employ Wordscores, a supervised text scaling procedure (Laver, Benoit and Garry, 2003; Lowe, 2008). Wordscores compares a

⁴In Appendix A.1, I discuss the concern that existing surveys provide imperfect measures of public opinion.

set of texts whose positions are unknown (“virgin texts”) with texts whose positions on a scale are assumed to be known to the analyst *a priori* (reference texts). Virgin documents are then scored based on their similarity to the reference texts in terms of their word usage – in particular, the frequency with which they use words also used in the reference texts. In Appendix A.3, I discuss the merits of using Wordscores relative to other text scaling procedures.

In my case, for each issue, generating these reference texts requires identifying actual legislators whose speeches can be considered to express the extreme left and extreme right positions on that issue, and constructing two reference documents: one containing all speeches made by legislators classed as “extreme left” (as reference text for the “extreme left” position), and the other containing all speeches made by legislators classed as “extreme right” (as reference text for the “extreme right” position).⁵ Then, for each period and issue, Wordscores estimates a left-right position for each legislator by comparing their speech in that period and on that issue with the reference texts. This includes the legislators whose speech was included in the reference texts, as their speech can still be scored as a ‘virgin text’ insofar as it differs from other speech in the reference documents.

Step 4: Jointly Scaling Voter Preferences and Legislator Speech

In order to compare the distribution of voter preferences on an issue with the distribution of preferences expressed in legislator speech, we must place the two on a common scale. I do this by creating hypothetical anchor legislators who are assigned a score on both the Wordscores scale (of legislator speech) and on the survey response scale (of voter opinions) on each issue and for each period. I then use these anchor legislators to map all other legislators to a position on the survey response scale, based on the position of their speech on the Wordscores scale.

For each issue and period, I first create two anchor legislators who represent hypothetical

⁵For example, in the empirical analysis I present in Section 4 – which focuses on the UK between 2010 and 2019 – the reference text for the extreme left position on redistribution is composed of *all* speeches delivered in this period by legislators belonging to the ‘Socialist Campaign Group’ faction of the Labour party, typically considered to represent the far left of the party.

extreme left and right legislators. I assign these two legislators positions on the survey response scale equal to the extremes of those scales, and Wordscores positions equal to the weighted average of scores received in that period by the legislators previously identified as extreme left and extreme right on those issues (again weighted by words spoken). That is, for each issue, these are the same “extreme left” and “extreme right” legislators whose (actual) speech was used to generate reference texts for that issue for the Wordscores procedure (as discussed above in Step 3). In Appendix C.4, I study the robustness of my results to alternative approaches to placing anchor legislators on the survey response scale.

I also generate several additional anchor legislators corresponding to ‘typical’ members of parties in the system concerned. These legislators are assigned positions on the survey response scale based on how attentive survey respondents placed their parties, on average, on that issue and in that period.⁶ These same hypothetical anchor legislators are then also assigned a score on the Wordscores scale equal to the weighted average of all Wordscore scores received by legislators from the same party in that period (weighted by number of words spoken).

Finally, for each period and issue, I run a bivariate linear OLS regression regressing the survey response positions of these anchor legislators on their Wordscores positions. The resulting estimates provide a linear mapping from the Wordscores scale to the survey response scale, for each period and issue, which I then use to place all legislators on the survey response scale, based on their estimated positions on the Wordscores scale. In Appendix B.4, I discuss some evidence that the two scales can indeed be accurately mapped in a linear way. In Appendix A.4, I compare my method to earlier approaches in the literature to ‘bridge’ or jointly scale legislators and voters.

Step 5: Measuring Communicative Congruence

As my interest is in the representation of voter preferences in political *speech*, I compare the distribution of voter preferences on each issue to the estimated distribution of legislative

⁶For this analysis, ‘attentive individuals’ were those who were among the top 25% of respondents in terms of self-reported political attention in each wave.

discourse on this issue. I do this by reporting the proportion of legislative speech delivered by legislators assigned to different bins on the survey response scale, and not only the proportion of legislators assigned to each bin. This gives greater weight to the expressed preferences of legislators who had more floor time – for instance, party leaders and frontbenchers (Proksch and Slapin, 2015) – and consequently, more presence and influence in public debate.

Based on this information, to summarize the level of communicative congruence that exists between legislators and voters on a particular issue, I develop a measure of ‘communicative malapportionment’. This measure builds on that of electoral malapportionment proposed by Samuels and Snyder (2001), and is calculated using the following formula:

$$M_{jt} = \frac{1}{2} \sum_{i=1}^N |D_{ijt} - v_{ijt}| \quad (1)$$

where M_t denotes the degree of communicative malapportionment that exists in country j at time t , i denotes the bins on the survey response scale, D_{ijt} the proportion of legislative discourse in each bin i at time t , and v_{ijt} the proportion of voters placing themselves in each bin i at time t . This quantity captures the proportion of legislative speech on an issue that is delivered by legislators who would not have received as much floor time if there were perfect communicative congruence on that issue.

Step 6: Measuring Communicative Responsiveness

However, communicative congruence alone is insufficient as an indicator of the distribution of communicative power in a polity, although it is important for evaluating whether voters’ opinions are proportionately represented in elite speech (as I argue, in Section 2.3, is essential for equal communicative power). This is because we might observe high levels of congruence just because opinions are highly endogenous and communicative power is monopolized by elites, leading voter opinions to mirror those of elites. For this reason, we must also analyze the level of communicative responsiveness on each issue – or, the extent to which changes in the distribution of voter preferences (appear to) produce corresponding changes in the distribution

of legislative speech. This provides us with an indication of how much the congruence we observe is driven by elite influence on public opinion rather than vice versa.

To facilitate this analysis, I compute legislators' 'gap responsiveness' to voters, by regressing the change in the proportion of legislative speech in each bin between periods t_0 and t_1 on the gap between the proportion of legislative speech and the proportion of voters in that bin in period t_0 . This captures whether legislator speech in subsequent periods moves towards the preferences of voters who were especially under-represented in speech in the previous period, so as to reduce the extent of under-representation of these voters in subsequent periods. As such, if there is a high level of gap responsiveness, legislative speech tends to evolve over time in a direction that diminishes the overall level of communicative malapportionment.

It is important to note that this measure of responsiveness is still likely to be biased due to the very endogeneity of public opinion that we are concerned with. For example, legislators and voters may both be responding to the views of experts, and so my measures of responsiveness do not capture the true level of communicative responsiveness by legislators to voters (a form of 'omitted variable bias'). This 'endogeneity problem' is precisely the *empirical* difficulty with estimating responsiveness under endogenous preferences, discussed in Section 2.4, but is distinct from the main issues that were the focus of Section 2: the implications of opinion endogeneity for the distribution of political power and status within a polity. In Appendix A.5, I argue that, despite this bias, my measures of communicative representation are still informative about inequalities of communicative power. I argue that this is because, first, the use of lags when measuring responsiveness addresses the most likely sources of bias and, second, the direction of bias in my estimates of communicative representation is almost certainly upwards.

Additional Statistics

I also propose two additional statistics that provide deeper insight into the degree and sources of unequal communicative representation in a polity.

First, as a measure of relative communicative presence, I calculate the extent to which different opinions and social groups are over-represented in legislative speech relative to their

numbers in the electorate as a whole. The relative communicative presence p_i of opinion group i (where an opinion group is e.g. voters who place themselves at ‘2’ on immigration) is given by:

$$p_i = \frac{\text{fraction of legislators with opinion } i}{\text{fraction of voters with opinion } i} \quad (2)$$

The relative communicative presence P_j of a social group j is then:

$$P_j = \sum_i p_i \times \text{fraction of social group } j \text{ with opinion } i \quad (3)$$

When the relative communicative presence a group has is below 1, members of the group are under-represented in legislative speech relative to the representation received by a typical voter. Conversely, when it is above 1, the group is over-represented in speech relative to the typical voter.

However, as with communicative representation overall, we may find that a social group has disproportionate communicative presence relative to another merely because the opinions of its members are especially influenced by, and therefore similar to, those expressed by elites. For this reason, I also calculate the extent to which legislators respond disproportionately in their speech to changes in the opinions of particular social groups – i.e. their ‘relative communicative responsiveness’ to different social groups. This is calculated by the same approach as ‘gap responsiveness’, discussed above, except that the gap that changes in legislative speech are regressed upon is the gap between the percentage of legislative speech and the percent of a subgroup, rather than all voters, at each position. These measures of the relative communicative presence of a group, and of legislators’ relative communicative responsiveness to that group, are cumulatively informative regarding that group’s ‘relative communicative power’.

4 Communicative Representation in the UK

In this article, as proof of concept, I analyze communicative representation on redistribution, immigration and EU integration in the UK between 2010 and 2019 – a time frame which

includes three general elections (in May 2010, May 2015 and June 2017), four governments, and one fateful referendum on Britain’s membership of the European Union (in June 2016), when British voters narrowly voted to leave the European Union. In this period, these issues constituted salient and cross-cutting dimensions of political conflict in the UK. Moreover, voters were repeatedly asked their views on these issues in the British Election Study at this time, enabling an over-time analysis of communicative representation on these issues.⁷

I split the years between 2010 and 2019 into four distinct sub-periods, punctuated by changes in the set of governing parties or Prime Minister: May 2010 to May 2015; May 2015 to June 2016; June 2016 to June 2017, and June 2017 to July 2019.⁸ Details on the application of the empirical strategy described in Section 3 to this case, including information on data sources, the identification of extreme left and right legislators on each issue, and the construction of hypothetical, composite, anchor legislators for bridging, are reported in Appendix B. Appendix B also presents several validation checks for the resulting estimates.

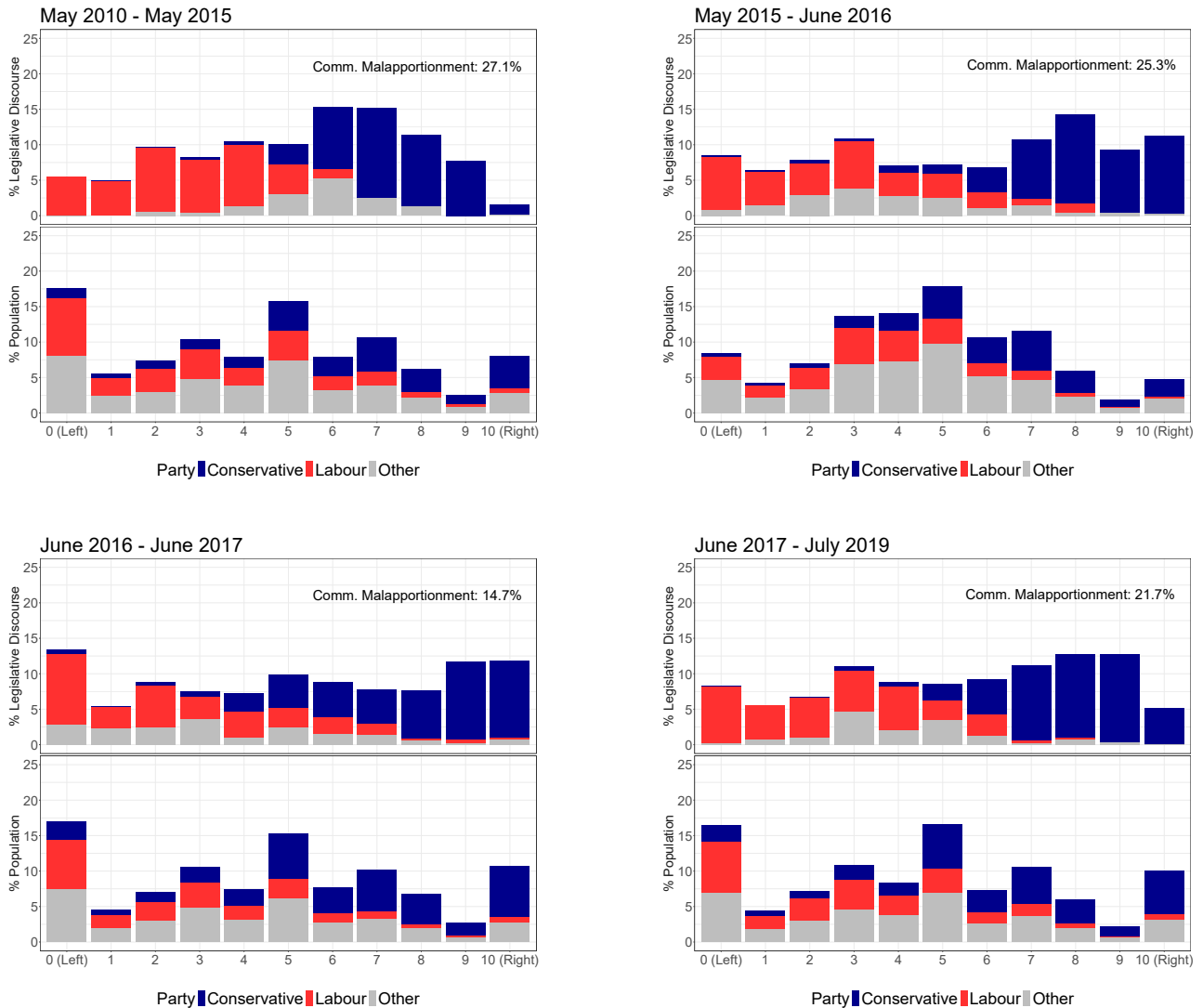
First, Figures 1-3 present the full distributions of citizen preferences, as expressed in surveys, alongside the preferences expressed in legislative discourse on each issue, as calculated by the approach described in Section 3. For each bin on the survey response scale, the proportion of Labour voters and MPs is given in red; Conservative voters and MPs in blue, and abstainers or those linked to other parties are given in gray. Each figure also reports the estimated level of communicative malapportionment for each issue and period. These estimates are generated by comparing the proportion of legislators and voters assigned to each bin on the survey response scale, according to the formula given in equation (1), and capture the proportion of legislative speech on the issue delivered by legislators who would not have received as much floor time if the distributions of voter preferences and legislative speech were perfectly congruent (i.e. there

⁷See Appendix B.1 for details on the survey questions used. As explained there, I only analyze voter preferences on immigration and EU integration from 2015 onwards due to lack of question availability or high non-response rates before 2015.

⁸This periodization is motivated by the intuition that the content of parliamentary discourse will be significantly affected by major changes in the composition of the cabinet, given the Government’s agenda setting powers.

was perfect communicative congruence).

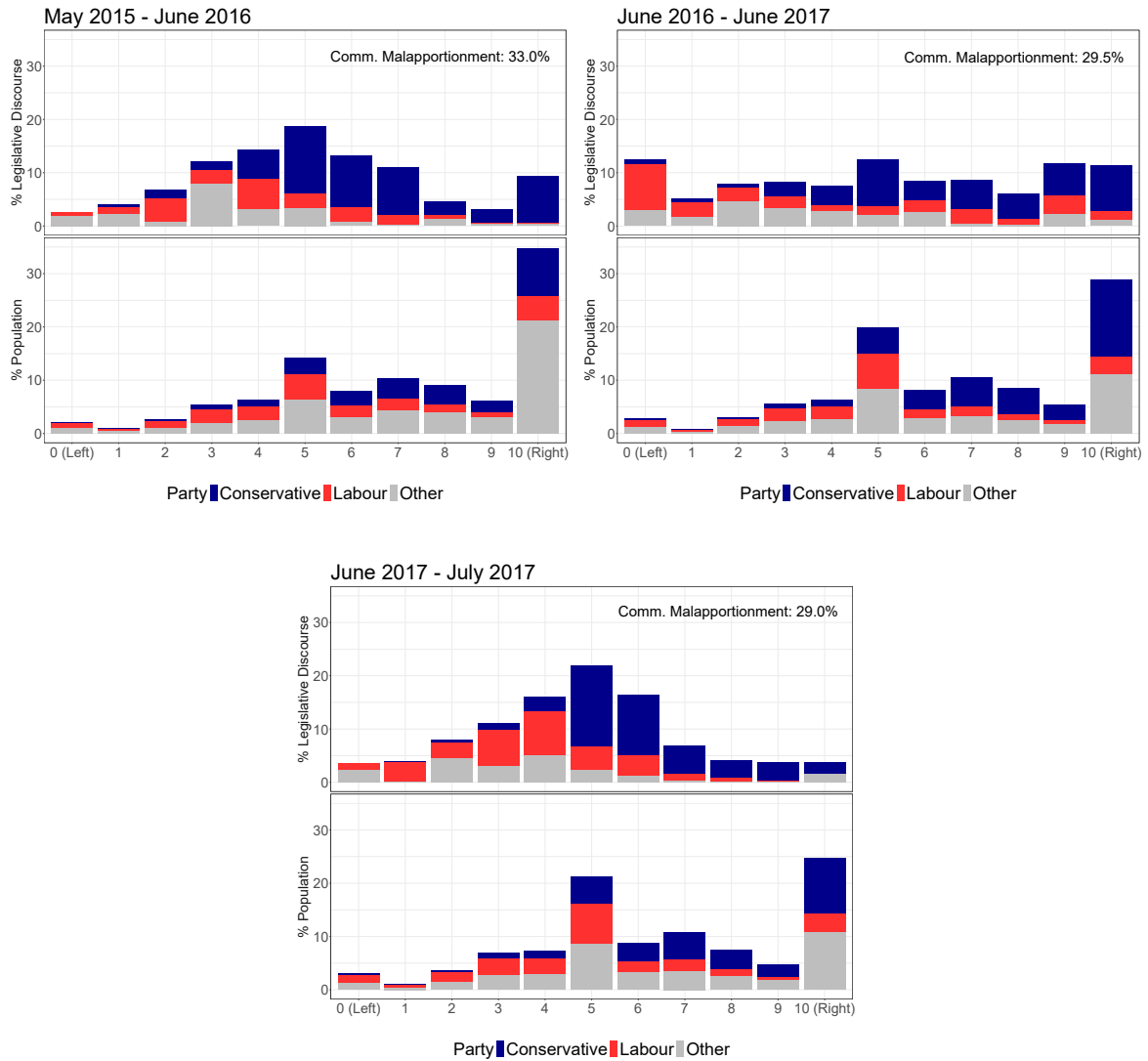
Figure 1: Comparing Voter Preferences and Legislative Speech on Redistribution



Note: This figure plots the distribution of citizen preferences on redistribution, alongside the distribution of preferences on redistribution expressed in legislative discourse in each period. Each subfigure also reports the level of communicative malapportionment estimated for that period and issue, a number generated by comparing the proportion of legislators and voters assigned to each bin on the survey response scale, according to the formula given in equation (1).

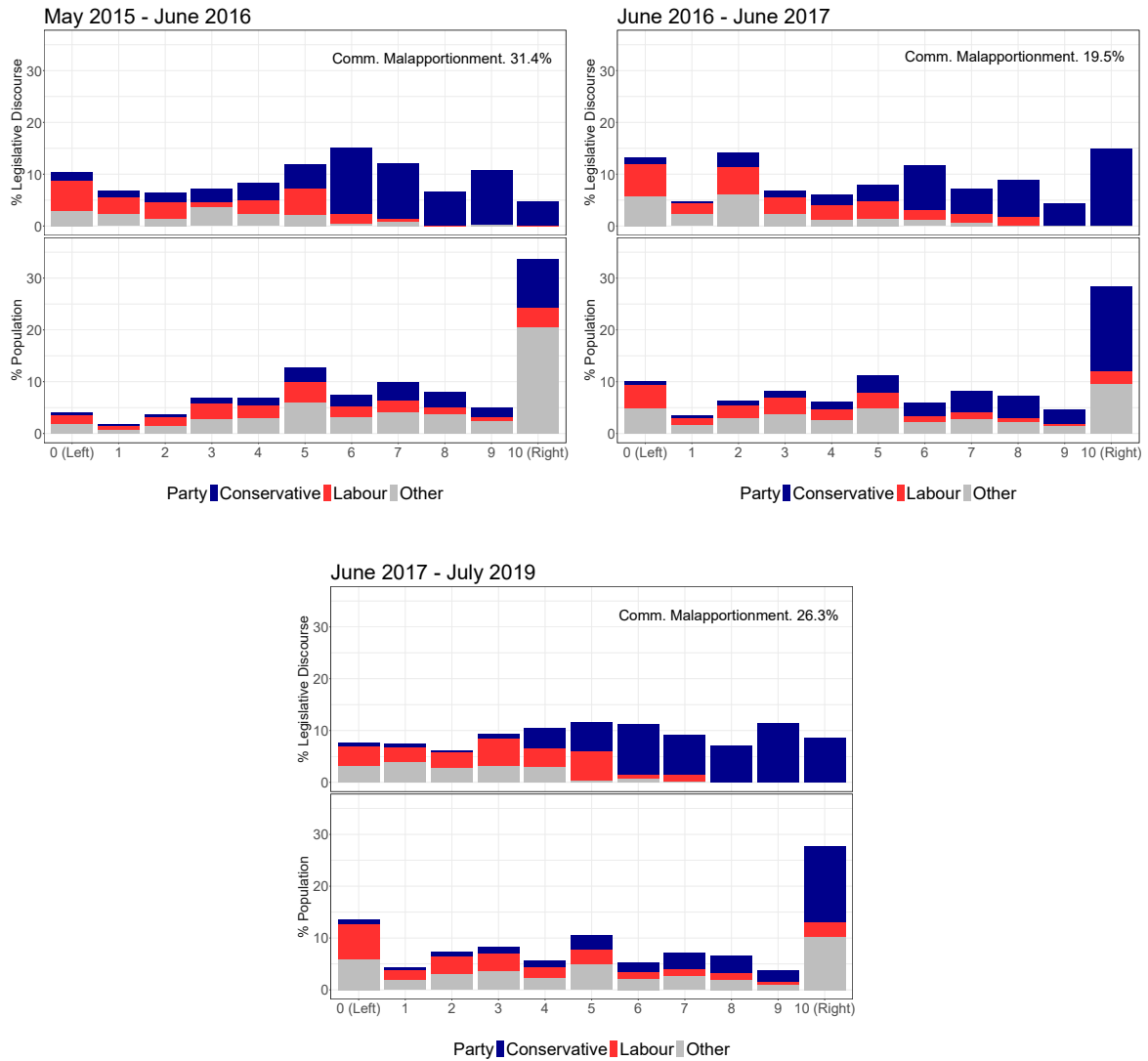
In all three cases, the patterns we observe provide considerable face validity to the overall approach. First, consider Figure 1. As one would expect, we observe Labour MPs taking a consistently more pro-redistribution line than Conservative MPs. After the election of left-wing stalwart Jeremy Corbyn as leader of the Labour party in 2015, we observe a notable

Figure 2: Comparing Voter Preferences and Legislative Speech on Immigration



Note: This figure plots the distribution of citizen preferences on immigration, alongside the distribution of preferences on immigration expressed in legislative discourse in each period. Each subfigure also reports the level of communicative malapportionment estimated for that period and issue, a number generated by comparing the proportion of legislators and voters assigned to each bin on the survey response scale, according to the formula given in equation (1).

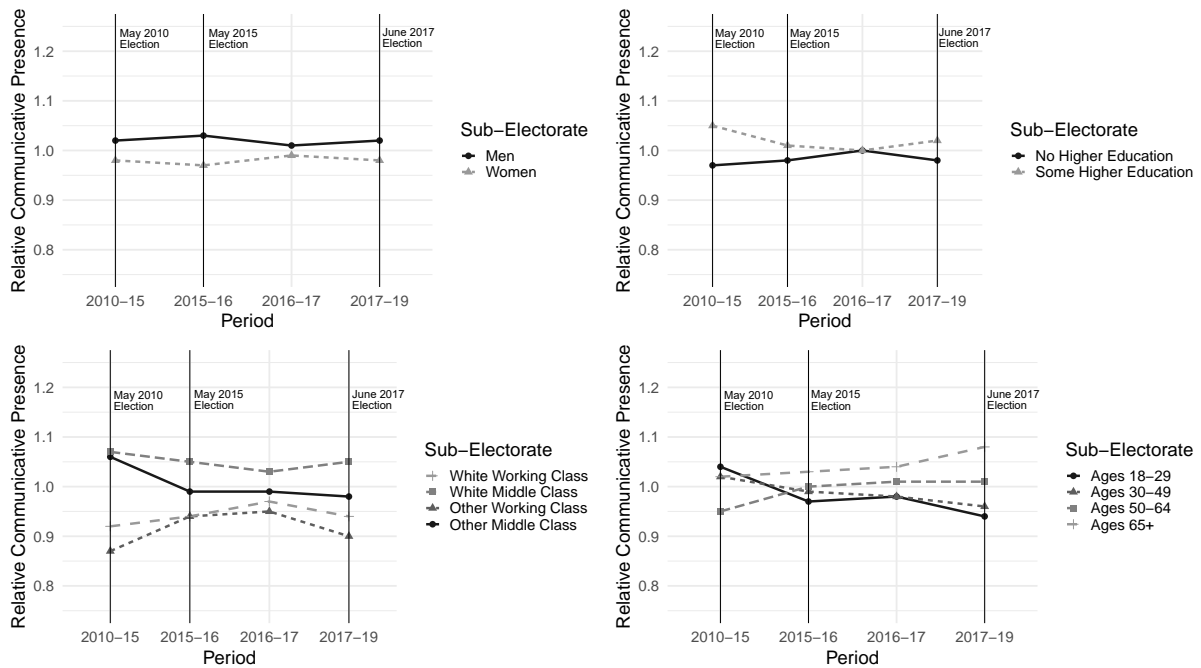
Figure 3: Comparing Voter Preferences and Legislative Speech on EU Integration



Note: This figure plots the distribution of citizen preferences on EU integration, alongside the distribution of preferences on EU integration expressed in legislative discourse in each period. Each subfigure also reports the level of communicative malapportionment estimated for that period and issue, a number generated by comparing the proportion of legislators and voters assigned to each bin on the survey response scale, according to the formula given in equation (1).

improvement in the communicative presence of the most pro-redistribution voters, who are under-represented overall. Consistent with this, we find a decrease in the level of communicative malapportionment from 27.1% in the early period to 14-22% later on. Turning to immigration and EU integration (ref. Figures 2 and 3), we observe greater evidence of communicative malapportionment throughout. Across parliaments, we observe that a substantial section of the British electorate favored held very strident anti-immigration and anti-EU views, but these views are consistently under-represented in legislative discourse, albeit notably less so after the 2016 Brexit vote. In line with these patterns, we also find that communicative malapportionment on European integration declines between 2015-16 and 2016-17.

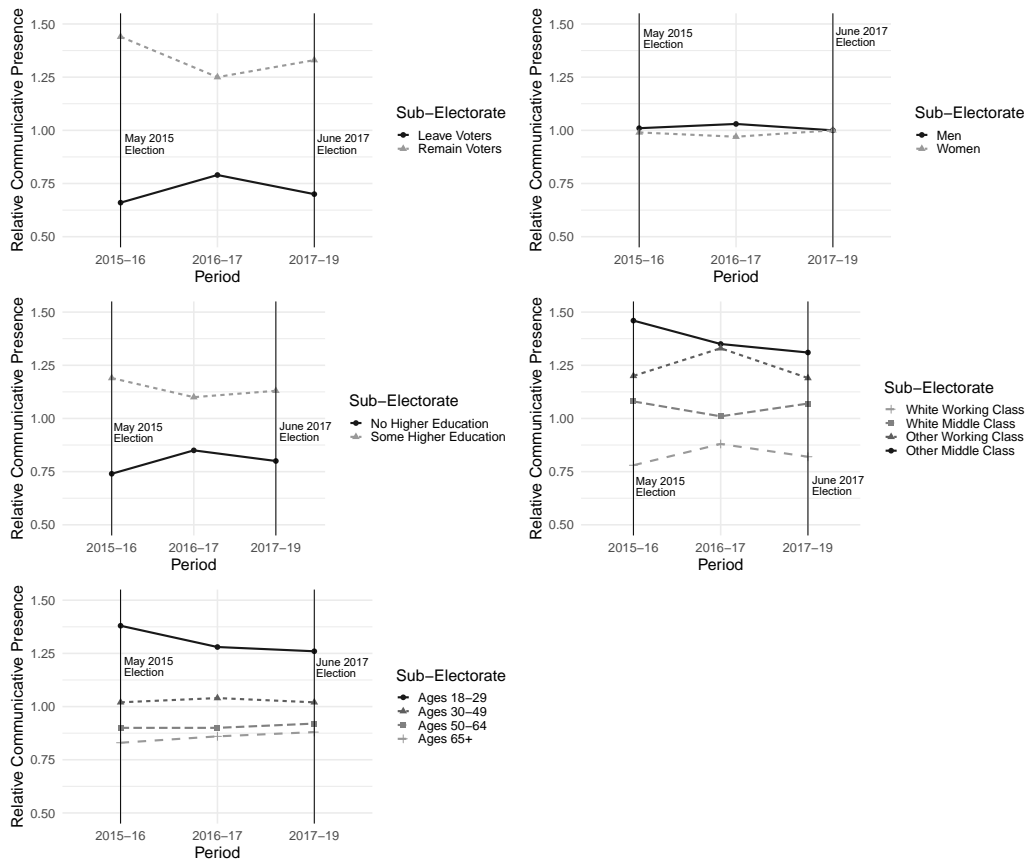
Figure 4: Relative Communicative Presence of UK Sub-Electorates on Redistribution



Note: This figure plots trends in the relative communicative presence of different sub-electoral groups on redistribution between 2010 and 2019, calculated according to equation 3. If the RCP of a group exceeds 1, the opinions of its members are over-represented in leg. speech relative to the opinions of a typical voter. Conversely, if the RCP of a group is less than 1, the opinions of its members are under-represented relative to those of a typical voter.

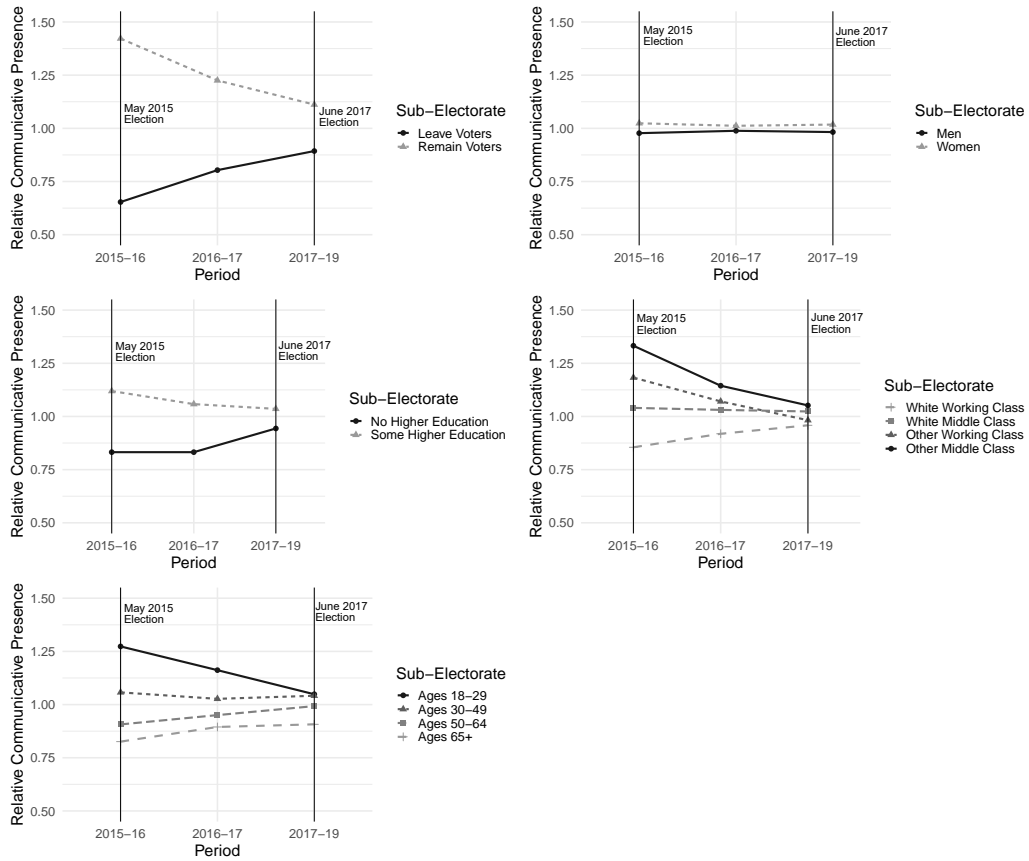
Next, in order to obtain deeper insight into the sources of this communicative malapportionment that we observe, Figures 4–6 plot trends in the relative communicative presence of different sub-electoral groups in this period, on redistribution, immigration and EU integration re-

Figure 5: Relative Communicative Presence of UK Sub-Electorates on Immigration



Note: This figure plots trends in the relative communicative presence of different sub-electorates on immigration between 2015 and 2019, calculated according to equation 3. If the RCP of a group exceeds 1, the opinions of its members are over-represented in leg. speech relative to the opinions of a typical voter. Conversely, if the RCP of a group is less than 1, the opinions of its members are under-represented relative to those of a typical voter.

Figure 6: Relative Communicative Presence of UK Sub-Electorates on EU integration



Note: This figure plots trends in the relative communicative presence of different sub-electorates on EU integration between 2015 and 2019, calculated according to equation 3. If the RCP of a group exceeds 1, the opinions of its members are over-represented in leg. speech relative to the opinions of a typical voter. Conversely, if the RCP of a group is less than 1, the opinions of its members are under-represented relative to those of a typical voter.

spectively. As discussed in Section 3, the relative communicative presence of a sub-electorate captures the extent to which the opinions of members of a particular group are over- or under-represented in legislative speech relative to the opinions of a typical voter, and so their numbers in the electorate as a whole.

Overall, we find higher disparities in relative communicative presence on immigration and EU integration compared with redistribution, consistent with the patterns in communicative malapportionment already observed. Yet, there are also some commonalities in the relative communicative presence of various sub-electorates across the three issues. Across issues, we generally find that the opinions of men and university-educated voters are over-represented in legislative speech, relative to those of women and less educated voters. These differences are especially stark with the education divide, and especially on the second-dimensional issues of immigration and EU integration, where the more liberal opinions of higher education voters are consistently over-represented.

On the other hand, patterns in relative communicative presence by age and by ethnicity and social class are less consistent across issues. I find that working class ethnic minority voters are slightly under-represented on redistribution but over-represented on immigration and EU integration throughout. In a similar vein, although I do not identify substantial inequalities of relative communicative presence on the redistribution issue by age, I find very large disparities by age on immigration and EU integration – with the (more left-wing) views of younger voters on these issues receiving disproportionately greater representation.

However, as explained in Section 3, in the discussion of Step 6, we cannot draw strong inferences about the relative communicative power of different groups, or about the level of communicative representation overall, based on measures of communicative malapportionment (or congruence) and relative communicative presence alone. For this reason, in regression analyses reported in full in Appendix C.3, I also estimate legislators' communicative ('gap') *responsiveness* to voters overall (i.e. to all voters), as well as to individual sub-electorates, across issues as well as for each issue, following the approach described in Section 3. Across issues, we find evidence for moderate communicative responsiveness by legislators to voters

overall ($\beta = 0.231$, $p < 0.001$). When issues are considered individually, we estimate a similar coefficient on legislators' communicative responsiveness to all voters across the three issues, but this coefficient only remains statistically significant at the 5% level on EU integration (for redistribution, $p = 0.058$). This lack of significance for two issues may be due to the fact that our analyses of communicative responsiveness by issue rely on an especially small number of observations.

At the same time, my estimates of legislators' relative communicative responsiveness to different sub-electorates suggest that legislative speech is much more responsive to some sub-electorates than to others. To a remarkable extent, it turns out that legislative speech is relatively more responsive to changes in the opinions held by the same groups that also have more relative communicative presence on an issue. For example, legislative speech is much more responsive to changes in the opinions of high education voters on all issues, a group that also have high relative communicative presence on all issues. Likewise, legislative speech responds more strongly to the opinions of younger voters on immigration, and these voters also have disproportionate relative communicative presence on immigration. This consistent pattern is confirmed by a Spearman's correlation test, where I estimate a (highly statistically significant) rank-order correlation of 0.83 ($p < 0.001$) between a group's (average) relative communicative presence on an issue and legislators' relative communicative responsiveness to that group on that issue.⁹ These results provide some evidence that these measures *are* cumulatively informative about a group's relative communicative power, as there is no obvious (other) reason to expect these measures of congruence and responsiveness to be so highly correlated.

Overall, these patterns align well with previous research on unequal representation in established democracies, including in the UK, documenting the descriptive and substantive under-representation of female, working-class and low education voters. However, these results also point towards some of the analytical gains from studying variation in the communicative representation of different sub-electorates, alongside their substantive and descriptive representation. For example, while young and ethnic minority voters are descriptively under-represented among

⁹A Pearson's correlation test likewise estimates a correlation of 0.86 ($p < 0.001$).

British parliamentarians, as elsewhere, we find that their opinions on second-dimensional issues like immigration and EU integration are nonetheless better represented in legislative speech than the opinions of white, older voters. More generally, trends in communicative, substantive and descriptive representation may not necessarily align – if, for instance, the views of certain sub-electorates are better represented among politicians with less policymaking power.

5 Conclusion

How should we evaluate the distribution of political power and status in a polity, if public opinion both influences and is influenced by elite communication? I have argued that, in the presence of such ‘opinion endogeneity’, discussion of the distribution of political power and status must take into account inequality in ‘communicative power’, and the extent of this inequality is captured by the degree of ‘communicative representation’. I introduce an empirical strategy for measuring how far communicative representation obtains in actually existing polities, and illustrate the method’s feasibility by characterizing the level of communicative representation on three key issues in the United Kingdom (UK) between 2010 and 2019. I find evidence of significant communicative malapportionment on each issue, as well as moderate levels of communicative responsiveness overall. I also identify significant inequalities in relative communicative power, particularly based on gender and education.

That said, there are several reasons to think that these patterns may not necessarily generalize to other issues and countries. For instance, while I consider three issues that constitute salient and cross-cutting dimensions of political conflict in the UK, it is very plausible that lower salience issues might receive systematically lower levels of communicative representation, and therefore higher communicative malapportionment. Furthermore, among parliamentary democracies, the UK has a particularly disproportional electoral system, with the parliamentary agenda largely controlled by the Government. Consequently, we might expect the communicative representation of public opinion in legislative speech to be higher in other, more proportional, democracies, or if other domains for elite discourse are considered (like the media,

or electoral campaigns).

Future research could examine and compare patterns in communicative representation across a larger number of countries, issues, years and domains. Such research would also be informative about which institutions and policies tend increase levels of communicative representation.

Competing Interests

The author(s) declare none.

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Supplementary Information

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A Measurement of Communicative Representation

A.1 Accuracy of Survey Measures of Public Opinion

My approach to measuring communicative representation relies heavily on the measurement of public opinion through survey data. While survey data provides an imperfect measure of public opinion (due to the variable effects of survey mode or question wording, non-response bias, or the effects of moderacy or extreme response bias), these concerns apply equally to any analyses that rely on survey data to measure public opinion – as is the case generally in the literatures on policy responsiveness or ideological congruence. Thus, while potentially problematic, these concerns are just as significant for much of the existing literature on political behavior and representation as they are for the measurement of communicative representation. Ideally, to produce better measures of public opinion on individual issues, we would want to draw on a large number of questions that address aspects of the same issue, so as to reduce measurement error (Ansolabehere, Rodden and Snyder, 2008).

A.2 Legislative Speech as a Proxy for Elite Speech

In this article, I consider legislative discourse as a proxy for the distribution of elite discourse in the UK. The advantage of using legislative discourse is that this has already been labelled and digitized by researchers for a large number of countries and years – for instance, in the ParlSpeech dataset (Rauh and Schwalbach, 2020) or the ParIEE Plenary Speeches dataset (Sylvester, Greene and Ebing, 2022). Nevertheless, analysis of other elite discourse, such as discourse in election campaigns or in the media is in principle possible and desirable.

Unlike political communication through various media outlets, legislative speech is not ‘public-facing’ and so ostensibly intended to communicate one’s policy positions to other legislators, not the public at large. However, most previous research on the politics of parliamentary debate has argued that legislators principally use legislative speech as a means of ‘public communication’ (Proksch and Slapin 2015, 21; see also Bäck and Debus 2016), speaking with the

intention of having key extracts from their speeches disseminated to the broader public by their parties, journalists, as well as through their own social media accounts. Then, while legislative speech is far from the main domain through which elites may influence public opinion, it still constitutes an important domain through which influential members of the political elite (legislators) communicate with, and so potentially influence the opinions of, the general public. However, future work can and should explore how well the representation of views within legislative speech correlates with their representation in other, less mediated, elite fora – such as the media – which are ultimately likely to be more influential on citizens’ views.

A.3 Wordscores Versus Other Text Scaling Approaches

In order to estimate the policy preferences on an issue expressed in each legislator’s parliamentary speech, we require text scaling methods. In this article, I employ Wordscores, a supervised text scaling procedure (Laver, Benoit and Garry, 2003; Lowe, 2008). Wordscores has previously been successfully applied to a variety of political text corpora (Klemmensen, Hobolt and Hansen, 2007; Klüver, 2009; Hjorth et al., 2015; Müller and Ncib, 2024), including parliamentary speech on welfare spending in the UK (O’Grady, 2019). In Appendix B, I also present several pieces of evidence validating its performance in my case. An alternative might be an unsupervised text scaling procedure, like Wordfish (Slapin and Proksch, 2008), Wordshoal (Lauderdale and Herzog, 2016) or word embeddings (Rheault and Cochrane, 2020). While these procedures have performed well in a number of contexts, I found that they performed poorly in my case, with Wordscores producing a more plausible ordering of legislators on all issues. Meanwhile, text scaling procedures based on large language models like ChatGPT are still in their infancy and their reliability remains controversial (Wu et al., 2023; Bisbee et al., 2024).

A.4 Comparison to Existing Bridging Methods

My method of measuring communicative representation rests on a novel procedure for bridging the scales between the ideological content of political speech and survey measures of public opinion. This procedure involves using constructed anchor legislators with positions on both scales and apply a linear regression to these anchors to create a linear mapping from one scale to another.

This approach differs from earlier efforts to ‘bridge’ or jointly scale legislators and voters developed by scholars of American politics and subsequently applied to other contexts like Europe (Bakker et al., 2014) and Latin America (Saiegh, 2015) – whereby two disjoint sets of roll call or survey data are connected using common survey items. The reason that these approaches are not easily applicable to my setting is that they all require joint surveys of elites and voters, limiting us to cases where such surveys already exist, or requiring new and costly data collection efforts. Although less precise, an advantage of my approach is that it only requires surveys where voters are asked to place parties *and* themselves on the same issue, allowing us to use historical survey data to locate legislators and voters on a common scale across a much larger number of countries, years and issues, including backwards in time.

A.5 Endogeneity Biases in the Estimation of Responsiveness

My estimation of communicative responsiveness involves regressing changes in the distribution of legislative speech on the previous gap between the distribution of legislator speech and the distribution of public opinion. As argued in Section 3, this measures how far legislative speech tends to evolve over time in a direction that diminishes the overall level of communicative malapportionment.

However, as discussed in Section 3, this measure of responsiveness is likely to be biased due to the very endogeneity of public opinion that we are concerned with. Since the distribution of public opinion is endogenous, regressing the evolution of legislative speech on a function of the distribution of public opinion would typically entail that estimates exhibit an endogeneity

bias. This is the same econometric difficulty with estimating responsiveness under endogenous preferences discussed in Section 2.4.

I argue here that, for two reasons, endogeneity bias of this kind is not a critical problem for my measures of communicative representation. First of all, my use of lags when measuring responsiveness addresses the most likely sources of omitted variable bias, such as factors that shift legislator opinion either before or simultaneously with that of voters (e.g. the influence of expert opinions or the media on both). Second, although my estimates of communicative responsiveness are likely biased, they are almost certainly biased upwards (by forces causing legislator and voter opinion to trend in a similar direction that are not captured by these lags). The only circumstances under which we might observe low communicative responsiveness when the true value is high is if there are factors pulling legislator and voter opinion in opposite directions. However, in those circumstances, we should also observe low communicative congruence. Therefore, even if these measures do not provide unbiased estimates of the true level of communicative representation on an issue, a finding of low communicative representation (i.e. low communicative congruence *and* responsiveness) is still informative about inequalities of communicative power.

B Data and Empirical Strategy for UK Analysis

B.1 Measuring the Preferences of British Voters

To measure the preferences of British voters on redistribution, immigration and European integration in this period, I use data from the British Election Study (waves 1, 7, 11 and 14, fielded in February–March 2014, April–May 2016, April–May 2017 and May 2018 respectively). Specifically, I analyze responses to the following three questions:

- Some people feel that government should make much greater efforts to make people’s incomes more equal. Other people feel that government should be much less concerned about how equal people’s incomes are. Where would you place yourself and the political

parties on this scale? (0 = extreme left)

- Some people think that the UK should allow *many more* immigrants to come to the UK to live and others think that the UK should allow *many fewer* immigrants. Where would you place yourself and the parties on this scale? (0 = extreme left)
- Some people feel that Britain should do all it can to unite fully with the European Union. Other people feel that Britain should do all it can to protect its independence from the European Union. Where would you place yourself and the political parties on this scale? (0 = extreme left)

The question on immigration is only available from wave 7 (2016) onwards. Meanwhile, although respondents were asked their views on European integration from wave 1 onwards, a narrow majority of respondents answered ‘Don’t Know’ in wave 1 – dropping to fewer than 10% of respondents from wave 7 onwards. This suggests many voters did not have well-formed preferences on this issue before 2016, making measures of voter preferences on this issue less reliable and less comparable with future waves. For these reasons, I only analyze voter preferences on immigration and European integration from 2015 onwards.

In all cases, respondents were presented with an 11 point scale (0 to 10), and I rescale their responses so that 0 always represent the most left-wing position on the survey scale. I use the sampling weights provided to ensure that the distribution of preferences I obtain is representative of the British electorate.

In every wave, the BES also includes information on respondents’ gender, their highest educational qualification (wave 1) or university attendance (wave 7 onwards), ethnicity, social grade and age, as well as their vote intention/recalled vote choice in the 2016 Brexit referendum. I use this information to divide respondents into sub-electrates based on their gender (male vs. female)¹⁰, education (some vs. no higher education), social class and ethnicity, age, and Brexit vote intention/choice (Leave vs. Remain). Individuals belonging to households with the

¹⁰The few respondents who refused to answer this question were classed as female.

social grades A, B and C1 were classed as ‘middle class’, and those from C2, D and E households, classed as ‘working class’. Meanwhile, when dividing respondents into sub-electorate by ethnicity, white British respondents were considered ‘white’, and all others (including, for instance, those of white European background) were classed as ‘other’.

B.2 Measuring the Preferences Expressed in British Legislative Speech

To measure the preferences expressed on these issues in elite speech, I rely on the ParlEE Plenary Speeches dataset (Sylvester, Greene and Ebing, 2022). The ParlEE dataset contains all speeches which were delivered in the UK House of Commons in this period, already classified by topic at the sentence-level according to the Comparative Agendas Project coding scheme (Froio, Bevan and Jennings, 2017). To identify relevant speeches, I first extract sentences classified as relating to the European Union, immigration, macroeconomics and social welfare. As the CAP scheme does not specifically identify speech on redistribution, to reduce measurement error, I ultimately base my estimates of legislator expressed preferences on this issue to references to redistribution within these extracts.¹¹

As discussed in Section 3, to apply Wordscores, we need to first to identify legislators taking an extreme position on each issue, whose speeches can then be used as reference texts. To represent the extreme pro-redistribution position, I constructed a reference document containing all speeches made by members of the “Socialist Campaign Group” (SCG) of Labour MPs between 2010 and 2019.¹² The SCG is an organized faction within the Labour party, generally considered to include legislators espousing views on the far left of the party, including on redistribution (Cowley, 2002). In this period, it included Jeremy Corbyn, leader of the Labour party between 2015 and 2019, and other prominent figures on the Labour left, such as Diane

¹¹Specifically, I extract ten word windows surrounding mentions of “tax*”, “*fair*”, “benefit*”, “poverty”, “*justice”, “unjust”, “inequality”, “unequal”, “taxpayer”, “rich*”, “redistribut*”, “austerity”, “cuts”, “universal credit”.

¹²Pooling all speeches into a single document maximizes the length and linguistic diversity of the reference document, which improves the performance of Wordscores (Lowe, 2008; O’Grady, 2019).

Abbott, John McDonnell, and Dennis Skinner. A total of 34 Labour MPs were part of the SCG at some point during this period. To anchor the other end of the spectrum on redistribution, I use speeches made by members of the ‘Free Enterprise Group’ (FEG), an organized faction of Thatcherite MPs within the Conservative party, founded in 2011. 65 Conservative MPs were linked to the FEG at some point during this period, including prominent right-wing MPs such as Liz Truss, Kwasi Kwarteng, Nadhim Zahawi and Priti Patel.

To represent the extreme left position on immigration, I use speeches by legislators who voted against the 2014 Immigration Act, which enshrined in law various policies intended to help identify and deport illegal immigrants residing in the UK. Only 18 legislators voted against (of whom two lost their seats in 2015), as the official Labour party position on the vote was to abstain on the third reading of the bill.¹³ Meanwhile, to represent the extreme right position on immigration, I use speeches by the 60 still-serving legislators who supported Nigel Mill’s 2014 amendment to extend transitional controls on Romanian and Bulgarian migrants to Britain – an amendment mainly supported by the Conservative party’s *right* flank (along with assorted representatives from the Democratic Unionist Party) – legislators who thought that the Conservative party’s proposed restrictions on future immigration did not go far enough. Prominent members of this group included Philip Hollobone, formerly member of a group which supported the voluntary repatriation of ethnic minorities, as well as Douglas Carswell, who defected to the radical right party UKIP in 2014.

To represent the extreme left position on European integration, I use speeches by 56 legislators who were publicly identified as members of various pro-European think tanks and pressure groups – in particular, British Influence, Britain Stronger in Europe, the European Movement UK, and the People’s Vote. These organizations attracted cross-party support, with prominent pro-European MPs linked to these groups including Conservative MPs Anna Soubry and Dominic Grieve; Labour MPs David Lammy, Chuka Umunna and Luciana Berger; Liberal Democrat MPs Nick Clegg, Vince Cable and Ed Davey; and the former Green party leader and

¹³Their number included some prominent members of the SCG, like Jeremy Corbyn and Diane Abbott, as well as some MPs from the Scottish National Party and Plaid Cymru.

MP Caroline Lucas. Finally, to represent the extreme right position on European integration, I use speeches by 54 legislators who were identified as members of the European Research Group (ERG) between 2010 and 2019, a research support group and caucus of Eurosceptic Conservative MPs. Members of the ERG included Michael Gove, Jacob Rees-Mogg and Priti Patel, and the organization played a leading role in the (ultimately successful) campaign for Britain to leave the European Union.

B.3 Jointly Scaling UK Voter Preferences and Legislator Speech

As discussed in Section 3, in order to compare the distributions of legislator speech and voter preferences on an issue, we need to place them on a common scale. In order to apply the approach described in Section 3, I create six hypothetical anchor legislators who are assigned a score on both the Wordscores scale (of legislator speech) and on the 11 point BES scale (of voter opinions) on each issue and for each period. I then use these six anchor legislators to map all other legislators to a position on the BES scale, based on the position of their speech on the Wordscores scale. Four of these anchor legislators correspond to ‘typical’ members of the four major British parties – Labour, the Conservatives, the Liberal Democrats and the Scottish National Party. I assign positions on the BES scale for these four anchor legislators based on how attentive BES survey respondents placed these four parties, on average, on the BES scale for that issue and in the relevant survey wave. Specifically, I assign these four anchor legislators a score on the Wordscores scale equal to the weighted average of all Wordscore scores received by legislators from the same party in that period (weighted by number of words spoken).

For each issue and period, I also create two additional anchor legislators representing hypothetical extreme left and right legislators. I assign these two legislators BES positions equal to the extreme of the BES survey scales, and Wordscores positions equal to the weighted average of scores received by extreme left and right legislators on those issues (again weighted by words spoken), where extreme left and right legislators on each issue are identified as described in Section B.2.¹⁴

¹⁴For example, in each period, I construct a hypothetical extreme left legislator on redistribution by taking

Finally, for each period and issue, I run a bivariate linear OLS regression regressing the BES positions of these six anchor legislators on their Wordscores positions. The resulting estimates provide a linear mapping from the Wordscores scale to the BES scale, for each period and issue, which I then use to place all legislators into bins on the BES scale, based on their estimated positions on the Wordscores scale. That is, using the estimated coefficients from the aforementioned OLS regression of BES positions on Wordscores positions for anchor legislators, each legislator receives a predicted location on the (continuous) BES scale based on their estimated Wordscores position. I convert these into discrete locations on the BES survey scale by assigning, for instance, legislators with a predicted location on the BES scale between 9.5 and 8.5 to the bin ‘9’ on the discrete BES scale. However, my results are robust to alternative thresholds for assigning legislators to bins (results available on request).

B.4 Validation of Wordscores Estimates

My approach of bridging legislative speech and public opinion to the same scale makes use of a linear mapping from the Wordscores scale of legislative speech to ideological locations on the BES survey scale. This begs the question of whether these two scales can be accurately mapped in a linear way. Indeed, to assert that they can be so mapped requires two assumptions. First, that the rank ordering of legislators on the Wordscores scale reflects their ideological location on the survey response scale, as revealed in their parliamentary speech, and second, that the loss of cardinal information from a linear mapping between the two scales is minimal. I discuss these two assumptions in turn and present evidence that they are consistent with the UK case, the weighted average of Wordscores locations assigned, in that period, to SCG MPs, a hypothetical extreme left legislator on immigration by taking the weighted average of Wordscores locations assigned, in that period, to MPs who had voted against the 2014 Immigration Act, and a hypothetical extreme left legislator on EU integration by taking the weighted average of Wordscores locations assigned, in that period, to MPs identified as members of various pro-European think tanks and pressure groups. For each issue and period, this hypothetical legislator is assigned a score of 0 on the BES scale, representing the most extreme left survey response on each issue. In Appendix C.4, I demonstrate robustness to assigning alternative locations on the BES scale for these hypothetical anchor legislators.

and that the resulting estimates appear to place MPs on the BES scale in a way consistent with what seems intuitively reasonable given what is known about the positions promoted by these MPs.

First, my approach assumes, that the rank ordering of legislators on the Wordscores scale reflects their ideological location on the BES survey scale, as revealed in their parliamentary speech. I find that this assumption seems reasonable in my case, based on two further analyses.

First, I inspect and report the estimated location of 50 *randomly-selected* MPs on each issue for the 2015-16 period (the first period in which voters were asked their opinion on all three issues by the British Election Study). The results of these analyses, together with 95% confidence intervals (narrower for MPs who spoke the most), are presented in Figure B.1. MPs' party affiliations are also indicated in the figure. On all issues, a more left-wing position is represented by a more negative location on the Wordscores scale.

In line with expectations, the left-end of all three issue scales are dominated by MPs from Labour and other center-left parties (like the Liberal Democrats or the Scottish National Party); meanwhile, Conservative MPs (and the odd Unionist MP) dominate on the right-end of the scales. On redistribution, the left-end includes well-known members of the Labour left or 'soft-left' who were *not* members of the Socialist Campaign Group – such as Virendra Sharma, Peter Dowd and David Winnick – and therefore whose positions were freely estimated. On the right, in addition to some members of the Free Enterprise Group (such as Rory Stewart), we also find Iain Duncan Smith and Stephen Crabb, both of whom led the Department for Work and Pensions while a range of welfare cuts were being implemented. On the left on immigration, in addition to Jeremy Corbyn (who voted against the 2014 Immigration Act), we also find individuals such as Cat Smith, a Socialist Campaign Group MP only elected in 2015, and also associated with pro-immigration and pro-refugee positions. Meanwhile, the right of the scale on immigration includes several MPs who supported the Mills amendment in 2014 (such as Richard Drax, Mark Field, and Mills himself), but also individuals elected later who were also closely associated with anti-immigrant positions (for example, Kevin Hollinrake). Finally, on the left on EU integration, we find many MPs with various party affiliations who were associated

with the ‘Remain’ side during and after the 2016 referendum campaign, including MPs with *and* without formal links to pro-European pressure groups (such as Roberta Blackman-Woods, Graham Evans and Rachael Maskell). Meanwhile, on the right, we find a number of prominent Eurosceptics, including several MPs linked to the ERG (such as Iain Duncan Smith and Pauline Latham), but others who were not ERG members, but nonetheless vocal advocates of Brexit (such as John Baron and Fiona Bruce).

Second, I also compare the estimated Wordscores positions for selected groups of MPs with known divergent views on these issues. In each case, box-and-whisker plots are used to illustrate the distribution of estimated scores for each group. First, Figure B.2 compares estimates on each issues for MPs affiliated with four different parties, focusing on the 2015-2016 period for redistribution and the 2017-2019 period on immigration and European integration.¹⁵ It is immediate that Conservative MPs typically used more anti-redistribution, anti-immigration and Eurosceptic rhetoric than MPs representing other parties, as might be expected. We also observe a larger partisan divide on rhetoric when it comes to redistribution than on immigration or European integration, also as expected.

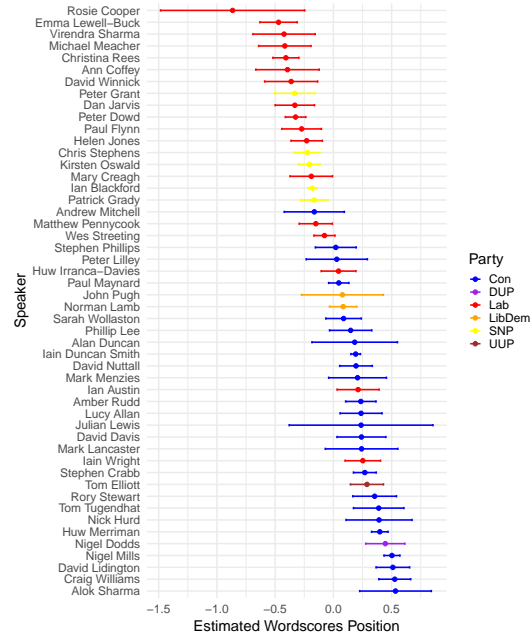
Next, Figure B.3 presents the estimated Wordscores positions for groups of MPs who voted differently in key divisions relating to redistribution, immigration and EU integration in this period. First, panel (a) compares Labour MPs who abstained on the Second Reading of the Welfare Reform and Work Bill in July 2015 to those who rebelled against the party line (to abstain) by voting against the bill. The bill included plans for an additional £12 billion in welfare cuts, and was opposed by many Socialist Campaign Group MPs (including Jeremy Corbyn), as well as some prominent ‘soft-left’ Labour MPs, such as Sadiq Khan and David Lammy. In line with expectations, we find that Labour MPs who opposed these cuts expressed more pro-redistribution rhetoric in the same parliament than those Labour MPs who abstained on the bill.

Second, panels (b)–(e) in Figure B.3 compare groups of MPs who voted differently on two key Brexit ‘indicative votes’ in March 2019 – first based on their positions on immigration

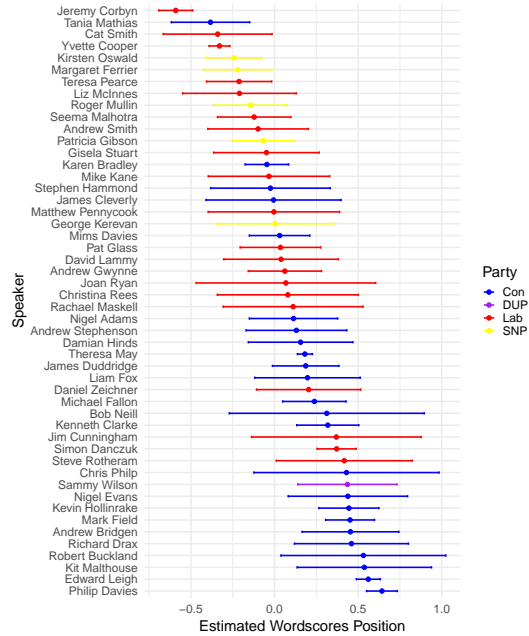
¹⁵I find similar patterns in the other periods as well – results available on request

Figure B.1: Estimated Wordscores Locations for Selected MPs, May 2015–June 2016

(a) Issue: Redistribution



(b) Issue: Immigration



(c) Issue: EU Integration

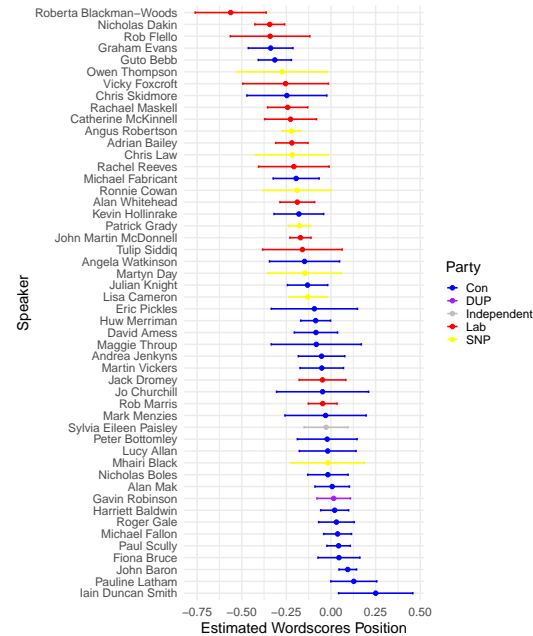
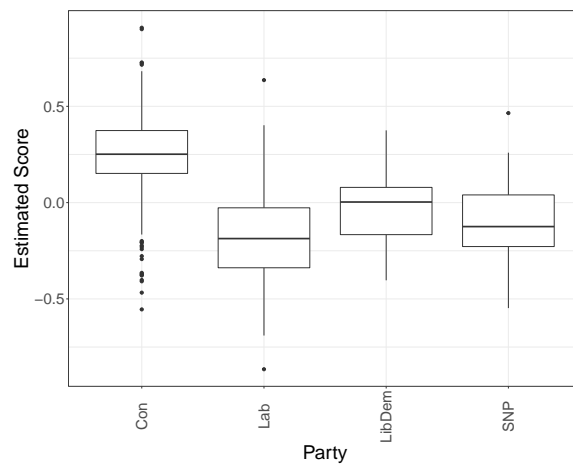
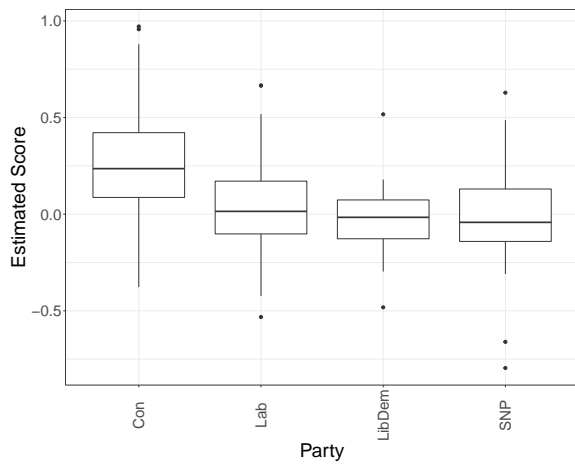


Figure B.2: Estimated Wordscores Locations by Party

(a) MPs on Redistribution, June 2015–June 2016



(b) MPs on Immigration, June 2017–July 2019



(c) MPs on EU Integration, June 2017–July 2019

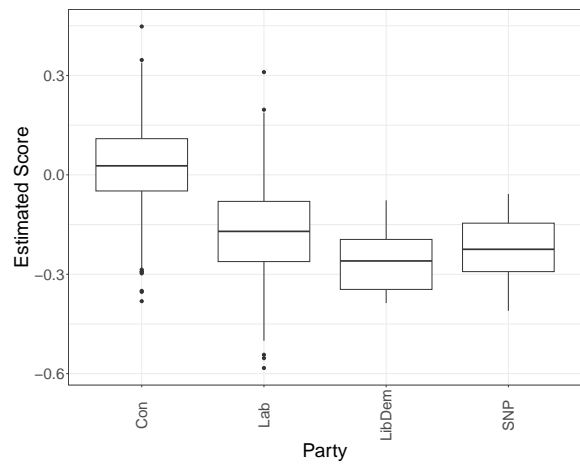
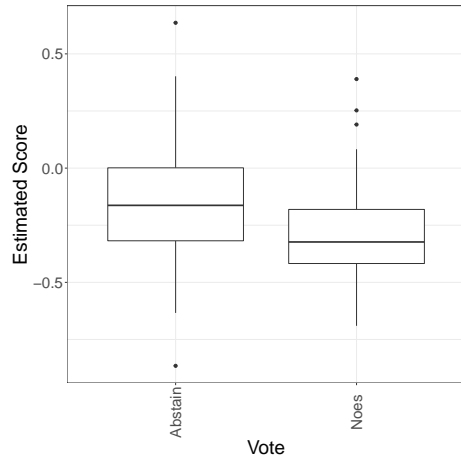
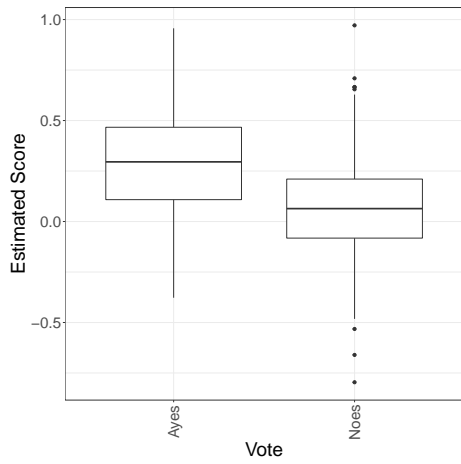


Figure B.3: Estimated Wordscores Locations by Vote on Key Divisions

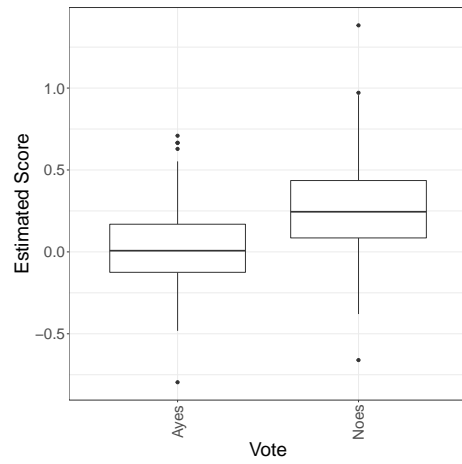
(a) Labour MP Votes on Welfare Reform and Work Bill



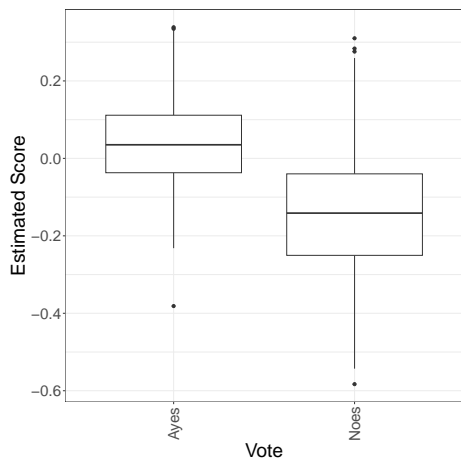
(b) March 2019 Vote on No Deal (by Positions on Immig.)



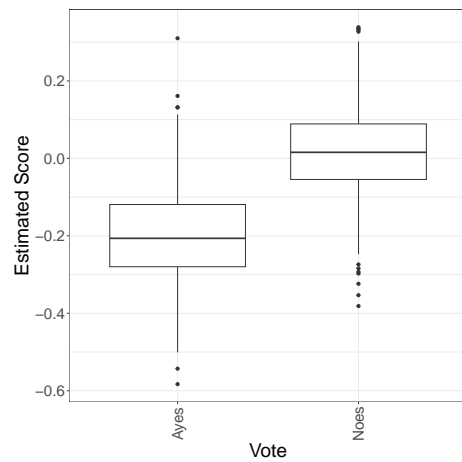
(c) March 2019 Vote on Revoking Article 50 (by Positions on Immig.)



(d) March 2019 Vote on No Deal (by Positions on EU Int.)



(e) March 2019 Vote on Revoking Article 50 (by Positions on EU Int.)



(panels (b)–(c)), and then based on their positions on EU integration (panels (d)–(e)), both estimated by Wordscores. These were votes on a proposal to leave the European Union (EU) without a deal, and to revoke Article 50, bringing the Brexit process to a halt, if MPs did not explicitly support a ‘No Deal’ exit from the EU, and were scheduled in end-March 2019 after the failure of a series of ‘meaningful votes’ on the terms of Britain’s exit from the European Union.

MPs were not whipped on these votes, and were able to vote simultaneously on eight options in total. The debate over the terms of ‘Brexit’ did not line up exactly with the debate over immigration numbers and controls in the UK at the time, and we should not expect individuals’ views on these topics to be perfectly correlated (for example, Jeremy Corbyn, known for his pro-immigration views and rhetoric, had also expressed some Eurosceptic views in the past). However, many of those who voted for Brexit (MPs or ordinary voters), and particularly those who favored the ‘hard Brexit’ that would follow from no deal, supported this option because they favored stricter controls on both the numbers and terms of (European) immigration into the UK. Meanwhile, advocates of continued Britain’s continued membership of the single market were necessarily committed to continued free movement from the European Union. Given this, we would expect MPs who voted in favor of ‘No Deal’ in March 2019 to be those who had been using more anti-immigration and Eurosceptic rhetoric in that period (and vice versa), and MPs who voted in favor of revoking Article 50 to be those who were using more pro-immigration and pro-European rhetoric in this period (and vice versa).¹⁶ Reassuringly, this is exactly what we find in panels (b)–(e) of Figure B.3, respectively. We also observe starker differences in vote choice based on legislators’ estimated positions on EU integration than their positions on immigration, also as expected.

Finally, my approach also relies on a second assumption: that the loss of cardinal information from a linear mapping between the two scales is minimal. This also seems a reasonable assumption in my case, as I consistently find that the proportion of variance in the BES loca-

¹⁶Wordscores estimates for MPs who abstained on these votes are not shown, as their motives are harder to interpret.

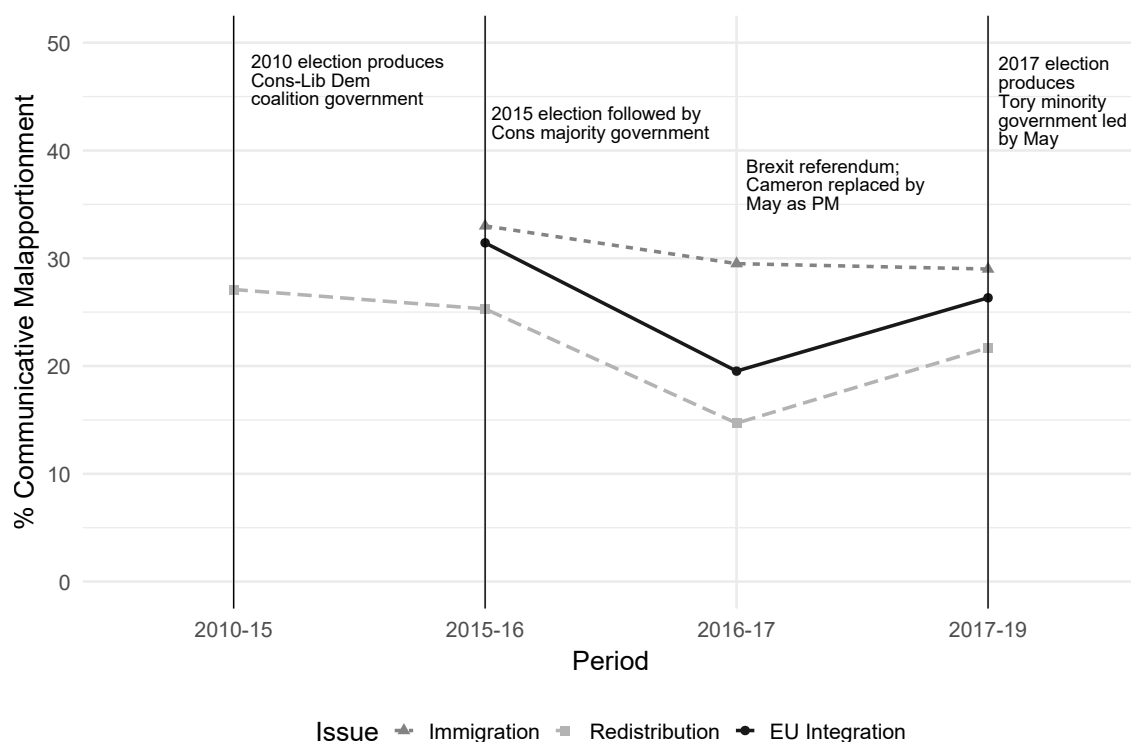
tions of anchor MPs explained by a linear mapping from their Wordscores locations is above 0.9, and in most cases above 0.95. Moreover – and in part, as a consequence — using a non-linear (quadratic or cubic) mapping does not qualitatively change the results (available on request).

C Additional Results

C.1 Trends in Communicative Malapportionment

Figure C.1 presents the estimated level of communicative malapportionment in the UK between 2010 and 2019, on redistribution (in light grey), immigration (in dark grey) and on EU integration (in black). These estimates are generated by comparing the proportion of legislators and voters assigned to each bin on the survey response scale, according to the formula given in equation (1).

Figure C.1: Communicative Malapportionment in the UK, 2010-2019



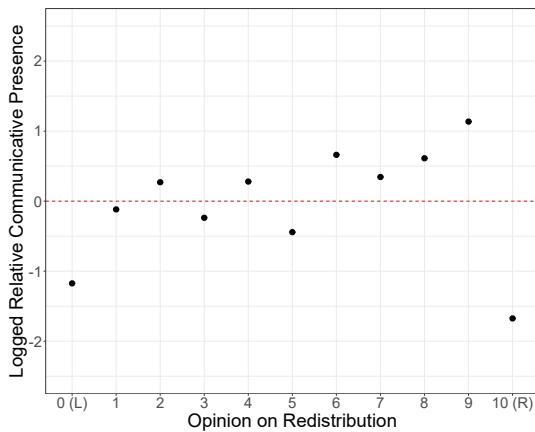
Note: This figure plots the estimated level of communicative malapportionment on redistribution, immigration and EU integration in the UK between 2010 and 2019, calculated according to equation (1). This quantity captures the proportion of leg. speech on an issue delivered by legislators who would not have received as much floor time if the distributions of voter preferences and leg. speech were perfectly congruent (i.e. there was perfect communicative congruence).

C.2 Patterns in Relative Communicative Presence

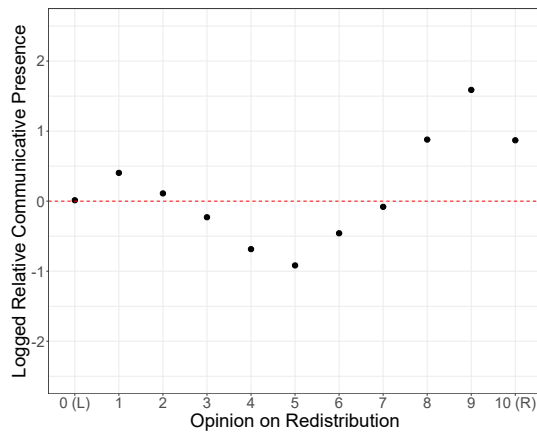
Figures C.2–C.4 report the (logged) relative communicative presence of different opinions on redistribution, immigration and EU integration, respectively, in parliamentary speech in this period.

Figure C.2: Relative Communicative Presence of Opinions on Redistribution in the UK

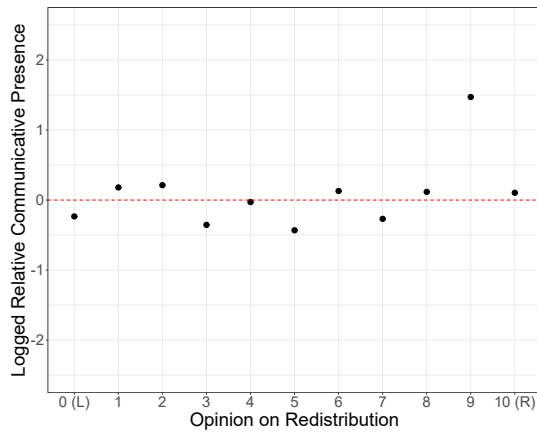
(a) May 2010 – May 2015



(b) May 2015 – June 2016



(c) June 2016 – June 2017



(d) June 2017 – July 2019

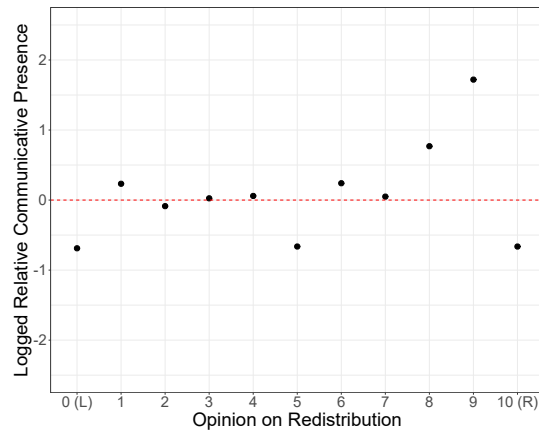
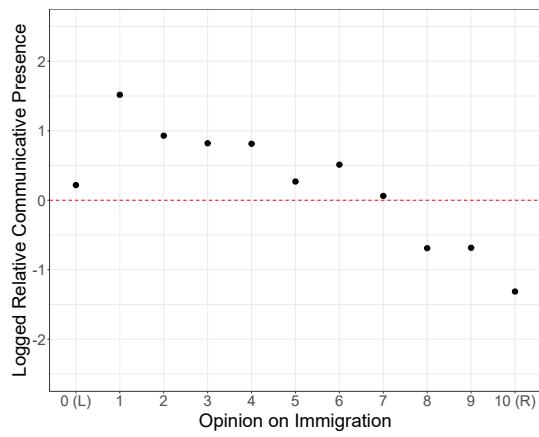
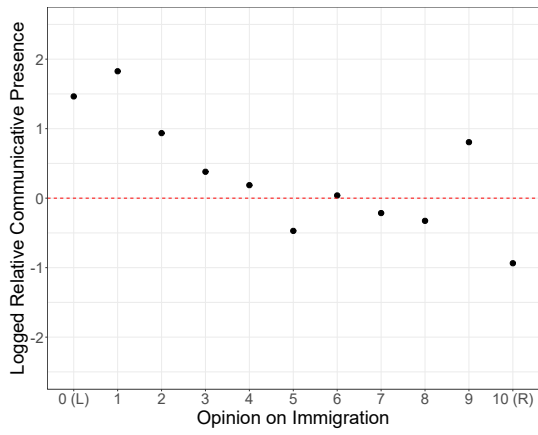


Figure C.3: Relative Communicative Presence of Opinions on Immigration in the UK

(a) May 2015 – June 2016



(b) June 2016 – June 2017



(c) June 2017 – July 2019

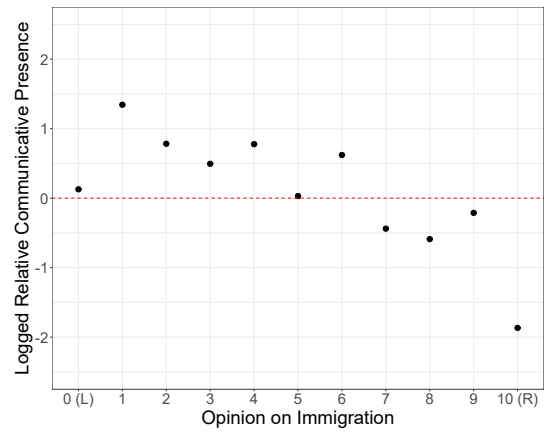
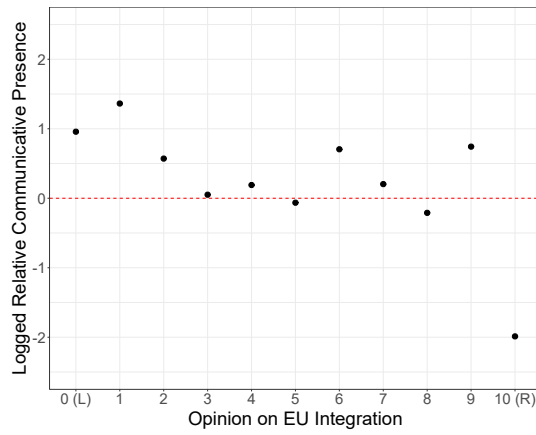
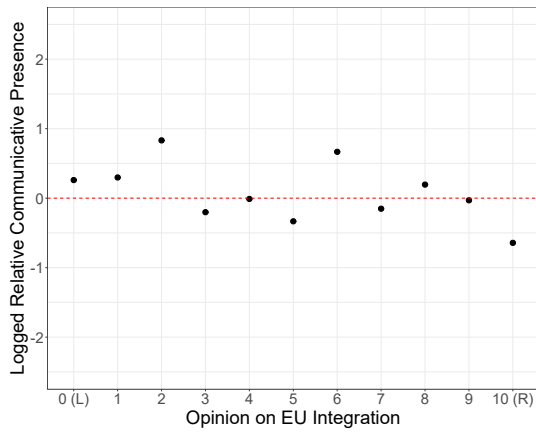


Figure C.4: Relative Communicative Presence of Opinions on EU Integration in the UK

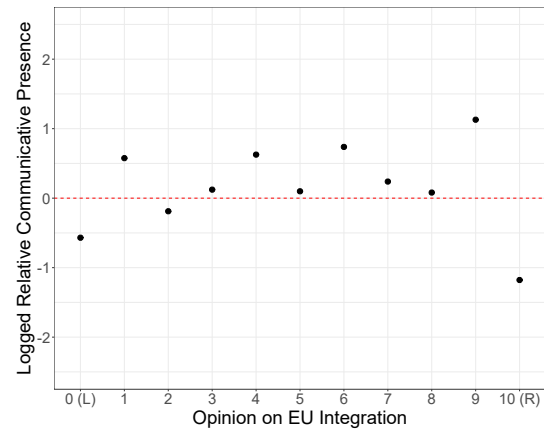
(a) May 2015 – June 2016



(b) June 2016 – June 2017



(c) June 2017 – July 2019



C.3 Regression Results

Table C.1 presents results from regression analyses estimating the overall communicative responsiveness of legislators to voters, with and without issue fixed effects. Next, Table C.2 presents results from regression analyses estimating the overall communicative responsiveness of legislators to voters by issue, as well as their relative communicative responsiveness to particular sub-electorates. Finally, Figure C.5 plots the estimated responsiveness of legislators to voters, along with 95% confidence intervals, by issue, for all voters as well as for different sub-electorates. Overall communicative responsiveness and relative communicative responsiveness are measured as described in Section 3.

Table C.1: Legislators' Overall Communicative Responsiveness to UK Voters

	Dependent variable: Δ % Legislative Speech in Bin i at t_1 ; All Issues	
	(1) No Issue FEs	(2) With Issue FEs
Representation Gap in Bin i at t_0	0.231** (0.076)	0.231** (0.077)
Constant	0.000 (0.519)	-0.00000 (607.349)
Observations	77	77
R ²	0.110	0.110
Adjusted R ²	0.098	0.061

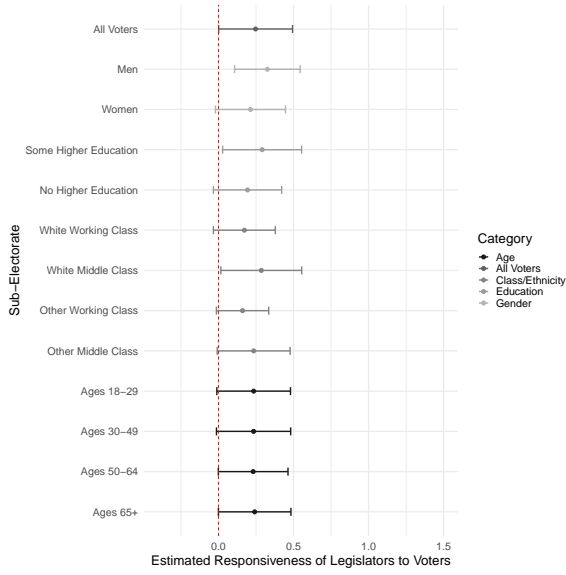
p<0.1; *p<0.05; **p<0.01; ***p<0.001

Table C.2: Legislators' Communicative Responsiveness to UK Voters by Sub-Electorate and Issue

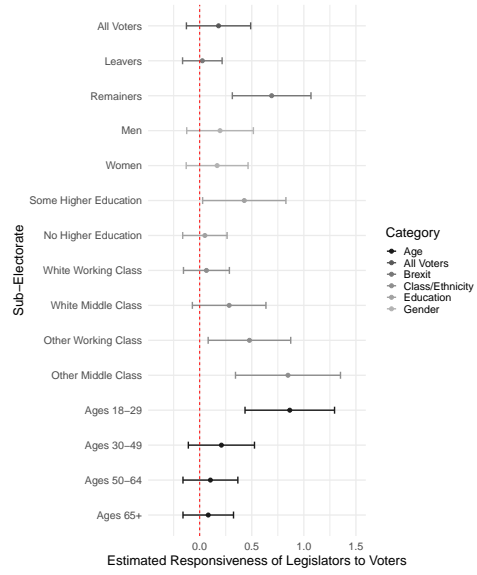
Dependent Variable: Δ % Legislative Speech in Bin i at t_i ; Issue: Redistribution															
	(1) All Voters	(2) Men	(3) Women	(4) Some HE	(5) No HE	(6) WWC	(7) WMC	(8) Other WC	(9) Other MC	(10) Ages 18-29	(11) Ages 30-49	(12) Ages 50-64	(13) Ages 65+	(15) Remainers	
Representation Gap in Bin i at t_0	0.247* (0.126)	0.326** (0.111)	0.213 (0.119)	0.291* (0.134)	0.194 (0.116)	0.172 (0.105)	0.285* (0.137)	0.160* (0.089)	0.234 (0.124)	0.234 (0.125)	0.234 (0.126)	0.231 (0.118)	0.231 (0.123)	0.241* (0.123)	
Constant	-0.000 (0.646)	-0.000 (0.606)	0.000 (0.652)	0.000 (0.638)	0.000 (0.656)	0.000 (0.657)	0.000 (0.642)	-0.000 (0.651)	0.000 (0.648)	0.000 (0.649)	-0.000 (0.650)	0.000 (0.646)	0.000 (0.646)	0.000 (0.646)	
Observations	33	33	33	33	33	33	33	33	33	33	33	33	33	33	
R ²	0.111	0.216	0.094	0.131	0.082	0.080	0.122	0.095	0.104	0.102	0.100	0.110	0.110	0.110	
Adjusted R ²	0.083	0.191	0.064	0.103	0.053	0.050	0.094	0.066	0.075	0.073	0.071	0.081	0.081	0.081	
p<0.1; *p<0.05; **p<0.01; ***p<0.001															
Dependent variable: Δ % Legislative Speech in Bin i at t_i ; Issue: Immigration															
	(1) All Voters	(2) Men	(3) Women	(4) Some HE	(5) No HE	(6) WWC	(7) WMC	(8) Other WC	(9) Other MC	(10) Ages 18-29	(11) Ages 30-49	(12) Ages 50-64	(13) Ages 65+	(14) Leavers	(15) Remainers
Representation Gap in Bin i at t_0	0.181 (0.157)	0.195 (0.163)	0.167 (0.151)	0.428* (0.204)	0.050 (0.109)	0.065 (0.112)	0.283 (0.180)	0.478* (0.202)	0.848** (0.257)	0.865*** (0.219)	0.209 (0.162)	0.103 (0.134)	0.082 (0.124)	0.025 (0.097)	0.691** (0.193)
Constant	-0.000 (1.266)	-0.000 (1.262)	-0.000 (1.269)	-0.000 (1.183)	-0.000 (1.300)	-0.000 (1.296)	-0.000 (1.233)	0.000 (1.155)	-0.000 (1.052)	-0.000 (0.980)	-0.000 (1.256)	-0.000 (1.288)	-0.000 (1.293)	-0.000 (1.304)	-0.000 (1.019)
Observations	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
R ²	0.062	0.067	0.058	0.180	0.010	0.016	0.110	0.218	0.352	0.438	0.076	0.028	0.022	0.003	0.391
Adjusted R ²	0.015	0.020	0.010	0.139	-0.039	-0.033	0.065	0.179	0.320	0.409	0.030	-0.020	-0.027	-0.046	0.361
p<0.1; *p<0.05; **p<0.01; ***p<0.001															
Dependent variable: Δ % Legislative Speech in Bin i at t_i ; Issue: EU Integration															
	(1) All Voters	(2) Men	(3) Women	(4) Some HE	(5) No HE	(6) WWC	(7) WMC	(8) Other WC	(9) Other MC	(10) Ages 18-29	(11) Ages 30-49	(12) Ages 50-64	(13) Ages 65+	(14) Leavers	(15) Remainers
Representation Gap in Bin i at t_0	0.271* (0.126)	0.247* (0.119)	0.305* (0.133)	0.417* (0.164)	0.162 (0.091)	0.172 (0.093)	0.322* (0.143)	0.351* (0.155)	0.531* (0.228)	0.446* (0.201)	0.348* (0.151)	0.204 (0.103)	0.142 (0.084)	0.103 (0.068)	0.202 (0.176)
Constant	0.000 (0.978)	0.000 (0.987)	0.000 (0.968)	0.000 (0.946)	0.000 (1.010)	0.000 (1.004)	0.000 (0.965)	0.000 (0.971)	0.000 (0.965)	0.000 (0.974)	0.000 (0.966)	0.000 (0.994)	0.000 (1.017)	0.000 (1.029)	0.000 (1.053)
Observations	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
R ²	0.191	0.177	0.208	0.243	0.138	0.147	0.213	0.204	0.213	0.198	0.211	0.164	0.126	0.104	0.062
Adjusted R ²	0.151	0.135	0.168	0.205	0.094	0.105	0.173	0.164	0.174	0.158	0.171	0.122	0.083	0.060	0.015
p<0.1; *p<0.05; **p<0.01; ***p<0.001															

Figure C.5: Communicative Responsiveness of Legislators to UK Voters, 2010-2019

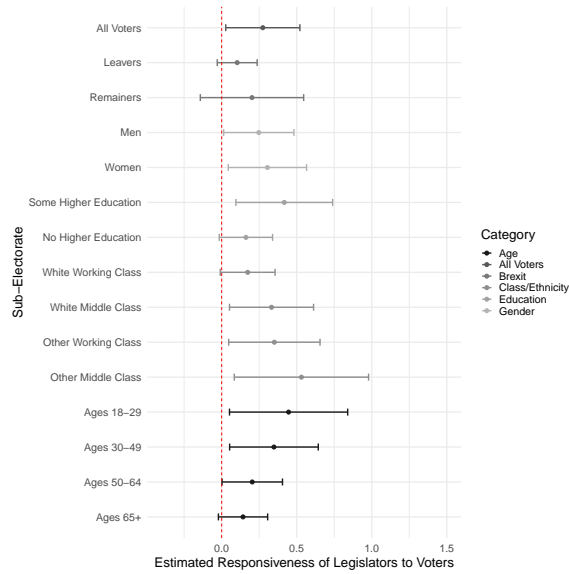
(a) Issue: Redistribution



(b) Issue: Immigration



(c) Issue: EU Integration



C.4 Robustness to Alternative Anchor Locations

My method for jointly scaling legislators and voters relies on creating hypothetical anchor legislators who are assigned a score on both the Wordscores scale (of legislator speech) and on the survey response scale (of voter opinions) on each issue and for each period.

For each issue and period, I first create two anchor legislators who represent hypothetical extreme left and right legislators. I assign these two legislators positions on the survey response scale equal to the extremes of those scales, and Wordscores positions equal to the weighted average of scores received in that period by the legislators previously identified as extreme left and extreme right on those issues (again weighted by words spoken). I also generate several additional anchor legislators corresponding to ‘typical’ members of parties in the system concerned. These legislators are assigned positions on the survey response scale based on how attentive survey respondents placed their parties, on average, on that issue and in that period. These same hypothetical anchor legislators are then also assigned a score on the Wordscores scale equal to the weighted average of all Wordscore scores received by legislators from the same party in that period (weighted by number of words spoken).

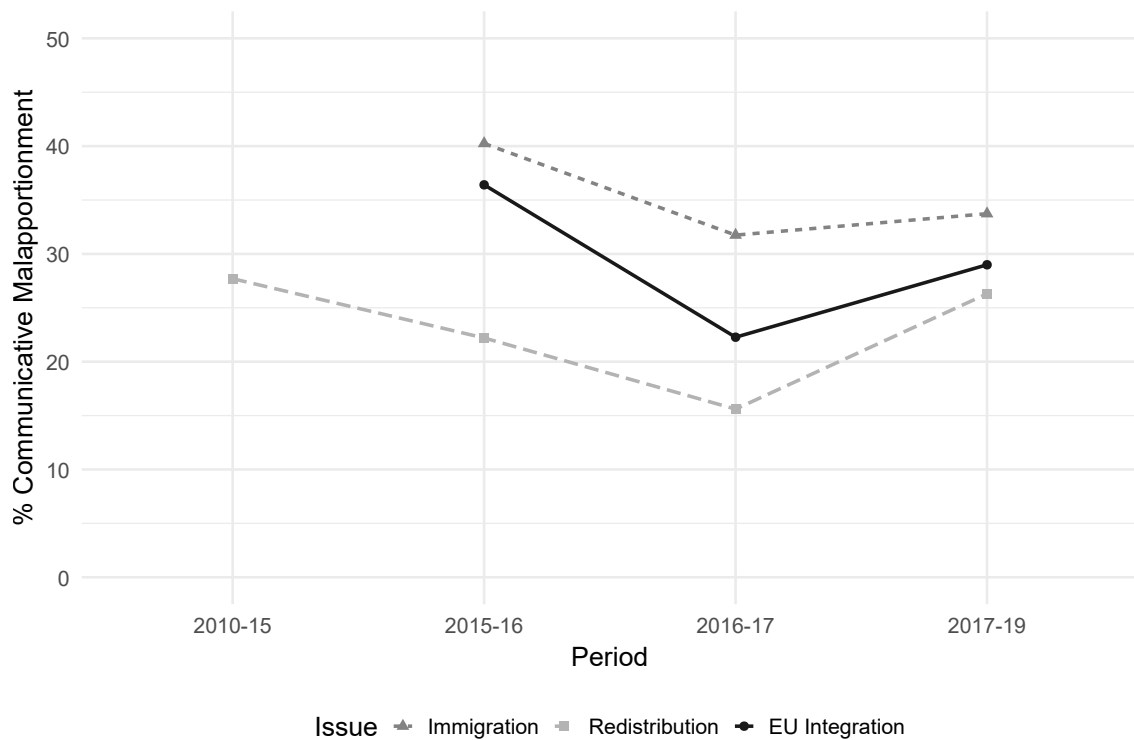
One might reasonably worry that the most extreme legislators elected to parliament do not represent the ‘true’ extremes of the survey scales, as voters may hold extreme opinions that do not receive any parliamentary representation. For this reason, I explore the implications of assigning less extreme positions on the survey scale for these ‘extreme’ anchor legislators. That is, I assign the hypothetical extreme-left anchor legislator a location on the BES survey scale of ‘1’ rather than ‘0’, and the hypothetical extreme-right anchor legislator a location on the BES survey of ‘9’ rather than ‘10’ – although there are voters espousing the positions ‘0’ and ‘10’ in the relevant survey waves.

Figures C.6–C.9 present the estimated level of communicative malapportionment, and trends in the relative communicative presence of different sub-electoralates between 2010 and 2019 for each issue. As might be expected, we find that this generally raises the level of communicative malapportionment we observe on each issue slightly (as the most extreme po-

sitions on each issue are now estimated to have less communicative presence than before), but the other patterns we observe remain largely unchanged – for instance, in terms of trends in communicative malapportionment, or which sub-electrates are estimated to have more or less relative communicative presence on each issue.

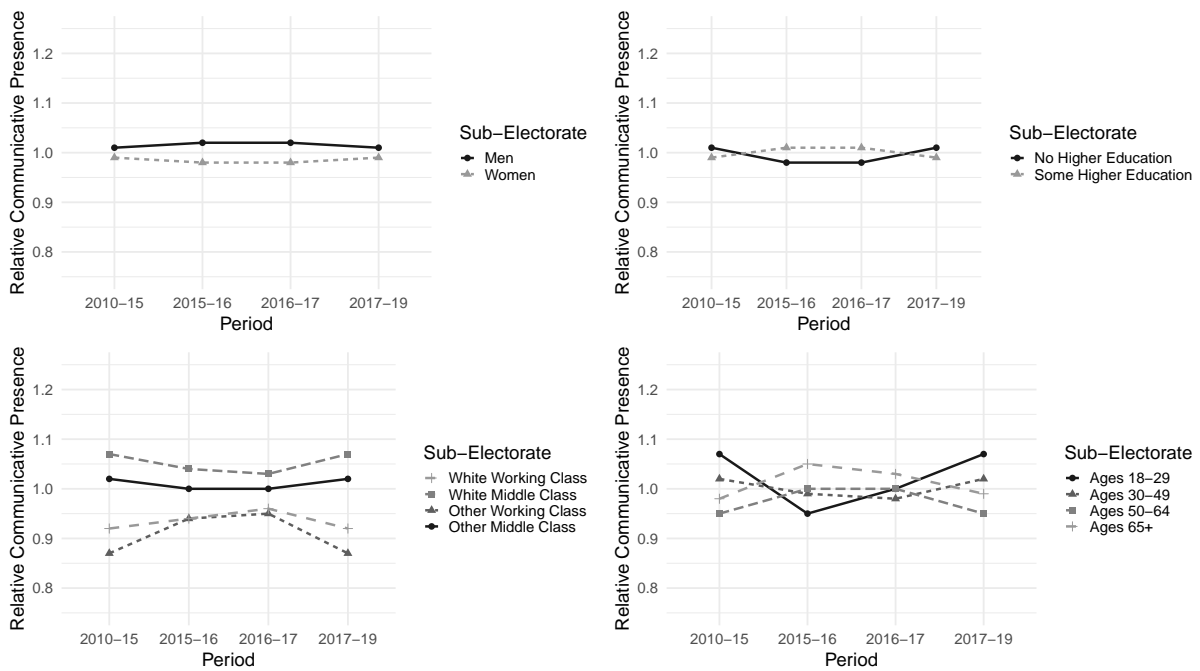
Notably, we still observe greater malapportionment on immigration and EU integration than on redistribution, and that communicative malapportionment on EU integration and immigration declines between 2015-16 and 2016-17. We also still find that, across issues, the opinions of university-educated voters are over-represented in legislative speech, relative to those of less educated voters, and especially on the second-dimensional issues of immigration and EU integration. Meanwhile, working class ethnic minority voters are still slightly under-represented on redistribution but over-represented on immigration and EU integration throughout. I also still find very large disparities by age on immigration and EU integration – with the (more left-wing) views of younger voters on these issues receiving disproportionately greater representation.

Figure C.6: Communicative Malapportionment in the UK, 2010-2019



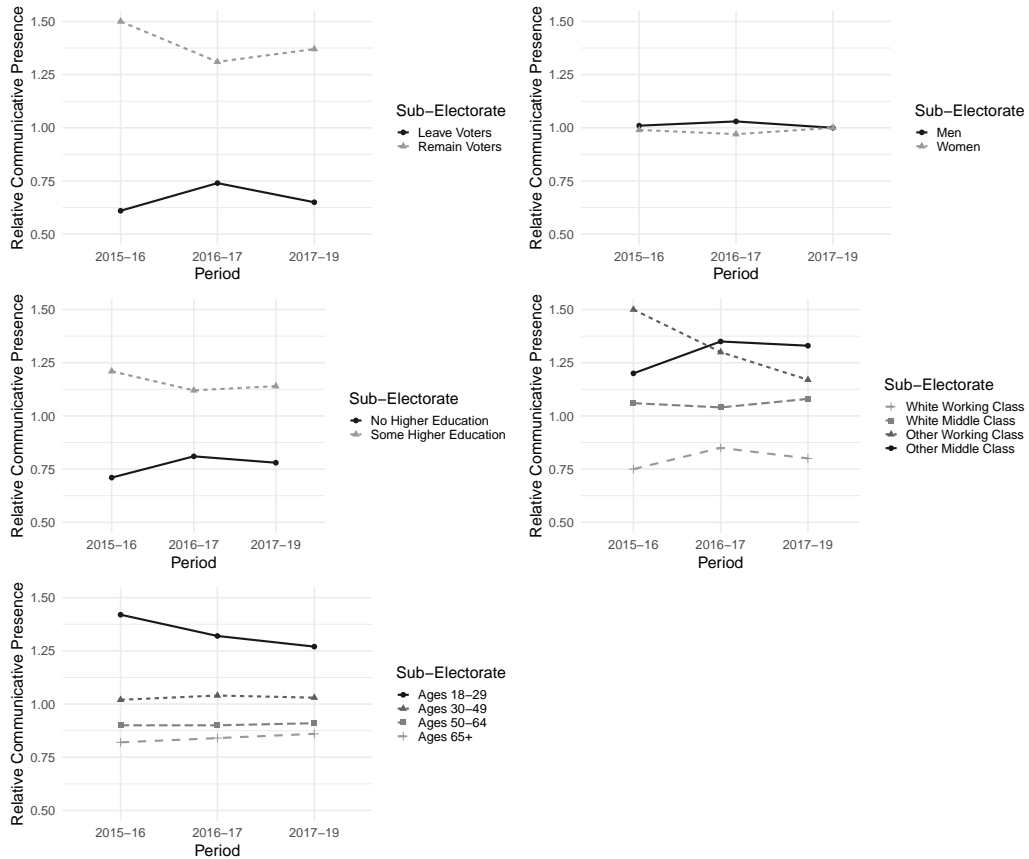
Note: This figure plots the estimated level of communicative malapportionment on redistribution, immigration and EU integration in the UK between 2010 and 2019, calculated according to equation (1), when anchor legislators for the most extreme positions represented in parliament located at 1 and 9 instead of 0 and 10. This quantity captures the proportion of leg. speech on an issue delivered by legislators who would not have received as much floor time if the distributions of voter preferences and leg. speech were perfectly congruent (i.e. there was perfect communicative congruence).

Figure C.7: Relative Communicative Presence of UK Sub-Electorates on Redistribution



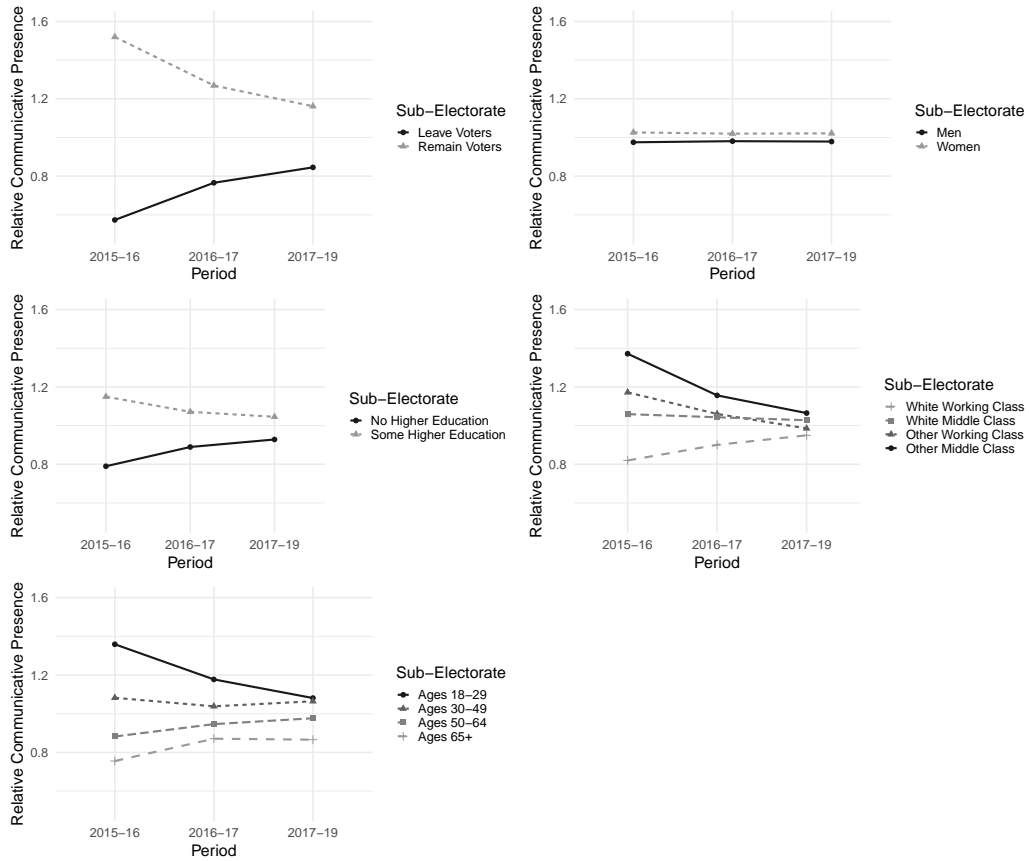
Note: This figure plots trends in the relative communicative presence of different sub-electorates on redistribution between 2010 and 2019, calculated according to equation 3, when anchor legislators for the most extreme positions represented in parliament located at 1 and 9 instead of 0 and 10. If the RCP of a group exceeds 1, the opinions of its members are over-represented in leg. speech relative to the opinions of a typical voter. Conversely, if the RCP of a group is less than 1, the opinions of its members are under-represented relative to those of a typical voter.

Figure C.8: Relative Communicative Presence of UK Sub-Electorates on Immigration



Note: This figure plots trends in the relative communicative presence of different sub-electorates on immigration between 2015 and 2019, calculated according to equation 3, when anchor legislators for the most extreme positions represented in parliament located at 1 and 9 instead of 0 and 10. If the RCP of a group exceeds 1, the opinions of its members are over-represented in leg. speech relative to the opinions of a typical voter. Conversely, if the RCP of a group is less than 1, the opinions of its members are under-represented relative to those of a typical voter.

Figure C.9: Relative Communicative Presence of UK Sub-Electorates on EU integration



Note: This figure plots trends in the relative communicative presence of different sub-electorates on EU integration between 2015 and 2019, calculated according to equation 3, when anchor legislators for the most extreme positions represented in parliament located at 1 and 9 instead of 0 and 10. If the RCP of a group exceeds 1, the opinions of its members are over-represented in leg. speech relative to the opinions of a typical voter. Conversely, if the RCP of a group is less than 1, the opinions of its members are under-represented relative to those of a typical voter.

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