From your house to their House? Representation, Political Rhetoric and Housing Markets

Ben Ansell,* Laure Bokobza† & Jacob Nyrup‡

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In the last decades, advanced industrial democracies have seen a rapid, yet unequal, surge in housing prices. While scholars have examined whether house prices shape the political behaviour of voters, we know little about how they change politicians' stances on housing policy. We rely on innovative text analysis methods on all parliamentary speeches on housing since 1997 in the UK and identify three main policy issues: housing supply, housing demand, and welfare-related concerns. The analysis shows that higher housing prices in an MP's constituency are associated with more expressed concern about housing demand and housing welfare support, particularly for Labour MPs relative to Tory MPs. Furthermore, we find that MPs from all parties talk more about housing supply in constituencies with higher housing prices. This provides new insights into the determinants of political elites' attitudes regarding welfare and show that MPs react to changes in their constituents living conditions.

*Professor of Comparative Democratic Institutions, Nuffield College, University of Oxford. This project has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme, grant agreement number 724949. The ERC project code for this project is WEALTHPOL.

†Behavioural Insights Team

‡Assistant Professor / Postdoctoral Researcher, University of Oslo

The core economic story of the past two decades in advanced industrial countries has been that of a rapid, but geographically unequal, surge in housing prices (Shiller 2015). In recent years, political scientists have started to examine the role that home ownership and house prices play in altering the political behavior of voters (Adler and Ansell 2019; André et al. 2018; Ansell et al. 2022; Conley and Gifford 2006; Larsen et al. 2019). Less attention has been paid to whether rising house prices play any role in the formation of politicians' views. Scholars have begun to examine whether local economic factors influence the rhetoric or behavior of politicians (de Benedictis-Kessner 2020; de Benedictis-Kessner and Warshaw 2020). However, the role of local housing prices in affecting political representation at the legislative level has largely been unexamined, which is unfortunate given the massive relative increase in house prices over the past few decades.

More broadly, we know little about which factors, beyond partisanship, that shape individual politicians' discourse regarding welfare-related issues in general, and housing policy in particular.[1] In those legislatures with strong party-line voting, how politicians talk about housing may be the most effective way they can individually represent their district and its constituents (Goet 2019). This article asks whether local house prices shape how political elites speak about housing policy in parliament. Using innovative text analysis methods and the case of the United Kingdom, this paper shows that housing prices across British constituencies influence the discourse of Members of Parliament representing these constituencies.

House prices have risen dramatically across the past three decades in the United Kingdom as a consequence both of constrained supply, increased demand, and an era of extremely low nominal interest rates. Although the boom has been most pronounced in London and the South East, all regions have experienced house price growth. Figure 1 shows that this near-universal British experience has meant that all political parties have seen prices rise in the constituencies they represent. The top panel shows the prevailing median house price in each party's median constituency (an average of averages), which has increased for all parties since 1996. The bottom

[1]Exceptions include Kohl (2018) on the mentions of housing policies in political manifestos and O'Grady (2017) on parliamentary rhetoric about welfare.

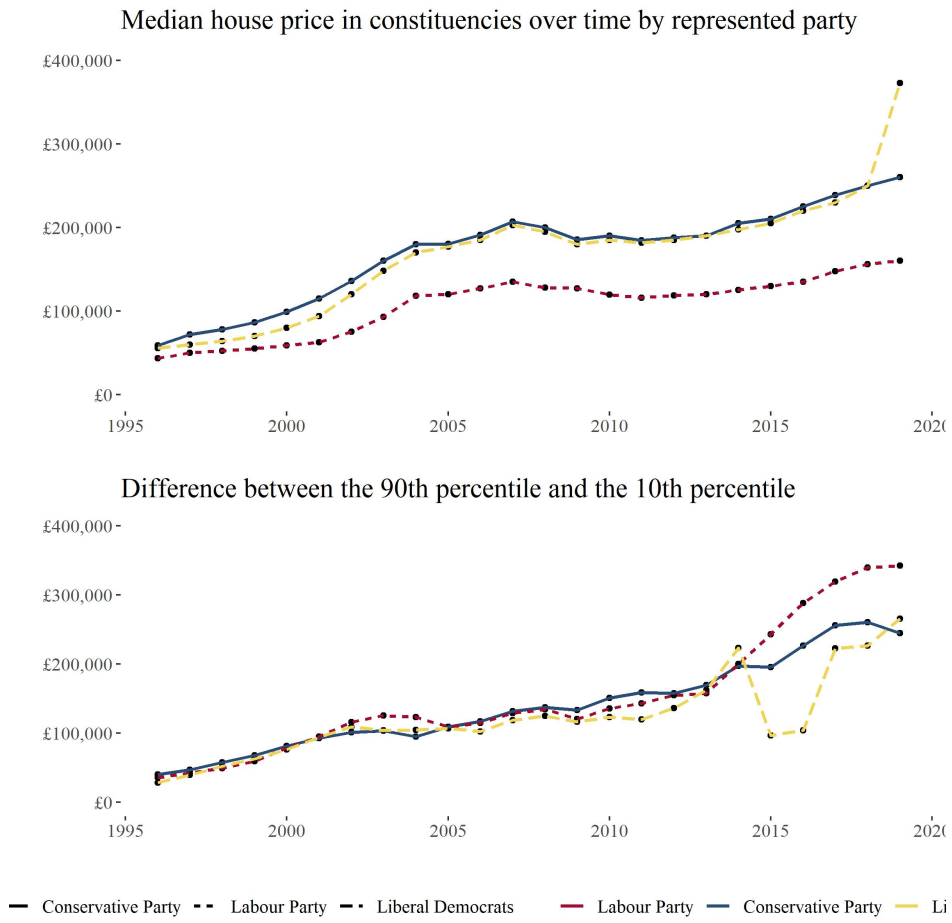


Figure 1: The top figure shows the constituency with the median house price by party group over time. The bottom figure shows the difference in the median house price between a house in the 90th percentile and the 10th percentile by party group over time.

panel shows that not only has their been a uniform increase in house prices but that parties have represented an ever more diverse range of constituencies in terms of house prices. This panel looks at the ratio of the median price in the party's 90th percentile constituency to that in their 10th percentile constituency – it accordingly shows the distribution of house prices in a party's overall base. Here, we see that the gap has gotten wider since the 1990s for all parties - that is, each party faces more diversity in house prices in the constituencies it represents. In sum, all parties have faced the housing boom, but they may be becoming more internally divided in terms of the housing wealth of the areas they represent.[2]

How have British politicians responded rhetorically to this substantial growth - and inequality - in housing prices? And does this vary across political parties? To get purchase on this question we begin by defining different types of housing policy that politicians might wish to discuss. Conceptually, we argue that housing policy has three key components that politicians can talk about. First, housing supply policies that affect the number of houses constructed either by private or public actors. Second, housing demand policies that change the ability of people to purchase houses or to afford rents. Finally, housing welfare policies that directly transfer money to poorer citizens as part of the tax and transfer system.

We argue that how parliamentarians speak about housing depends on (a) the types of housing policy we are considering, (b) their partisanship, and (c) the housing market facing their constituents. We expect left-wing politicians to put more emphasis on an activist housing policy than right-wing politicians in all areas but particularly in housing welfare. We also expect parliamentarians who represent constituencies with more expensive housing to be more likely to talk about housing policy issues than those in constituencies with less expensive housing. Finally, we expect an interactive relationship whereby left-wing and right-wing MPs' rhetoric about housing diverges most in the most expensive constituencies, where their constituents' attitudes are likely to be most

[2]Figure 1 and the house price data we use in this paper is drawn from annual Land Registry databases of every property sold in the United Kingdom since 1996. We calculate median prices at the constituency level matching the postcode of property sales to the relevant constituency boundaries (taking into account the boundary changes that have occurred since 1997). We do not have data from before 1996.

divergent. In particular, left-wing MPs in expensive constituencies should be much more likely to talk about activist housing policy than their right-wing peers in similar constituencies.

Using structural topic modeling (STM) we analyse all speeches about housing in the British House of Commons from 1997 to 2018 and extract a series of coherent topics. We then match these topics to the housing policy concepts of supply, demand, and welfare and develop measures for each parliamentarian of how much they speak about these concepts in each year. We then statistically model the share of speeches devoted to each topic by each MP, examining the degree to which partisanship, local house prices, and their interaction shape rhetoric.

Our contribution is threefold. First, this paper has a descriptive value in that it sheds light on elected politicians' expressed views on housing and housing policy, its evolution over time, and its relation to partisan affiliation and constituency-based socioeconomic factors. Because our period of study covers a change of government, we are able to partly disentangle the effect of partisanship from that of government *versus* opposition dynamics, where existing studies often focus on shorter periods.

Second, this paper presents an original method of analysis based on the combination of unsupervised Structural Topic Models and manual coding of topics into dictionaries to create, for each MP, an index of how they score on a particular dimension of housing policy depending on how much they talk about it.

Lastly, our results provide new and substantial insights into the determinants of political elites' discourse about housing – beyond partisan affiliation. Since housing policy is a core element of welfare and redistributive politics more broadly, our results carry important implications for the study of how governments respond to rising wealth inequality. More generally, this paper asks how local contexts matter for national-level politicians, an area of growing research, but one where we still have relatively little empirical evidence regarding redistribution (de Benedictis-Kessner 2020; Finseraas, Høyland and Søyland 2021; Mian, Sufi and Trebbi 2010; Tzelgov and Olander 2018). The paper demonstrates that differences in the local economy do indeed appear to shape how politicians speak – but with differences dependent on partisan slant – shedding new light on

the representation of local interests in legislatures. This fit into a broader debate about political accountability, where it is an open question whether politicians react to local concerns.

The rest of this paper proceeds as follows. First, we discuss the various mechanisms through which housing prices can affect the politicians' views and priorities and put forward testable hypotheses. Second, we present our data and lay out our empirical setup, including how we measure individual MPs' stances through text data analysis. Third, we conduct the analysis and present our results. The last section concludes.

Theory: Housing prices and the changing views of political elites

Over the past few years a new body of research has shown that both housing prices and housing policies are important for voters. Higher house prices make voters more supportive of incumbent politicians (Larsen et al. 2019), less supportive of redistribution and social insurance (André et al. 2018; Ansell 2014), and less supportive of populist movements and parties (Adler and Ansell 2019; Ansell et al. 2022). In comparison, we know rather less about voter attitudes towards housing policy itself (though see Ansell and Cansunar (2020)) and political parties' attitudes towards housing policies. We argue and show that the way MPs talk about housing in Parliament is contingent on their party affiliation and housing prices in their constituencies.

Taking speeches seriously

There are good reasons, theoretically and empirically, to consider parliamentary speeches as more than "cheap talk". There is a wealth of research using legislative speeches to measure the views of individual legislators (Back et al. 2021; Eggers and Spirling 2016; Lauderdale and Herzog 2016; Schwarz, Traber and Benoit 2017). As Proksch and Slapin (2015) underline, MPs are less constrained by their party in how they speak than in how they vote, allowing for finer nuances and contradictions in MPs' expressed views (Goet 2019). O'Grady (2019) further shows that differences in MPs' backgrounds jointly influence how they speak and how they vote on welfare issues. To what extent do speeches translate into tangible political effects? We bring a twofold response to the "cheap talk" argument which views speeches as little more than costless signaling and pos-

turing on MPs' part.

First, interventions in Parliament are not that "cheap" for MPs. The latter are under no obligation to speak in Parliament, and when they choose to do so, it entails that they devote some of their time to being physically present in the House and getting involved in a debate – rather than engaging in some other duty. By the same logic, participating in a debate about housing specifically may come at the expense of getting informed and involved on other, more electorally salient policy issues. Moreover, it is unclear that there are any direct electoral benefits for MPs from talking about specific issues. Rational voters know less about what is said and care more about what is done. The "cheap talk" argument therefore does not hold against a straightforward cost-benefit analysis.

Second, speeches matter because parliamentary debates shape what is ultimately voted on in Parliament. MPs are doubly constrained when voting: By the three mutually exclusive options they face (in favour, against, abstain), and by their party's leadership which maintains a strict control of the legislative agenda and sets the line for all affiliated MPs (Goet 2019; Spirling and McLean 2007). Looking specifically at the Housing and Planning Act of 2016, which is the last big piece of legislation regulating housing policy in the UK, there were 34 divisions and only one case of dissidence.[3][4] Because it exhibits so little variation, voting itself is thus a poor indicator of MPs' individual opinions beyond their partisan affiliation.

However, individual MPs have leeway in what they say before a specific bill or amendment is voted, including that of expressing views that dissent from their own party's leadership (Cowley 2002; Proksch and Slapin 2012). The contradictory opinions expressed by MPs across and within parties shape what is included in and left out of the texts that are ultimately voted on. The sum of speeches and their interaction thus inform the content of bills in a direct way: What is brought up by MPs during a debate may take the bill in a different direction, by adding or removing provisions,

[3]A "division" is the technical term for a vote in the House of Commons. When a division is called, MPs cast their vote for or against a specific issue by going into one of two rooms, situated on either side of the Chamber.

[4]Labour MP Smyth Karin voted no in a division that took place in January 2016, while the rest of her party voted yes.

or shifting the focus of the legislation from one dimension to another. In addition to revealing intra-party differences (which voting doesn't due to party-line behaviour), debates are thus relevant for policy to the extent that they exert a direct and concrete influence on the main vectors of policy-making, namely bills and other legislative proposals. Furthermore, legislative debates determine the prevalence of specific issues related to housing – which we turn to in the following section.

What MPs talk about when they talk about housing

Since speeches on housing are pivotal in shaping legislation, we need a framework for analyzing them. Yet, there is little previous research on the topic. Recent work by Kohl (2018) examines mentions of housing in party manifestos, finding that although left-wing parties tend to mention housing policy *per se* more often than right-wing parties, the latter are more likely to promote homeownership in their manifestos. This mixed pattern suggests that how parties talk about housing may depend on what *type* of housing policy we are considering - is it affordability, construction, housing benefits, mortgage access, or something else? Just as O'Grady (2017) finds that British politicians speak about welfare policy in a variety of different ways - dependency, inequality, poverty, and so forth - housing too is a multifaceted topic, where different partisans will have different goals.

Existing work on housing touches on the different partisan politics of housing but rarely relates it to the actual housing market and, most importantly, the development in house prices. Since house prices have changed massively in aggregate - but also with enormous within-country variation - over the past three decades, it would be surprising if politicians' views about housing policy were not responsive to this enormous shift in the distribution of wealth. In particular, in countries such as the United Kingdom, where parliamentarians represent specific geographic districts, we might expect prevailing *local* house prices to shape how they view and talk about housing policy. Accordingly, we expect the way parliamentarians talk about housing policy to be affected by both their partisanship and by local house prices.

But what types of housing policy do politicians talk about? Recall that O'Grady (2017) finds different dimensions of welfare policy in his analysis of parliamentary speech. Drawing from ex-

isting work on cross-national variations in housing policy (Castles 2005; Kemeny 1981; Schwartz 2009; Schwartz and Seabrooke 2008) we argue there are three key dimensions of housing policy that need to be analytically separated, if we are to understand the motivations of politicians to talk about housing in parliament.

The first dimension of housing policy is *housing supply*. This refers to the construction of new housing or land development more broadly. In the United Kingdom, as in most European countries, house-building has traditionally been split between two sectors: private-sector home construction (possibly with government subsidy) and direct public housing construction. In recent years, the latter has largely been replaced by non-profit housing association construction with government support for 'social housing'. Governments can affect the for-profit private construction sector - through regulation, subsidy, taxation, and so forth - or for non-profit social housing sector - through direct government construction, subsidy, regulations on social housing, and so forth.

The second dimension of housing policy is *housing demand*. This relates to helping owners and / or renters afford housing, typically on the private market. For owners, this means policies that promote homeownership, without directly implying any change in supply. In the United Kingdom, one recent example is the 'Help to Buy' scheme set up by the Conservative-Liberal coalition government in 2013, which provided government equity loans (i.e. shared ownership), mortgage guarantees, and later tax-favored savings accounts. Governments might also help renters by providing greater renter rights, subsidized housing and so on. Obviously there may be some tension between demand policies helping ownership versus those helping renters (because of second order effects on prices) but similarly the same group of people might be aided by both.

The final dimension of housing policy is *housing welfare* - policies that resemble other cash transfers from the welfare state such as disability or unemployment insurance. These policies work by transferring financial resources to poorer citizens (that is, unlike most housing demand policies they are usually means tested). In the United Kingdom this is largely done through the policy of'housing benefit', though this has been rolled into so-called Universal Credit (a single transfer covering housing, disability, unemployment, etc) in recent years. Such policies may also be quasi-

regulatory - for example, the infamous 'bedroom tax' which charge residents of council / social housing who had more bedrooms than they 'needed'. We also include government support for the homeless in this category.

Partisanship and housing prices as drivers of political discourse

With these different types of policies in mind, let us now return to the question of how different politicians may speak about housing. We argue that there are two key drivers of parliamentarians' behavior towards housing policy - the party they belong to and the housing characteristics of the constituency they represent. These factors should have both direct and interactive effects on how MPs talk about housing.

In terms of the direct effect of partisanship, existing work by Kohl (2018) would suggest that left-wing politicians are more likely to be interested in government housing policy *in general* but that promoting home ownership should be of greater interest for right-wing politicians. The implication is that left and right wing rhetoric about *housing supply* might be quite similar, with left-wing politicians more interested in public supply and right-wing politicians more interested in private sector house-building but in both cases they may advocate housing supply. For *housing demand* we would also expect some similarities for the same reason but again with left-wing politicians more attracted to helping renters. O'Grady (2017) suggests further that left-wing British politicians are more likely to be concerned about the poverty and inequality aspects of welfare - translated to housing policy we anticipate that left-wing politicians should be more concerned about *housing welfare* than right-wing politicians.

How do we expect politicians' stance on housing to be affected by housing prices in their constituency? As we note above, we expect both direct effects and those moderated by partisanship. In terms of direct effects, we anticipate that in general rising house prices should produce a greater demand for government intervention of some kind - be that new supply, support for demand, or for welfare.

However, there are strong reasons to believe that the effects of local house prices on MP rhetoric will depend on their partisan background. Housing intervention after all, is not costless. Housing

welfare is a direct transfer from wealthier tax payers to poorer benefit recipients. Left-wing MPs in expensive areas will be particularly concerned about affordability for their own constituents, poorer citizens in wealthy areas, who will struggle most fiercely to afford housing. They may also seek greater support on the housing demand side for renters and perhaps poorer would-be owners, both of whom will find affording housing especially hard in expensive constituencies.

By contrast right-wing parliamentarians in expensive constituencies face a different set of motivations. Building new houses in such constituencies potentially pushes prices down, hurting their constituents. And while encouraging home-ownership *overall* may be a goal for right-wing parties, this rubs up against the negative effect of increased housing supply for current owners, an important part of the base for right-wing parties (Verberg 2000). The same applies for help for renters in expensive districts, which helps the base of the left but not that of the right. Moreover, increased housing support, through public construction, demand subsidies, and especially through housing welfare, places pressure on public budgets and may ultimately require tax increases. The group most likely to be the target of such tax rises are the very constituents of right-wing MPs in expensive constituencies.

Putting these interactive effects together, we anticipate that the way that MPs talk about housing will vary by partisanship. This is especially the case in constituencies with higher house prices, where the underlying preferences of left and right-wing constituents will be most dissimilar, with the former much more likely to speak about housing.[5] This produces the following hypotheses:

> **Hypothesis One: House Prices -** MPs from constituencies with higher house prices will be more likely to talk about all forms of housing policy.
>
> **Hypothesis Two: Partisanship -** Left-wing politicians will be more likely to speak about housing welfare than right-wing politicians. This gap will still exist but be smaller for housing demand and housing supply.

[5]These hypotheses are further informed by our thorough reading of the corpus. In Appendix A, we present selected excepts from parliamentary speeches which exhibit strong differences within and across parties and housing prices.

Hypothesis Three: Partisanship x House Prices - The partisan gap in how MPs speak about housing will widen as constituency house prices increase.

Data and empirical methods

We examine whether house prices and partisanship matter respectively for MPs' expressed views about housing policy, and the extent to which there is a moderating effect of house prices on the relationship between partisan affiliation and discourse on housing policy. To do so, we rely on both fine-grained house price data and the entire corpus of debates about housing in the House of Commons from 1997 to 2018. We describe these data sources below, before turning to our usage of the debates corpus. Here, we rely on a combination of Structural Topic Modelling and dictionary methods. We proceed to explain how we model the relationship between how MPs talk about housing and both constituency house prices and partisanship.

The main independent variable in our analysis is an indicator of housing prices at the constituency level. We rely on house price data from HM Land Registry for this information. It contains records about all residential property sales in England and Wales, dating back to 1995. We aggregate this information at the constituency level to compute the median housing price for each constituency in each year.[6]

Our outcome of interest is a measure of how MPs speak about housing. There are *a priori* several ways to capture politicians' viewpoints. As roll-call-based analyses do not perform well in parliamentary settings such as that of the UK, where party-line voting is the norm (Spirling and McLean 2007), scholars have increasingly resorted to so-called "text-as-data" approaches to measure political inclinations. The text analysis of party manifestos using the Comparative Manifestos Project (CMP, Budge et al. 2001) has allowed to produce meaningful estimates of the positions of political parties (Laver, Benoit and Garry 2003; Slapin and Proksch 2008). The latter are, however,

[6]Because a reform redefined constituency boundaries in 1996, we begin our analysis the following year, thus discarding the housing prices data for 1996 and 1997. We also ensure that our constituency-level housing prices account for the 2010 reform in boundaries, manually matching old constituencies to new ones for both England and Wales. Scottish house prices are available at the constituency level but only dating back to 2004. Hence we can only include Scottish constituencies from this date. We omit constituencies in Northern Ireland.

poor indicators of how legislators situate themselves on specific policy issues.

Recent research has therefore turned to the analysis of legislative speeches to measure individual legislators' views (Back et al. 2021; Eggers and Spirling 2016; Lauderdale and Herzog 2016; Schwarz, Traber and Benoit 2017). Drawing on Proksch and Slapin (2015), Goet (2019) identifies two key advantages of speeches relative to votes when trying to infer legislators' viewpoints: They are less subject to partisan control than voting, and they allow MPs to express views along a continuum rather than through three mutually-exclusive options (in favour, against, abstain). The textual analysis of parliamentary debates allows us to capture the nuances and contradictions that political conflict is made of (Goet 2019). Furthermore, MPs enjoy considerable freedom in the opinions they express during parliamentary debates, including that of expressing views that dissent from their own party's leadership (Cowley 2002; Proksch and Slapin 2012). As a result, "speeches provide a lot of insight into MPs' beliefs and priorities that could not be gained from an analysis of voting" (O'Grady 2019, p.554). Specifically in this case, we use debates about housing in the House of Commons to measure how MPs talk about the three key aspects of housing policy mentioned above: supply, demand, and welfare.

Housing debates in the UK House of Commons

All parliamentary debates in the United Kingdom over the last 200 years have been recorded in *Hansard*, which reports MPs' speeches *verbatim*, bar some "repetitions and obvious mistakes".[7] The full text of each debate is available online. We focus on debates that took place in the House of Commons in the period from 1997 to 2018, to align the data with the availability of housing price data. To build the raw text database, we first use the search engine to identify all the debates that were *explicitly* about housing – meaning that we exclude cases where housing is mentioned in debates about other issues, such as welfare or budget matters.[8] Since debate titles have an agenda-

[7]Hansard website, "About Hansard Online" page.

[8]The trade-off here entails that by excluding mentions of housing policy outside of housing-specific debates, we may lose some potentially relevant information. However, including them would mean that we no longer are sure that what we capture really is about housing – and not, for instance, welfare, or development in general – making the link between our dependent and independent variables more tenuous.

setting purpose in the UK House of Commons, we filter relevant debates by searching for housing terms in the title. We then match these debates to the text data compiled by Odell (2019), which draws on *Hansard* and includes an ID that allows to consistently track MPs over time.

The result is an exhaustive text database of 12,168 speeches, where one speech is one oral intervention by an MP in a debate about housing. The unit of observation for the text data is a single and cohesive utterance from an MP during a specific housing debate. It can range from one to hundreds of words. Each speech comes with a range of speech-level variables (date, governmental session), MP-level variables (name, age, gender, party affiliation), and constituency-level variables (socioeconomic indicators, described below).

Understanding how MPs talk about housing in Parliament using Structural Topic Modelling

Though Kohl (2018) finds that partisanship alters how parties talk about housing in frequency and in substance, existing research tells us next to nothing about how the policy area of housing is discussed in Parliament. In particular, there is no well-established dictionary of housing and housing policy, nor is it *a priori* obvious how housing debates would be structured, and what themes would dominate our corpus of speeches. We thus begin our analysis by running a Structural Topic Model (STMs) with 30 topics on our corpus of speeches.[9]

Topic models are part of the broader class of "bag-of-words" methods of text analysis, which consider the meaning of words to depend on the context in which they are used.[10] STMs are unsupervised learning methods, which means that they "learn underlying features of text without explicitly imposing categories of interest" (Grimmer and Stewart 2013, p.281): the categories are estimated, and documents simultaneously assigned to said categories. We follow Denny and Spirling (2018)'s recommended procedure for pre-processing. We detail our pre-processing steps in Appendix B.1, and present further model diagnostics in Appendix B.3.

[9]The optimal number of topics for this corpus was somewhere between 30 and 40. For ease of human understanding, and because it does not substantially affect the structure and content of the topics revealed, we kept 30 topics in our main specification. More details and model diagnostics can be found in Appendix B.3.

[10]For recent reviews on the use of text analysis methods in political science, see Grimmer and Stewart (2013) and Lucas et al. (2015).

Because we do not want to pollute the identification of the underlying categories with our pre-conceived notions nor end up in a circular reasoning by including what will be our independent variables as covariates, we run a simple STM with only time – entering as a spline – as covariate.[11] Relying on STMs also allows to relax three assumptions made by the standard Latent Dirichlet Allocation (LDA) topic model: That of the independence of topics within a document, that of the stationarity of the distribution of words within a topic, and the assumption that topics can be fully modeled based on the text of the document (Blei, Ng and Jordan 2003).

We thus proceed to categorize the latent topics produced by the STM by assigning them to concepts related to housing policy. Though scholars agree that validation of topics is crucial, there is no agreement on validation methods (Chang et al. 2010; Grimmer and King 2011; Grimmer and Stewart 2013). To conduct this exercise, we have therefore thoroughly inspected the content of topics and speeches manually, going over the list of high-frequency and FREX words, reading a random sample of documents assigned a high probability of being in a given topic, and producing word clouds for each of the 30 topics, as shown in Appendix D.[12] This provides us with some reassurance regarding the semantic validity of each cluster, and makes it more plausible that we are capturing the right underlying concepts.

Based on this examination, we manually assign to each latent topic two semantic labels, a "broad policy frame" (supply, demand, welfare, formalities or "other"), and a "narrow policy frame", the latter being nested in the former – as described in Table 1 below. Six researchers (including the authors) have conducted this classification exercise separately, and pooled their results to come up with the final categorization.[13] Figure 2 shows some example word clouds for

[11] For that same reason, we refrain from using newer methods such as keyword-assisted topic modelling with keyATM - though we would expect fairly similar results given that we use the STM results to build housing dictionaries, as described later on.

[12] FREX is a measure of frequency *and* exclusivity of a word to a topic of interest. The summary of a word's contribution to a topic is computed as the harmonic mean of the word's rank in terms of exclusivity and frequency (see Bischof and Airoldi 2012).

[13] Since we are interested in how housing is debated in Parliament by "expert" politicians, not how the general public talks about housing issues, the utility of conducting a validation exercise through means such as surveys would have been low. We find cross-validation by researchers, relying on the above-mentioned methods, to be more pertinent.

three latent STM topics. We identify the top one as new builds, which has to do with the broader issue area of public supply of housing; the middle one as mortgages, which relate to the purchasing of housing; and the bottom one as housing benefits, which belong to the issue area of welfare. Word clouds for each latent topic can be found in Appendix D.

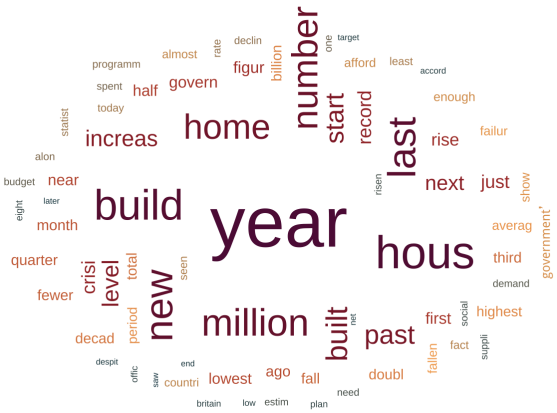
Broad policy frame	*Narrow policy frame*	*Number of latent topics*
Housing supply	Private market supply	5
	Public market supply	3
Housing demand	Demand for purchasing housing	2
	Demand for private rental	2
Housing and welfare	Transfers for affordable housing	4
	Homelessness	1
Formalities	X	9
Other	X	4

Table 1: Classification of STM topics into narrow and broad policy frames

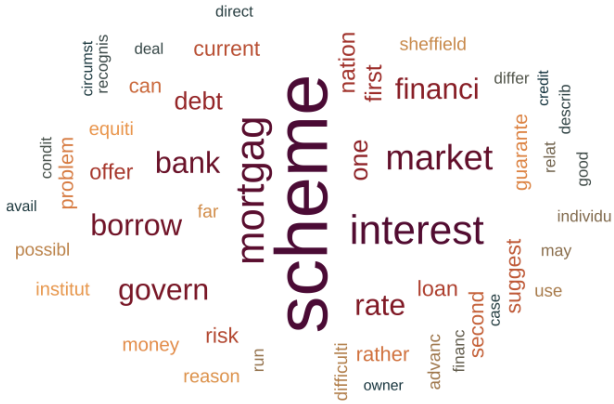
Figure 3 below displays the proportion of corpus documents for each of the 30 latent topics. Two things are worth noting: first, because of the nature of our corpus, debate formalities make up a substantial proportion of all documents. This is true even when excluding the most common formalities-related words from the corpus before running the STMs.[14] Second, the vast majority of topics clearly falls into one of our policy areas – housing supply, housing demand, or welfare – with the exception of four latent topics, which are more ambiguous and therefore lumped into the "Other" category.

STM is a powerful tool to uncover latent themes in our corpus of parliamentary debates. It is nonetheless limited when it comes to building a simple metric to conduct individual-level analyses, which is why we propose an innovative approach which combines STMs with dictionary methods,

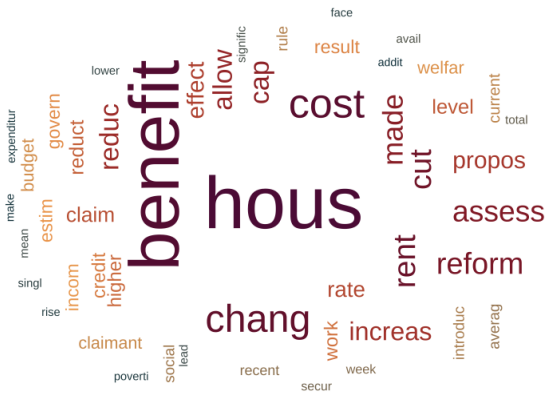
[14] We do so by adding a custom list of "stopwords" during the corpus pre-processing stage of our STM specification. This is recommended so that the prevalent dimension in a corpus is not purely procedural (Goet 2019). See Appendix B for details.



(a) New builds



(b) Mortgages



(c) Housing benefits

Figure 2: Select word clouds for three latent topics

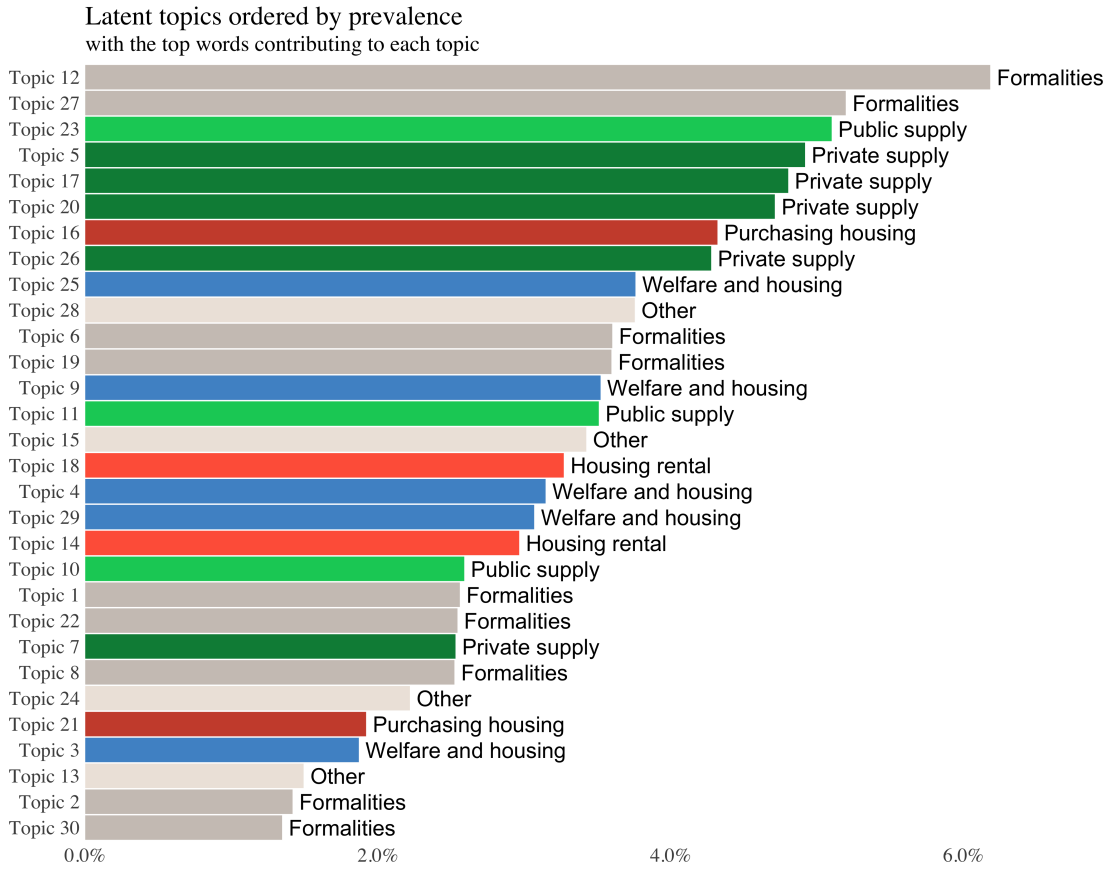


Figure 3: Proportion of each latent topic in the corpus

exploiting the best features of each technique.

Creation of housing dictionaries

There is no well-established nor widely used dictionary for such a small, specific policy area as housing. This is particularly problematic as we want to explore various dimensions of housing. We therefore create new dictionaries to measure how much a given MP talk about different aspects of housing by relying on the topics identified by the STM. This combination of unsupervised and supervised approaches offers several advantages. First, it helps us in reducing the degree of arbitrariness involved in dictionary creation, since we do not rely on people's memory and personal inclinations. Second, our text data is made up of speeches by British politicians, who presumably have a specific way of talking, which may not be reflected in the layman's language and vocabulary. Finally, it is fairly easy to adjust the dictionaries – in particular the number of words extracted –

and test the robustness and sensitivity of our results.

In practice, we extract the words with the highest FREX values from each latent topic to create three distinct dictionaries, corresponding to the three broad policy frames that emerge from the latent topics identified by the STM: housing supply, housing demand, and welfare. In the main model, we rely on 50 words per latent topic to create the dictionary, but we vary the number of words that we extract per dictionary to ensure that the results are consistent as seen in Appendix L. After extracting the words, we remove doublets and words irrelevant to the underlying concepts, such as names of cities, written numbers, prepositions, and the names of days.[15] The resulting words included in each of the dictionaries can be seen in Appendix C. Figure 4 below shows an example for three speeches by different MPs, where words pertaining to Housing Supply are highlighted in green, those relevant to demand of housing are highlighted in red, and those that fall in the welfare dictionary are highlighted in blue.

1:

Local authorities are required to develop an evidence base locally. This ensures that their local plans meet the needs for their market and for affordable housing to be consistent with policies in the national planning policy framework. We have published new guidance to local authorities on assessing housing need in their area and 340 new affordable homes have been provided in Brighton and Hove since 2010.

2:

The Help to Buy equity loan scheme alone helped 116,000 first-time buyers to get on to the property ladder and stimulated the supply of new housingâ€"both key aims of this Government.

3:

I am grateful to the hon. Lady for giving way. Does she accept that, with 2 million households on social housing waiting lists in England alone and 250,000 families living in overcrowded accommodation, it is simply unfair for people to live in houses larger than their needs?

Demand Supply Welfare

Figure 4: Housing dictionaries and example speeches

[15] See Appendix D for the exact list of words that was systematically removed from each dictionary.

An alternative procedure would have been to rely on sentiment analysis – which refers to methods and existing dictionaries built specifically for the evaluation of opinion or emotions in text, including political text (Young and Soroka 2012). Sentiment analysis has also been used to measure conflict in legislative speeches (Proksch et al. 2019). There are challenges in applying this approach to our research question and data. To capture individual MPs' views on housing matters, one would need to perform a topic-specific sentiment analysis, while existing approaches focus on overall polarization, and mainly capture differences between government and opposition politicians. Furthermore, because we only care about MPs' views on the specific issue that is housing policy, it is far from obvious what "positive" and "negative" language would reflect (as it is unclear what it means to talk positively or enthusiastically about, for instance, housing development).[16] Overall, because we know little about how housing is debated in Parliament to begin with, we believe sentiment analysis to be a fragile basis upon which to build legislator-specific scores on the various dimensions of housing identified. Despite these caveats, we present the results of sentiment analysis on our corpus of speeches by party, topic and housing prices in Appendix E. These exploratory results give credence to our argument that the share of speeches devoted to a given topic is a good indicator of MPs' concerns for that issue across the three housing areas of interest.

Econometric setup

We use our three housing dictionaries – supply, demand, and welfare – to assign to each piece of text a score reflecting the extent to which an MP's intervention is devoted to each policy issue. Specifically, we compute the share of each piece of text that pertains to each dictionary. Each piece of text is thus assigned a score from 0 (no words are in this dictionary) to 100 (all words are included in this dictionary), for each of the three topic dictionaries. This score captures the share of the speech devoted to each of the three topics, and is used as is our main measure of how much

[16] An added concern here is that sentiment lexicons are typically built and validated using a combination of crowdsourcing, reviews of various types, and Twitter data. We may thus hesitate to apply them to legislative speeches, which are a very different sort of text.

the speaking MP cares about this specific housing topic. A higher score means that the MP focuses more on this issue. The baseline model we estimate by OLS writes:

$$s_{i,t} = \beta_1 h_{i,t} + \beta_2 P_{i,t} + \delta X_{i,t} + \alpha_t + \varepsilon_{i,t}$$

where $s_{i,t}$ is the score of the speech for a given housing dictionary, $h_{i,t}$ is the median house price in that MP's constituency in year t, P_i, t is the MP's partisan affiliation, $X_{i,t}$ is a vector of controls at the MP and constituency levels, α_t are year fixed effects, and ε_i, t is the error term. The year dummies are included to control for factors that are common to all constituencies in a given year, such as the the Great Recession in 2007-2009 that may simultaneously impact housing prices and how much politicians speak about welfare for instance.[17] The vector of controls includes a set of personal characteristics, namely the MP's gender and age. Indeed, we know that female politicians tend to be more supportive of redistribution compared to men (Iversen and Rosenbluth 2006; Thomas 1991), although this seem to be less pronounced within parties (Lovenduski and Norris 2003). Furthermore, age is a predictor of both wealth and home ownership (Shorrocks 1975), and we might suspect that wealthier politicians act differently than those, who are less fortunate (Page, Bartels and Seawright 2013). In addition, we control for whether the MP's party is in the governing coalition, since one might expect the governing party to act differently compared to the opposition party. Lastly, we control for the region where the constituency is located, to account for regional patterns in housing prices and attitudes towards housing policies.

In appendix H and appendix J we also include a range of constituency-level controls, such as median income or share of owners, and show that the results are robust to the inclusion of these variables. This additional data originates from the 2001 and 2011 censuses, and we can therefore not create yearly controls. Furthermore, we rely on house price levels in the main analysis, but in appendix K we repeat the analysis where we use changes in house prices.

[17] However, because doing so also entails discarding a lot of potentially meaningful variation and does not allow to compare between constituencies, we also run the same specification without the year fixed effects. Results are presented in Appendix I

In order to test whether and how housing prices moderate politicians' partisan leanings, we also run OLS models where the MPs' partisan affiliation is interacted with the median house price in his/her constituency. The estimated model writes:

$$s_{i,t} = \beta_1 h_{i,t} + \beta_2 P_{i,t} + \gamma P_{i,t} * h_{i,t} + \delta X_{i,t} + \alpha_t + \varepsilon_{i,t}$$

In all models, we cluster the standard errors at the government level (Blair1, Blair2, Blair3, Brown, etc.) to account for unexplained variation relating to the specific governmental session, where the debate is embedded (in the same logic as Goet, Fleming and Zubek 2020, who cluster their analysis at the parliamentary session level). To ensure that results are not driven by very short pieces of text, we remove all speeches that have less than 19 tokens (which is the first quartile of speech length). In appendix M we show that the results are consistent when we use another cut-off for the number of tokens.

Results: Partisanship, Housing Prices and MPs' Housing Rhetoric

Figure 5 shows the evolution over time of the share of speech devoted to the three principal housing-related policy areas that we have identified – supply, demand and welfare – by the MPs' party affiliation. As a benchmark, we also display the share of formalities in MPs' speeches over time. The share is calculated as the average of the percentage of words that are included in the given dictionary at a specific point in time using the main dictionaries shown in Appendix C.

A few points are worth noting. First, there is substantial variation in the extent to which the three topics are discussed. For example, it seems like the Labour Party devoted more time to talking about supply while in government, and that the Conservative Party started devoting more time to supply only after taking over the reins of government. This may imply that the party in government is more proactive when taking initiative to increase housing supply. Furthermore, we see that the share of speech devoted to demand increased in the beginning of the millennia – perhaps as a response to the growing unaffordability of housing – and that Labour politicians consistently devote more debate time to speaking about housing demand than their Tory counterparts. Labour

MPs also consistently speak more about welfare than their colleagues from the Conservative party. Nonetheless, we see that the share devoted to welfare rose for all MPs irrespective of party affiliation from 2007 to 2012, before declining. Lastly, in the bottom right panel, we plot the share devoted to debate formalities. While this topic (reassuringly) exhibits a lot less absolute variation over time and across parties, it does appear that MPs who are from the party in government are more formal on average in their expression. This conforms to our expectations, and adds credence to the descriptive analysis.

Next, we ask: to what extent do patterns of speech vary with the variables mentioned in the theory section, namely housing prices in the MPs' constituency, and the MPs' partisan affiliation? We explore this systematically using regression analysis in Table K1, Table K2, and Table K3.

First, we explore H1, which states that politicians from constituencies with higher prices should be more likely to talk about all forms of housing policy, by looking at column 1 across the three tables. Table K1 shows the results for housing supply, which covers public and private supply. Column 1 shows that MPs representing constituencies with more expensive houses devote more debate time to the supply of housing. On average, they allocate 0.73 percent more of their speech to supply of housing when the median house in their constituency increases by £100,000 (and this difference is significant at the 1% level). This effect size is at the outset substantially small. Yet, as shown in the interaction plots later on, politicians are expected to speak very differently dependent on the house price in the constituency. There is thus some evidence of politicians reacting to more unaffordable housing by discussing how to increase supply. In Table K2, the dependent variable is the share of each speech devoted to housing demand, which encompasses issues of housing rental and the purchase of housing. Results in column 1 show no significant relationship between housing prices and the share of the speech devoted to housing demand, albeit the relationship is positive. In table K3 the dependent variable is the share of speech devoted to housing welfare. Here, we find that MPs representing more expensive constituencies talk significantly less about welfare: they allocate 0.50 percent less of their speech to these issues when the median house in their constituency increases by £100,000 (and this difference is significant at the 5% level). Thus, the

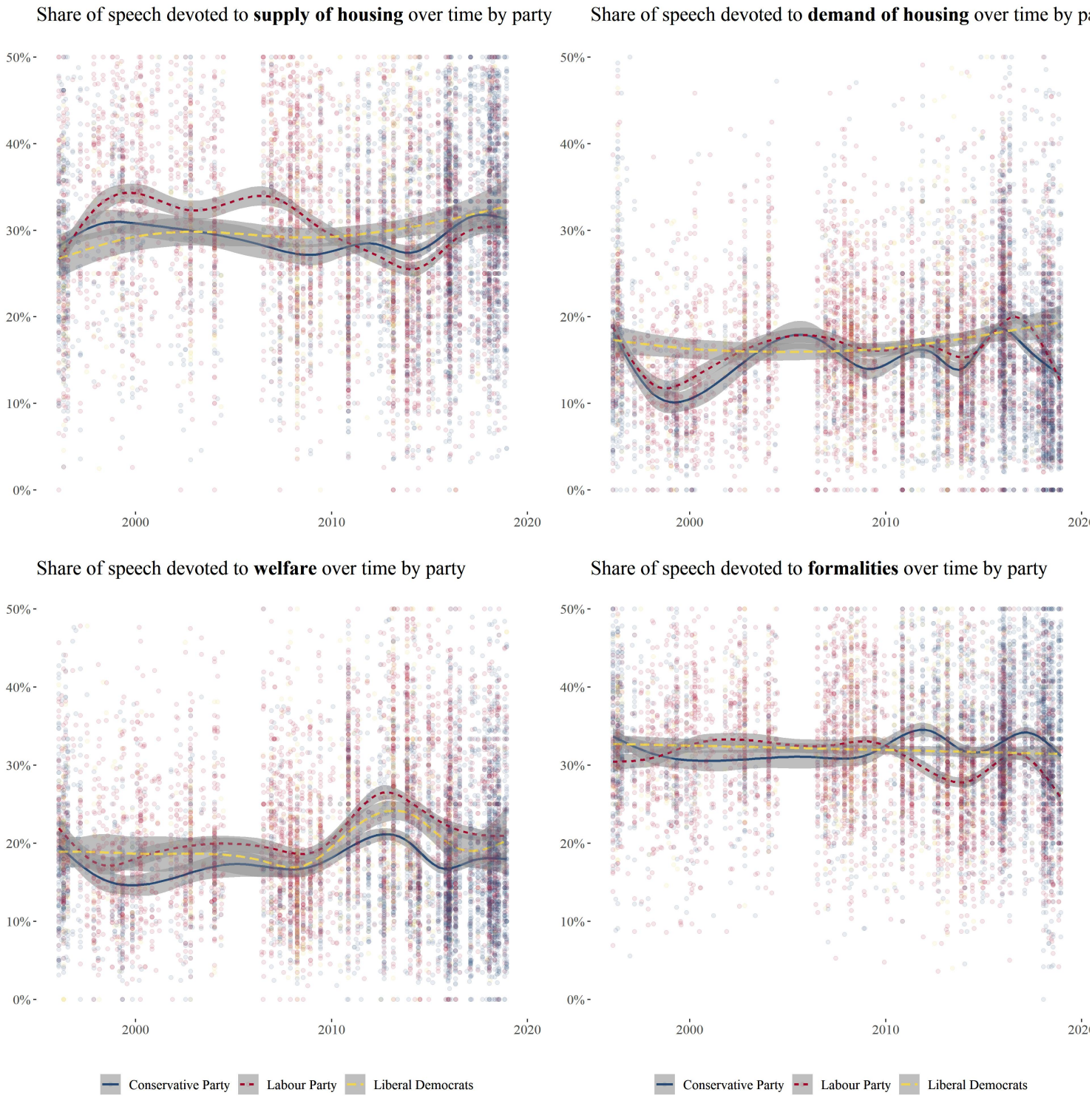


Figure 5: Trends in topics over time by party. The plots shows the share of text on a given day that is covered by the different dictionaries. The lines are loess-fits with a bandwidth of 0.02, while the dots represents a single piece of text.

Table 2: Share of speech devoted to supply of housing and housing prices

	(1)	(2)	(3)
Median house price (GBP 100,000)	0.73 (0.27)***	0.74 (0.28)***	0.57 (0.41)
Labour (Ref: Conservative)		0.36 (0.67)	−0.30 (1.62)
Liberal Democrat (Ref: Conservative)		1.26 (0.40)***	1.80 (1.43)
Other (Ref: Conservative)		0.60 (1.85)	−3.09 (3.44)
MHP*Labour (Ref: Conservative)			0.32 (0.52)
MHP*Lib Dem (Ref: Conservative)			−0.32 (0.76)
MHP*Other (Ref: Conservative)			2.45 (1.68)
Male	0.32 (0.61)	0.33 (0.58)	0.39 (0.59)
Age	−0.03 (0.02)	−0.04 (0.02)*	−0.04 (0.02)*
Governing coalition	4.74 (0.45)***	4.64 (0.45)***	4.72 (0.56)***
Region FE	✓	✓	✓
Num. obs.	7339	7339	7339
R^2 (full model)	0.13	0.13	0.13
R^2 (proj model)	0.05	0.05	0.05
Num. groups: year	21	21	21

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Dependent variable: Share of text devoted to supply of housing. OLS-regression using year fixed effects. Standard errors clustered by parliamentary session in parentheses.

results provide mixed findings to support H1: While MPs from constituencies with higher house prices do devote more time to supply of housing, this is not the case for demand and welfare. The finding that MPs in wealthier constituencies talk significantly less about welfare issues, while at odds with our general expectation, could be explained by the fact that their constituents are then less affected by and interested in welfare-related issues, including housing benefits and policies to fight homelessness.

We then turn to our second hypothesis H2, which states that left-wing politicians should be more likely to speak about housing than right-wing politicians. Results are shown in column 2 across the three tables, where we include partisanship in the model. For housing supply, we find that Labour politicians do not systematically differ from Tory politicians (and neither do Liberal

Table 3: Share of speech devoted to demand of housing and housing prices

	(1)	(2)	(3)
Median house price (GBP 100,000)	0.34 (0.25)	0.36 (0.25)	−0.02 (0.24)
Labour (Ref: Conservative)		0.55 (0.47)	−0.88 (0.58)
Liberal Democrat (Ref: Conservative)		1.67 (0.39)***	2.09 (0.83)**
Other (Ref: Conservative)		−0.67 (0.87)	−3.57 (2.03)*
MHP*Labour (Ref: Conservative)			0.72 (0.24)***
MHP*Lib Dem (Ref: Conservative)			−0.28 (0.37)
MHP*Other (Ref: Conservative)			1.79 (0.95)*
Male	−0.27 (0.25)	−0.25 (0.32)	−0.20 (0.31)
Age	−0.01 (0.01)	−0.01 (0.01)	−0.01 (0.01)*
Governing coalition	0.66 (0.40)*	0.47 (0.36)	0.63 (0.30)**
Region FE	✓	✓	✓
Num. obs.	7339	7339	7339
R^2 (full model)	0.08	0.09	0.09
R^2 (proj model)	0.01	0.02	0.02
Num. groups: year	21	21	21

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Dependent variable: Share of text devoted to demand of housing. OLS-regression using year fixed effects. Standard errors clustered by parliamentary session in parentheses.

Table 4: Share of speech devoted to welfare and housing prices

	(1)	(2)	(3)
Median house price (GBP 100,000)	-0.50 $(0.20)^{**}$	-0.24 (0.21)	-0.75 $(0.23)^{***}$
Labour (Ref: Conservative)		2.97 $(0.60)^{***}$	1.06 (1.21)
Liberal Democrat (Ref: Conservative)		1.62 $(0.48)^{***}$	1.22 (1.86)
Other (Ref: Conservative)		2.54 $(0.91)^{***}$	4.36 (4.70)
MHP*Labour (Ref: Conservative)			0.99 $(0.34)^{***}$
MHP*Lib Dem (Ref: Conservative)			0.17 (0.78)
MHP*Other (Ref: Conservative)			-1.53 (2.51)
Male	-3.27 $(0.47)^{***}$	-2.49 $(0.59)^{***}$	-2.51 $(0.59)^{***}$
Age	-0.02 (0.02)	-0.04 $(0.02)^{**}$	-0.04 $(0.02)^{**}$
Governing coalition	-0.06 (0.28)	-0.58 (0.44)	-0.39 (0.42)
Region FE	✓	✓	✓
Num. obs.	7339	7339	7339
R^2 (full model)	0.13	0.14	0.15
R^2 (proj model)	0.04	0.05	0.06
Num. groups: year	21	21	21

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Dependent variable: Share of text devoted to welfare. OLS-regression using year fixed effects. Standard errors clustered by parliamentary session in parentheses.

Democrats or otherwise affiliated MPs). For housing demand, we find Liberal Democrats speak significantly more about demand of housing – including the purchasing and rental of houses – compared to politicians from the Conservative Party, but Labour MPs are not significantly different in that respect. Nevertheless, for welfare, we find that Labour MPs speak significantly more about welfare compared to Conservative MPs (and so do Liberal Democrats and other politicians). Furthermore, the coefficient for housing prices becomes insignificant. This may be because Conservative MPs, who tend to get elected in more expensive districts (as seen in Figure 5), also speak less about welfare. Overall, we find that left-wing politicians devote more debate time to speak about welfare relative to right-wing politicians. The fact that the expected partisan effect does not hold for demand and supply could be because these topics are much more broadly defined – hence in the next section we run the same analysis on sub-dictionaries for supply and demand.

Third, we test H3 in column 3 across the three tables, by investigating the interactive effects of housing prices and partisanship. Results for this specification are also displayed visually in Figure 6. The coefficient for housing prices now reflects how much more Conservative politicians speak about the given housing topic, conditional on the median house price in their constituency; while the interaction term represents how partisanship moderates this relationship. For housing supply, we see that politicians from all parties put more emphasis on supply when they represent constituencies with higher housing prices, with politicians from the Labour Party and the Liberal Democrats doing so to a higher degree than Conservatives. Nevertheless, it should be noted that neither the coefficient for Conservatives independently nor the interaction term are significant at the 5% level here.

When we replace the dependent variable with housing demand, we find an interesting pattern, namely that MPs representing the Labour Party use more words related to housing demand in more expensive constituencies, while this is not the case for Conservative MPs (the interaction term is significant at the 1% level). This is in line with our expectations, since we find that left-wing politicians focus most on the demand for housing in the constituencies where it is most needed due to higher prices, resulting in more people being unable to afford housing.

The difference is even more pronounced for welfare, as we find that Labour MPs devote more debate space to welfare in more expensive constituencies, while we find the opposite pattern for Conservative MPs. The separation in speech patterns between Labour and Conservative MPs in constituencies with high house prices can be seen clearly in 6. Although all MPs are more likely to speak about supply issues in expensive constituencies, there is a clear divergence between Labour and Conservative MPs when it comes to speaking about demand or housing welfare in these areas. By contrast in constituencies with cheap housing, MPs from both political parties devote very similar proportions of speech to all three housing topics.

In sum, our findings provide strong support for H3. MPs tend to adopt more radical stances in affluent constituencies, since left-wing politicians talk more about their priority issues, such as welfare, while right-wing politicians tend to disregard such concerns in their parliamentary speeches. Although the claims we are making are not causal in nature, we run alternative specifications to ensure that our results are not purely contingent on our choice of variables. We run the same models including constituency-level income as control (see Appendix H), removing year fixed effects (see Appendix I), and adding socio-economic controls at the constituency-level, such as the share of home owners and unemployment rate (see Appendix J). We do not not include these additional controls in the main models for two reasons. First, a lot of them are time-invariant as they come from the 2001 and 2011 UK censuses. Second, our argument is ultimately not causal in nature, but related to the interaction of personal and local characteristics. We argue that MPs from more expensive constituencies and with certain partisan affiliations speak differently. Thus, while the inclusion of individual-level and year/time Fixed Effects makes sense, controlling for structural factors at the constituency level may obscure our main relationship of interest by introducing a large amount of multicollinearity in our model. Results do not substantially vary in these alternative specifications, which increases our confidence in the mechanisms identified. Lastly, we also show the results when using year-to-year changes in house prices in appendix K. We will not discuss the results from this analysis in depth here, but much in line with the analysis for levels we find that politicians, particularly from the left, talk more about supply and demand when prices

increase.

Results using the sub-dictionaries of housing

One of the advantages of combining STMs with dictionary analysis is that we can easily disaggregate the main dictionaries into sub-dictionaries corresponding to the narrow policy frames identified in table 1. Re-running the analysis on these sub-dictionaries allows for finer distinctions. We show the results for the interactive effects in Figure 7, while the corresponding full tables are reported in Appendix G.

As previously mentioned, the dictionary for housing demand has two sub-components: *demand for purchasing housing* and *demand for rental*. The results for demand are shown in the two top panels. On the left-hand side, we see that politicians from the two major parties both talk more about purchasing houses in constituencies with more expensive housing, and that there is no or very little difference between the two parties. On the right hand side, we find that Labour MPs talk more about rental in more expensive constituencies, while Conservative MPs talk less about rental in these places. Again, it seems to be the case that Labour politicians pay more attention to the people being harmed by the housing market – in this case, renters – relative to Conservative MPs.

The two plots in the bottom panel of figure 7 show the results for the two narrow policy frames that make up the dictionary for housing supply. These are *private market supply* and *public market supply*. There is very little variation for the debate share devoted private market supply conditional on the price of housing. On the other hand, we find that MPs speak more about public market supply in more expensive constituencies, and that Labour politicians do so significantly more compared to Conservative politicians. This may be because politicians, particularly Labour MPs, see public market supply as a way of catering to voters in areas where affordable housing is relatively scarce, while this is a less relevant strategy in areas which are more affordable. In comparison, neither Conservative nor Labour MPs have an incentive to promote private housing, since right-wing politicians fear it might result in lowering house prices in the area, while left-wing politicians see public housing as the prime solution to (un)affordability problems.

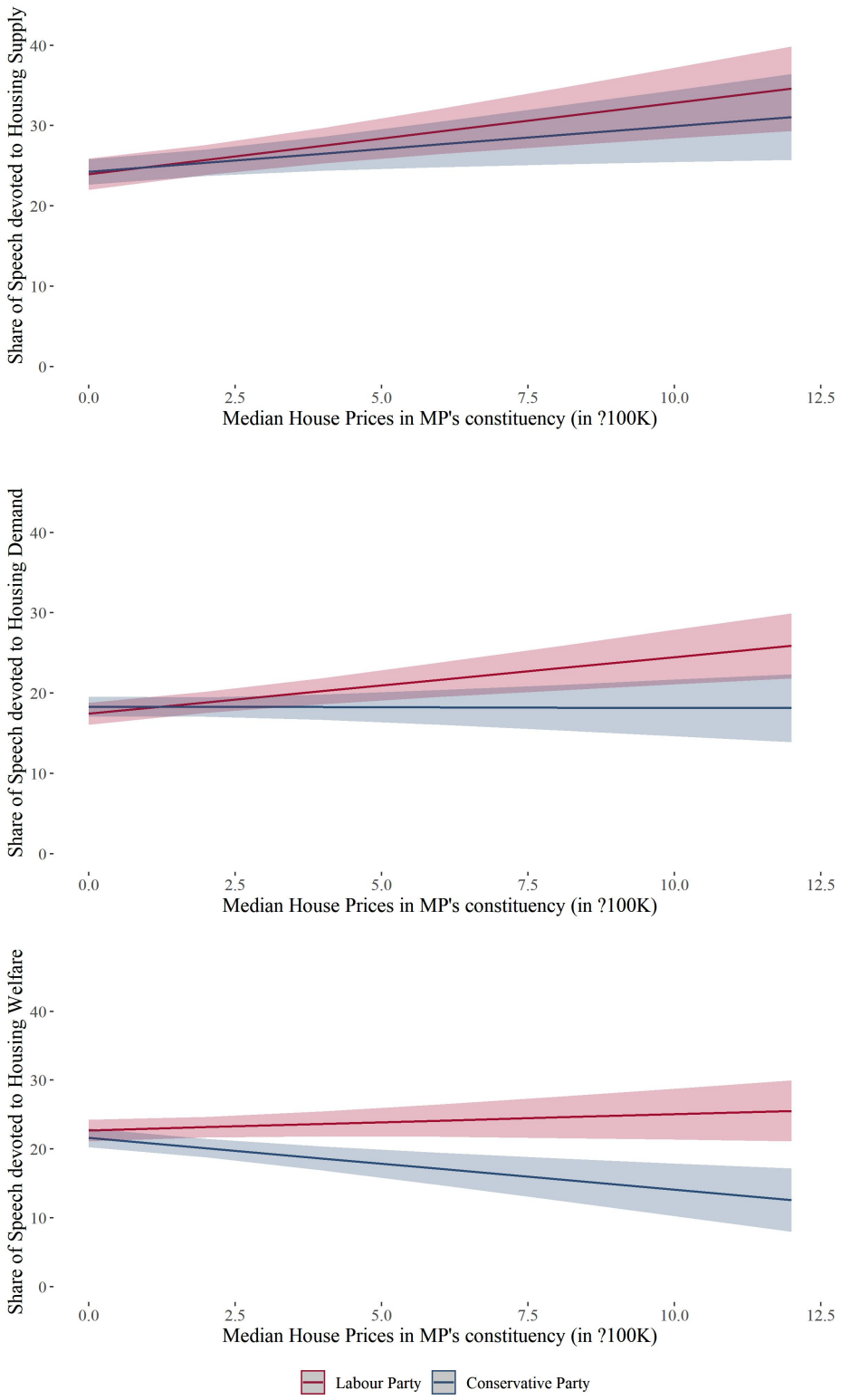


Figure 6: The predicted value of text devoted to each of the three topics by median house price and party. The graphs are based on model 3 in table K1, K2, and K3.

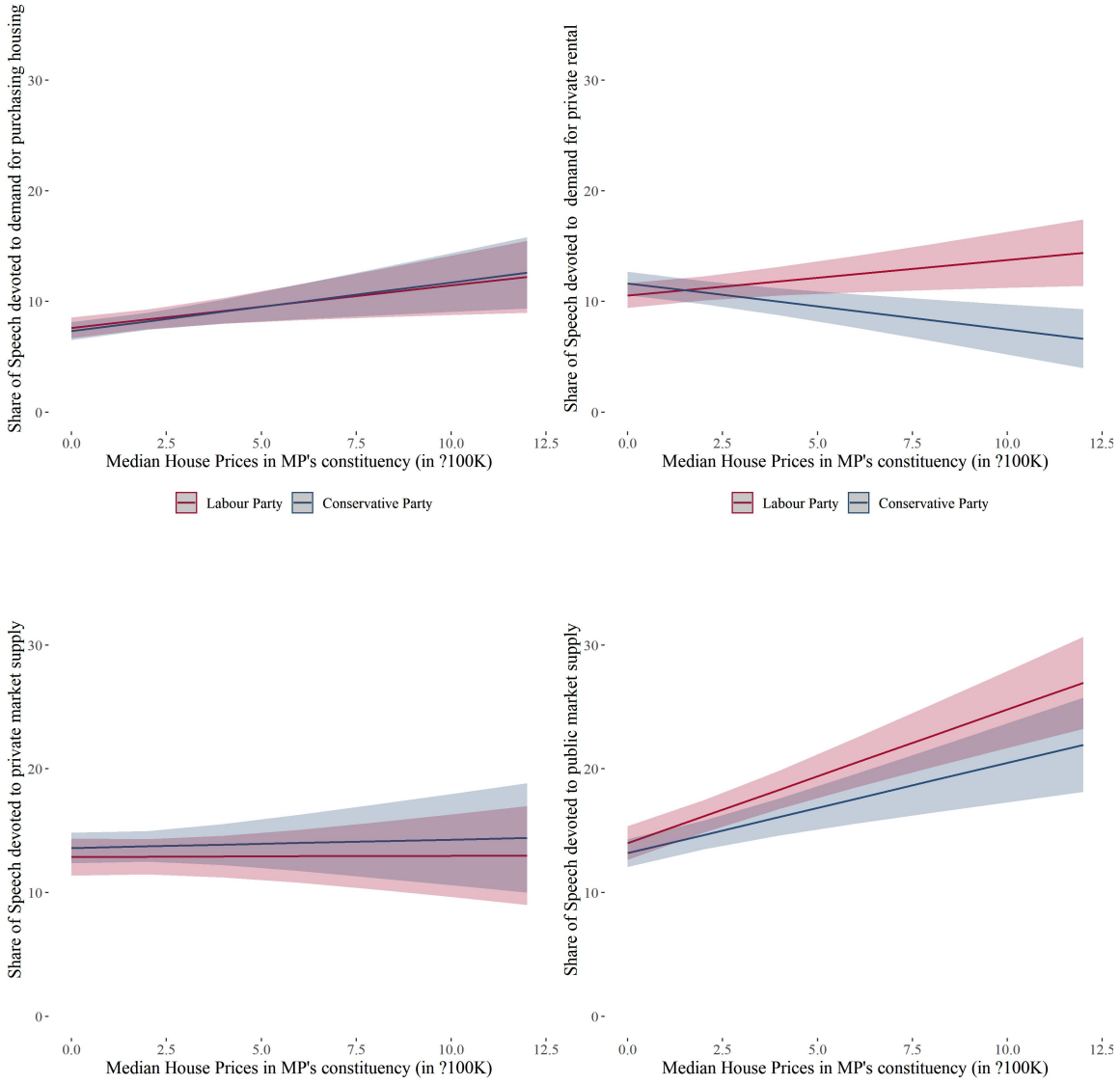


Figure 7: The predicted value of text devoted to each of the four sub-dictionaries by median house price and party. The graphs are based on model 3 in the respective tables found in Appendix G

Conclusion

Recent research has shown that the housing market plays a large role in shaping voters' political behavior (Ansell 2014; Ansell et al. 2022; Larsen et al. 2019). In this paper, we ask whether politicians also alter their behavior in response to developments in the housing market.

Using the case of the United Kingdom, we rely on fine-grained house price data at the constituency level and a mix of supervised and unsupervised text analysis methods to show that MPs speak differently conditional on the median house price in their constituency. We find that MPs from both sides of the aisle devote more debate space to housing supply when they represent more expensive constituencies; suggesting that both Conservative and Labour politicians try to find ways to increase supply of housing in response to the affordability crisis. However, when focusing on the two other main dimensions of housing – namely housing demand and welfare – we find that increasing housing prices are associated with diverging patterns. Labour MPs tend to speak more about housing demand and welfare when they represent more expensive areas, while Tory MPs do not alter their behavior, nor focus less on these topics, in more expensive constituencies. Therefore, Labour and Conservative MPs speak similarly about housing in relatively deprived areas, whereas in more expensive places, left-wing MPs are significantly more concerned about housing affordability for poorer citizens, while right-wing politicians do not display such concerns in Parliament.

These findings hold important contributions for both the literature on housing and the literature on political accountability, in addition to providing new empirical evidence for the larger discussion on how to solve the housing crisis. As previous research has shown that the housing market matters for the voters, whether and to what extent (some) politicians pay attention to these issues when debating in the legislature is a serious matter for concern.

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Competing Interests

Competing interests: The author(s) declare none

Appendix: For Online Publication

Contents

A Excerpts of speech illustrating differences within and across parties and house prices

Difference between Labour *versus* Conservative MPs in high housing prices constituencies

December 7, 2006 – Debate on Housing Affordability

Karen Buck (L): I shall be concentrating on social housing in my speech today. Like other hon. Members, I want to emphasise that a key issue is supply. [...] I want to make a couple of remarks about the impact of the fall in provision of social housing on community cohesion, a subject that is dear to my heart. There is no doubt that many cities—London in particular—are experiencing an exacerbation of community tensions as a consequence of the competition for the scarce resource of housing. We must also recognise that the impact of homelessness and overcrowding falls disproportionately on black and minority ethnic communities.

[...] In the last fortnight, I have been visited by people from three new households. Families of six are sharing one-bedroom flats. Can Members imagine the pressures that that causes? Children risk growing up in surroundings in which they cannot study, in which they have no privacy and in which any illness will spread like wildfire. Overcrowding has been known to cause tuberculosis to spread among family members.

Greg Hands (C): [...] My position is to support in general more house building. It seems that some of that building will inevitably have to be on greenfield land, which I support somewhat reluctantly, although it is not the same as supporting construction on green belt land, about which I have severe reservations, as I do about the Government's approach announced earlier this week. My constituency suffers badly from the phenomenon of lack of affordability of private housing. [...] Affordability is a very large issue in my constituency. In central London, the average home price, as distinct from house price, is about to break through the £500,000 barrier.

[...] I am certainly not addressing other issues to the exclusion of social housing. I merely wanted to emphasise some private sector housing issues in London. I am fairly sure that he will speak later about many of the issues facing the social housing sector, which I will certainly not ignore. We need more social housing for rent, but that cannot be the only solution.

Difference between Labour MPs in high *versus* low housing prices constituencies

November 12, 2013 – Debate on Housing Benefits

Steve Rotheram (low HP constituency): No one standing on a Tory ticket in the next general election should be in any doubt whatsoever that once again it will be two words that will define their heartless brand of ideological politics – the bedroom tax. The majority of those clobbered by this Con-Dem con trick are ordinary working people on low wages.

[...] In areas such as Liverpool and other major UK cities, rent arrears have increased dramati-

cally, which means that housing associations have to find a way to combat the decrease in income while, at the same time, they are expected to commit to building more one and two-bedroom houses. That has the potential to affect their asset base and their ability to borrow money to build those houses.[...] As a consequence of not having enough of the right housing type it is virtually impossible for people caught in the bedroom tax trap to move into suitable social housing, so they are forced to consider renting in the private sector, even if that costs more than staying in their existing property and even if no one wants to move into the house that they are kicked out of.

[...] Be in no doubt that the overwhelming majority of the British people will not support a policy that punishes the poorest, the disabled, our armed forces, those riddled with cancer, the suicidal, the frail and the vulnerable. As the hon. Member for Stourbridge (Margot James) alluded to, this is the Tory poll tax of the 21st century.

Emily Thornberry (high HP constituency): People are under attack not only from the bedroom tax but from the limits on housing benefit, and a large number of those in private accommodation can simply no longer afford to live where they live at the moment. While we try to find them somewhere else to live, they need assistance with their rent, which is paid through the discretionary housing payment. [...]

The bedroom tax affects 3,100 families in Islington. In 2012-13, despite the frenetic building attempts by the borough council, only 609 two-bedroom flats were let through the waiting list, which is already under huge pressure with 19,000 families looking for accommodation through it. Now, many more people need to be moved very quickly as they are being attacked by the bedroom tax. [...]

Of course, people under-occupy — I fully acknowledge that. [...] Why not work it that way? If this is really about under-occupancy and over-occupancy and getting people into the right flat, we should work with them. We should not just punish them, which is what the Government are doing. Why does the nation need to wait? We need to build more.

Difference between Conservative MPs in high *versus* low housing prices constituencies

January 17, 2017 – Debate on Housing Supply

Kelly Tolhurst (low HP constituency): In my constituency, we face high levels of proposed new housing. Can the Minister assure me that that will be matched with increased investment in our local infrastructure?

David Gauke (high HP constituency): Progress has been made since 2010, with housing starts now at an eight-year high. However, the scale of the challenge requires us to go further. That was why

my right hon. Friend the Chancellor announced in the autumn statement that the Government will invest £5.3 billion in housing. This includes investing £2.3 billion in the new housing infrastructure fund, which will deliver up to 100,000 homes in high-demand areas, an additional £1.4 billion to deliver 40,000 new affordable homes, and £1.7 billion to deliver a programme of accelerated construction on public land.

[...] We look to put in place measures to support all sectors and all types of housing. The hon. Lady is absolutely right to say that private rented housing is a really important sector. However, I am sure that she agrees that we have to be careful about some of the proposals on rent controls that float around, which would be damaging for the private rented sector.

B Structural Topic Models: Pre-processing and diagnostics

B.1 Text corpus pre-processing

Pre-processing refers to all the decisions regarding how words are to be converted into numbers when using text analysis. It commonly refers to seven binary decisions: Punctuation removal; Numbers removal; Lowercasing; Stemming; Stopword removal; n-grams inclusion; and Infrequently used terms removal. Denny and Spirling (2018) show that pre-processing decisions have consequential effects on model results and their subsequent interpretation. Importantly, they demonstrate through concrete applications that "inference is highly variable depending on small differences in pre-processing". This is therefore far from trivial. We follow their recommended steps and use the R package *preText* to assess the impact of the different pre-processing decisions, choose the best specification based on theory, and systematically check how robust our findings are to reasonable perturbations in these choices.

Our theoretically motivated pre-processing specification is the following : Punctuation removal, Numbers removal, Lowercasing, Stemming, standard Stopword removal, and removal of Infrequently used terms (1% threshold). Based on this, we generate *preText* score regression results for all combinations of the pre-processing steps outlined above, and plot the results (for further details, see Denny and Spirling 2018). Figure B9 and B8 show the impact of each pre-processing choice on the STM results. A negative parameter estimate for each binary pre-processing choice applied to the corpus means that this step tends to reduce the *preText* score for a given specification, which entails that its inclusion lowers the risk of drawing "unusual" conclusions. A positive parameter estimate, on the other hand, means that including this pre-processing step in a specification increases the risk of drawing "unusual" conclusions. Hence the removal of infrequent terms slightly reduces the unusualness of the results, while lowercasing slightly increases it.

All parameter estimates are not significantly different from 0 at the 95% confidence level, which means that our conclusions are unlikely to be highly sensitive to our of pre-processing choices. We thus choose to proceed with lowercasing in our main specification, because while we have found that doing so will not significantly affect our results; and we then confidently proceed with the analysis with the pre-processing choices specified above.

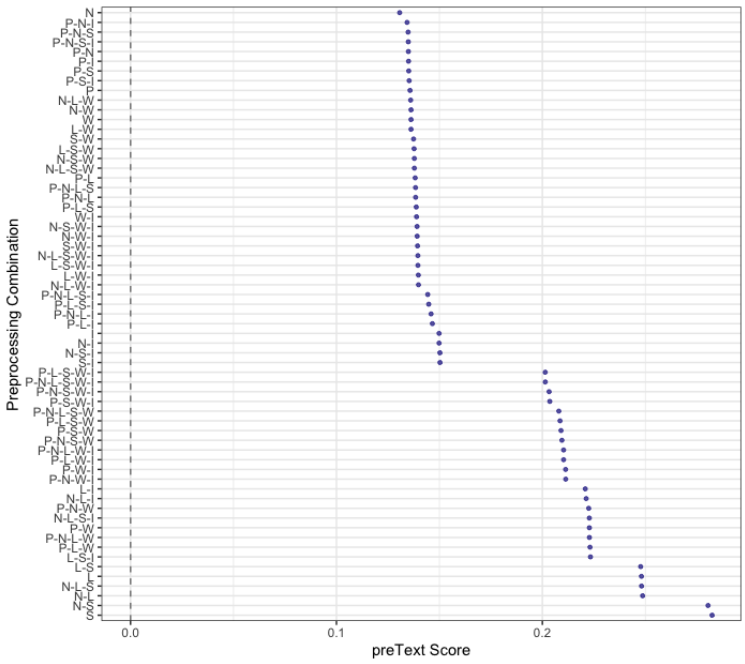

Figure B8: *preText* scores

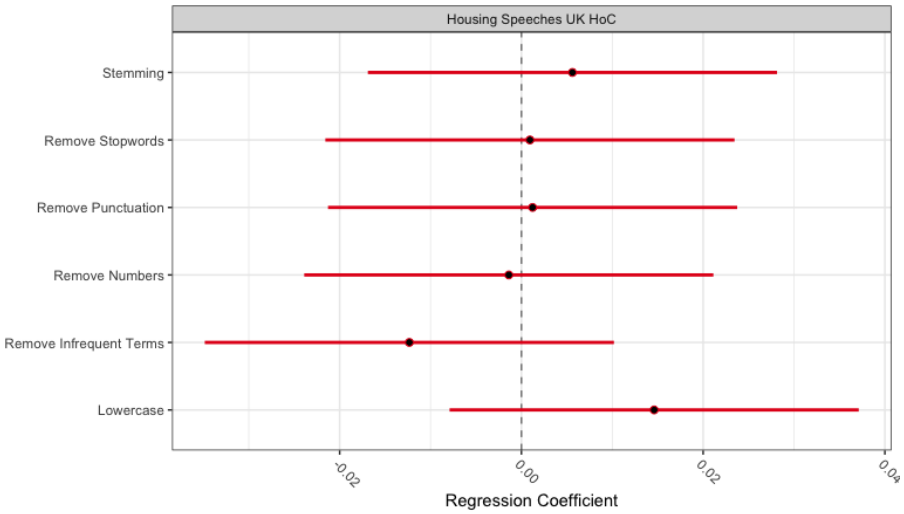

Figure B9: Influence of pre-processing choices on STM results

B.2 Custom stopwords

We create a list of custom stopwords to refine our analysis, so that the main dimension that emerges from our STM is not purely related to debate formalities (Goet 2019). Table B5 below lists the words that we exclude from the STM analysis, expanding beyond the usual stopwords from the English language. They correspond to the highest FREX words from the four topics identified as covering “formalities" in the basic STM model which only includes year (as spline) as covariate.

	Highest FREX words in “formalities" topics		
1	minist	26	interruption
2	minister	26	interrupted
3	minister’s	28	-secretari
4	state	29	tell
5	secretari	30	dispatch
6	secretary	31	box
7	secretaries	32	explain
8	say	33	hon
9	question	34	honourable
10	answer	35	hon.
11	prime	36	friend
12	said	37	right
13	time	38	point
14	deputi	39	ladi
15	deputy	41	lady
16	deputies	42	ladies
17	ask	43	sure
18	tell	44	rais
19	perhap	45	raise
20	perhaps	46	matter
21	confirm	47	discuss
22	statement	48	comment
23	rose—	49	comments
24	rose	50	grate
25	interrupt	51	thank

Table B5: List of custom stopwords

B.3 Structural Topic Models diagnostics

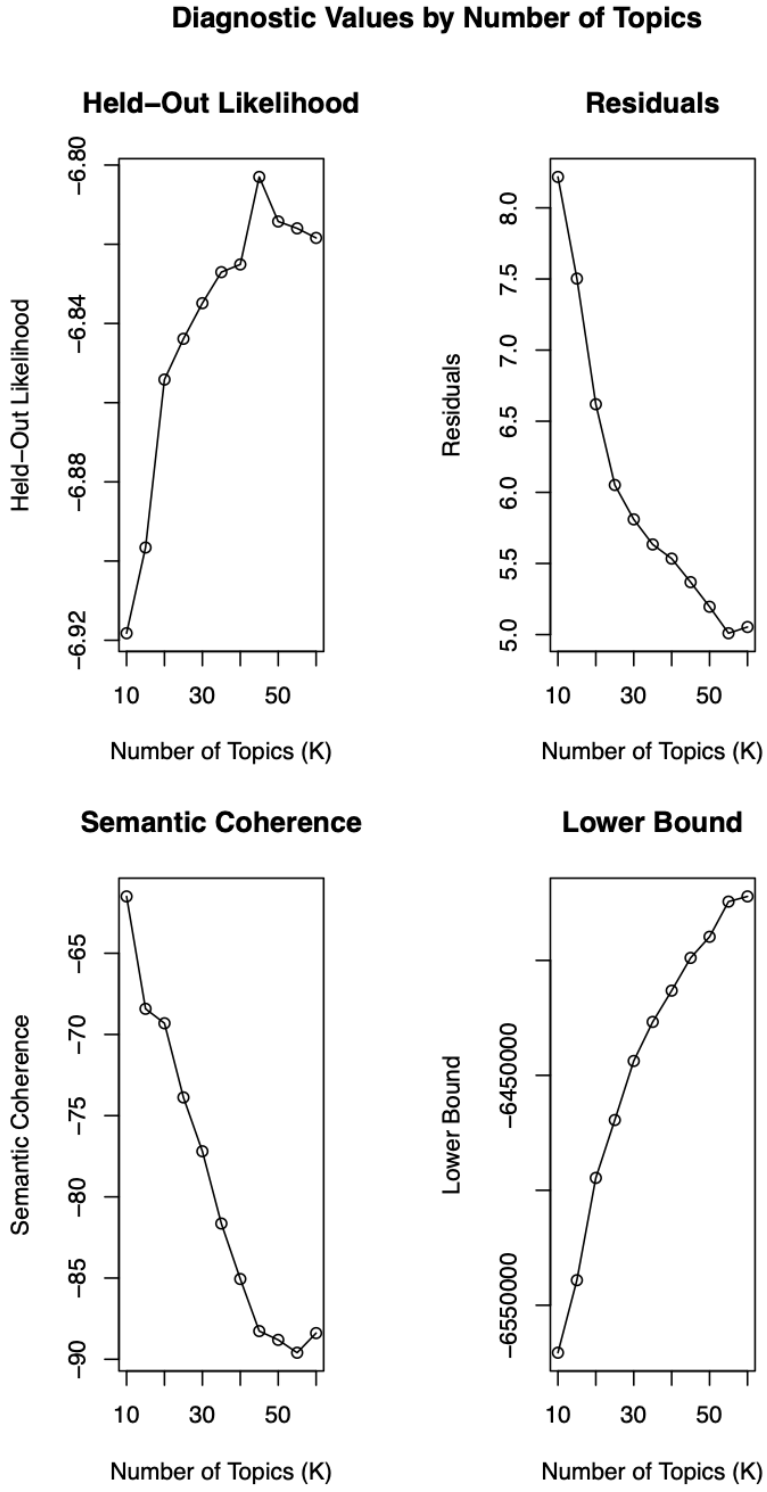

Figure B10: STM diagnostics – Optimal number of latent topics

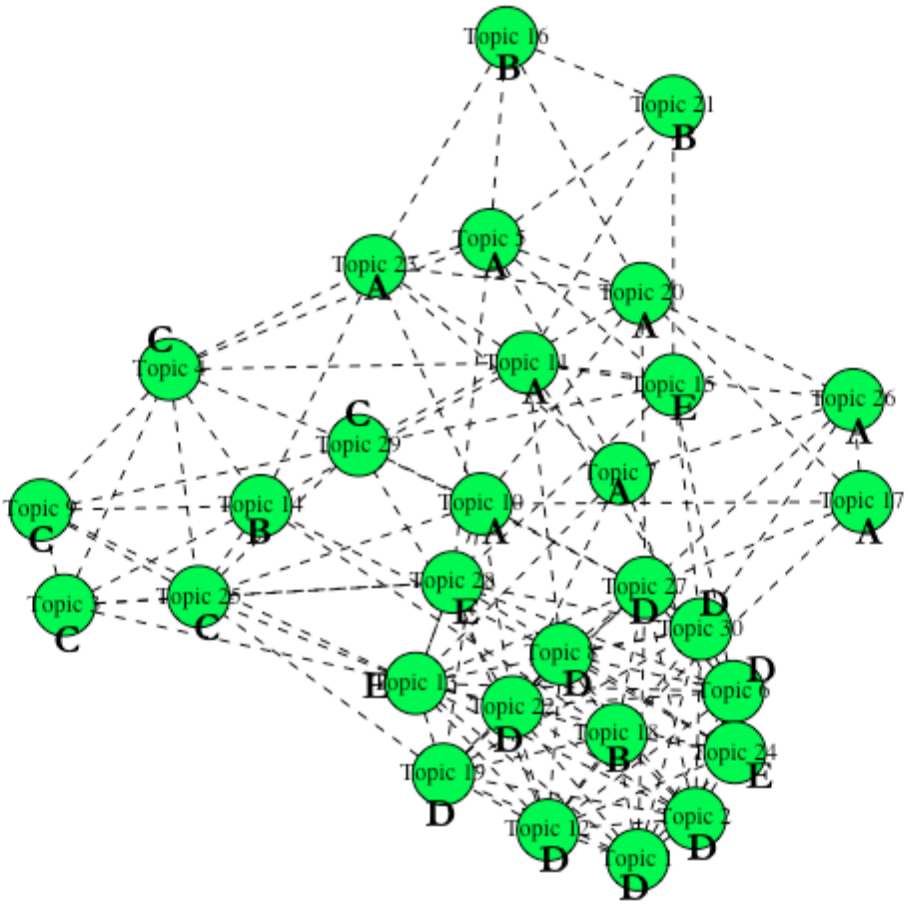

Figure B11: Correlation between latent topics, where A = Supply, B = Demand, C = Welfare, D = Formalities and E = Other

C Dictionaries of housing

	1	2	3	4	5	6	7	8	9
1	abil	borrow	countrysid	expect	identifi	must	project	rural	tackl
2	abl	bought	crisi	expenditur	imagin	nation	proper	scale	take
3	account	bring	current	extra	improv	natur	properti	school	taken
4	achiev	brought	deal	factor	includ	need	proport	secur	target
5	action	brown-field	debt	failur	increas	negat	protect	sell	tenur
6	addit	brownfield	decad	fall	indic	neighbour	provid	set	time
7	address	budget	decent	fallen	infrastructur	neighbourhood	provis	seven	total
8	adopt	build	decid	fewer	initi	new	public	shop	town
9	afford	builder	decis	field	inspector	number	purchas	shortag	transfer
10	afraid	built	declin	figur	instanc	option	purpos	show	transport
11	agenc	capit	deliv	financ	invest	outsid	qualiti	signific	treasuri
12	alloc	case	deliveri	financi	issu	own	rang	sinc	tri
13	allow	caus	demand	find	just	paper	reach	site	type
14	alon	centr	depart	flexibl	keep	park	receipt	social	undermin
15	although	central	design	former	key	part	receiv	solut	undertak
16	amount	challeng	desper	framework	lack	partnership	recent	solv	unit
17	announc	citi	determin	fund	land	past	record	sound	urban
18	applic	clear	develop	garden	larg	pay	regener	space	urgent
19	approach	commit	difficult	general	last	period	region	spend	use
20	appropri	communiti	difficulti	goe	level	permiss	repair	spent	valu
21	approv	compar	district	good	local	place	repres	standard	villag
22	area	complet	door	grant	london	plan	represent	start	water
23	associ	comprehens	doubl	greater	lot	play	requir	statist	westminst
24	author	concentr	dwell	green	lower	poor	resid	step	white
25	avail	consider	effici	growth	lowest	popul	resolv	stock	wider
26	averag	consist	empti	guidanc	maintain	pound	resourc	strategi	year
27	bad	constitu	encourag	help	manag	power	respect	structur	
28	base	construct	ensur	high	market	present	retain	subsidi	
29	basi	consult	environ	higher	massiv	pressur	return	subsidis	
30	becom	context	environment	highest	mayor	price	revenu	success	
31	behaviour	contribut	estat	home	meet	prioriti	review	suggest	
32	belt	control	estim	hous	mine	problem	rise	sum	
33	best	corpor	even	household	mix	process	risen	suppli	
34	bid	council	examin	housingn	money	produc	road	sustain	
35	borough	counti	exist	huge	month	programm	role	system	

Table C1: Dictionary for supply of housing

	1	2	3	4	5
1	accommod	countri	good	new	rent
2	act	court	government	object	rental
3	action	credit	grant	occup	replac
4	advanc	crisi	group	occupi	requir
5	afford	current	guarante	offer	right
6	agenc	debt	hand	organis	risk
7	agreement	decent	help	own	run
8	amend	deliv	home	owner	safeti
9	appli	deposit	human	ownership	sale
10	argu	describ	immedi	paid	scheme
11	argument	difficulti	includ	park	second
12	arrang	direct	incom	pay	section
13	aspir	discount	individu	peopl	sector
14	asset	discuss	inform	person	secur
15	averag	duti	institut	poor	seek
16	bad	earn	intend	possibl	sell
17	bank	enabl	interest	potenti	share
18	behaviour	encourag	introduc	power	sign
19	bodi	enforc	ladder	practic	sold
20	borrow	ensur	landlord	price	standard
21	build	equiti	let	principl	starter
22	builder	evict	licens	privat	statutori
23	built	expens	line	probabl	subject
24	buy	express	live	product	suggest
25	buyer	extend	loan	properti	suppli
26	chanc	extens	lord	provis	survey
27	choic	far	maintain	purchas	tabl
28	circumst	favour	major	purpos	tenanc
29	claus	financ	manag	rate	tenant
30	committe	financi	market	reason	tenur
31	concern	fire	may	regist	valu
32	condit	fit	might	regul	want
33	consult	generat	mortgag	relat	worst
34	control	genuin	multipl	relev	
35	corpor	get	nation	remov	

Table C2: Dictionary for demand of housing

	1	2	3	4	5	6
1	abus	claim	extra	line	prioriti	social
2	access	claimant	facil	list	properti	societi
3	accommod	close	famili	live	propos	someon
4	accord	complex	find	long-term	provid	space
5	administr	concern	flat	longer	provis	spare
6	adult	condit	forc	lose	push	stay
7	advic	consequ	four	loss	qualiti	street
8	affect	constitu	free	love	rate	stress
9	age	cost	fund	low	receiv	subsidis
10	alloc	coupl	government	lower	recent	suffer
11	allow	credit	group	made	reduc	suitabl
12	amount	crisi	grow	mental	reduct	support
13	appal	current	health	met	reform	surgeri
14	appli	cut	higher	money	rent	tax
15	arm	decent	hit	month	rental	taxpay
16	arrear	depend	homeless	move	resid	temporari
17	assess	desper	hospit	must	result	told
18	avail	disabl	hour	older	rise	total
19	averag	discretionari	hous	one-bedroom	risk	two-bedroom
20	avoid	domest	household	organis	room	type
21	becom	earn	hundr	overal	rough	unfair
22	bedroom	educ	impact	overcrowd	rule	univers
23	beg	effect	implement	paid	safe	use
24	benefit	elder	incom	parent	save	visit
25	budget	emerg	increas	pay	school	vital
26	cap	end	independ	payment	secur	vulner
27	care	enough	individu	pension	servic	wait
28	case	entitl	introduc	peopl	share	week
29	chanc	estim	introduct	people	shelter	welfar
30	chang	evict	larger	perfect	signific	women
31	chariti	exempt	lead	person	simpli	work
32	child	exercis	learn	polici	singl	wors
33	children	exist	leav	potenti	size	young
34	choic	expenditur	level	poverti	sleep	
35	citi	expens	life	pressur	smaller	

Table C3: Dictionary for welfare

	1	2	3	4	5	6	7	8	9
1	abl	birmingham	delight	get	know	much	promot	sensibl	understand
2	abus	bit	deserv	give	larg	multipl	proper	serv	unless
3	accept	block	desir	given	later	must	propos	set	urg
4	across	bring	detail	glad	law	need	protect	shall	view
5	act	call	differ	good	lead	north	provis	short	voluntari
6	add	can	document	government	least	note	put	side	want
7	address	central	done	grate	legal	noth	question	simpli	warm
8	adequ	certain	doubt	great	legisl	notic	quick	sir	way
9	advic	challeng	draft	guarante	let	now	quit	sit	welcom
10	advis	chamber	draw	happen	like	number	rais	situat	well
11	agre	chang	earlier	happi	limit	object	rather	solut	west
12	ahead	clear	east	hear	listen	occas	read	someth	westminst
13	allow	close	end	heard	littl	occup	realis	sorri	whether
14	alreadi	colleagu	engag	help	long	one	realli	south	whole
15	also	come	enough	highlight	look	opportun	reason	speak	will
16	although	commend	ensur	hope	lot	oppos	reassur	specif	wish
17	amount	commit	entir	hous	made	opposit	recognis	speech	without
18	announc	concern	everi	howev	major	order	refer	speed	wonder
19	anyon	conclud	excel	implement	make	other	reflect	spoke	word
20	appreci	confid	expect	import	mani	overal	regard	spoken	work
21	argu	congratul	extrem	includ	matter	paper	remain	stage	worri
22	ask	consid	fear	indic	may	part	remark	stand	write
23	aspect	constitu	final	initi	mean	particular	rememb	substanti	wrong
24	assist	consult	find	instanc	meant	pass	remind	support	yesterday
25	assur	contain	first	interest	measur	pilot	repeat	take	
26	attempt	continu	focus	interven	meet	place	repli	talk	
27	attent	contribut	follow	intervent	member	pleas	respect	tell	
28	avail	correct	forc	introduc	mention	pleasur	respond	think	
29	awar	countri	former	issu	might	point	respons	thought	
30	back	current	forward	itn	mind	posit	result	thousand	
31	basi	deal	friend	john	minut	possibl	right	today	
32	bear	dealt	futur	join	miss	precis	say	toward	
33	believ	debat	gave	just	model	present	second	tri	
34	better	decis	gentleman	keen	moment	press	see	tribut	
35	bill	definit	genuin	kind	motion	progress	seem	turn	

Table C4: Dictionary for formalities

D Word clouds and housing dictionaries

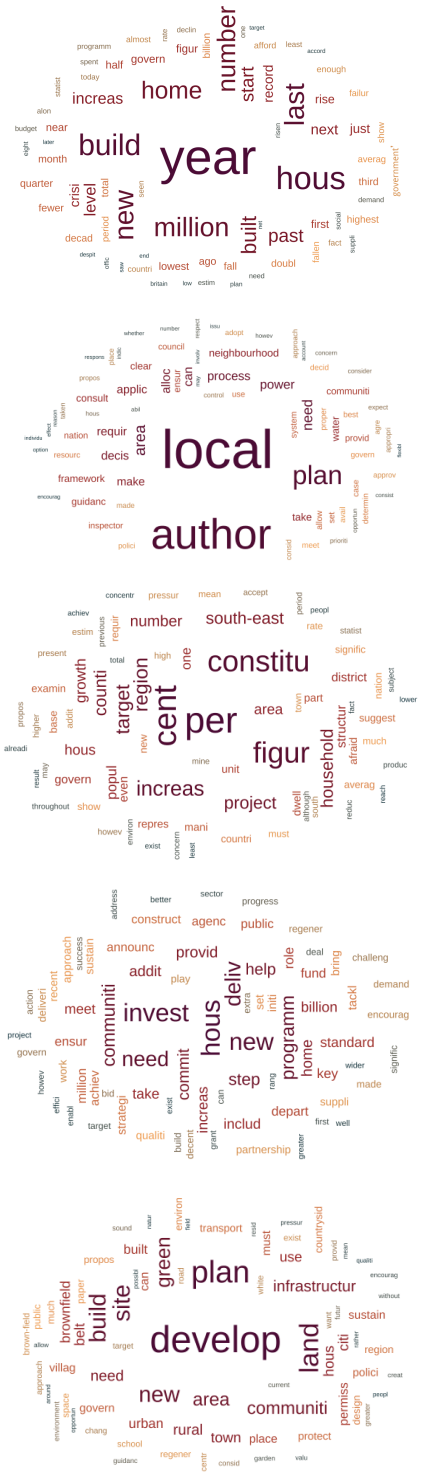

Figure D1: Private supply of housing – Latent topic wordclouds

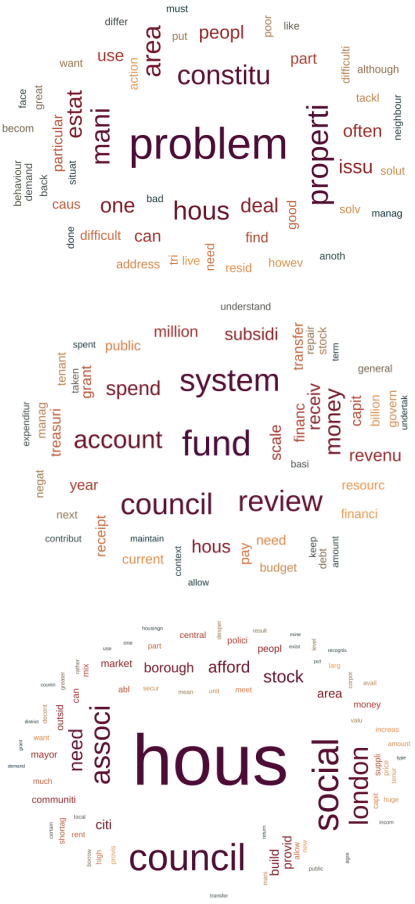

Figure D2: Public supply of housing – Latent topic wordclouds

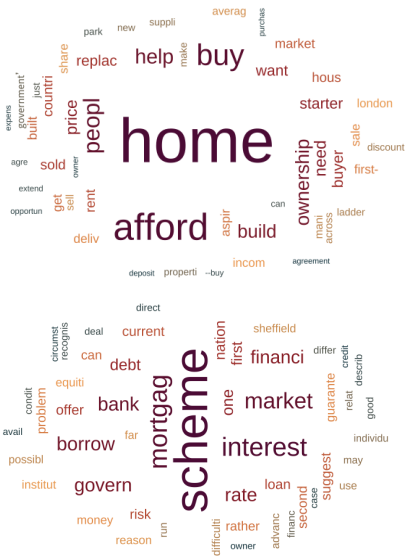

Figure D3: Purchasing of housing – Latent topic wordclouds

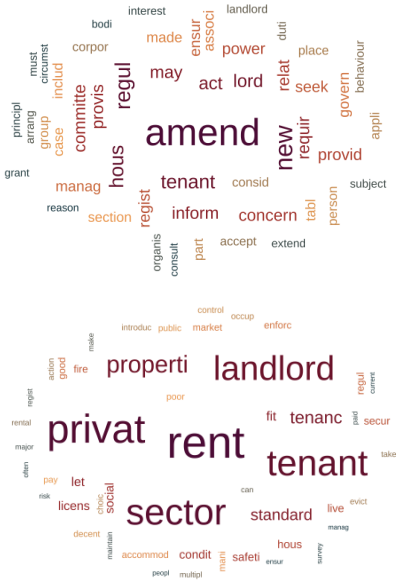

Figure D4: Rental of housing – Latent topic wordclouds

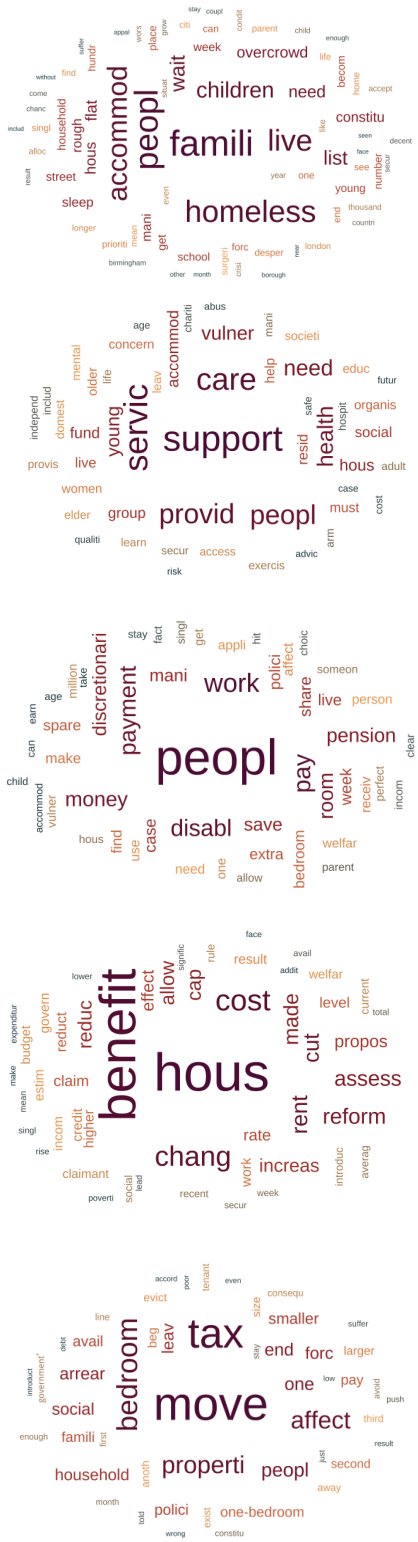

Figure D5: Welfare and housing – Latent topic wordclouds

Removed from Supply topic	Removed from Demand topic	Removed from Welfare topic
cent	anyth	third
per	first-	april
five	sheffield	two
often	rather	second
south-east	governmentí	three
million	london	away
mani	often	anoth
billion	now	thousand
quarter	first	birmingham
half	whose	one
three	therefor	government,Äô
sometim	everi	people,Äô
near	mani	mani
next	unlik	million
particular	peopleí	other
ago	two	within
third	someon	near
els	within	whose
four	fewer	also
throughout	thousand	among
everi	one	everyon
someth	britain	tri
six	across	around
south	longer	often
now	earli	six
also		now
eight		even
much		therefor
fulli		realli
almost		without
toward		alreadi
still		thatn
someon		never
rather		els
one		like
enough		either
elsewher		especi
anoth		billion
britain		still
west		autumn
manchest		
around		
without		
two		
togeth		
despit		
especi		
today		
howev		
unless		
whether		
either		
never		
east		
along		
thousand		

Table D5: List of irrelevant words removed from each dictionary

E Sentiment analysis

To perform sentiment analysis on our corpus of speeches, we exploit the lexicon "bing", which categorizes words in a binary way (Hu and Liu 2004), and use the tidytext framework. We merge the lexicon with our speech data, and construct a sentiment score equal to the difference between the number of words classified as positive and negative respectively. We proceed to plot this sentiment score by party, median housing prices, and housing topic in Figure E6 below.

Figure E6: Sentiment scores of speeches by topic, party and housing prices

An occurrence of speech by a given MP is classified as a speech on supply (respectively, demand or welfare) if its share of words that falls into that dictionary is higher than the mean share across all speeches in the data. The graph plots the smoothed sentiment score (i.e. total of positive minus negative words), aggregated by party and by housing dictionary, across values of median constituency house prices.

As expected, Labour MPs talk more positively about both supply and demand when they represent constituencies that have lower median housing prices. The trend reverses at higher levels of housing prices. Speeches about welfare are generally more negative, which makes sense if one thinks of what kind of issues fall into this dictionary: Homelessness, health and hygiene, squalor, degradation of living conditions and so on. These issues would naturally tend to be more negatively

connoted than those related to housing supply and demand. The trend of Labour *versus* Conservative for welfare speeches reverses almost at the very lower end of the housing prices distribution, and the gap in sentiment scores between parties narrows substantially around £75,000. Towards the end of the distribution, Labour MPs actually talk considerably more negatively about welfare than their Conservative counterparts – which could be due to Labour MPs vehemently criticizing inequalities in housing welfare in richer constituencies.

Overall, and despite the previously mentioned limitations of sentiment analysis for legislative debates, the above results confirm that: (i) there is meaningful variation in how MPs talk about different housing-related topics based on their partisanship and the housing prices in their constituency; (ii) how much MPs talk about a given topic is a good measure of how important this issue is to them, and is likely to translate into meaningful consequences in terms of policy.

F Descriptive statistics and correlation matrix

Below descriptive statistics are seen for the variables included in the main analysis and the extra control variables used in Appendix H and Appendix J. Afterwards, we present the bivariate correlations between the same variables. To fit the table into one page, we have used shorter names for the column names, but the column variables are exactly the same as the row variables.

Table F1: Descriptive statistics

	Observations	Mean	Median	SD	Min	Max
Share devoted to supply	9034	0.32	0.31	0.12	0.00	0.88
Share devoted to demand	9034	0.16	0.15	0.09	0.00	0.65
Share devoted to welfare	9034	0.20	0.18	0.10	0.00	0.69
Share devoted to formalities	9034	0.33	0.32	0.10	0.00	0.82
Share devoted to private market supply	9034	0.20	0.19	0.11	0.00	0.70
Share devoted to public market supply	9034	0.15	0.14	0.08	0.00	0.61
Share devoted to demand for purchasing housing	9034	0.09	0.07	0.07	0.00	0.56
Share devoted to demand for private rental	9034	0.08	0.07	0.06	0.00	0.65
Median house price (GBP 1e+05)	8630	1.96	1.57	1.25	0.25	14.22
Male	9034	1.76	2.00	0.43	1.00	2.00
Age	7741	50.31	50.00	9.24	22.00	83.00
Governing coalition	7742	0.36	0.00	0.48	0.00	1.00
Share living in a owned house	8653	0.66	0.69	0.14	0.20	0.91
Share living in a detached house	8653	0.83	0.89	0.18	0.11	0.98
Share living in a one-person household	8653	0.31	0.30	0.05	0.21	0.54
Share living in a household with >2 persons	8653	0.35	0.36	0.04	0.19	0.57
Median earnings (GBP 1e+03 per week)	8246	387.54	385.05	83.78	134.70	958.20
log(Population density)	8327	2.28	2.40	1.53	-2.30	4.99
Share born in the UK	8653	0.88	0.93	0.12	0.41	0.99
Share without educational qualifications	8653	0.25	0.24	0.07	0.10	0.48
Unemployment rate	8653	0.04	0.04	0.01	0.01	0.10
Share with a high skilled occupation	8653	0.10	0.09	0.04	0.03	0.24
Share with routine occupations	8653	0.23	0.23	0.07	0.09	0.40

Table F2: Correlation matrix

	Supply	Demand	Welfare	Formalities	Private MS	Public MS	Purchasing	Rental	HP	Male	Age	GC	Owned	Detached	One-person	+2 persons	Earnings	Density	bornUK	No ed.	Unemp	HO	RO
Share devoted to supply	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Share devoted to demand	.15	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Share devoted to welfare	-.05	.08	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Share devoted to formalities	-.12	-.12	-.13	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Share devoted to private market supply	.83	.06	-.20	-.13	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Share devoted to public market supply	.65	.17	.20	-.03	.18	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Share devoted to demand for purchasing housing	.21	.73	.00	-.10	.16	.17	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Share devoted to demand for private rental	-.03	.66	.11	-.08	-.10	.06	-.02	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Median house price (GBP 100000)	.04	.09	-.02	.01	.02	.05	.11	.01	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Male	.02	-.03	-.17	.03	.05	-.04	-.01	-.02	-.07	1	.	.	.	.	.	.	.	.	.	.	.	.	.
Age	-.02	.00	-.01	-.03	-.05	.03	-.03	.04	.09	.12	1	.	.	.	.	.	.	.	.	.	.	.	.
Governing coalition	.22	-.03	-.05	.11	.20	.13	-.10	.07	-.21	.02	.00	1	.	.	.	.	.	.	.	.	.	.	.
Share living in a owned house	-.02	-.07	-.10	.10	.05	-.10	-.02	-.07	-.29	.19	-.12	.02	1	.	.	.	.	.	.	.	.	.	.
Share living in a detached house	.01	-.06	-.09	.07	.08	-.08	-.01	-.07	-.49	.17	-.12	.05	.82	1	.	.	.	.	.	.	.	.	.
Share living in a one-person household	-.03	.00	.10	-.09	-.08	.06	-.03	.03	.07	-.18	.11	.01	-.74	-.75	1	.	.	.	.	.	.	.	.
Share living in a household with >2 persons	.02	.03	-.04	.04	.03	-.01	.02	.03	.11	.09	-.02	.07	.24	.31	-.65	1	.	.	.	.	.	.	.
Median earnings (GBP 1000 per week)	-.01	.12	.04	-.02	-.04	.04	.12	.04	.66	-.11	.06	-.23	-.41	-.48	.15	.08	1	.	.	.	.	.	.
log(Population density)	.05	.05	.07	-.06	-.01	.10	.02	.06	.27	-.18	.15	.08	-.61	-.60	.50	.14	.32	1	.	.	.	.	.
Share born in the UK	.00	-.09	-.07	.07	.07	-.09	-.04	-.09	-.61	.14	-.13	.09	.74	.80	-.43	-.16	-.55	-.64	1	.	.	.	.
Share without educational qualifications	.02	-.03	-.01	.02	.02	.02	-.06	.01	-.66	-.02	-.07	.29	.11	.36	-.02	.02	-.49	-.03	.44	1	.	.	.
Unemployment rate	-.03	.04	.13	-.09	-.06	.02	.02	.03	-.06	-.16	.07	-.04	-.64	-.38	.48	.01	.16	.57	-.37	.35	1	.	.
Share with a high skilled occupation	.02	.04	-.03	.01	.02	.01	.06	.00	.73	.02	.08	-.13	-.15	-.45	.08	-.04	.50	.13	-.46	-.87	-.34	1	.
Share with routine occupations	-.06	-.01	.10	-.02	-.03	-.06	.02	-.05	-.51	-.06	-.08	-.10	.14	.46	-.16	-.03	-.23	-.23	.48	.64	.41	-.75	1

G Results for narrow policy areas

The tables below show the full results using the sub-dictionaries. Figure 7 is based on these tables.

Table G1: Share of speech devoted to private market supply

	(1)	(2)	(3)
Median house price (GBP 100,000)	0.11 (0.27)	0.04 (0.26)	0.07 (0.36)
Labour (Ref: Conservative)		−0.83 (0.83)	−0.74 (1.50)
Liberal Democrat (Ref: Conservative)		−0.27 (0.40)	0.11 (1.29)
Other (Ref: Conservative)		−0.56 (1.30)	−1.81 (2.16)
MHP*Labour (Ref: Conservative)			−0.06 (0.47)
MHP*Lib Dem (Ref: Conservative)			−0.21 (0.55)
MHP*Other (Ref: Conservative)			0.88 (1.17)
Male	0.58 (0.65)	0.35 (0.65)	0.37 (0.66)
Age	−0.05 (0.02)***	−0.05 (0.02)***	−0.05 (0.02)***
Governing coalition	3.74 (0.46)***	3.89 (0.56)***	3.89 (0.58)***
East Midlands (Ref: East)	−1.18 (1.00)	−1.04 (1.00)	−1.04 (0.99)
London (Ref: East)	−1.95 (0.94)**	−1.49 (1.08)	−1.44 (1.04)
North East (Ref: East)	−1.82 (0.73)**	−1.29 (1.07)	−1.29 (1.14)
North West (Ref: East)	−1.98 (0.82)**	−1.63 (0.95)*	−1.62 (0.97)*
Scotland (Ref: East)	−3.99 (0.84)***	−3.52 (0.87)***	−3.47 (0.95)***
South East (Ref: East)	−0.41 (1.12)	−0.35 (1.16)	−0.39 (1.18)
South West (Ref: East)	−0.47 (0.76)	−0.39 (0.75)	−0.38 (0.75)
Wales (Ref: East)	−3.40 (0.66)***	−2.98 (0.69)***	−2.94 (0.68)***
West Midlands (Ref: East)	0.17 (1.07)	0.45 (1.03)	0.45 (1.06)
Yorkshire and The Humber (Ref: East)	1.72 (0.67)**	2.12 (0.73)***	2.12 (0.73)***
Num. obs.	7339	7339	7339
R^2 (full model)	0.14	0.14	0.14
R^2 (proj model)	0.05	0.05	0.05
Num. groups: year	21	21	21

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Dependent variable: Share of text devoted to private market supply. OLS-regression using year fixed effects. Standard errors clustered by government in parentheses.

Table G2: Share of speech devoted to public market supply

	(1)	(2)	(3)
Median house price (GBP 100,000)	0.81 (0.10)***	0.91 (0.10)***	0.73 (0.15)***
Labour (Ref: Conservative)		1.50 (0.39)***	0.80 (0.74)
Liberal Democrat (Ref: Conservative)		1.88 (0.37)***	1.69 (1.09)
Other (Ref: Conservative)		1.65 (1.57)	0.25 (3.02)
MHP*Labour (Ref: Conservative)			0.35 (0.16)**
MHP*Lib Dem (Ref: Conservative)			0.07 (0.53)
MHP*Other (Ref: Conservative)			0.86 (1.24)
Male	−0.52 (0.39)	−0.21 (0.49)	−0.19 (0.49)
Age	0.01 (0.01)	0.00 (0.01)	0.00 (0.01)
Governing coalition	1.71 (0.35)***	1.42 (0.18)***	1.48 (0.18)***
East Midlands (Ref: East)	1.22 (0.71)*	0.86 (0.60)	0.87 (0.62)
London (Ref: East)	0.41 (0.62)	−0.51 (0.52)	−0.55 (0.53)
North East (Ref: East)	1.52 (0.60)**	0.60 (0.53)	0.73 (0.53)
North West (Ref: East)	0.66 (0.73)	−0.19 (0.64)	−0.09 (0.67)
Scotland (Ref: East)	0.62 (0.33)*	−0.58 (0.68)	−0.46 (0.77)
South East (Ref: East)	−0.25 (0.61)	−0.42 (0.60)	−0.38 (0.62)
South West (Ref: East)	1.20 (0.42)***	0.48 (0.40)	0.46 (0.41)
Wales (Ref: East)	−0.74 (0.51)	−1.76 (0.64)***	−1.67 (0.65)**
West Midlands (Ref: East)	0.59 (0.45)	0.03 (0.39)	0.09 (0.42)
Yorkshire and The Humber (Ref: East)	2.40 (0.71)***	1.65 (0.65)**	1.74 (0.70)**
Num. obs.	7339	7339	7339
R^2 (full model)	0.08	0.08	0.08
R^2 (proj model)	0.03	0.03	0.03
Num. groups: year	21	21	21

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Dependent variable: Share of text devoted to public market supply. OLS-regression using year fixed effects. Standard errors clustered by government in parentheses.

Table G3: Share of speech devoted to demand for purchasing housing

	(1)	(2)	(3)
Median house price (GBP 100,000)	0.42 (0.10)***	0.42 (0.10)***	0.44 (0.11)***
Labour (Ref: Conservative)		0.19 (0.18)	0.29 (0.35)
Liberal Democrat (Ref: Conservative)		1.20 (0.45)***	0.66 (1.21)
Other (Ref: Conservative)		−0.42 (0.59)	−1.30 (1.74)
MHP*Labour (Ref: Conservative)			−0.05 (0.18)
MHP*Lib Dem (Ref: Conservative)			0.29 (0.54)
MHP*Other (Ref: Conservative)			0.61 (1.06)
Male	0.18 (0.27)	0.14 (0.26)	0.15 (0.26)
Age	−0.03 (0.01)**	−0.03 (0.01)**	−0.03 (0.01)**
Governing coalition	−0.30 (0.32)	−0.40 (0.31)	−0.44 (0.30)
East Midlands (Ref: East)	−1.37 (0.46)***	−1.50 (0.46)***	−1.47 (0.46)***
London (Ref: East)	−1.08 (0.56)*	−1.26 (0.54)**	−1.26 (0.54)**
North East (Ref: East)	−1.06 (0.43)**	−1.16 (0.42)***	−1.16 (0.38)***
North West (Ref: East)	−0.06 (0.32)	−0.32 (0.40)	−0.31 (0.38)
Scotland (Ref: East)	−1.80 (1.12)	−1.78 (0.80)**	−1.71 (0.80)**
South East (Ref: East)	−0.94 (0.49)*	−0.99 (0.47)**	−1.02 (0.47)**
South West (Ref: East)	−0.47 (0.89)	−0.96 (1.05)	−0.95 (1.06)
Wales (Ref: East)	−1.79 (0.80)**	−1.95 (0.81)**	−1.89 (0.77)**
West Midlands (Ref: East)	0.18 (0.76)	0.06 (0.74)	0.07 (0.74)
Yorkshire and The Humber (Ref: East)	0.73 (0.52)	0.61 (0.52)	0.60 (0.50)
Num. obs.	7339	7339	7339
R^2 (full model)	0.10	0.10	0.10
R^2 (proj model)	0.01	0.02	0.02
Num. groups: year	21	21	21

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Dependent variable: Share of text devoted to demand for purchasing housing. OLS-regression using year fixed effects. Standard errors clustered by government in parentheses.

Table G4: Share of speech devoted to demand for private rental

	(1)	(2)	(3)
Median house price (GBP 100,000)	−0.06 (0.25)	−0.04 (0.24)	−0.42 (0.16)**
Labour (Ref: Conservative)		0.37 (0.46)	−1.10 (0.65)*
Liberal Democrat (Ref: Conservative)		0.58 (0.12)***	1.50 (0.89)*
Other (Ref: Conservative)		−0.32 (0.44)	−2.12 (1.03)**
MHP*Labour (Ref: Conservative)			0.74 (0.22)***
MHP*Lib Dem (Ref: Conservative)			−0.54 (0.46)
MHP*Other (Ref: Conservative)			1.04 (0.45)**
Male	−0.37 (0.25)	−0.31 (0.30)	−0.27 (0.25)
Age	0.02 (0.01)**	0.02 (0.01)**	0.02 (0.01)*
Governing coalition	0.95 (0.30)***	0.85 (0.32)***	1.04 (0.29)***
East Midlands (Ref: East)	−0.26 (0.52)	−0.36 (0.48)	−0.40 (0.52)
London (Ref: East)	1.51 (0.82)*	1.27 (0.73)*	1.22 (0.78)
North East (Ref: East)	1.47 (0.70)**	1.24 (0.77)	1.48 (0.80)*
North West (Ref: East)	0.31 (0.38)	0.09 (0.34)	0.25 (0.45)
Scotland (Ref: East)	−0.23 (0.55)	−0.25 (0.45)	−0.12 (0.37)
South East (Ref: East)	−0.09 (0.38)	−0.12 (0.37)	−0.03 (0.36)
South West (Ref: East)	0.29 (0.35)	0.06 (0.38)	0.01 (0.41)
Wales (Ref: East)	−0.06 (0.30)	−0.22 (0.37)	−0.13 (0.33)
West Midlands (Ref: East)	0.18 (0.52)	0.03 (0.54)	0.14 (0.64)
Yorkshire and The Humber (Ref: East)	0.23 (0.55)	0.04 (0.70)	0.23 (0.75)
Num. obs.	7339	7339	7339
R^2 (full model)	0.06	0.06	0.07
R^2 (proj model)	0.02	0.02	0.02
Num. groups: year	21	21	21

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Dependent variable: Share of text devoted to demand for private rental. OLS-regression using year fixed effects. Standard errors clustered by government in parentheses.

H Adding controls for income

In this appendix we control for income in addition to the control variables used in the main analysis. We measure income as median earnings per week (gross), which is found using the Annual Survey of Hours and Earnings. We find that results generally are robust to including income.

Table H1: Share of speech devoted to supply of housing and housing prices

	(1)	(2)	(3)
Median house price (GBP 100,000)	0.49 (0.26)*	0.40 (0.27)	0.07 (0.40)
Labour (Ref: Conservative)		−0.44 (0.47)	−1.80 (1.28)
Liberal Democrat (Ref: Conservative)		1.21 (0.56)**	1.94 (1.46)
Other (Ref: Conservative)		−0.25 (1.41)	−5.09 (3.30)
MHP*Labour (Ref: Conservative)			0.61 (0.44)
MHP*Lib Dem (Ref: Conservative)			−0.49 (0.75)
MHP*Other (Ref: Conservative)			3.12 (1.71)*
Median earnings (GBP 1,000 per week)	0.01 (0.00)***	0.01 (0.00)***	0.01 (0.00)***
Male	0.39 (0.61)	0.13 (0.60)	0.20 (0.64)
Age	−0.04 (0.03)	−0.03 (0.02)	−0.03 (0.02)
Governing coalition	4.95 (0.34)***	4.95 (0.43)***	5.22 (0.48)***
East Midlands (Ref: East)	−0.14 (1.81)	−0.18 (1.66)	−0.18 (1.67)
London (Ref: East)	−1.21 (1.24)	−1.07 (1.19)	−1.08 (1.16)
North East (Ref: East)	−0.36 (0.72)	−0.04 (0.85)	0.22 (0.93)
North West (Ref: East)	−1.30 (0.85)	−1.33 (0.89)	−1.10 (0.93)
Scotland (Ref: East)	−3.16 (0.79)***	−3.05 (0.84)***	−2.71 (0.95)***
South East (Ref: East)	−0.55 (1.34)	−0.59 (1.33)	−0.60 (1.44)
South West (Ref: East)	0.67 (0.93)	0.20 (0.88)	0.19 (0.88)
Wales (Ref: East)	−3.63 (0.78)***	−3.55 (0.68)***	−3.31 (0.71)***
West Midlands (Ref: East)	0.60 (1.03)	0.69 (0.92)	0.77 (0.89)
Yorkshire and The Humber (Ref: East)	3.48 (1.24)***	3.66 (1.14)***	3.91 (1.12)***
Num. obs.	6883	6883	6883
R^2 (full model)	0.13	0.13	0.13
R^2 (proj model)	0.05	0.05	0.06
Num. groups: year	20	20	20

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Dependent variable: Share of text devoted to supply of housing. OLS-regression using year fixed effects. Standard errors clustered by government in parentheses.

Table H2: Share of speech devoted to demand of housing and housing prices

	(1)	(2)	(3)
Median house price (GBP 100,000)	0.16 (0.21)	0.23 (0.23)	−0.08 (0.23)
Labour (Ref: Conservative)		0.85 (0.28)***	−0.43 (0.43)
Liberal Democrat (Ref: Conservative)		1.79 (0.42)***	2.00 (0.93)**
Other (Ref: Conservative)		−0.52 (0.88)	−3.64 (1.95)*
MHP*Labour (Ref: Conservative)			0.59 (0.25)**
MHP*Lib Dem (Ref: Conservative)			−0.20 (0.45)
MHP*Other (Ref: Conservative)			1.94 (0.90)**
Median earnings (GBP 1,000 per week)	0.00 (0.00)**	0.00 (0.00)	0.00 (0.00)
Male	−0.09 (0.20)	−0.05 (0.24)	−0.01 (0.25)
Age	−0.01 (0.01)	−0.02 (0.01)**	−0.02 (0.01)**
Governing coalition	0.60 (0.45)	0.26 (0.35)	0.49 (0.34)
East Midlands (Ref: East)	−1.31 (0.67)**	−1.57 (0.67)**	−1.57 (0.65)**
London (Ref: East)	0.56 (0.94)	0.08 (0.90)	0.04 (0.89)
North East (Ref: East)	0.71 (0.74)	0.21 (0.87)	0.45 (0.81)
North West (Ref: East)	0.43 (0.26)*	−0.17 (0.35)	0.02 (0.34)
Scotland (Ref: East)	−2.05 (1.61)	−2.20 (1.12)*	−1.93 (0.97)**
South East (Ref: East)	−0.98 (0.56)*	−1.05 (0.52)**	−1.02 (0.47)**
South West (Ref: East)	−0.04 (0.85)	−0.71 (0.97)	−0.74 (0.94)
Wales (Ref: East)	−1.65 (1.08)	−2.19 (1.10)**	−1.99 (0.96)**
West Midlands (Ref: East)	0.18 (0.50)	−0.13 (0.48)	−0.05 (0.42)
Yorkshire and The Humber (Ref: East)	0.66 (0.38)*	0.21 (0.48)	0.41 (0.39)
Num. obs.	6883	6883	6883
R^2 (full model)	0.08	0.09	0.09
R^2 (proj model)	0.01	0.02	0.02
Num. groups: year	20	20	20

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Dependent variable: Share of text devoted to demand of housing. OLS-regression using year fixed effects. Standard errors clustered by government in parentheses.

Table H3: Share of speech devoted to welfare and housing prices

	(1)	(2)	(3)
Median house price (GBP 100,000)	−0.47 (0.29)	−0.10 (0.32)	−0.61 (0.24)**
Labour (Ref: Conservative)		3.29 (0.53)***	1.14 (1.24)
Liberal Democrat (Ref: Conservative)		2.17 (0.40)***	1.54 (1.99)
Other (Ref: Conservative)		2.50 (1.02)**	5.78 (5.03)
MHP*Labour (Ref: Conservative)			1.04 (0.40)***
MHP*Lib Dem (Ref: Conservative)			0.22 (0.93)
MHP*Other (Ref: Conservative)			−2.60 (2.62)
Median earnings (GBP 1,000 per week)	−0.00 (0.00)	−0.01 (0.00)	−0.01 (0.00)
Male	−3.32 (0.48)***	−2.59 (0.60)***	−2.66 (0.58)***
Age	−0.02 (0.02)	−0.05 (0.02)***	−0.04 (0.02)***
Governing coalition	0.01 (0.35)	−0.83 (0.46)*	−0.44 (0.51)
East Midlands (Ref: East)	1.01 (0.42)**	0.40 (0.59)	0.36 (0.45)
London (Ref: East)	3.81 (0.86)***	2.16 (0.99)**	1.95 (0.94)**
North East (Ref: East)	3.45 (1.54)**	1.40 (1.70)	1.70 (1.70)
North West (Ref: East)	3.92 (0.41)***	2.33 (0.54)***	2.45 (0.53)***
Scotland (Ref: East)	4.27 (0.34)***	2.28 (0.39)***	2.27 (0.53)***
South East (Ref: East)	1.84 (0.62)***	1.63 (0.61)***	1.90 (0.57)***
South West (Ref: East)	2.73 (0.90)***	1.96 (0.82)**	1.84 (0.79)**
Wales (Ref: East)	3.41 (2.02)*	1.29 (2.13)	1.37 (2.21)
West Midlands (Ref: East)	1.69 (0.80)**	0.65 (0.78)	0.75 (0.81)
Yorkshire and The Humber (Ref: East)	2.07 (0.51)***	0.42 (0.42)	0.64 (0.38)*
Num. obs.	6883	6883	6883
R^2 (full model)	0.14	0.15	0.15
R^2 (proj model)	0.04	0.06	0.06
Num. groups: year	20	20	20

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Dependent variable: Share of text devoted to welfare. OLS-regression using year fixed effects. Standard errors clustered by government in parentheses.

I Removing time fixed effects

In the following analyses we remove the time fixed effects to see whether the results are consistent if we do not take into account trends and shocks to housing prices, but instead compare all constituencies across time. We find that the patterns when using partisanship are substantially similar to the main finding, both the bivariate and the interaction effects. Yet, we also that not including time fixed effects somewhat alters the relationship between housing prices and our dependent variables. For example, we no longer find a significant association between house prices and share of speech devoted to supply. This indicates that MPs representing relatively expensive constituencies in a given year talk more about supply, while general price increases are not associated with MPs talking more about supply.

Table I1: Share of speech devoted to supply of housing and housing prices

	(1)	(2)	(3)
Constant	30.66 (1.49)***	30.54 (1.52)***	30.23 (1.86)***
Median house price (GBP 100,000)	0.52 (0.51)	0.60 (0.55)	0.76 (0.77)
Labour (Ref: Conservative)		0.98 (1.04)	1.29 (2.38)
Liberal Democrat (Ref: Conservative)		0.81 (0.79)	4.22 (1.75)**
Other (Ref: Conservative)		1.43 (2.07)	1.24 (4.37)
MHP*Labour (Ref: Conservative)			−0.17 (0.76)
MHP*Lib Dem (Ref: Conservative)			−1.81 (0.97)*
MHP*Other (Ref: Conservative)			0.23 (1.94)
Male	0.26 (0.73)	0.51 (0.71)	0.53 (0.73)
Age	−0.04 (0.03)	−0.05 (0.03)	−0.05 (0.03)
Governing coalition	5.38 (0.72)***	5.22 (0.73)***	5.29 (0.86)***
East Midlands (Ref: East)	−0.32 (2.00)	−0.54 (1.84)	−0.59 (1.78)
London (Ref: East)	−0.65 (1.52)	−1.26 (1.60)	−1.16 (1.52)
North East (Ref: East)	−1.78 (1.22)	−2.42 (1.33)*	−2.44 (1.37)*
North West (Ref: East)	−1.47 (1.44)	−1.98 (1.25)	−1.98 (1.21)
Scotland (Ref: East)	−5.86 (0.68)***	−6.74 (0.88)***	−6.77 (1.02)***
South East (Ref: East)	−0.36 (1.52)	−0.48 (1.52)	−0.56 (1.55)
South West (Ref: East)	−0.23 (1.58)	−0.53 (1.49)	−0.54 (1.44)
Wales (Ref: East)	−5.12 (1.44)***	−5.81 (1.05)***	−5.88 (1.00)***
West Midlands (Ref: East)	0.32 (1.46)	0.02 (1.44)	−0.03 (1.39)
Yorkshire and The Humber (Ref: East)	2.98 (1.65)*	2.50 (1.61)	2.52 (1.55)
Num. obs.	7339	7339	7339
R^2 (full model)	0.08	0.08	0.08
R^2 (proj model)	0.08	0.08	0.08

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Dependent variable: Share of text devoted to supply of housing. OLS-regression using year fixed effects. Standard errors clustered by government in parentheses.

Table I2: Share of speech devoted to demand of housing and housing prices

	(1)	(2)	(3)
Constant	15.96 (2.59)***	16.06 (2.61)***	16.97 (2.57)***
Median house price (GBP 100,000)	0.94 (0.52)*	0.95 (0.53)*	0.44 (0.58)
Labour (Ref: Conservative)		0.35 (0.83)	−1.57 (1.17)
Liberal Democrat (Ref: Conservative)		1.37 (0.73)*	0.85 (1.26)
Other (Ref: Conservative)		−0.69 (0.91)	−4.18 (1.40)***
MHP*Labour (Ref: Conservative)			1.00 (0.35)***
MHP*Lib Dem (Ref: Conservative)			0.22 (0.54)
MHP*Other (Ref: Conservative)			2.13 (0.52)***
Male	−0.29 (0.29)	−0.30 (0.40)	−0.24 (0.38)
Age	−0.01 (0.01)	−0.01 (0.01)	−0.01 (0.01)
Governing coalition	−0.24 (1.20)	−0.38 (1.15)	−0.23 (1.11)
East Midlands (Ref: East)	−1.78 (1.23)	−1.97 (1.18)*	−1.95 (1.16)*
London (Ref: East)	−0.65 (0.59)	−0.93 (0.72)	−1.09 (0.68)
North East (Ref: East)	0.86 (1.24)	0.60 (1.25)	0.95 (1.22)
North West (Ref: East)	0.00 (0.51)	−0.34 (0.49)	−0.08 (0.54)
Scotland (Ref: East)	−2.73 (1.89)	−2.69 (1.57)*	−2.37 (1.40)*
South East (Ref: East)	−1.72 (0.55)***	−1.77 (0.51)***	−1.65 (0.39)***
South West (Ref: East)	−1.16 (1.01)	−1.73 (0.97)*	−1.77 (0.90)**
Wales (Ref: East)	−2.05 (1.64)	−2.28 (1.72)	−2.08 (1.61)
West Midlands (Ref: East)	0.17 (0.88)	0.03 (0.83)	0.21 (0.84)
Yorkshire and The Humber (Ref: East)	1.31 (0.65)**	1.12 (0.92)	1.36 (0.90)
Num. obs.	7339	7339	7339
R^2 (full model)	0.03	0.03	0.03
R^2 (proj model)	0.03	0.03	0.03

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Dependent variable: Share of text devoted to demand of housing. OLS-regression using year fixed effects. Standard errors clustered by government session in parentheses.

Table I3: Share of speech devoted to welfare and housing prices

	(1)	(2)	(3)
Constant	19.97 (1.56)***	19.81 (1.68)***	20.83 (1.95)***
Median house price (GBP 100,000)	0.26 (0.62)	0.45 (0.63)	−0.12 (0.59)
Labour (Ref: Conservative)		2.23 (0.69)***	0.26 (1.01)
Liberal Democrat (Ref: Conservative)		1.56 (1.47)	−1.38 (1.87)
Other (Ref: Conservative)		1.51 (0.62)**	1.51 (3.50)
MHP*Labour (Ref: Conservative)			1.05 (0.26)***
MHP*Lib Dem (Ref: Conservative)			1.52 (0.97)
MHP*Other (Ref: Conservative)			−0.31 (2.34)
Male	−3.41 (0.40)***	−2.83 (0.50)***	−2.83 (0.51)***
Age	−0.00 (0.02)	−0.02 (0.02)	−0.02 (0.02)
Governing coalition	−1.12 (0.69)	−1.52 (0.74)**	−1.45 (0.76)*
East Midlands (Ref: East)	1.39 (0.85)	0.90 (0.89)	0.93 (0.78)
London (Ref: East)	3.03 (1.10)***	1.67 (1.29)	1.40 (1.20)
North East (Ref: East)	3.53 (2.18)	2.05 (2.26)	2.36 (2.22)
North West (Ref: East)	4.78 (1.03)***	3.70 (1.15)***	3.89 (1.14)***
Scotland (Ref: East)	8.27 (0.66)***	6.98 (0.83)***	7.13 (0.82)***
South East (Ref: East)	1.06 (0.68)	0.84 (0.72)	1.07 (0.68)
South West (Ref: East)	3.35 (1.96)*	2.77 (1.73)	2.72 (1.68)
Wales (Ref: East)	5.09 (2.93)*	3.84 (2.66)	3.97 (2.73)
West Midlands (Ref: East)	2.98 (0.97)***	2.29 (1.04)**	2.46 (0.99)**
Yorkshire and The Humber (Ref: East)	2.88 (0.76)***	1.79 (0.90)**	1.97 (0.83)**
Num. obs.	7339	7339	7339
R^2 (full model)	0.06	0.07	0.07
R^2 (proj model)	0.06	0.07	0.07

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Dependent variable: Share of text devoted to welfare. OLS-regression using year fixed effects. Standard errors clustered by government session in parentheses.

J Adding constituency controls

Here, we add a list of extra control variables focusing on demographic and economic factors to the main specifications used in the manuscript. More specifically, we add "log(Population density)", "Share (of population) born in the UK", "Share without educational qualifications", "Unemployment rate" , "Share with a high skilled occupation", and "Share with a routine occupation". All variables originates from the census statistics found at NOMIS. We use the data from the 2001 census and 2011 census. The inclusion of additional variables does not alter the results substantially.

Table J1: Share of speech devoted to supply of housing and housing prices

	(1)	(2)	(3)
Median house price (GBP 100,000)	0.57 (0.37)	0.56 (0.37)	0.58 (0.34)*
Labour (Ref: Conservative)		−0.72 (0.92)	−0.58 (1.63)
Liberal Democrat (Ref: Conservative)		0.32 (0.60)	1.16 (1.69)
Other (Ref: Conservative)		−0.50 (1.82)	−2.55 (3.73)
MHP*Labour (Ref: Conservative)			−0.09 (0.40)
MHP*Lib Dem (Ref: Conservative)			−0.44 (0.98)
MHP*Other (Ref: Conservative)			1.46 (1.89)
Male	0.69 (0.59)	0.52 (0.59)	0.56 (0.61)
Age	−0.04 (0.02)**	−0.03 (0.02)	−0.03 (0.02)
Governing coalition	5.03 (0.57)***	5.06 (0.63)***	5.07 (0.71)***
East Midlands (Ref: East)	−0.10 (1.86)	0.05 (1.66)	0.05 (1.63)
London (Ref: East)	−1.24 (1.80)	−1.16 (1.78)	−1.10 (1.71)
North East (Ref: East)	−0.79 (1.20)	−0.32 (1.36)	−0.30 (1.40)
North West (Ref: East)	−0.68 (1.14)	−0.42 (1.16)	−0.36 (1.16)
Scotland (Ref: East)	−1.86 (1.14)	−1.42 (1.69)	−1.39 (1.92)
South East (Ref: East)	−0.67 (1.62)	−0.58 (1.67)	−0.64 (1.72)
South West (Ref: East)	−0.09 (1.14)	−0.07 (1.01)	−0.05 (0.96)
Wales (Ref: East)	−3.35 (0.99)***	−2.94 (0.83)***	−2.89 (0.85)***
West Midlands (Ref: East)	0.93 (0.84)	1.08 (0.82)	1.08 (0.82)
Yorkshire and The Humber (Ref: East)	2.76 (1.14)**	3.06 (1.08)***	3.08 (1.07)***
log(Population density)	0.33 (0.23)	0.37 (0.21)*	0.34 (0.18)*
Share born in the UK	−2.23 (5.42)	−2.27 (5.11)	−2.57 (4.93)
Share living in a owned house	−11.63 (3.16)***	−12.39 (3.35)***	−12.40 (3.36)***
Share without educational qualifications	−1.83 (16.70)	−1.14 (16.50)	−1.15 (15.27)
Share living in a detached house	4.05 (4.40)	4.05 (4.27)	3.82 (5.12)
Unemployment rate	14.55 (60.94)	14.23 (59.34)	13.53 (58.73)
Share with a high skilled occupation	−11.41 (15.36)	−9.58 (15.51)	−8.47 (13.08)
Share with routine occupations	−9.83 (7.06)	−7.83 (7.72)	−6.85 (8.48)
Share living in a one-person household	−42.35 (8.52)***	−40.38 (9.56)***	−40.49 (10.54)***
Share living in a household with >2 persons	−43.18 (14.25)***	−40.23 (13.62)***	−39.85 (13.10)***
Num. obs.	7013	7013	7013
R^2 (full model)	0.14	0.14	0.14
R^2 (proj model)	0.06	0.06	0.06
Num. groups: year	21	21	21

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Dependent variable: Share of text devoted to supply of housing. OLS-regression using year fixed effects.
Standard errors clustered by government in parentheses.

Table J2: Share of speech devoted to demand of housing and housing prices

	(1)	(2)	(3)
Median house price (GBP 100,000)	0.29 (0.26)	0.28 (0.26)	0.07 (0.25)
Labour (Ref: Conservative)		0.59 (0.39)	−0.33 (0.57)
Liberal Democrat (Ref: Conservative)		1.51 (0.30)***	2.48 (1.02)**
Other (Ref: Conservative)		−1.10 (0.94)	−3.31 (1.83)*
MHP*Labour (Ref: Conservative)			0.45 (0.26)*
MHP*Lib Dem (Ref: Conservative)			−0.52 (0.48)
MHP*Other (Ref: Conservative)			1.42 (0.88)
Male	−0.10 (0.29)	−0.12 (0.30)	−0.11 (0.30)
Age	−0.01 (0.01)	−0.01 (0.01)*	−0.01 (0.01)*
Governing coalition	0.84 (0.38)**	0.58 (0.30)*	0.64 (0.28)**
East Midlands (Ref: East)	−1.61 (0.67)**	−1.79 (0.65)***	−1.81 (0.64)***
London (Ref: East)	−0.11 (1.28)	−0.33 (1.14)	−0.18 (1.15)
North East (Ref: East)	0.55 (0.60)	0.21 (0.72)	0.35 (0.71)
North West (Ref: East)	0.42 (0.23)*	0.00 (0.34)	0.06 (0.35)
Scotland (Ref: East)	−1.96 (1.70)	−1.91 (1.16)	−1.64 (1.07)
South East (Ref: East)	−1.24 (0.59)**	−1.26 (0.57)**	−1.21 (0.53)**
South West (Ref: East)	−0.77 (0.96)	−1.28 (0.99)	−1.20 (0.93)
Wales (Ref: East)	−1.91 (0.92)**	−2.23 (0.98)**	−2.11 (0.90)**
West Midlands (Ref: East)	0.58 (0.58)	0.36 (0.54)	0.36 (0.52)
Yorkshire and The Humber (Ref: East)	1.10 (0.47)**	0.84 (0.52)	0.95 (0.52)*
log(Population density)	−0.05 (0.18)	−0.15 (0.17)	−0.13 (0.16)
Share born in the UK	−0.46 (3.30)	−0.61 (3.26)	−0.14 (3.25)
Share living in a owned house	−3.76 (2.91)	−3.35 (2.93)	−3.62 (2.85)
Share without educational qualifications	−12.84 (9.24)	−10.71 (8.88)	−9.02 (7.59)
Share living in a detached house	−2.02 (1.74)	−1.94 (1.87)	−0.86 (1.63)
Unemployment rate	4.44 (21.12)	5.01 (16.99)	2.05 (16.24)
Share with a high skilled occupation	−23.63 (14.72)	−21.07 (14.98)	−16.46 (13.68)
Share with routine occupations	−2.65 (6.40)	−3.76 (5.79)	−3.11 (5.68)
Share living in a one-person household	−19.13 (13.68)	−17.20 (12.90)	−12.90 (12.45)
Share living in a household with >2 persons	−12.85 (10.33)	−10.64 (9.05)	−7.38 (8.33)
Num. obs.	7013	7013	7013
R^2 (full model)	0.09	0.09	0.09
R^2 (proj model)	0.02	0.02	0.02
Num. groups: year	21	21	21

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Dependent variable: Share of text devoted to demand of housing. OLS-regression using year fixed effects. Standard errors clustered by government in parentheses.

Table J3: Share of speech devoted to welfare and housing prices

	(1)	(2)	(3)
Median house price (GBP 100,000)	0.03 (0.35)	0.03 (0.35)	−0.41 (0.33)
Labour (Ref: Conservative)		1.69 (0.31)***	−0.28 (0.91)
Liberal Democrat (Ref: Conservative)		1.15 (0.59)*	1.61 (2.23)
Other (Ref: Conservative)		1.58 (0.62)**	3.96 (4.03)
MHP*Labour (Ref: Conservative)			1.00 (0.46)**
MHP*Lib Dem (Ref: Conservative)			−0.26 (0.95)
MHP*Other (Ref: Conservative)			−1.92 (2.26)
Male	−2.43 (0.69)***	−2.16 (0.70)***	−2.24 (0.71)***
Age	−0.03 (0.02)	−0.04 (0.02)**	−0.04 (0.02)**
Governing coalition	−0.06 (0.26)	−0.31 (0.39)	−0.17 (0.38)
East Midlands (Ref: East)	1.42 (0.36)***	0.97 (0.43)**	0.89 (0.40)**
London (Ref: East)	1.38 (1.04)	0.97 (1.19)	1.10 (1.16)
North East (Ref: East)	4.17 (1.40)***	3.11 (1.44)**	3.29 (1.50)**
North West (Ref: East)	4.52 (0.33)***	3.63 (0.40)***	3.54 (0.42)***
Scotland (Ref: East)	4.05 (1.21)***	2.74 (1.04)***	3.04 (0.82)***
South East (Ref: East)	1.80 (0.75)**	1.58 (0.76)**	1.81 (0.73)**
South West (Ref: East)	3.08 (0.72)***	2.47 (0.69)***	2.54 (0.70)***
Wales (Ref: East)	4.36 (1.41)***	3.17 (1.41)**	3.19 (1.53)**
West Midlands (Ref: East)	1.31 (0.63)**	0.80 (0.67)	0.80 (0.69)
Yorkshire and The Humber (Ref: East)	2.46 (0.36)***	1.70 (0.33)***	1.83 (0.32)***
log(Population density)	0.58 (0.21)***	0.46 (0.21)**	0.56 (0.22)**
Share born in the UK	−1.75 (7.55)	−2.11 (7.58)	−0.25 (7.63)
Share living in a owned house	3.35 (3.48)	5.19 (3.43)	4.58 (3.24)
Share without educational qualifications	−15.00 (9.39)	−13.98 (9.27)	−11.43 (9.61)
Share living in a detached house	−9.02 (5.35)*	−8.79 (5.06)*	−6.48 (4.67)
Unemployment rate	−52.06 (27.27)*	−46.81 (31.30)	−52.72 (30.94)*
Share with a high skilled occupation	−18.42 (8.96)**	−16.77 (8.83)*	−11.67 (7.85)
Share with routine occupations	29.83 (5.12)***	26.24 (5.81)***	25.27 (5.47)***
Share living in a one-person household	10.69 (7.67)	8.08 (7.02)	16.15 (6.71)**
Share living in a household with >2 persons	21.92 (10.42)**	17.86 (10.01)*	23.22 (10.73)**
Num. obs.	7013	7013	7013
R^2 (full model)	0.15	0.16	0.16
R^2 (proj model)	0.06	0.06	0.06
Num. groups: year	21	21	21

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Dependent variable: Share of text devoted to welfare. OLS-regression using year fixed effects. Standard errors clustered by government in parentheses.

K Using year-to-year changes in house prices

In the main analysis we for simplicity rely on house price levels. Yet, it is also possible to conduct the analysis using changes in house prices which we do in this appendix. Here, we have changed the main independent variable to year-to-year changes (in %). Thus, in model 1 in the table for supply we find that a one percent increase in the house price is associated with 0.14 percentage points more speak devoted to supply.

Table K1: Share of speech devoted to supply of housing and housing prices

	(1)	(2)	(3)
Change in house price (%)	0.14 (0.03)***	0.14 (0.03)***	0.06 (0.05)
Labour (Ref: Conservative)		−0.21 (0.52)	−0.88 (0.69)
Liberal Democrat (Ref: Conservative)		1.31 (0.41)***	0.78 (0.32)**
Other (Ref: Conservative)		0.12 (1.91)	−1.41 (2.69)
MHP*Labour (Ref: Conservative)			0.11 (0.06)**
MHP*Lib Dem (Ref: Conservative)			0.09 (0.05)*
MHP*Other (Ref: Conservative)			0.27 (0.17)
Male	0.34 (0.61)	0.15 (0.60)	0.15 (0.61)
Age	−0.03 (0.02)	−0.02 (0.02)	−0.02 (0.02)
Governing coalition	4.98 (0.41)***	4.98 (0.41)***	4.91 (0.44)***
East Midlands (Ref: East)	−0.28 (1.88)	−0.33 (1.75)	−0.32 (1.78)
London (Ref: East)	−0.39 (0.98)	−0.43 (1.05)	−0.47 (1.11)
North East (Ref: East)	−0.87 (0.87)	−0.67 (1.08)	−0.53 (1.08)
North West (Ref: East)	−1.59 (0.94)*	−1.72 (1.02)*	−1.67 (1.02)
Scotland (Ref: East)	−3.21 (0.67)***	−3.33 (1.17)***	−3.18 (1.09)***
South East (Ref: East)	−0.38 (1.37)	−0.44 (1.37)	−0.38 (1.40)
South West (Ref: East)	0.81 (0.90)	0.29 (0.90)	0.40 (0.96)
Wales (Ref: East)	−3.85 (0.91)***	−3.94 (0.87)***	−3.90 (0.82)***
West Midlands (Ref: East)	0.36 (0.84)	0.40 (0.78)	0.50 (0.79)
Yorkshire and The Humber (Ref: East)	3.21 (1.22)***	3.29 (1.16)***	3.41 (1.17)***
Num. obs.	6837	6837	6837
R^2 (full model)	0.13	0.13	0.13
R^2 (proj model)	0.06	0.06	0.06
Num. groups: year	20	20	20

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Dependent variable: Share of text devoted to supply of housing. OLS-regression using year fixed effects. Standard errors clustered by government session in parentheses.

Table K2: Share of speech devoted to demand of housing and housing prices

	(1)	(2)	(3)
Change in house price (%)	0.06 (0.02)***	0.06 (0.02)***	0.05 (0.03)*
Labour (Ref: Conservative)		0.86 (0.27)***	0.82 (0.36)**
Liberal Democrat (Ref: Conservative)		1.75 (0.45)***	1.83 (0.58)***
Other (Ref: Conservative)		−0.66 (0.73)	−2.02 (1.14)*
MHP*Labour (Ref: Conservative)			0.01 (0.04)
MHP*Lib Dem (Ref: Conservative)			−0.02 (0.06)
MHP*Other (Ref: Conservative)			0.26 (0.13)**
Male	−0.17 (0.22)	−0.10 (0.25)	−0.06 (0.25)
Age	−0.00 (0.01)	−0.01 (0.01)*	−0.01 (0.01)
Governing coalition	0.50 (0.45)	0.16 (0.30)	0.17 (0.32)
East Midlands (Ref: East)	−1.37 (0.66)**	−1.66 (0.65)**	−1.65 (0.65)**
London (Ref: East)	0.97 (0.72)	0.46 (0.72)	0.49 (0.74)
North East (Ref: East)	0.57 (0.79)	0.04 (0.88)	0.05 (0.88)
North West (Ref: East)	0.29 (0.36)	−0.30 (0.39)	−0.29 (0.41)
Scotland (Ref: East)	−2.14 (1.57)	−2.17 (1.12)*	−2.14 (0.91)**
South East (Ref: East)	−0.87 (0.55)	−0.95 (0.52)*	−0.95 (0.50)*
South West (Ref: East)	−0.15 (0.76)	−0.79 (0.88)	−0.75 (0.88)
Wales (Ref: East)	−1.78 (0.93)*	−2.27 (0.96)**	−2.33 (0.94)**
West Midlands (Ref: East)	0.10 (0.44)	−0.24 (0.37)	−0.22 (0.37)
Yorkshire and The Humber (Ref: East)	0.51 (0.34)	0.03 (0.41)	0.04 (0.41)
Num. obs.	6837	6837	6837
R^2 (full model)	0.08	0.09	0.09
R^2 (proj model)	0.01	0.02	0.02
Num. groups: year	20	20	20

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Dependent variable: Share of text devoted to demand of housing. OLS-regression using year fixed effects. Standard errors clustered by government in parentheses.

Table K3: Share of speech devoted to welfare and housing prices

	(1)	(2)	(3)
Change in house price (%)	0.03 (0.02)	0.03 (0.02)	0.01 (0.03)
Labour (Ref: Conservative)		3.17 (0.74)***	3.02 (0.92)***
Liberal Democrat (Ref: Conservative)		1.74 (0.43)***	1.38 (0.52)***
Other (Ref: Conservative)		2.14 (1.18)*	1.57 (0.72)**
MHP*Labour (Ref: Conservative)			0.02 (0.06)
MHP*Lib Dem (Ref: Conservative)			0.07 (0.09)
MHP*Other (Ref: Conservative)			0.10 (0.11)
Male	−3.16 (0.49)***	−2.40 (0.61)***	−2.41 (0.63)***
Age	−0.02 (0.02)	−0.05 (0.02)**	−0.04 (0.02)**
Governing coalition	0.05 (0.35)	−0.79 (0.46)*	−0.77 (0.48)
East Midlands (Ref: East)	1.37 (0.56)**	0.63 (0.71)	0.63 (0.70)
London (Ref: East)	2.86 (0.64)***	1.45 (0.87)*	1.47 (0.82)*
North East (Ref: East)	3.92 (1.72)**	1.80 (1.98)	1.80 (2.00)
North West (Ref: East)	4.45 (0.57)***	2.94 (0.81)***	2.95 (0.81)***
Scotland (Ref: East)	5.02 (0.44)***	3.13 (0.57)***	3.20 (0.48)***
South East (Ref: East)	1.65 (0.69)**	1.49 (0.67)**	1.50 (0.68)**
South West (Ref: East)	2.79 (0.97)***	2.30 (0.91)**	2.31 (0.90)**
Wales (Ref: East)	3.69 (2.21)*	1.71 (2.40)	1.81 (2.29)
West Midlands (Ref: East)	1.99 (0.76)***	0.87 (0.81)	0.88 (0.85)
Yorkshire and The Humber (Ref: East)	2.50 (0.63)***	0.78 (0.61)	0.81 (0.60)
Num. obs.	6837	6837	6837
R^2 (full model)	0.14	0.14	0.15
R^2 (proj model)	0.04	0.05	0.05
Num. groups: year	20	20	20

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Dependent variable: Share of text devoted to welfare. OLS-regression using year fixed effects. Standard errors clustered by government in parentheses.

L Vary number of words extracted to the dictionary

To ensure that the results are not driven by the number of words extracted to create the dictionaries, we replicate the results while extracting respectively 10, 25, and 100 words in the following analyses.

Table L1: Share of speech devoted to supply of housing and housing prices

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Median house price (GBP 100,000)	0.48***	0.52***	0.34	0.50***	0.55***	0.36	0.71***	0.72**	0.58
	(0.14)	(0.16)	(0.27)	(0.18)	(0.19)	(0.32)	(0.27)	(0.28)	(0.40)
Labour (Ref: Conservative)		0.51	−0.17		0.69	−0.03		0.44	−0.12
		(0.55)	(1.25)		(0.70)	(1.56)		(0.60)	(1.62)
Liberal Democrat (Ref: Conservative)		0.38	0.87		0.88**	1.27		1.47**	1.76
		(0.44)	(1.55)		(0.41)	(1.60)		(0.70)	(1.88)
Other (Ref: Conservative)		0.02	−2.93		0.58	−1.37		0.55	−3.20
		(1.38)	(2.31)		(1.52)	(2.50)		(1.56)	(3.52)
MHP*Labour (Ref: Conservative)			0.33			0.36			0.27
			(0.37)			(0.45)			(0.54)
MHP*Lib Dem (Ref: Conservative)			−0.29			−0.24			−0.19
			(0.76)			(0.86)			(0.76)
MHP*Other (Ref: Conservative)			1.94			1.24			2.50
			(1.22)			(1.17)			(1.56)
Number of words extracted	10	10	10	25	25	25	100	100	100
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Num. obs.	7339	7339	7339	7339	7339	7339	7339	7339	7339
R^2 (full model)	0.08	0.08	0.08	0.11	0.11	0.11	0.14	0.14	0.14
R^2 (proj model)	0.02	0.02	0.03	0.04	0.04	0.04	0.06	0.06	0.06
Num. groups: year	21	21	21	21	21	21	21	21	21

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Dependent variable: Share of text devoted to supply of housing. OLS-regression using year fixed effects.
Standard errors clustered by government in parentheses.

Table L2: Share of speech devoted to demand of housing and housing prices

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Median house price (GBP 100,000)	0.27	0.30*	0.04	0.40**	0.44**	0.07	0.45	0.47*	0.20
	(0.18)	(0.17)	(0.17)	(0.20)	(0.19)	(0.21)	(0.30)	(0.28)	(0.25)
Labour (Ref: Conservative)		0.64*	−0.34		0.77*	−0.59		0.72	−0.31
		(0.33)	(0.25)		(0.46)	(0.47)		(0.53)	(0.94)
Liberal Democrat (Ref: Conservative)		1.56***	1.38*		1.86***	1.26*		2.61***	2.86***
		(0.41)	(0.76)		(0.46)	(0.76)		(0.44)	(0.79)
Other (Ref: Conservative)		−0.09	−2.93**		−0.28	−3.17*		−0.10	−2.99
		(0.47)	(1.33)		(0.76)	(1.86)		(1.15)	(3.15)
MHP*Labour (Ref: Conservative)			0.49***			0.68***			0.52*
			(0.14)			(0.21)			(0.31)
MHP*Lib Dem (Ref: Conservative)			0.05			0.27			−0.18
			(0.25)			(0.26)			(0.48)
MHP*Other (Ref: Conservative)			1.81**			1.77*			1.84
			(0.71)			(0.99)			(1.44)
Number of words extracted	10	10	10	25	25	25	100	100	100
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Num. obs.	7339	7339	7339	7339	7339	7339	7339	7339	7339
R^2 (full model)	0.08	0.08	0.09	0.09	0.09	0.09	0.09	0.09	0.09
R^2 (proj model)	0.01	0.02	0.02	0.01	0.02	0.02	0.02	0.02	0.03
Num. groups: year	21	21	21	21	21	21	21	21	21

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Dependent variable: Share of text devoted to demand of housing. OLS-regression using year fixed effects.
Standard errors clustered by government in parentheses.

Table L3: Share of speech devoted to welfare and housing prices

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Median house price (GBP 100,000)	-0.47^{***}	-0.35^{***}	-0.48^{***}	-0.55^{***}	-0.39^{**}	-0.69^{***}	-0.43^{***}	-0.21	-0.72^{***}
	(0.13)	(0.13)	(0.13)	(0.19)	(0.19)	(0.17)	(0.16)	(0.17)	(0.21)
Labour (Ref: Conservative)		1.22^{***}	0.76		1.84^{***}	0.69		2.68^{***}	0.78
		(0.23)	(0.68)		(0.41)	(1.12)		(0.80)	(1.12)
Liberal Democrat (Ref: Conservative)		0.24	-0.11		0.60^{**}	0.34		1.66^{***}	0.63
		(0.20)	(1.08)		(0.28)	(1.35)		(0.58)	(2.10)
Other (Ref: Conservative)		0.83^{***}	2.89		1.50^{**}	4.29		2.51^{**}	5.42
		(0.29)	(2.67)		(0.65)	(4.42)		(1.13)	(4.94)
MHP*Labour (Ref: Conservative)			0.25			0.60			0.99^{***}
			(0.27)			(0.38)			(0.22)
MHP*Lib Dem (Ref: Conservative)			0.18			0.12			0.51
			(0.56)			(0.60)			(0.84)
MHP*Other (Ref: Conservative)			-1.48			-2.08			-2.29
			(1.56)			(2.50)			(2.61)
Number of words extracted	10	10	10	25	25	25	100	100	100
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Num. obs.	7339	7339	7339	7339	7339	7339	7339	7339	7339
R^2 (full model)	0.18	0.18	0.18	0.15	0.15	0.15	0.12	0.13	0.13
R^2 (proj model)	0.05	0.05	0.05	0.04	0.04	0.05	0.04	0.04	0.05
Num. groups: year	21	21	21	21	21	21	21	21	21

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Dependent variable: Share of text devoted to welfare. OLS-regression using year fixed effects. Standard errors clustered by government in parentheses.

M Vary number of tokens in text

In the main analysis we exclude paragraphs with less than 19 tokens (25th percentile), so the findings are not driven by very short pieces of text. Here, we show that the results are robust to alternative cut-offs (5, 10 and 30 tokens).

Table M1: Share of speech devoted to supply of housing and housing prices

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Median house price (GBP 100,000)	0.40*	0.48*	0.13	0.58**	0.61**	0.36	0.53*	0.56*	0.58
	(0.22)	(0.25)	(0.54)	(0.24)	(0.25)	(0.46)	(0.31)	(0.30)	(0.39)
Labour (Ref: Conservative)		1.29	−0.08		0.60	−0.35		0.44	0.50
		(1.09)	(2.44)		(0.92)	(2.10)		(0.71)	(1.66)
Liberal Democrat (Ref: Conservative)		2.17***	2.88**		1.63***	2.02		1.07	1.93
		(0.57)	(1.43)		(0.48)	(1.51)		(0.74)	(1.51)
Other (Ref: Conservative)		0.29	−4.48		0.68	−4.06		0.97	−3.70
		(1.86)	(4.05)		(1.88)	(4.58)		(1.55)	(2.97)
MHP*Labour (Ref: Conservative)			0.69			0.47			−0.06
			(0.69)			(0.59)			(0.53)
MHP*Lib Dem (Ref: Conservative)			−0.44			−0.26			−0.48
			(0.75)			(0.80)			(0.87)
MHP*Other (Ref: Conservative)			3.13			3.17			3.16*
			(1.93)			(2.28)			(1.72)
Minimum number of words	5	5	5	10	10	10	30	30	30
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Num. obs.	8880	8880	8880	8297	8297	8297	5706	5706	5706
R^2 (full model)	0.10	0.10	0.10	0.11	0.11	0.11	0.14	0.14	0.14
R^2 (proj model)	0.03	0.03	0.03	0.04	0.04	0.04	0.05	0.05	0.05
Num. groups: year	21	21	21	21	21	21	21	21	21

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Dependent variable: Share of text devoted to supply of housing. OLS-regression using year fixed effects.
Standard errors clustered by government in parentheses.

Table M2: Share of speech devoted to demand of housing and housing prices

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Median house price (GBP 100,000)	0.25	0.30	−0.13	0.27	0.30	−0.06	0.25	0.26	−0.04
	(0.25)	(0.25)	(0.19)	(0.23)	(0.22)	(0.19)	(0.25)	(0.26)	(0.22)
Labour (Ref: Conservative)		0.91**	−0.70		0.61	−0.72		0.34	−0.82
		(0.43)	(0.55)		(0.53)	(0.60)		(0.49)	(0.56)
Liberal Democrat (Ref: Conservative)		1.86***	1.54**		1.78***	1.46*		1.53***	2.51***
		(0.35)	(0.75)		(0.35)	(0.78)		(0.28)	(0.77)
Other (Ref: Conservative)		−0.12	−2.36		−0.30	−2.40		−0.56	−4.48*
		(0.82)	(1.74)		(0.84)	(1.85)		(1.04)	(2.34)
MHP*Labour (Ref: Conservative)			0.83***			0.68***			0.57**
			(0.24)			(0.26)			(0.22)
MHP*Lib Dem (Ref: Conservative)			0.12			0.12			−0.58
			(0.36)			(0.39)			(0.45)
MHP*Other (Ref: Conservative)			1.32*			1.26			2.49**
			(0.77)			(0.84)			(1.10)
Minimum number of words	5	5	5	10	10	10	30	30	30
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Num. obs.	8880	8880	8880	8297	8297	8297	5706	5706	5706
R^2 (full model)	0.07	0.07	0.07	0.07	0.08	0.08	0.10	0.10	0.10
R^2 (proj model)	0.01	0.02	0.02	0.01	0.02	0.02	0.02	0.02	0.02
Num. groups: year	21	21	21	21	21	21	21	21	21

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Dependent variable: Share of text devoted to demand of housing. OLS-regression using year fixed effects.
Standard errors clustered by government in parentheses.

Table M3: Share of speech devoted to welfare and housing prices

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Median house price (GBP 100,000)	-0.80^{***}	-0.55^{**}	-1.11^{**}	-0.65^{***}	-0.40^{**}	-0.96^{***}	-0.48^{***}	-0.20	-0.79^{***}
	(0.19)	(0.23)	(0.44)	(0.14)	(0.17)	(0.33)	(0.16)	(0.19)	(0.27)
Labour (Ref: Conservative)		2.98^{***}	0.88		2.80^{***}	0.70		3.37^{***}	1.21
		(0.54)	(1.37)		(0.60)	(1.37)		(0.66)	(1.24)
Liberal Democrat (Ref: Conservative)		2.44^{***}	1.33		1.88^{***}	1.63		1.91^{***}	1.01
		(0.50)	(2.08)		(0.54)	(2.15)		(0.47)	(1.68)
Other (Ref: Conservative)		1.85	3.03		2.63^{***}	5.08		2.37^{***}	3.36
		(1.39)	(4.18)		(0.95)	(3.52)		(0.79)	(4.21)
MHP*Labour (Ref: Conservative)			1.11^{**}			1.10^{**}			1.13^{***}
			(0.48)			(0.43)			(0.33)
MHP*Lib Dem (Ref: Conservative)			0.54			0.07			0.43
			(0.96)			(0.92)			(0.78)
MHP*Other (Ref: Conservative)			-1.15			-2.03			-0.97
			(1.99)			(1.82)			(2.30)
Minimum number of words	5	5	5	10	10	10	30	30	30
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Num. obs.	8880	8880	8880	8297	8297	8297	5706	5706	5706
R^2 (full model)	0.09	0.10	0.10	0.12	0.12	0.12	0.16	0.17	0.18
R^2 (proj model)	0.04	0.04	0.05	0.04	0.05	0.05	0.05	0.06	0.07
Num. groups: year	21	21	21	21	21	21	21	21	21

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Dependent variable: Share of text devoted to welfare. OLS-regression using year fixed effects. Standard errors clustered by government in parentheses.