

The housing crisis on social media: Housing markets and the subnational diversification of policy supply*

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Abstract

Political research shows an increasing interest in the political repercussions of subnational heterogeneity in housing markets. Whereas the effects on voters' preferences and behaviors receive increasing attention, effects on parties' policy supply remain understudied. Integrating theories of party competition with literatures on intra-party politics and dyadic representation, we argue that MPs in territorial representation systems seek to strategically diversify their housing policy supply in response to housing market contexts in the districts they represent. In doing so, MPs avoid 'direct confrontation' with their national parties and instead use 'selective emphasis': They do not openly oppose the party line but emphasize (tone down) their parties' stance where doing so is electorally (in)opportune. To test our argument, we study German MPs' housing-related policy communication on Twitter. Using a novel approach for legislator-level position and salience estimation in conjunction with original characterizations of local housing markets in terms of rent-to-income ratios and ownership rates, we find both cross-sectional and longitudinal evidence in support of our argument. Our findings deepen our understanding of the political effects of housing markets and highlight new research potentials for the study of representation and subnational party competition.

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Introduction

In recent years, political research has shown an increasing interest in the political effects of housing markets. As a growing body of literature shows, housing markets systematically structure and deepen economic inequalities (Ansell 2019). In large part, these inequalities rest on a twofold distinction of residents' position in the housing market. The first is *homeownership*. The second is residents' *geographic position* in the housing market. Jointly, homeownership and residential geography have severe, albeit heterogeneous economic effects. This is because local variation in house prices and rent levels has structurally different implications for homeowners and renters. For homeowners, living in a booming market implies an increase in asset wealth. Whereas house price appreciation in booming localities has significantly increased the wealth of residents, homeowners in static or stagnant markets have not benefited from these developments (e.g., Ansell et al. 2022; Baldenius, Kohl, and Schularick 2019). For renters, in contrast, living in a booming market implies surging rents. Unless matched with corresponding income gains, renters in booming markets, therefore, face risks of economic hardship and residential displacement (e.g., Abou-Chadi, Cohen, and Kurer, n.d.; Cohen, n.d.).

A booming literature in comparative political economy highlights the political effects of this subnational variation in housing markets on the *demand-side*. This research has linked individuals' exposure to local housing markets to incumbent support (Larsen et al. 2019), Brexit (Ansell and Adler 2019), populist party voting (Adler and Ansell 2019; Ansell et al. 2022), socio-economic policy preferences (Ansell 2014; André and Dewilde 2016) as well as issue-specific preferences for land use (Hankinson 2018), housing development (Marble and Nall 2021), and rent control (Cohen, n.d.). Whereas the importance of subnational heterogeneity in housing markets has thus widely entered the study of political preferences and behaviors, they have so far received little to no attention in *supply-side* studies. The few existing contributions on the supply-side of housing policy primarily showcase left-right differences along established economic policy domains in cross-national perspective (e.g., Kohl 2018; Beckmann 2019; Ansell, Broz, and Flaherty 2018).

As a result, we still have little insight into how parties navigate the considerable strategic challenges of politicizing the housing issue and diversifying their appeal in response to the considerable geo-economic disparities within national housing markets. This is particularly puzzling in light of the strategic incentives that parties and their candidates face in electoral systems that promote territorial representation (e.g., Wratil 2019). Such systems not only include countries with single-

member district legislatures, such as the UK House of Commons or the French *Assemblée*, but also mixed-member systems like Germany or proportional systems with small multi-member districts like Sweden. In addressing the increasing politicization of rent and housing policy, parties must react to geographical heterogeneity in market conditions, as these likely affect constituents’ preferences and salience attributions. Given that parties’ electorates typically include both renters and owners, as well as residents in booming and declining regions alike, parties must thus weigh conflicting priorities against one another when designing and communicating their electoral appeal. This begs the question of how parties tackle this strategic challenge.

In this paper, we study if and how members of parliament who compete for a personal mandate in electoral districts (“district competitors”) deviate from the line of their national party in response to local housing markets in their districts. Moving beyond existing work on dyadic representation, we incorporate insights from both salience and spatial theories of party competition (e.g., Downs 1957; Budge and Farlie 1983a; Meyer and Wagner 2017) to explicitly contrast two mechanisms by which district competitors can deviate from the party line. The first is a *positional response* to local conditions, whereby district competitors sacrifice party unity and emphasize divergent positions in a bid to attract local support. The second is an *emphasis-based response* to local conditions, whereby district competitors either emphasize or tone down their parties’ policies in response to local electoral incentives but neither oppose their party’s policies nor endorse competing policies.

We argue that district competitors will strategically opt for an *emphasis-based response* to local housing markets. This is due to the significant risks of electoral damage and deselection associated with direct confrontation with the national party, and amplified by the particular structure of issue competition over housing policy. The provision of affordable housing is a classical valence issue (cf. Stokes 1963): Parties generally agree on the goal but disagree on the preferred policy instruments for its pursuit. This policy disagreement runs along classical economic left-right differences: Whereas parties on the right generally advocate supply-side subsidies to stimulate private investments in a bid to increase the available housing stock, parties on the left propose state intervention policies such as rent control, public housing, and regulation of the real estate market. In light of this positional polarization, district competitors would face both electoral risks and intra-party criticism from their selectorate and their parliamentary group if they were to oppose their own parties positions or advocate a policy proposed by the opposing camp. Therefore, district competitors will instead strategically tone down the party line where the party’s positions may undermine their

electoral appeal, and emphasize the party line strongly where doing so is electorally opportune. The result is a synergy between parties and their district competitors: Both share a common interest in strategically diversifying their policy supply in response to subnational heterogeneity in housing markets in order to match local demands.

Empirically, our study focuses on Germany. Germany represents an ideal case for testing our argument for two reasons. First, it is a mixed-member proportional representation system in which the vast majority of MPs are district competitors. This not only includes roughly half of MPs who are directly elected as district representatives: The majority of MPs elected via state-level lists are concurrently unsuccessful district competitors. Secondly, Germany is a country with pronounced subnational differences in purchasing power, house prices, rent levels and ownership rates. Taken together, this represents an ideal case for testing our theory.

To test our argument, we use an innovative combination of data and measures. Following recent advances at the intersection of political communication and party politics (e.g., Vergeer, Hermans, and Sams 2013; Sältzer 2022), we use MPs’ communication on Twitter to estimate intra-party salience and preference heterogeneity. We apply a novel sequential approach for the concurrent estimation of legislator-level salience and position scores. This approach involves a supervised manual annotation effort, followed by the sequential application of the state-of-the-art transformer-based natural language processing technique BERT (Devlin et al. 2019) for the categorical classification of tweets to policy issues and positions-within-issues. We then apply hierarchical shrinkage estimators. These allow us to model variation in district competitors’ attention to, and positions on, housing policies as a function of district-level housing market characteristics. Here, we focus on two core parameters describing subnational housing markets. We use census-based homeownership rates and a novel measure of average rent loads based on rental prices from millions of georeferenced ads for rental objects along with administrative data on taxable incomes. Together, these two variables allow us to capture nuanced differences in district-level housing markets.

Using this rich data infrastructure, we present a series of empirical tests of our argument. First, we conduct a cross-sectional analysis of 528 tweeting district competitors in the 19th German *Bundestag* (2017-2021). We analyze within-party differences in salience and position scores as a function of ownership rates and rent-to-income ratios in incumbents’ electoral districts. Controlling for a host of likely confounders, we find evidence of increased salience and emphasis-based positional diversification in high-pressured housing markets. Overall, MPs overwhelmingly emphasize housing

policy in housing markets with low ownership rates and high rent-to-income ratios. This pertains to right-wing and left-wing MPs alike and is primarily driven by the dominance of debates about rent control policies. On this issue sub-domain, MPs of left-wing parties also engage in emphasis-based positional diversification: MPs in districts with high-pressured housing markets emphasize their parties' leftist housing policies considerably more than MPs in less pressured housing markets.

Secondly, we address concerns about selection bias through a longitudinal pre-post-analysis of 491 tweeting district competitors seeking election or re-election to the 20th German *Bundestag*. We leverage the exogenously timed verdict of the German Federal Constitutional Court on the five-year rent freeze introduced by the state government of Berlin in 2019, which was overturned by the court on April 15, 2021. This long-anticipated but suddenly released ruling just months before the Federal Election gave a sudden boost to debates about rent control. We find that pre-post differences in MPs' attention to rent control policies are particularly pronounced among MPs about to compete for a personal mandate in high rent-to-income districts.

Overall, our findings show that parties diversify their policy appeal through their district competitors' agency. District competitors follow rational incentives for emphasis-based policy diversification in their quest for dyadic representation. They thereby avert the risks associated with confrontational positional defections from their party line. Instead, they systematically emphasize their parties' policy stances where local housing markets press the issue onto the agenda and where politicizing it is electorally opportune. Understanding how subnational market contexts affect parties' policy supply is imperative for understanding the politicization of housing in political systems with territorial representation. Our findings extend existing insights into the political effects of housing markets by investigating the so far widely understudied supply-side of housing policy. Over and beyond these insights into the politicization of housing, our empirical strategy and findings highlight the need for new perspectives in the study of context-dependent voter behavior and in the study of subnational party competition and representation.

Theoretical framework

Strategic dilemmas of dyadic representation

Explanations of individual MP behavior in territorial representation systems typically assume that MPs are guided by self-interest (e.g., Depauw and Martin 2009; Kam 2009; Sieberer 2015). Ac-

according to *Competing Principals Theory* (Carey 2007), a legislator – the agent – acts on behalf of two principals at once: Their party as well as their constituents. While not always the case, the interests of the two principals may diverge.

This presents a strategic dilemma to national parties and their MPs alike. On the one hand, parties strive for internal unity with coherent policy positions (Cox and McCubbins 1993; Proksch and Slapin 2012; Sieberer 2006). Cox and McCubbins (2005), for instance, reason that a party's name acts as a brand whose reputation is better when its members are not internally divided. In contrast, the display of internal divisions negatively affects parties' electoral performance (Greene and Haber 2015; Kam 2009). Individual MPs' deviation from the party line would thus undermine such efforts and increase the risk of electoral punishment. As a result, parties' leadership incentivizes compliant behavior by offering selective benefits while sanctioning deviating behavior (e.g., Kam 2009; Krehbiel 2000; Sieberer 2006), e.g., by keeping deviant MPs off the parliamentary floor (Bäck and Debus 2018; Proksch and Slapin 2012). On the other hand, in territorial representation systems, MPs are incentivized to respond to the priorities and preferences of their constituents (Carey 2007). An MP is, thus, pressured to advocate policies that benefit their local constituents. This representation of local interests is also referred to as *dyadic representation* (e.g., Ansolabehere and Jones 2011; Hanretty, Lauderdale, and Vivyan 2017; Weissberg 1978).

The strategic dilemma is, thus, twofold. On the one hand, parties must toe the line between granting their individual MPs sufficient leeway to respond to their constituents' interests in order to score successes in local districts. At the same time, they must enforce sufficient compliance and unity as not to damage their image as a coherent national organization. On the other hand, parties' candidates must toe the line between catering for the interest of their local constituents and preserving a credible allegiance to their party. Whereas the former incentivizes candidates to build a personal platform (e.g., Campbell and Erzeel 2018; Gschwend and Zittel 2015; Vivyan and Wagner 2012), the latter mandates compliance in order to avoid risks of informal sanctions and future deselection (Baumann, Debus, and Klingelhöfer 2017; Hazan and Rahat 2006; Müller 2000).

The question if, why, and how MPs prioritize constituency representation over party unity has motivated a considerable body of research. Several studies have tested arguments about the link between MPs' responsiveness to constituency-level priorities and preferences. Some studies proxy constituency-level public opinion via election results or referendum votes (Schwarz, Traber, and Benoit 2017; Soroka, Penner, and Blidook 2009; Tzelgov and Olander 2018) or employ small-area

estimates based on georeferenced surveys (Hanretty, Lauderdale, and Vivyan 2017; Tausanovitch and Warshaw 2014). More often, however, studies focus on objective indicators of political, societal, or economic pressures like local unemployment rates, occupational compositions, or the ethnic diversity of the constituency (e.g., Baughman 2004; Herzog and Benoit 2015; Tzelgov and Olander 2018).

This diversity in proxies for constituency interests is equally reflected by the manifold outcomes that capture legislators' responsiveness to these. Next to generic measures of MPs' attention to their constituency, such as time spent on constituency service (e.g., Lancaster and Patterson 1990; Heitshusen, Young, and Wood 2005; Norris 1997; Wood and Young 1997) or parliamentary speeches with explicit references to MPs' constituencies (e.g., Fernandes, Leston-Bandeira, and Schwemmer 2018; Kellermann 2016; Martin 2011; Zittel, Nyhuis, and Baumann 2019), existing research emphasizes two central parameters that capture MPs' responsiveness to constituents' *substantive* demands: Saliency and positions.

With respect to *saliency*, existing research has analyzed how MPs emphasize specific policy issues in parliamentary speeches (e.g., Blidook and Matthew 2011; Soroka, Penner, and Blidook 2009) and in co-sponsorships of legislative bills (Baumann 2016; Däubler 2020). This allows researchers to draw conclusions about the relationship between *public policy priorities* and *MPs' issue emphases*. Concerning *positional responses*, research has studied revealed preferences from candidate surveys (Hirano et al. 2011; Umeda 2020), roll-call votes (e.g., Baughman 2004; Baumann, Debus, and Müller 2015; Hanretty, Lauderdale, and Vivyan 2017; Krimmel, Lax, and Phillips 2016), textual contents of parliamentary speeches (e.g., Baumann, Debus, and Müller 2015; Herzog and Benoit 2015; Schwarz, Traber, and Benoit 2017; Tzelgov and Olander 2018), and the participation in bill initiations (e.g., Baumann, Debus, and Müller 2015; Crisp et al. 2004; Hanretty, Lauderdale, and Vivyan 2017). These approaches allow researchers to analyze the link between *public policy preferences* and *MPs' issue positions*.

Whereas existing research has thus leveraged a variety of different data to capture *either* MPs' saliency attributions *or* their policy positions on specific research there is, to the best of our knowledge, no contribution that jointly analyzes issue positions *and* saliency attributions to study dyadic representation. However, as we argue in the following, examining positions and saliency at the same time is crucial to obtain a complete picture of an MP's strategic behavior in navigating the strategic dilemma of dyadic representation. Our argument reflects the increasing turn in the political

competition literature to study both salience and positions as important constitutive parameters of strategic behavior (e.g., Meguid 2005; Rovny and Polk 2020). Given that the benefits of integrating spatial theory and salience theory are widely appreciated in studying the strategic behavior of parties, we argue that doing so can be equally beneficial when studying the strategic behavior of individual MPs.

Emphasis-based and genuinely positional responses to constituency interests

While spatial theory (Downs 1957) and salience theory (Budge and Farlie 1983a, 1983b) agree that political actors seek to appeal to voters through competing programmatic offers, they differ distinctly in the presumed mechanics of party competition. Spatial theory views programmatic competition as a matter of ‘direct confrontation’ and thus presumes that parties take conflicting stances toward specific policies and policy goals. Salience theory, in contrast, presumes that programmatic competition is primarily a matter of ‘selective emphasis’: Rather than competing via conflicting stances, parties build their platform by emphasizing stances they endorse. Accordingly, opposition to policies and policy goals is at best rarely made explicit, and primarily communicated by *not* talking about them.

Salience and positions are, thus, not merely nominal parameters to describe party strategies. They constitute distinct mechanisms through which political actors can build distinguishable platforms and craft unique appeals. While these mechanisms are well theorized in the party competition literature (e.g., Dolezal et al. 2014; Meguid 2005), the theoretical value of distinguishing them has not yet been fully embraced at the intersection of the literatures on intra-party politics and dyadic representation. Here, variation in MPs’ issue attention and positions are vastly treated as alternative *measures* to capture responsiveness to constituents’ demands and less as distinct *mechanisms* of strategically responding to local voter demand.

We argue that explicitly distinguishing emphasis-based and genuine positional responses in studying how MPs’ react to constituency interest is of central importance. Much like parties can use either of the two mechanisms to craft their platform and build a unique appeal to their targeted electorate, individual MPs can employ either emphasis-based or positional strategies to craft a *personal* platform that appeals to their targeted *local* electorate. Distinguishing these two mechanisms is important because they yield very different implications with respect to the strategic dilemmas of dyadic representation outlined above.

A *positional response* means that MPs endorse policy stances that conflict with the party line. In other words, for a genuinely positional response, MPs seek ‘direct confrontation’ with their national party. This strategy generally implies the unity-representation trade-off outlined above and activates the strategic dilemmas of dyadic representation. MPs risk sanctions for deviant positioning and parties, conversely, cannot comfortably rely on the individual efforts of their MPs in order to diversify their appeal in response to subnational heterogeneity. This strategy is particularly risky when issue competition is polarized and parties’ issue ownership is high: A rift between MPs and their party is especially likely when MPs choose to advocate positions that their party directly opposes and that are strongly supported by its competitors.

An *emphasis-based response* to local demands, in contrast, allows both MPs and parties to circumvent the strategic dilemmas of dyadic representation. MPs can selectively emphasize those policies advocated by their party that are electorally opportune in their constituencies while toning down on those they suspect to be electorally harmful. Depending on the stringency of parties’ platforms, this response may come in one of two forms. When parties adopt “blurry” positions by advocating positionally ambiguous policies on one and the same issue, MPs can selectively pick the positionality of the issues they emphasize. For instance, MPs in districts with right-leaning (left-leaning) preferences can emphasize their parties’ rightist (leftist) policies. This kind of emphasis-based policy diversification (see Meyer and Wagner 2017) allows MPs to diverge positionally from their party line *without* opposing any of their party’s stances. When parties, in contrast, advocate unambiguous positions, MPs’ leeway for strategic maneuvering via emphasis-based responses is more limited: They can either emphasize their parties’ policies where these cater for local interests or tone them down where they conflict with local interests. For instance, if an MP’s party advocates unambiguously leftist policies on an issue, the MP can only craft an idiosyncratic platform by choosing how strongly, if at all, they express support for these policies.

In the following, we apply this framework to our case study of MPs’ strategic responses to district-level housing markets in Germany. Toward this end, we first contextualize the framework with respect to the electoral system, subnational housing market heterogeneity, and party competition on housing in Germany. We then proceed to derive specific theoretical expectations about the effects of housing markets on MPs’ policy strategies.

Contextualizing the argument: Housing markets and the politicization of housing policy in Germany

The institutional context

Germany is a mixed-member electoral system that strongly promotes territorial representation (for details, see Saalfeld 2005). Citizens get to cast two votes: The first vote (*Erststimme*) is for a candidate competing for a direct mandate in one of the 299 federal electoral districts. The second vote (*Zweitstimme*) is for a party list at the state level. Half of the seats in parliament is reserved for directly elected district candidates, who win their seats by a plurality of first votes in their district. The other half is filled with candidates from parties' closed state-level lists. Eventually, party groups in parliament should reflect proportionality in two regards: First, each party's total number of seats should reflect their total share of second votes relative to all other parties in parliament. Secondly, the state-level composition of each party group should reflect the share of second votes won in each of the 16 states.¹

District candidates are nominated by local party selectorates, comprised of members of the parties' county chapters within each electoral district. List candidates, in contrast, are selected and ranked by state-level selectorates (usually, the delegates to state-level party conventions). In practice, most elected MPs contest for both a direct mandate in an electoral district *and* a list mandate within a state. Therefore, even those MPs elected to the *Bundestag* via the state list typically compete in a specific electoral district, in which they often seek renomination even in case of previously unsuccessful bids for a direct mandate.

Per these institutional characteristics, district competitors among German MPs face up to five competing principals at three different levels. At the national level, the party leadership as well as the party's parliamentary group in the federal parliament act as principals. At the level of the state, it is the state party, whose delegates form the state-level selectorate. Lastly, at the level of their electoral district, MPs face principals in their local constituents and county-level selectorates. District winners and runner-ups with realistic chances of winning a future direct mandate in their districts face obvious electoral incentives to respond to their local constituents. However, even

¹In practice, large parties typically win more direct mandates in their stronghold states than would be allocated to them according to these proportionality rules. As a result, additional list candidates obtain seats in parliament until both types of proportionality are restored. Therefore, the number of MPs in the German *Bundestag* can grow far beyond the initial number of 598.

district competitors without realistic chances of winning a direct mandate are encouraged to do so. German MPs are generally entitled to a district office (*Wahlkreisbüro*). Successful and unsuccessful district competitors alike maintain these offices to act as local ambassadors of their parties and to signal to local constituents that their interests are heard by the parties' groups in the national parliament.

Existing research shows that in spite of historically strong compliance with party whips in legislative votes in the *Bundestag*, this prominent role of local principals incentivizes directly elected MPs to build a personal platform, particularly in their public communication (Proksch and Slapin 2012; Gschwend and Zittel 2015; Baumann, Debus, and Müller 2015). Among other things, this is evidenced by them taking more critical stances toward the national party leadership (Sieberer 2010, 2015; Bäck and Debus 2016).

The market context

Germany is well-known for its pronounced geo-economic heterogeneity. While part of this heterogeneity can be attributed to the economic path dependencies of state socialism in the former German Democratic Republic (e.g., Alesina and Fuchs-Schündeln 2007), there is also considerable intra-regional heterogeneity within the country's East and West. Germany's geo-economic heterogeneity is reflected in both housing markets and income levels. Across Germany's 299 electoral districts, the average annual per-capita income ranges from 30800 EUR to 68600 EUR, with a mean of 40700 EUR. Median market rents vary from as low as 4.66 EUR/sqm to as high as 21.69 EUR/sqm, with a mean of 8.81 EUR/sqm.² Unsurprisingly, income and rent levels are strongly correlated: At $\rho = 0.71$, higher square meter rents tend to go hand in hand with higher incomes.

While this correlation is sizable, it is, however, far from perfect. This indicates that there are considerable deviations from the general relationship: In some districts, higher housing costs for renters (and greater real estate wealth for homeowners, respectively) are less stringently met with higher incomes than in others. To account for this, we combine information on market rents and average taxable incomes to construct a *rent-to-income ratio*. With some simplifying assumptions about the average home size per capita and the average percentage of taxes and social security contributions, this allows us to express average district-level rent installments as the proportion of disposable income.

²Median market rents have a near-perfect correlation with median market house prices.

Fig. 1 shows the geographical distribution of both rent-to-incomes ratios (left) and homeownership rates (right) at the level of the electoral districts for the 2021 Federal Election.³ In each of these plots, white-shaded regions represent values at the district-level average. Shades of orange indicate above-average values whereas shades of blue represent below-average values. The stronger the opacity of these shadings, the farther the values exceed and fall below the district-level average, respectively.

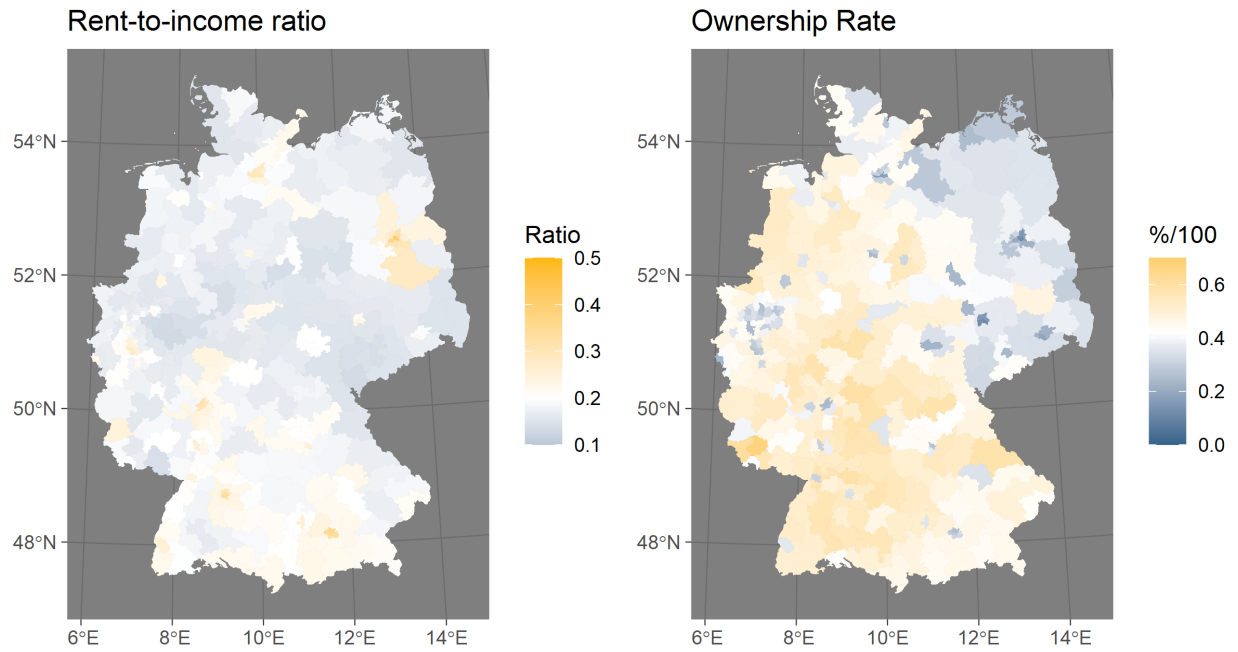


Figure 1: Rent-to-income ratios (left) and homeownership rates (right) at the level of the 2021 Federal Election districts.

As we can see, there is notable subnational heterogeneity in both parameters describing district-level housing markets. Rent-to-income ratios, on the other hand, range from 13.03% to 41.49%, with a district-level mean of 19.95%. Ownership rates, on the other hand, range from 9.85% to 67.42%, with a district-level mean of 41.92%. Both housing market characteristics are correlated at $\rho = -0.46$. Specifically, high rent-to-income ratios and low homeownership rates tend to coincide

³Details about the data are given in the Empirical Strategy section of this paper.

in many cities and metropolitan areas. Districts in the highest decile of rent-to-income ratios are almost exclusively concentrated in districts with below-average ownership rates. For districts with low rent-to-income ratios, in contrast, we see a more ambiguous picture: Here, homeownership rates range across the entire distribution, from below 20% to over 60%. This shows that overall, homeownership and rent-to-income ratios, albeit correlated, are cross-cutting phenomena in the German housing market. As a result, district competitors must take both parameters into account when strategically diversifying their appeals to local constituents.

The political-competitive context

To understand how individual MPs strategically politicize housing policy, we must first understand where national parties stand on this issue. For detailed insights into this matter, Fig. 2 presents our own codings of party positions based on their 2021 Federal Election manifestos. We have included distinct policy proposals as long as they were mentioned at least once in any of the manifestos of the six major parties. We have grouped these into six policy sub-domains according to their primary policy goals: (1) Incentivization of construction, (2) facilitation of acquisitions of private homes, (3) Curbing realty sector speculation, (4) promotion of public and non-profit housing, (5) rent control and tenant protection, and (6) expropriation of large real estate firms. Of these six sub-domains, categories (1) and (2) can be subsumed as supply-side subsidies: Policies that aim at increasing the housing stock. Categories (3) through (6), on the other hand, advocate market-regulating state intervention that aims at preventing further spikes in rent levels and house and property prices.

In Fig. 2, light-shaded (yellow) cells indicate that a party’s manifesto expresses support for a specific policy. Dark-shaded (purple) cells, conversely, indicate that a party expresses opposition. White cells imply that parties have not mentioned the policy. As we can see from the figure, the political competition over housing policy in Germany follows a particular logic. First, parties place selective *positive* emphasis on specific policy sub-domains to define their platform. Right-wing parties – AfD, CDU/CSU, and FDP – almost exclusively take positive stances toward supply-side subsidies. Left-wing parties – Greens, Left, and SPD – primarily take positive stances toward market regulation, with the exception of occasional advocacy for facilitating the first-time acquisition of private homes among Greens and SPD. In contrast, parties rarely seek ‘direct confrontation’ on the respective other camps’ preferred sub-domains. The only exceptions include preferences for increased housing allowances in place of subsidized housing among FDP and AfD, the FDP’s op-

position to expropriation, and all right-wing parties’ opposition to direct regulation of tight rental markets.

Theoretical expectations

Our preceding discussions have established that the institutional context in Germany strongly incentivizes dyadic territorial representation among the vast majority of German MPs – namely all those who competed or seek to compete for a direct mandate in one of the 299 electoral districts. Stark subnational differences in housing markets provide considerable incentives for MPs to diversify the national parties’ appeal with respect to housing policy in response to local conditions. Such attempts to diversify housing policy unfold in a context of issue competition that is highly polarized along classical economic left-right divided and where parties primarily define their platform through selective emphasis on the policies they endorse: Right-wing parties strongly support supply-side subsidies, whereas left-wing parties strongly support market regulation. These scope conditions allow us to formulate context-sensitive hypotheses about the subnational politicization of housing policy in Germany in response to district-level housing markets.

The main thrust of our argument is that *emphasis-based responses* minimize the risks and maximize the benefits of subnational policy diversification. This should particularly apply in the case we study, where national issue competition is polarized. Even though parties rarely explicitly take opposing stances on the policies advocated by competitors on the opposite side of the political spectrum, the strong ownership of supply-side subsidies among right-wing parties and of market regulation among left-wing parties increases the potential costs of adopting policies of the opposing camp. For the most part, parties’ issue positions are thus vastly unambiguous: Right-wing parties explicitly support supply-side subsidies and oppose market regulation. Left-wing parties, in contrast, explicitly support market regulation; if anything, their stances on supply-side subsidies are malleable. Given this, we should expect policy diversification to be *positionally invariant*: MPs are clearly discouraged to seek ‘direct confrontation’ with their national party. If anything, they will engage in emphasis-based policy diversification.

In terms of the drivers of subnational policy diversification, we focus on the differential effects of high rent-to-income ratios in high and low-ownership districts, respectively. On average, high rent-to-income ratios have different implications for renters and homeowners. For renters, they signify disproportionately deep cuts into their disposable incomes and, thus, a reduction in discretionary

incomes. For homeowners, in stark contrast, they signify that the value of their asset is disproportionately high in relation to local income levels. High rent-to-incomes ratios, therefore, carry significant, albeit structurally different economic consequences for renters and homeowners. Low rent-to-income ratios, in contrast, attenuate the economic consequences for renters and homeowners alike: Expenditures on housing do not cut deep into renters' pocketbooks and homeowners' residences remain assets of limited value.

Higher rent-to-income ratios therefore imply greater economic stakes for local constituents, and thus, greater electoral incentives for MPs to cater for constituents' interests. We expect MPs to follow these incentives more where homeownership rates are lower. This is because both housing policy sub-domains – market regulation and supply-side subsidies – undermine homeowners' interest: They either directly regulate prices, or indirectly do so by increasing the supply of housing. In homeowner-majority districts, MPs can therefore best cater for the median voters' interests by *not* advocating active housing policies at all. Therefore, we expect that the higher district-level rent-to-income ratios, the more will MPs representing districts with low homeownership rates emphasize housing policy. Furthermore, we expect that in doing so, MPs avoid 'direct confrontation' with their party: Left-wing MPs will increase their emphasis on 'leftist' market regulation whereas right-wing MPs will increase their emphasis on 'rightist' supply-side subsidies. As a corollary, we expect that *positional diversification* will be a mere artifact of intra-party variation in MPs' selective emphasis on their parties' trademark policy positions.



Figure 2: Party position on multi-dimensional rent and housing policies. Own codings based on parties' 2021 federal election manifestos.

Empirical Strategy

Legislator-level salience and position scores: A framework for prediction and inference

To obtain legislator-level salience and position scores on housing policy, we use a full corpus of over two million tweets from social media statements that are increasingly used to measure MPs’ policy positions (e.g., Ceron 2017; Sältzer 2022; Castanho Silva and Proksch 2021) or attention to specific issues (Peeters, Van Aelst, and Praet 2021; Castanho Silva and Proksch 2021). As one of the leading social media platforms, Twitter is an optimal resource for mining political texts. A high proportion of politicians actively use Twitter to share their often rather unfiltered communication with the public which makes Twitter a unique source of political discourse. Even though social media communication is not completely free of institutional constraints (Graham, Jackson, and Broersma 2016; Marland and Wagner 2020), the impact of party leaders on MPs’ behavior is much weaker on social media platforms than in the parliamentary arena, e.g., on roll-call votes or speeches (Peeters, Van Aelst, and Praet 2021). Unlike parliamentary speech, social media statements are often spontaneous and unsolicited expressions and therefore reflect true intra-party heterogeneity better (Schober et al. 2015).

For our estimation of legislator-specific housing salience and position scores, we proceed in three steps. The first two steps sequentially apply supervised transformer-based classification methods to selected corpora of Tweets from German MPs. Specifically, we use Bidirectional Encoder Representations from Transformers (BERT) (Devlin et al. 2019), a powerful machine learning method that captures semantic contexts of textual statements, including short statements like tweets. Unlike “classical” approaches to topic modeling, BERT processes text as a whole instead of working with a bag-of-words approach. This allows it to learn the context of a single word based on its bidirectional surroundings (Vaswani et al. 2017). Thereby, it respects the order of words and additionally builds on word embeddings which can relate semantically similar words with each other. Another important aspect of transformers is the possibility to pre-train and fine-tune the classifier. During pre-training, a model is fed huge corpora of data from a variety of sources (e.g., Wikipedia, Twitter, or books). Thus, a model pre-trained on Twitter data already initializes BERT with important lingual characteristics which are specific to the platform (e.g., vocabulary, grammar, and slang).

Fine-tuning then covers the adaption to the task at hand by optimizing these parameters using annotated housing tweets.

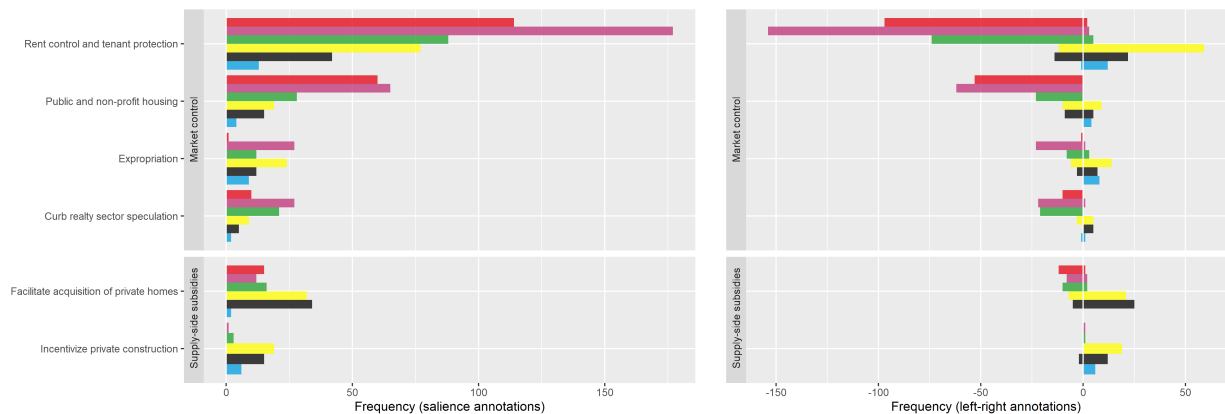


Figure 3: Multicategorical annotations of 1200 pre-filtered tweets of German MPs, January 2017 - September 2021. Counts of issue-specific categories (left) and issue-specific positions-within-categories (right).

In the first step of our sequential approach, we provided multicategorical manual annotations for a sample of tweets sent by German MPs. Tweets were pre-filtered based on a minimal dictionary approach: We randomly sampled 1200 tweets containing the word stubs *miet* (“rent”) or *wohn* (“liv”/“hous”), which were sent between January 1, 2017, and September 30, 2021. After filtering out false positives (e.g., *Mietwagen*, “rental car”), we obtained 907 housing-related tweets, which we annotated according to the scheme previously introduced in Fig. 2. As communication on several sub-domains of the housing issue is scarce, we grouped the six initial sub-domains into two broader domains by subsuming rent control and tenant protection, public and non-profit housing, expropriation, and curbing realty sector speculation under a joint category “market control”, while subsuming facilitating the acquisition of private homes and incentivizing construction under a joint category named “supply-side subsidies”. Based on these manual annotations, whose party-specific frequencies are shown on the left-hand side of Fig. 3, we then ran the pre-trained and fine-tuned BERT to classify tweets as discussing (1) market control policies, (2) supply-side subsidies, (3) both, or (4) neither on the full corpora of tweets selected for each of our two studies (see below).

In the second step, we then provided multicategorical annotations of positions within each policy subdomain. Tweets were annotated as either advocating a leftist (-1) or rightist (+1) stance on each policy, with a neutral category (0) capturing generic, non-positional mentions of each policy domain. The right-hand side of Fig. 3 shows the frequencies of the positional annotations by party.

We then used these manual annotations on all tweets classified as belonging to categories (1), (2), or (3) in the previous step to predict the positionality of each tweet on market control, supply-side subsidies, or both.

These first two steps yield discrete predictions of the number of tweets belonging to each of the two policy domains, as well as the number of tweets taking either a leftist or rightist stance on each of the two policy domains for each individual legislator. Based on this information – i.e., discrete information on the number of tweets classified as belonging or not belonging to a given policy domain and position – the third step of our approach then uses hierarchical models with legislator- and district-level random effects for prediction and inference. Hierarchical random-effects models are a well-known and versatile tool for prediction and inference on latent “upper-level” outcomes (e.g., Gelman 2005; Gelman and Hill 2007). In our case, that means that we can model latent legislator-level quantities such as salience and position scores as a function of “lower-level” observable outcomes, i.e., our discrete predictions of tweets nested within each legislator.

We use these hierarchical models for prediction *and* inference: We model the systematic component as a function of legislator-level and district-level covariates (which we detail below). Additionally, we retrieve legislator-specific estimates of salience and position scores as an additive function of the conditional means estimated per the systematic component and legislator- and district-level random deviations from these. These random-effects are characterized by the so-called shrinkage property (Gelman and Hill 2007). Random deviations for legislators and districts with a large number of data points meaningfully capture latent idiosyncrasies of specific legislators or districts, and may thus add decisively to the predicted position and salience scores. In contrast, for legislators and districts with few data points, the random deviations are shrunk towards zero. Thus, their predicted scores rely heavily on the systematic component and hardly on the latent idiosyncrasies of specific legislators or districts. This allows us to derive meaningful legislator-level predictions, balancing systematic information from the model covariates and latent information from the random effects, even for MPs with few (housing-related) tweets.

All of our predictors are measured at the levels of legislators and districts – not at the level of single tweets. We therefore devise upper-level models by encoding a frequency-weighted log-likelihood at the legislator level. We implement and estimate these models in Stan, a highly flexible platform for custom statistical modeling and high-performance statistical computation using fully Bayesian inference. When modeling *salience scores*, we use hierarchical logistical specifications to model

legislator-level proportions of domain-specific tweets. We apply this to housing policy in general (combining tweets on market control and supply-side subsidies) and to each of the two policy sub-domains separately. When modeling *positions*, we follow the same approach but estimate bivariate hierarchical logistic models, where the proportion of left and right tweets on each policy domain is estimated jointly with legislator-level random effects correlated across both equations. Following Lowe et al. (2011), we then retrieve log-ratio scores by subtracting the log of the predicted percentage of left tweets from the log of the predicted percentage of right tweets for each legislator.

Predictors

District-level housing markets

We characterize district-level housing markets in terms of two theoretically relevant parameters previously shown in Fig. 1: The rent-to-income ratio as a measure of the costs of housing relative to purchasing power and the ownership rate. To construct the rent-to-income ratio, we use two primary data sources. First, we use original aggregations of rental market statistics from the *RWI-GEO-RED: Real Estate Data Scientific Use File* (RWI; ImmobilienScout24 2021a, 2021b).⁴ This data collection provides detailed information on millions of georeferenced rental objects (apartments and houses) advertised on *ImmobilienScout24*. Focusing on ads for both rental apartments and rental houses posted between January 2020 and June 2021 (the most recent month included in the data), we map each ad onto its district and extract the district-level median *base rent per square meter*.

Secondly, we retrieve official municipal-level statistics on taxable income and the number of inhabitants from the German *Regionaldatenbank*, a platform operated by the Federal Statistical Office and the Statistical Offices of the Federal States. We use the most recent available data, which is from 2017. We take the ratio of these two variables to obtain the average taxable income per capita, map municipalities onto electoral districts using an official correspondence sheet of municipalities to electoral districts (*Wahlkreise und zugeordnete Gemeinden*) provided by the Federal Election Commissioner (*Bundeswahlleiter*), and take population-weighted averages at the district level.

The rent-to-income ratio indicates the hypothetical proportion of disposable income spent on monthly rent installments for an individual whose taxable income corresponds to the district-

⁴The scientific use files are free for academic use and made available by the data provider upon signing a data use agreement. For details, visit the web site of the [FDZ Ruhr am RWI](#).

level average and whose rent corresponds to the district-level median. To derive this measure, we invoke two simplifying assumptions: We assume that the living space per capita equals the 2020 nationwide average of 47.4 sqm and that the percentage of deductions from individuals' taxable income corresponds to the 2020 average of 38.9%.

Our measure of district-level ownership rates is based on data from the 2011 German Census. The census provides detailed levels on the number of housing units in different categories at the level of hectare grids. We map grid cells onto electoral districts, aggregate the number of housing units per category within electoral districts, and take the ratio of owner-occupied units to owner- and renter-occupied units to derive the ownership rate.

Additional covariates

Our analyses adjust for a selection of relevant confounders. The first and most important one is MPs' *party membership*. Since we are interested in legislators' deviations from the party line, the use of party-fixed effects ensures that we analyze within-party relationships. The second set of confounders is whether MPs serve in an *issue-specific role* within parliament or within their party group that prompts them to discuss housing more extensively. The first is membership in the parliamentary committee for Construction, Housing, and Urban and Municipal Development during the 2017-2021 legislative period, information which we retrieved from the website of the German *Bundestag*. We distinguish (1) MPs in leading roles in the committee (chair, vice chair, or ombudsperson), (2) committee members, (3) deputy committee members, and (4) non-members. The second role is that of the issue-specific spokesperson of the parliamentary group. Here, we searched the websites of parliamentary groups to identify each party group's speaker for relevant issues such as housing, construction, and development. The third likely confounder is whether a district competitor won the *direct mandate* in their electoral districts. Even though district competitors elected via state lists often seek renomination in their electoral districts, directly elected MPs will likely be under greater scrutiny from their constituents and district-level selectorates to respond to constituents' demands. Lastly, we control whether MPs' electoral district is in the former *East or West* of Germany to account for structural differences in public salience attributions and preferences on socio-economic issues between the two regions.

Table 1: Tweeting district competitors among the members of the 19th German Bundestag.

Party	MPs	Tweeting district competitors	Directly elected
AFD	87	70	2
CDU/CSU	245	144	136
FDP	80	75	0
GRÜNE	67	64	1
LINKE	69	56	5
SPD	152	119	46
NONE	9	NA	NA
Total	709	528	190

Preliminary findings

Study 1: Cross-sectional evidence

Study 1 focuses on cross-sectional differences in MPs’ housing-related communication on Twitter. We include all district competitors in the 19th German *Bundestag* with an active account on Twitter and analyze all tweets sent between January 1, 2018, and September 26, 2021, the election day for the next German Bundestag. We do not include the early weeks after the constitution of the 19th *Bundestag* in late 2017 because MPs’ committee memberships were still undetermined during this period. An overview of the accounts included in our analysis can be found in Table 1.

Prediction

Fig. 4 shows posterior medians and 95% credible intervals of the predicted salience scores (along the y -axis) and position scores (along the x -axis) for all 528 MPs included in our sample. Predictions are colored by party membership, exceptional predictions are labeled with MPs’ names. The spokespersons of parties’ parliamentary groups are marked with an asterisk. The left-hand side of the plot shows MPs’ platforms on housing overall, the center shows their platforms on market regulation, and the right-hand side shows their platforms on supply-side subsidies. As we can see, credible intervals on MPs’ positions tend to become narrower with increasing salience scores: With more statements on housing policy per MP, our model can pinpoint MPs’ positions with greater certainty.

Market regulation and supply-side subsidies attract unequal attention: Whereas MPs, on average, talk about market regulation in 0.96% of their tweets, they talk about supply-side subsidies in merely 0.1% of their tweets. As a result, MPs’ overall salience and position scores, shown on the

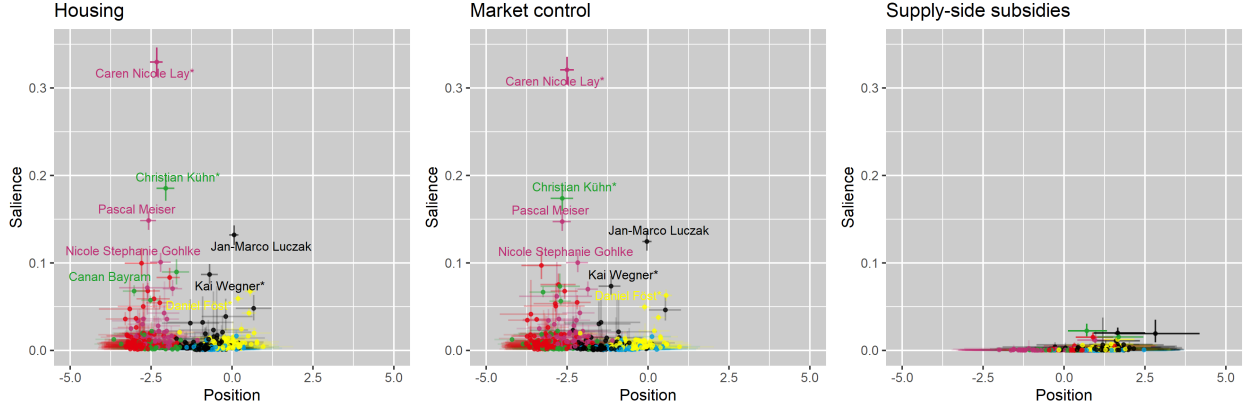


Figure 4: Predicted legislator-level salience and position scores. Posterior medians and 95% credible intervals. Spokespersons are marked with an asterisk (*).

left-hand side, are primarily determined by their platforms on market regulation. Over and beyond these averages, we see considerable idiosyncratic variation in MPs' housing-related communication on Twitter. Among others, the spokespersons of the parties' parliamentary groups stand out. For instance, Caren Lay (Left Party), spokesperson for rent, construction and housing policy of her parliamentary group, covers housing-related topics in 33.0 (31.3, 34.6)% of her tweets. For both market regulation and supply-side subsidies, we see clear left-right divides. On market regulation, social democratic, green, and left MPs are tightly clustered on the left of the spectrum, followed by CDU/CSU, AfD, and FDP with mean positions of -1.42, -0.8, and -0.34, respectively. Conversely, on supply-side subsidies, MPs of AfD, CDU/CSU, and FDP are clustered on the right, with the SPD, Greens, and Left Party to their left with mean positions of 0.49, 0.36, and -0.82, respectively.

Inference

Overall intra-party differences In a first step, we approach the question of how district-level housing markets affect MPs' personal housing-policy platforms by pooling within-party effects across all parties. This allows us to draw broad, general conclusions about the politicization of housing and the strategic diversification of housing policy supply in Germany. We first model MPs' *attention* to housing policy as a function of the housing market characteristics of their districts. Toward this end, we assess the *conditional expected value* of issue salience over the joint distribution of the rent-to-income ratio and ownership rates. These results are shown on the left-hand side of Fig. 5. As we can see, in line with our expectations, MPs in high rent-to-income, low-ownership districts emphasize housing policy more strongly than otherwise comparable MPs of the same party.

MPs in such districts dedicate 0.09 (0.04, 0.23)% of their tweets to housing. This more than six times as much as among MPs in low rent-to-income, low-ownership districts (0.06 (0.02, 0.15)%) and among MPs in low rent-to-income, high-ownership districts (0.04 (0.02, 0.07)%).

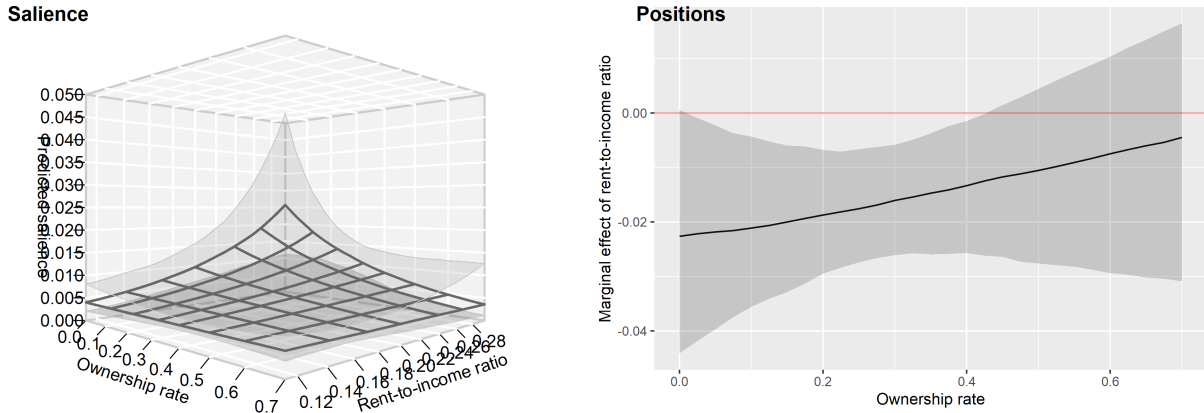


Figure 5: MPs' housing policy platforms as a function of district-level housing markets. Left: Conditional expected values of housing policy salience as a joint function of rent-to-income ratios and ownership rates. Right: Marginal effects of rent-to-income ratios on MPs' housing policy positions, conditional on district-level ownership rates. Posterior medians and 95% credible intervals.

Next, we turn to the question if such high-pressured housing markets also prompt positional responses among MPs. For this, we report the *conditional marginal effect* of rent-to-income ratios along the value range of district-level distribution of ownership rates on the right-hand side of Fig. 5. This allows us to assess if – and where – higher rent-to-income ratios predict MP position-taking that deviates from otherwise comparable MPs of the same party. As we can see, this is, indeed, the case: Whereas rent-to-income ratios have hardly any effect in high-ownership districts, they predict deviating positions to the left of the party average in low-ownership districts. In districts with an ownership rate of 25, for instance, a 10 percentage point rent-to-income ratio difference between two MPs of the same party would result in a -0.18 (-0.27, -0.07) point positional difference.

Strategic left and right-wing responses on policy sub-domains While the findings above show that high-pressured housing markets not only result in greater attention to housing but also predict positional differentiation between MPs, they do not elucidate the underlying mechanisms. Specifically, positional differentiation may be an artifact of selective emphasis or indicative of genuine positional deviations. To address this question, we now investigate the strategic responses of left-wing and right-wing MPs on both 'leftist' market control policies and 'rightist' supply-side subsidies. As we can already infer from Fig. 4, right-wing MPs emphasize market control

policies (which their parties oppose) more strongly than supply-side subsidies (which their parties support). This begs the question if right-wing MPs risk ‘direct confrontation’ with their party line and endorse left-wing positions in districts with high-pressured housing markets in order to appeal to local constituents.

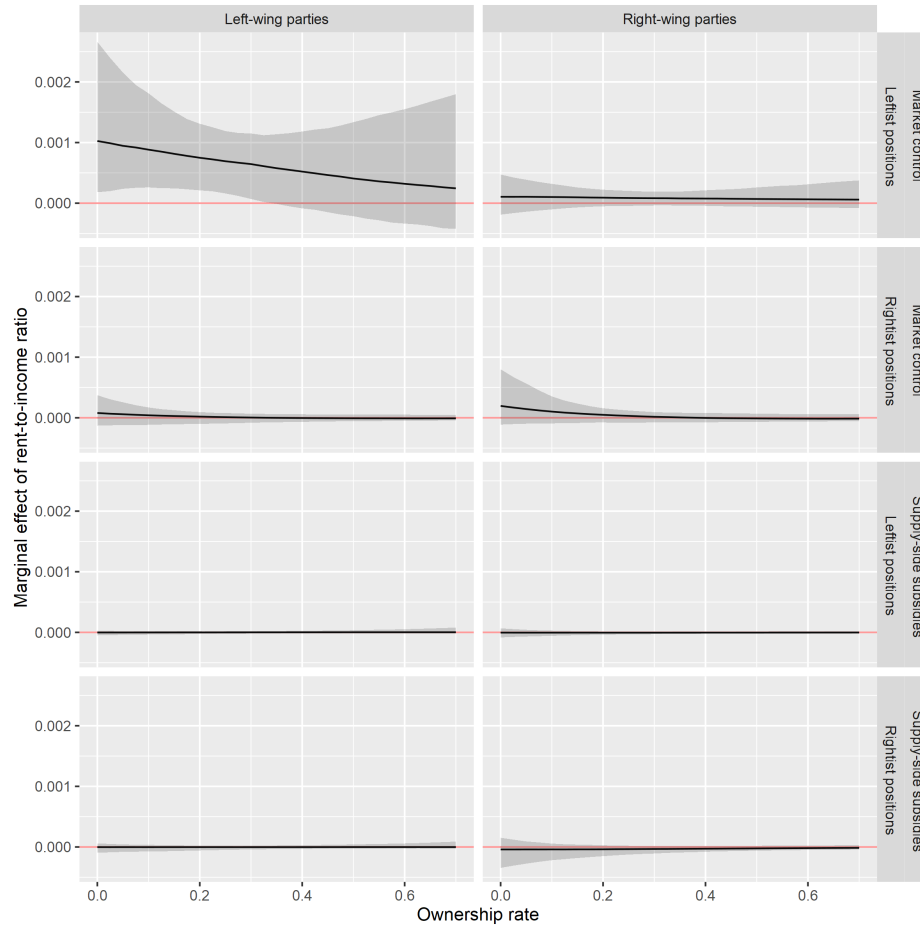


Figure 6: Marginal effect of rent-to-income ratios on selective emphases, conditional on district-level ownership rates. Estimates by policy domains and positionality (rows) as well as parties (columns). Posterior medians and 95% credible intervals.

Fig. 6 shows that this is not the case. Right-wing MPs do not adopt left-wing stances on market control in response to higher rent-to-income ratios, irrespective of homeownership rates. Their positions do not systematically depend on rent-to-income ratios on either of the two policy domains. Instead, we learn that the left-shifting effect of rent-to-income ratios on intra-party policy positions from the pooled findings in Fig. 5 is entirely driven by left-wing MPs’ positions on market regulation (as shown in the upper left of Fig. 6). Whereas left-wing MPs place invariably little to no emphasis on rightist positions toward market control, they strategically communicate leftist positions: Left-

wing MPs in high-pressured low-ownership, high-rent-to-income districts endorse their parties' core housing policies much more forcefully than their counterparts in districts with less pressured housing markets. They therefore *appear* more left-wing than their counterparts, albeit neither systematically endorses policies that contradict their parties' platforms.

These findings are fully in line with the *emphasis-based* mechanism of personal platform building: MPs need not seek 'direct confrontation' with the national party in order to craft an idiosyncratic platform that appeals to local constituents. Instead, they can selectively increase (decrease) their emphasis on their parties' positions in response to the particularities of the districts in which they compete. Left-wing MPs systematically employ this strategy by emphasizing their parties' policies when doing so is electorally opportune. Right-wing MPs, on the other hand, do not do the same on their parties' core stances in favor of supply-side subsidies. This may, in part, be attributed to the overall low levels of politicization of this sub-domain, and the corresponding lower electoral potentials of strategic platform-building.

Study 2: Longitudinal evidence

Whereas Study 1 provides valuable associational insights into district competitors' emphasis-based responses to structural differences in the housing markets of the districts they seek to represent, its cross-sectional design is vulnerable to various biases. Most prominently, it is prone to collider bias by sample selection (e.g., Schuessler and Selb 2019): We cannot preclude that district-level housing markets *and* MPs' attention to and positions on housing jointly affect selectorates' initial nomination decisions and the electoral support candidates attract in a district. As a result, the proposed mechanism between the housing market and legislators' communication on housing may concurrently determine who gets elected into parliament and, thereby, becomes a data point in our sample.

To alleviate these concerns, Study 2 focuses on intra-individual differences in district competitors' housing-related communication on Twitter in response to an exogenous shock: The suddenly released verdict of the German Federal Constitutional Court on the constitutionality of a five-year rent freeze introduced by the state government of Berlin in 2019. The court released its decision to nullify the law on the morning of April 15, 2021, after announcing a press conference shortly before, during the afternoon of April 14. Since neither the timing of the release nor the contents

Table 2: Tweeting district competitors among the members of the 19th German Bundestag.

Party	MPs	Tweeting district competitors	Directly elected
AFD	80	55	10
CDU/CSU	197	112	80
FDP	92	64	0
GRÜNE	118	90	12
LINKE	39	26	3
SPD	206	144	82
NONE	4	NA	NA
Total	736	491	187

of the ruling were anticipated beforehand, this event constitutes an exogenous shock that allows us to compare short-term emphasis-based reactions among MPs.

While the heavily debated verdict of April 15 sparked a general boost in housing-related communication on Twitter, we expect that it prompted disproportionate intra-individual responses from competitors contesting in high-pressured housing markets. We thus employ a pre-post design (e.g., Imai and Kim 2019) with heterogeneous treatment effects. We accommodate this design by extending our hierarchical models to include mutually correlated random intercepts and random effects on the treatment – a binary indicator distinguishing if a tweet was sent before or on/after April 15 – at the level of the individual district competitors. We then model this legislator-level heterogeneity in the pre-post treatment effect as a function of district-level housing markets, adjusting for party membership, individuals’ role as a spokesperson, and whether the individuals’ district was in Berlin. Since the court’s ruling exclusively targeted a specific rent control policy, we focus on tweets in the sub-category “tenant protection and rent control” only.

As the ruling Federal Constitutional Court came just five months before the 2021 Federal Election – a time at which the vast majority of parties’ county chapters had already nominated their district competitors for the upcoming election – we expect significant incentives to appeal to the constituents in district competitors’ 2021 election districts. Therefore, we focus on all district competitors elected to the 20th German *Bundestag* with an active account on Twitter. To balance demands for a sufficiently sized sample of tweets with a reasonably narrow time window around the ruling of April 15, we restrict our analysis to a two-month period and select tweets sent between March 15 and May 15, 2021. An overview of the accounts included in our analysis can be found in Table 2 below.

Fig. 7 shows the predicted salience levels in the month before and after the court’s ruling, respectively, for the 491 district competitors in our sample. For each MP, it shows both pre- and post-treatment salience levels, as well as the corresponding salience shift. For a more accessible display, the y -axis has been logged. This allows a closer assessment of salience shifts among the bulk of MPs with low salience levels. As we can see, the event did indeed spark a strong increase in issue salience. Whereas average attention to housing was comparatively low before the ruling at 0.33, mean levels abruptly rose to 1.24 after April 15. This yields a pre-post shift in salience of approx. 0.92 percentage points. Over and beyond this *average* treatment effect, we see considerable idiosyncratic variation in how strongly MPs’ attention to the issue increased after April 15. In the following, we turn to the question if this legislator-level variability can be attributed to the housing markets in which MPs compete.

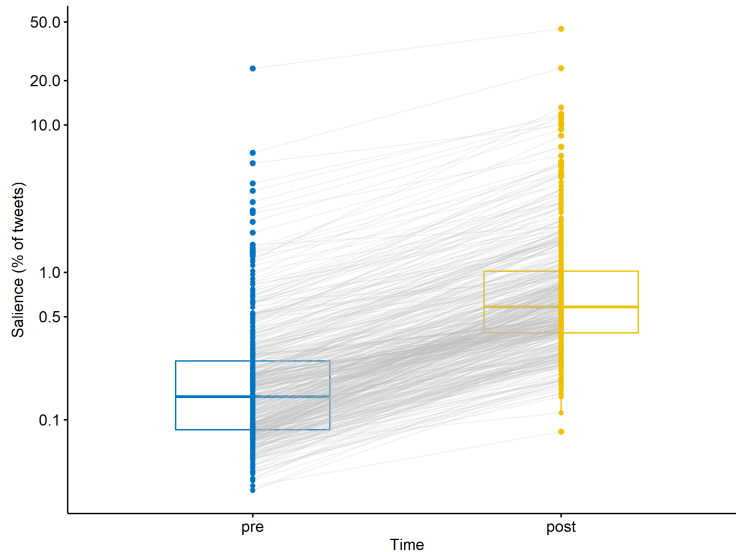


Figure 7: Percentage of tweets on tenant protection and rent control per MP, before and after April 15, 2021.

Fig. 8 shows the corresponding findings. It plots the conditional treatment effect as a function of the rent-to-income ratios in MPs’ electoral districts.⁵ In support of our expectation, we see that with higher rent-to-income ratios, the treatment effect increases in magnitude. For instance, at a rent-to-income ratio of 0.15, we find an expected 0.54 (0.29, 0.91) percentage point increase in issue salience, compared to a 1.28 (0.54, 2.84) percentage point increase at a rent-to-income-ratio of 0.3.

⁵Due to the increased complexity of our statistical model, which now seeks to explain heterogeneity in effects *and* levels, we merely adjust for homeownership rates in estimating the moderating effect of rent-to-income ratios on the heterogeneous treatment effects.

These findings come with considerable uncertainty, which precludes a definitive conclusion. The evidence, thus, only weakly supports our expectations.

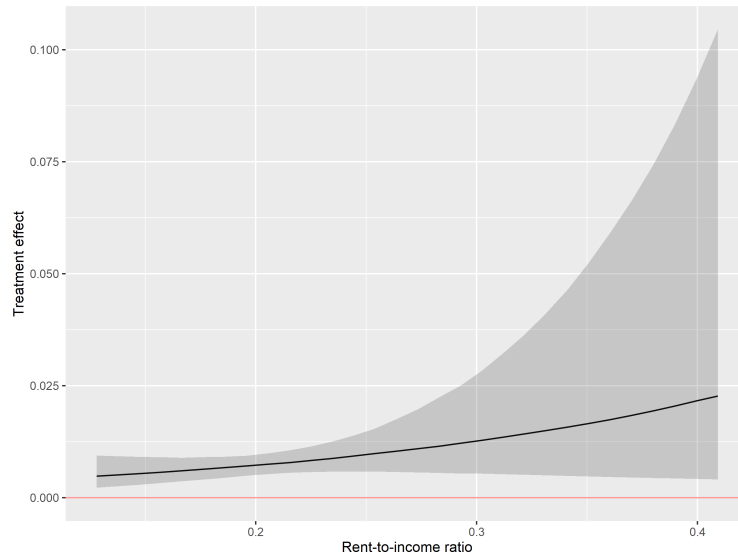


Figure 8: Pre-post treatment effect as a function of rent-to-income ratios, adjusting for ownership rates, Berlin MPs, spokespersons, and party fixed effects. Posterior medians and 95% credible intervals.

Summary and Discussion

In this paper, we have studied if and how German MPs respond to district-level housing markets in their policy communication on social media. We thereby contribute to a growing literature on the political effects of housing markets. Whereas the vast majority of existing studies focuses on the demand-side by examining voters' preferences and behavior in reaction to local housing markets, we have looked at the other side of the coin by assessing the effects on the political supply-side. We have moved beyond the existing literature on dyadic representation by not only investigating MPs' issue attention *or* issue positions as separate parameters that describe political platforms. Instead, we have integrated theories of party competition with literatures on intra-party politics to derive expectations about MPs' strategic diversification of their supply of housing policy. Specifically, we have argued that MPs avoid 'direct confrontation' with their national parties and instead use 'selective emphasis': They do not openly oppose the party line but emphasize (tone down) their parties' stance where doing so is electorally (in)opportune. In line with this argument, we have shown through both cross-sectional and longitudinal evidence that MPs attribute more

attention to the housing issue when they represent constituencies with high-pressured housing markets, characterized by high rent-to-income ratios and low ownership rates.

As we have shown, the use of MPs' social media statements enables an integrated assessment of emphasis-based and genuinely positional strategies of individual legislators. This is a significant operational benefit and also a promising strategy for studying personal platforms in territorial representation systems with high party unity in legislative behavior. Our approach has not only allowed us to show that parties manage to diversify their appeal to subnational electorates through the strategic agency of their MPs without sacrificing unity. It also constitutes a promising avenue for future research on dyadic representation and subnational party competition.

Future iterations of this paper will solidify the empirical analyses through extensive validation and robustness checks. In terms of validation, we will use an improved coding scheme and an updated and enlarge collection of manually annotated tweets. On this basis, we will perform post-hoc semantic and predictive validations of our legislator-level salience and position estimates. Furthermore, we seek to explore the robustness of our findings to various alternative specifications of our empirical analyses. The first is an alternative measurement of district-level housing markets. Here, we aim to develop a simplified, categorical characterization of housing markets that concurrently incorporates information on homeownership rates and rent-to-income ratios. Secondly, we aim to explore the sensitivity of our findings to various scope conditions. These include running the analyses on subsets of MPs (e.g., district winners, runner-ups, and others) and on subsets of electoral districts (e.g., rural, suburban, and urban districts). Lastly, we aim to test for the sensitivity of the findings of our longitudinal pre-post-analysis to different widths of the time spans of the pre and post-treatment periods.

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Online appendix

Additional evidence	A-2
Strategic left and right-wing responses on policy sub-domains: Saliience	A-2
Strategic left and right-wing responses on policy sub-domains: Net positions	A-3

Additional evidence

Strategic left and right-wing responses on policy sub-domains: Saliency

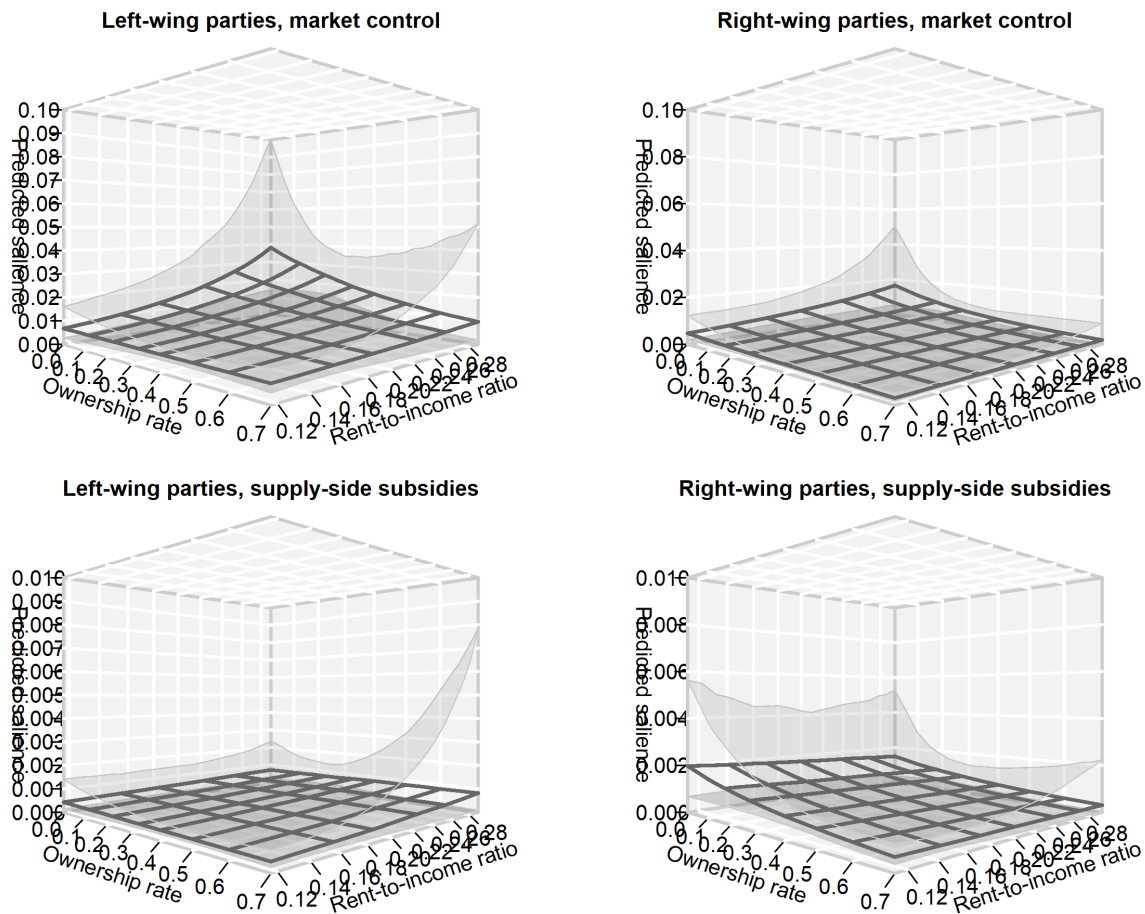


Figure A0.1: Conditional expected values of domain-specific saliency as a joint function of rent-to-income ratios and ownership rates. Posterior medians and 95% credible intervals.

Strategic left and right-wing responses on policy sub-domains: Net positions

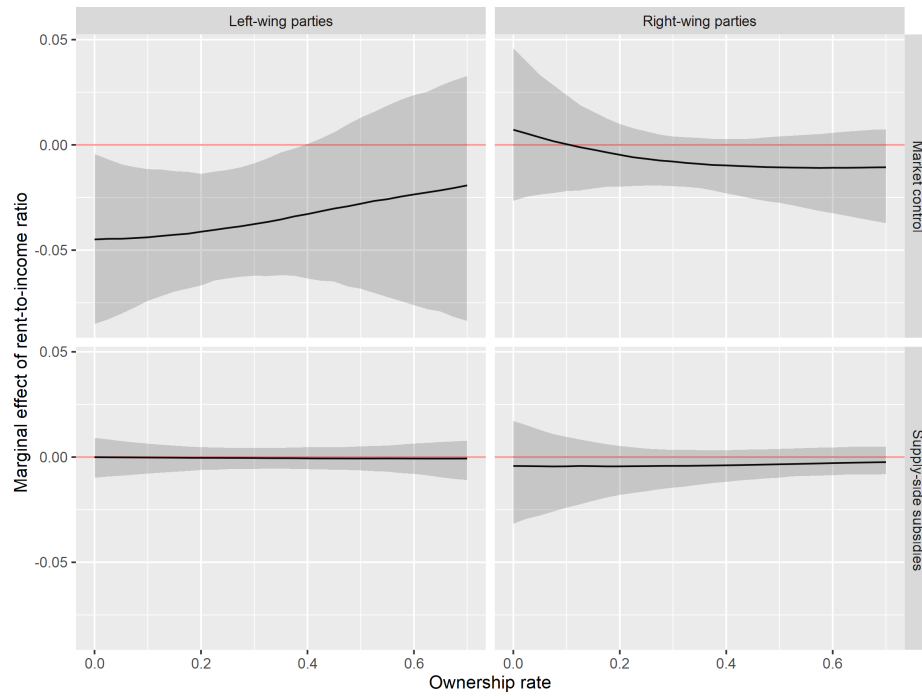


Figure A0.2: Marginal effect of rent-to-income ratios on MP positions, conditional on district-level ownership rates. Estimates by policy domains (rows) and parties (columns). Posterior medians and 95% credible intervals.