Rental Market Risk and Radical Right Support

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Abstract

A growing literature examines how economic threat affects support for anti-establishment parties. While most existing work focuses on transforming labor markets as a source of anxiety, we advance the literature by studying changes in urban development and rent price appreciation. Our analysis examines the case of Germany, the country with the highest share of rental housing in the European Union. Combining individual-level geo-referenced panel data with a longitudinal data set on the cost of rental housing at the postcode level, we demonstrate that rising local rent levels increase support for radical right parties. The effect is especially pronounced among long-term residents, in particular in suburban and urban areas and among voters with low and moderate household incomes. Our results suggest that urban development, not unlike labor market transformation, represents an important and so far neglected source of economic insecurity and social concern with important political implications.

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Introduction

The share of people who live in rented accommodation is on the rise in most post-industrial democracies. Almost everywhere, increases in rent levels and housing affordability are a key source of economic pressure. According to Eurostat Housing Statistics, the proportion of the EU population that suffers from housing cost overburden (exceeding 40% of their equivalized disposable income) is by far highest for tenants with market price rents. It is thus unsurprising that rent price developments are a major concern among citizens in many European democracies and beyond. For example, a recent study by the UK Office for National Statistics shows that the housing situation is a central determinant of worries about the rising cost of living. Between April and May 2022, a striking 85% of adults who rent their home reported feeling very or somewhat concerned about the cost of living (ONS, 2022).

Despite their real-world importance, the consequences of rental market developments have received surprisingly little attention in the political science literature (see Held and Patana, 2023, for an important recent exception). The political implications of housing have so far been primarily studied from the perspective of homeowners (Ansell, 2014, 2019; Larsen et al., 2019; Adler and Ansell, 2020). However, we argue here that the political implications of rental markets differ fundamentally from what we know about homeownership. In this article, we introduce the concept of *rental market risk* and demonstrate that it systematically affects individual party preferences of tenants in ways that contrast starkly with the behavior of homeowners. Rental market risk describes individuals' exposure to the latent economic threat from a rent price appreciation in their local environment. Importantly, local rental market dynamics are entirely beyond the control of individual tenants. Even when local rent price appreciation has not (yet) affected individuals' own rents, it signals that the local environment is in flux, a development that may go hand in hand with an imminent increase in one's cost of living – an increase that not all can afford. Local rent price appreciation hence represents a profound and previously neglected source of economic risk, which we expect to affect electoral preferences.

In developing our argument, we emphasize the role of households' economic resources and residential geography. Building on an emerging literature on the political ramifications of economic risk and status anxiety (Gidron and Hall, 2017; Kurer, 2020; Engler and Weisstanner, 2021; Abou-Chadi and Kurer, 2021), we anticipate that rental market risk, conceptualized as a latent threat from rising local rent levels, fuels support for the radical right. This party family has been shown to successfully appeal to voters who are concerned about their potential *relative* decline in the social hierarchy even though other parties, notably the Left, may actually

look like a more obvious political choice when considering specific programmatic priorities in the domain of housing market regulation.

We expect that tenants in the lower half of the income distribution will be particularly likely to support the radical right when local rents go up. They face higher rental market risk because lower income deciles typically spend a higher share of their disposable income on housing (Fetzer, Sen and Souza, 2023). We argue that household income is a crucial factor that separates those for whom rising rent prices pose severe economic and status threats from beneficiaries of neighborhood upgrading. Higher income increases the chances that individuals will be able to afford imminent increases in their household rents. It thereby shields tenants from the threat of being driven out of their neighborhood. The lower people's income, on the other hand, the more they will perceive increases in rental prices as a threat. Furthermore, we argue that this mechanism will be particularly pronounced where rent spikes have been most frequent and most forceful: In booming regions, in cities and metropolitan suburbia, where strong rent increases often materialize rapidly and are more vividly perceived by voters. The rapid change and immediate exposure to increasing rent loads that many face in these areas amplifies the political significance of economic and status threats.

In analyzing the so far neglected aspect of rental market change our argument thus not only presents a novel perspective on the political effects of the housing market. It also offers a new perspective on place-based drivers of radical right support. Existing research on the structural differences between booming and declining regions shows that residents of rural and stagnant regions disproportionately support the radical right (e.g. Rodríguez-Pose, 2018; Patana, 2021), a pattern that is mostly attributed to compositional socio-structural differences that result from residential self-selection (Maxwell, 2019, 2020). Moving beyond these analyses of inter-regional discrepancies, we zoom in on dynamic changes within places to offer an explanation why radical right parties attract significant shares of the vote even in booming urban areas. By showing that those at risk of being economically overburdened and driven out by neighborhood upvaluation increasingly turn to the radical right, we identify a vastly overlooked reservoir of radical right support.

To test our expectations, we rely on an innovative combination of high-quality geo-referenced panel data from the German Socio-Economic Panel (SOEP) with novel longitudinal and spatially disaggregated information on the cost and quality of rental housing. This allows us to analyze panel data from 2005 to 2018 and to investigate how individuals react to changes in rent levels in their neighborhood. The case of Germany is not only an ideal testing ground for our theory because it has the highest share of renters in the European Union but also due to the political geography of support for the the radical right party *Alternative für Deutschland* (AfD). Support for the AfD is strongest in the rural periphery, where it sometimes exceeds 30%

of the vote. Accordingly, we can show with our data that – in cross-sectional perspective – support for the party is strongest where rents have been and remained low. Yet, we know that even in the most liberal urban districts, the party attracts more than 5% of the vote. Turning to dynamic changes within neighborhoods, we show how the rental market forcefully drives the *urban* far-right vote.

Rental market dynamics thus constitute an important element for place-based explanations of radical right support. This literature has largely focused on declining regions (e.g. Bolet, 2021), losers of globalization (e.g. Walter, 2021), and general feelings of rural resentment (e.g. Cramer, 2016; Hochschild, 2016). It has thereby often turned a blind eye on radical right success in urban centers. Rental market risk can help us understand why in booming regions, too, we find support for those parties. Our argument thus taps into a group so far largely understudied in radical right support: People with limited economic resources who live in comparatively well-off neighborhoods but fear that they may not be able to keep track with the economic dynamism of their place of residence. Given the centrality of rent prices in many people's lives and the dramatic changes that rental markets have undergone in the past two decades, close examination of this link is crucial for understanding the transformation of political behavior in Europe.

The politics of housing

Homeownership

The existing body of work on the politics of housing has almost exclusively focused on homeownership. In contrast to the literature on labor market risk with its focus on fluctuations in current income streams (e.g. Iversen and Soskice, 2001; Rehm, 2009; Walter, 2015; Häusermann, Kurer and Schwander, 2015), the housing literature emphasizes the importance of long-term consumption patterns, which are smoothed over time by assets and wealth and, hence, are at least partly independent from labor market dynamics (Friedman, 1957). Building on this concept of "permanent income", Ansell (2014) offers a theory of the political preferences of homeowners. Assets provide a stock of wealth that serve as a form of self-insurance against hard times. Accordingly, the ability to "self-insure" against short-term fluctuations in labor market income results in higher tax aversion and lower demand for social insurance and redistribution provided by the government (Ansell, 2014). With respect to party vote choice, this pattern of social policy preferences among homeowners translates into increased support for center-right parties (Ansell and Cansunar, 2020).

Beyond the individual-level pocketbook logic, rising house prices are also a proxy for the relative wealth of a locality and an improving economy more generally (Ansell, 2019). In line with this geotropic perspective, rising house prices at the local or regional level are associated with support for the political status quo. This support manifests itself in a variety of ways, including higher vote shares for the incumbent party (Larsen et al., 2019), support for mainstream parties, in particular from the center-right (Ansell and Cansunar, 2020), and lower support for populist actors challenging the establishment as in the Brexit referendum campaign (Adler and Ansell, 2020).

The geotropic component of the politics of housing also highlights a relevant flipside of the house price appreciation argument with political implications transcending traditional left-right or "first-dimension" politics. Citizens in places where housing prices stagnate or even decline may feel excluded from the massive gains of homeowners in booming localities, and possibly interpret this as a signal that the market does not value places like theirs. Voters in such "left-behind" regions with less dynamic housing markets hence might want to attack the political status quo by supporting anti-establishment and/or populist parties (Adler and Ansell, 2020; Ansell et al., 2022).

In sum, for homeowners, the pocketbook effect that operates via individual economic well-being and the geotropic effect that unfolds via the relative wealth of a locality go hand in hand and produce consistent expectations about the political repercussions of house price appreciation.

Rental markets

While rising house prices in most European countries directly benefit many homeowners, tenants in the rental market face the other side of that coin. In contrast to the more cyclical housing price market, rent levels have increased steadily throughout the years. According to Eurostat, rents have gone up by 14.6% across the EU-27 during the last ten years. This average masks large variation both between and within countries, with urban areas, which host two thirds of the European population, seeing particularly pronounced surges.

Despite the importance of the rental market as a key source of economic insecurity, the political behavior implications of this development have received comparatively little scholarly attention. The one important recent exception most closely related to our work is Held and Patana's (2023) study on the relationship between personal rent loads and voting behavior. They provide evidence that *actual* household rents fuel support for radical right parties in

Germany and argue that an explicitly cultural frame of rising rents, which emphasizes housing market competition with immigrants and refugees, allows radical right parties to mobilize voters on this inherently economic issue. In another relevant contribution, Fetzer, Sen and Souza (2023) examine the consequences of a cut in housing benefits and show that this shock in the affordability of rents affected a variety of socio-economic outcomes including evictions, crime and homelessness. In addition, they document that exposure to benefit cuts is also associated with lower political participation. Finally, Beckmann, Fulda and Kohl (2020) study 'housing cleavages' in Germany by examining differences in political behavior between homeowners and tenants and high-price versus low-price areas. Beyond these studies, we are not aware of any work that specifically looks at individual political responses to a tightening rental market.

Rental market risk and electoral behavior

In developing our theoretical argument, we follow the existing work on the politics of housing by differentiating between two conceptually distinct mechanisms linking rent levels to political behavior: A pocketbook channel focusing on individual economic circumstances and a geotropic channel focusing on risk perceptions in a changing environment.

In the context of the rental market, the pocketbook channel stipulates that increases in *actual* household rents prompt political reactions among affected individuals. However, there is some disagreement about the exact mechanism and expected directionality of this effect. From a purely economic, first-dimension politics perspective, the pocketbook mechanisms yields similarly straightforward expectations as in the case of homeownership – just with an opposite sign. All things equal, an increase in *actual* rents at the individual level implies higher expenditures and lower disposable income. Given this, one would expect that voters with lower disposable income support redistribution and political parties of the left. However, adopting a second-dimension politics perspective, one may argue that radical right parties employ a cultural frame, which emphasizes housing market competition with immigrants, to mobilize affected voters (Held and Patana, 2023).

We argue, however, that the impact of changing rent levels at *the local level* are both theoretically deeper and potentially more consequential for understanding the transformation of the political space in post-industrial societies. We therefore explore the geotropic effects of changing local rental markets on individual voters, which entail more than the flipside of the effects on homeowners discussed above. In the following, we discuss our theoretical expectations of how rental market dynamics affect political preferences and behavior.

First, we need to take into account that rent levels are generally higher in metropolitan areas and university towns. Rent prices are thus highest in those regions that can be seen as the winners of socio-economic change in the knowledge economy. As these areas attract skilled workers from around the globe, we see considerable pressure on the rental market and, thus, increasing rents. In contrast, declining regions with only few competitive industries in the knowledge economy, from where especially young people move away, generally have the lowest levels of rents. Given these socio-structural characteristics, we should expect patterns of rental markets to correlate with patterns of electoral behavior at the aggregate level. The socio-economic make up of booming regions, in contrast, comprises especially those groups with higher levels of education and socio-cultural and managerial occupations (Oesch, 2013; Beramendi et al., 2015; Schöll and Kurer, 2023). We should thus expect higher support for the radical right in regions where rents are low. In regions with higher rents, in contrast, we should expect voters disproportionate support for liberal and left-libertarian parties. In this regard, the observable implications of rent levels are equivalent to those of housing prices.

We can corroborate this cross-sectional point of departure with our own data. Figure 1 shows that support levels for the radical right party AfD are much higher where rents are low compared to places where rents are high. This is in line with the established finding that the radical right is particularly successful in declining regions (Rodríguez-Pose, 2018; Bolet, 2021). In Germany in particular, this is also in line with the AfD overperforming in states of the former GDR. Furthermore, Figure 1 also shows that in such a cross-sectional perspective the pattern between homeowners and renters does not differ: Both groups' AfD support decreases with rising rents and vice versa.

Hence, looking at the empirical pattern *across* neighborhoods and regions, we find similar results as the existing literature on housing and homeownership. Support for the radical right is strongest in areas with low levels of rents. These low-rent areas – located far from the thriving hubs of the knowledge economy and typically characterized by low and declining population density – constitute central strongholds of the radical right. However, this cross-sectional evidence tells us little about the actual effect of rental market pressure. Instead, it tells us something about the effect of well-known socio-demographic and socio-economic predictors of radical right support, whose compositional differences co-determine rent levels and radical right voting in cross-sectional perspective.

To get closer to the causal effect of rental market pressure on party preferences, we have to look at individuals who stay put in an environment of changing rental markets. In such a scenario, we should expect a fundamentally different dynamic. We argue that the relationship between changes in rent levels and political behavior can be best understood in terms of *rental market risk*. The price dynamics of local rental markets are determined by structural forces that
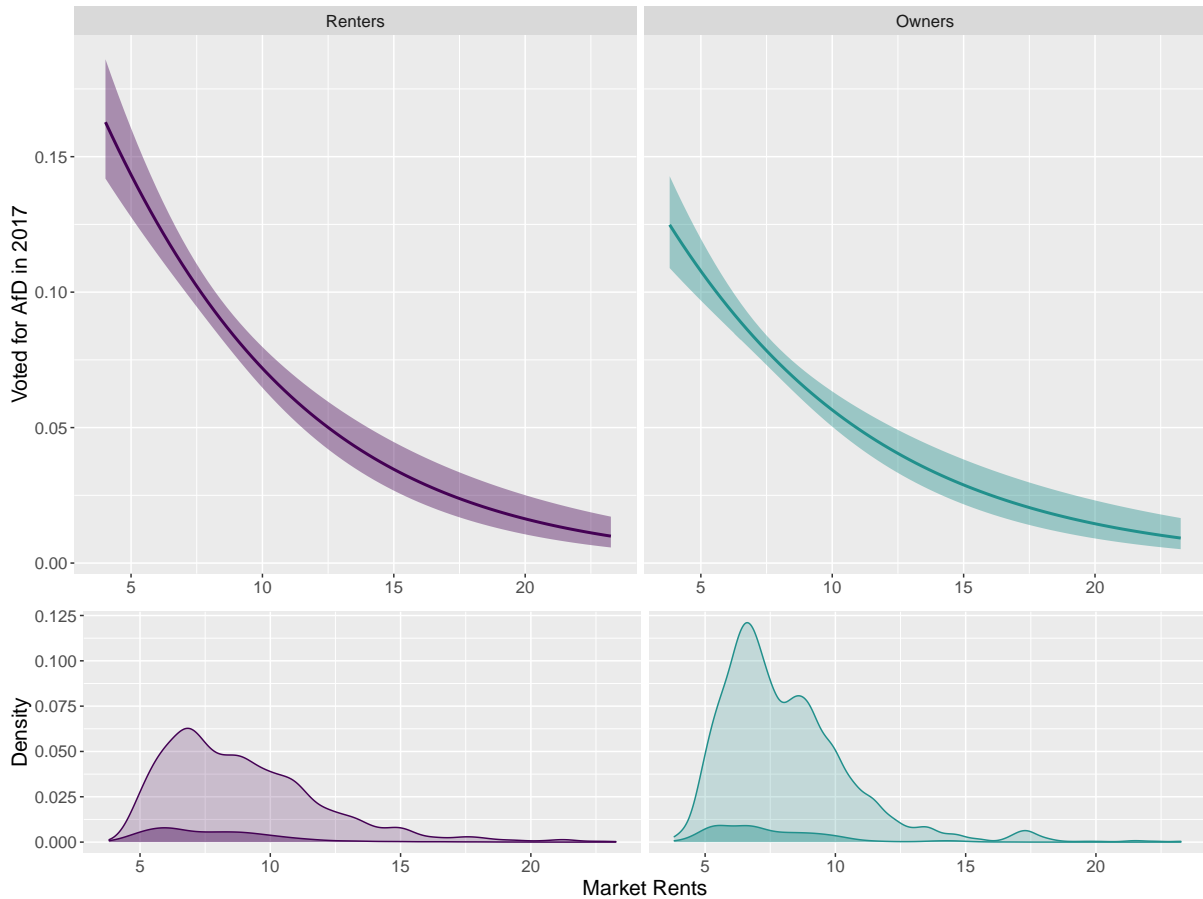
Figure 1: Postcode-level market rents and AfD support in the 2017 German Federal Election. Upper panel: Predicted probability of voting AfD as a function of market rents for renters (left) and home-owners (right) who turned out in the election. Lower panel: Density plots of AfD voters (dark) and non-AfD voters (light).

are nearly entirely beyond the control of individual tenants. Rising local rent levels represent a profound risk to the many fundamental and sentimentally relevant aspects of a tenant's existence. The resulting grievances are not only limited to disposable income and the concern to be able to afford the rent. Increasing risks of rental market unaffordability also increase the risk of forced relocation, and thereby threaten to disrupt individuals' established routines and networks: Meeting friends in the local area, visiting one's favorite shops and restaurants, or enrolling children in local schools. Such uncontrollable local rental market dynamics are likely to prompt individual reactions even in the absence of actual increases in household rents or actual involuntary moves: The latent and intensifying threat of no longer being able to afford living in one's familiar neighborhood alone may create political grievances.

From this perspective, increases in local rental market prices constitute an economic and social status threat. Building up on existing approaches to status politics in terms of education, occupation or gender, we argue that local rental markets profoundly affect people's status perceptions. A number of recent contributions argue that status threat is an important motive behind the rising support for anti-establishment forces in general, and radical right parties in

particular. Support for such parties may not be primarily issue-based. Instead, it stems from a deep and often diffuse discontent, which may have been growing over time. This discontent is rooted in a negative view of the evolution of society and a distinct sense among some citizens that they are increasingly pushed towards the fringes of their community (Elchardus and Spruyt, 2016; Gidron and Hall, 2017; Steenvoorden and Harteveld, 2018; Mutz, 2018; Bolet, 2021). Importantly, this sense of alienation and marginalization is not tantamount to material deprivation but based on perceptions of risk and threat (Kurer, 2020).

We thus expect that where increasing levels of local rents constitute an economic and social status threat, they will translate into support for the radical right. We argue that two factors are crucial for understanding how increasing local rents translate into a status threat and, thereby, increase individuals' propensity to support the radical right. First, individuals who have been long-term residents in an area should be much more affected by rental market risks. They have built profound ties in a neighborhood that are threatened by increases in local rents. In addition, people who have recently moved to a neighborhood may have already taken rental market dynamics into account when making their decision to move to an area. Hence, we should expect that increases in local rents primarily lead to support for the radical right among longtime residents.

The second and crucial factor that will determine how increases in local rents affect the likelihood of voting for the radical right is household income. It is obvious that higher rents constitute a very different risk for low-income households compared to those with higher incomes. For people with low income, exposure to rising local housing costs represents a largely uncontrollable source of insecurity that threatens to disrupt a seemingly established everyday life. This is true even if one's own household rent has not (yet) been affected by price hikes. Hence, rising local rents will constitute a status threat especially for people with lower household income. On the contrary, increasing local rents will seem much less of a risk to those with higher incomes. In fact, as long as they can afford it, people with higher income may perceive rent price appreciation and the resulting processes of neighborhood upgrading favorably. Higher rent prices will change the social, economic, and demographic makeup of a neighborhood. For people who can afford it, gentrification, thus, comes with many advantages. These advantages lead to a positive geotropic perception of the neighborhood which in turn should reduce support for populist parties who threaten to disrupt the status quo (Adler and Ansell, 2020; Ansell et al., 2022).

In sum, increasing local rents and the socio-cultural changes of a neighborhood that come along with them will affect low and high-income households fundamentally differently. For low-income households, these changes constitute a profound threat to their social status and should thus make them more likely to support the radical right. For high-income households,

the feeling of neighborhood upgrading and the resulting status boost should make them less likely to support the radical right.

We expect that these diverging effects are particularly strong in urban areas, where phenomena associated with gentrification are particularly pronounced. In urban areas, increases in rent levels have not only been the largest but change has often happened very rapidly. Therefore, changes in status are more easily observable in day-to-day life. Hence, in contrast to a literature that has primarily focused on vastly static, structural characteristics of left-behind regions, we describe a dynamic mechanism that connects booming regions to support for the radical right. People with low income in dynamic urban rental markets face a profound risk of seeing the basic pillars of their life disrupted. As economic insecurity is a well-documented source of alienation and anti-elite sentiment (e.g. Abou-Chadi and Kurer, 2021), we expect a strong increase in the propensity to support the radical right in this group.

An important additional observable implication of our argumentation is that in contrast to renters, homeowners should be largely shielded from adverse implications of structural urban development and rent price appreciation. Even if homeowners do not approve of the changing face and composition of their neighborhood, a potential move out of a booming neighborhood is not only entirely their own decision but a sale or leasing of their property will most likely be financially beneficial for them. As house price and rent level appreciation benefits homeowners, we should expect it to result in the status-quo enhancing political choices discussed in the section on political implications of homeownership.

Before moving to the empirical section, we should re-iterate that our theoretical expectations do not result from an issue-based voter response to partisan policy supply in the domain of housing politics. We do not argue that people who face high rental market risk support the radical right because the radical right would promote the best available policy solutions for their situation (cf. Cohen, 2023) or because the left has disappointed their expectations in that regard (cf. Chou and Dancygier, 2021; Cavaillé and Ferwerda, 2023). In line with the recent literature on status politics, the underlying mechanism is not so much issue-based but rather a result of a more diffuse sense of alienation and anti-elite sentiment that fuel support for radical parties that fundamentally challenge the political status quo.

Case and data

To test our theoretical expectations, we focus on the case of Germany, the country with the highest share of people in rental housing in the European Union. According to Eurostat data, in

2019 every second person in Germany (48.9%) lived in a rented apartment or house, compared to an EU-28 average of 30.8%. Rents account for a large share of household expenditures: on average, German tenants spend a quarter of of the disposable income on rents. Both the prevalence of renting and the share of the disposable income spent on housing is socially stratified. Lower-income households live more frequently in rented as opposed to owner-occupied dwellings and spend higher shares of their income on housing. Single households and single parents spend more than a third of the disposable income on renting and this share rises to almost 50% among the poverty-vulnerable population in Germany.[1] Given the sizable share of rents in the budgets of German households, and particularly among those with fewer economic resources, increases in local rents can pose a serious threat to tenants' well-being and comfort.
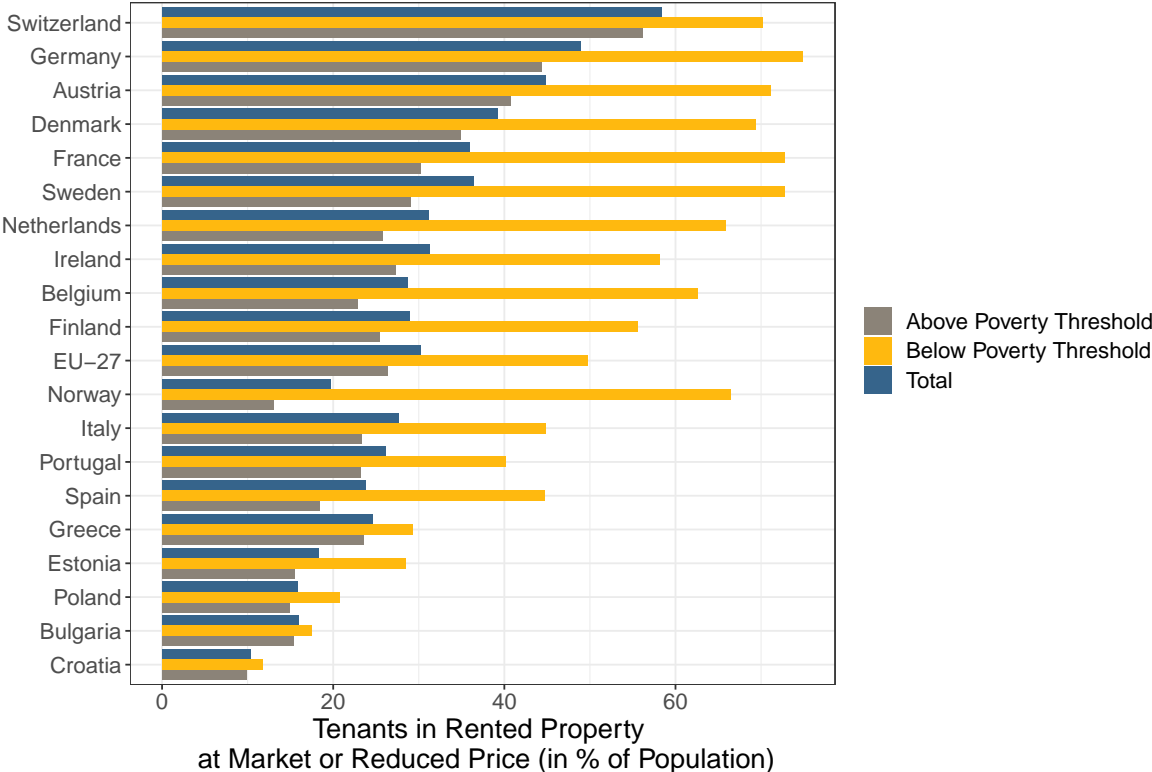

Figure 2: Importance of the rental market in comparative perspective (Source: Eurostat)

Our conceptualization of local rental market risk demands that we link longitudinal micro-level data with fine-grained spatial data on local rental markets. We overcome the critical empirical challenge of accurately measuring local rental price level and change at a granular level by using an innovative proprietary data collection: The so-called *Mietmarktmonitor* (rental market monitor), collected by the German research and consulting firm *F+B*, which provides a systematic collection of geo-referenced housing advertisements across newspapers and online market places since the early 2000s. Based on a comprehensive data set of over 27

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[1]Destatis Share of housing costs and housing costs overburden. Link

million unique advertised rental objects, we have obtained yearly aggregates of rents and rent market indicators at the postcode level between 2005 and 2018.

Germany is divided into roughly 8,200 postcode areas, whose size strongly depends on population density. The median size of a postcode is approximately 25 sqkm, while the 2.5 percentile is 0.5 sqkm and the 97.5 percentile is 175 sqkm. Postcode areas thus capture small-scale areas that individuals usually navigate on a daily basis. The data set includes information on local market rents, local hedonic rents (i.e., modeled rents for a hypothetical reference object from a predictive model), and various indicators on the quality and quantity of the advertised objects.

Our micro-level data comes from the German Socio-Economic Panel (GSOEP). Specifically, we use a restricted-access version of the data set which is exclusively accessible for on-site use at the GSOEP Research Data Center in Berlin, Germany. Next to the extensive information on individuals' labor market position, economic resources, and housing situation included in the standard GSOEP data, this restricted-access version includes the exact five-digit postcode of each respondents' current place of residence. This allows us to combine the micro-level panel data from the GSOEP with our time-series cross-sectional data on local rental markets by respondents' five-digit postcode for all survey waves from 2005 to 2018.

Local variation in rental markets

Figure 3 provides an overview of the spatial distribution of postcode-level rents between 2005 and 2018. The map on the left-hand side shows the average levels of hedonic rents in €/sqm across the 14 year period whereas the right-hand side map shows the absolute change from 2005 to 2018. In the plot on the left-hand side, white-shaded areas indicate the national average in rent levels (6.11 €/sqm). Blue-shaded areas indicate postcode areas with below-average levels while areas with above-average levels are displayed in shades of orange. On the right-hand side, white-shaded areas indicate static rental markets. The nearly non-existant blue-shaded areas indicate rent decreases whereas orange-shaded areas indicate rent increases of varying intensity. As we can see on the left-hand side of the figure, the distribution of rent levels follows intuitive patterns. Between 2005 and 2018, rents have been highest in urban centers (including Munich, Berlin, Hamburg, Stuttgart, the Rhein-Main Metropolitan Region, and the Rhineland Metropolitan Region) and in popular tourist destinations (including the island of Sylt and the Alpine regions at the southern border). The right-hand side shows that this variation in rent levels correlates strongly – but far from perfectly – with the 14-year change in rents. Whereas many urban centers (including Munich and Berlin) have experienced

dramatic increases in rent levels, this trend is much less pronounced or even non-existent in other West German metropolitan areas, including the Rhineland Metropolitan Region or the Ruhr Region. That said, rents have also increased significantly in many rural and suburban areas, especially in Southern Germany and in the Berlin/Brandenburg Metropolitan Area.
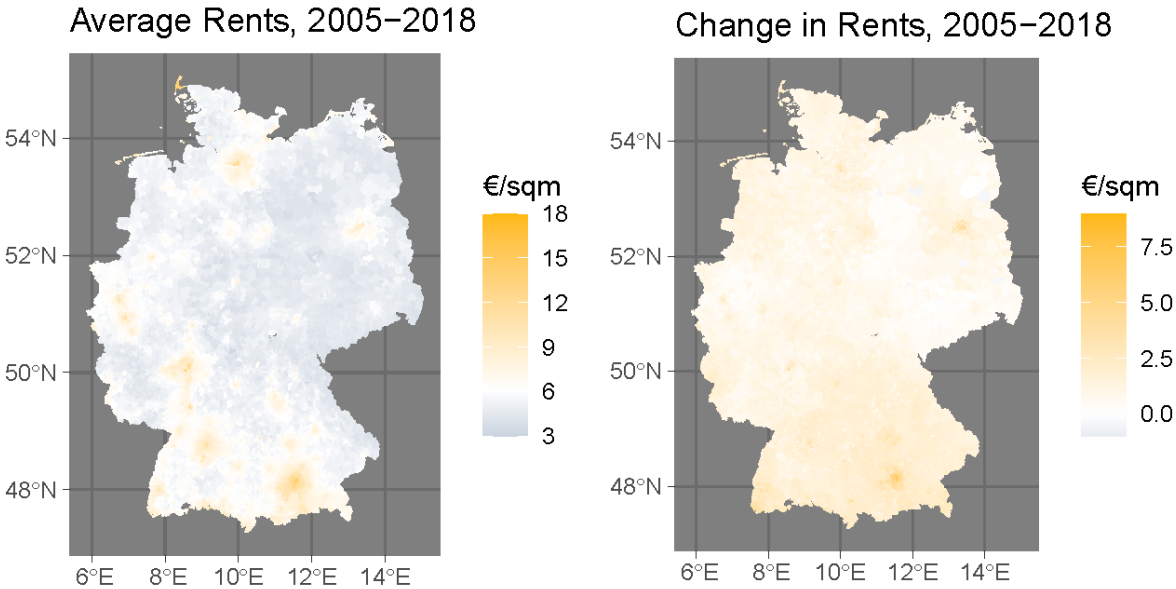

Figure 3: Rental market monitor data: Average levels and changes of hedonic rents at the postcode level in Germany.

Figure 4 investigates how the average 14-year trend varies across different locality types. Next to a trend line for the national average, the figure shows separate trend lines for postcode areas in rural and suburban localities (administrative counties called *Landkreise*) and urban localities (administrative counties called *Stadtkreise* and *kreisfreie Städte*, which we further distinguish by their total population). As we can see, the trend lines for rural and suburban localities and small cities with a population below 100,000 are tightly clustered and fall below the national average, where rents increased from 5.69 €/sqm in 2005 to 6.96 €/sqm in 2018. For cities with a population of 100,000 to 500,000, average rent levels are higher but the trend line runs flatter, which shows that rents in these places have, on average, grown comparatively mildly. In large cities with a population of 500,000 to 1,000,000, in contrast, the trend line starts at fairly high levels and runs parallel to the national average trend. Lastly, average rents in the German metropolises of Cologne, Munich, Hamburg, and Berlin have increased most rapidly, rising from a high starting point of approximately 8.00 €/sqm in 2005 to nearly 11.00 €/sqm in 2018 on average.
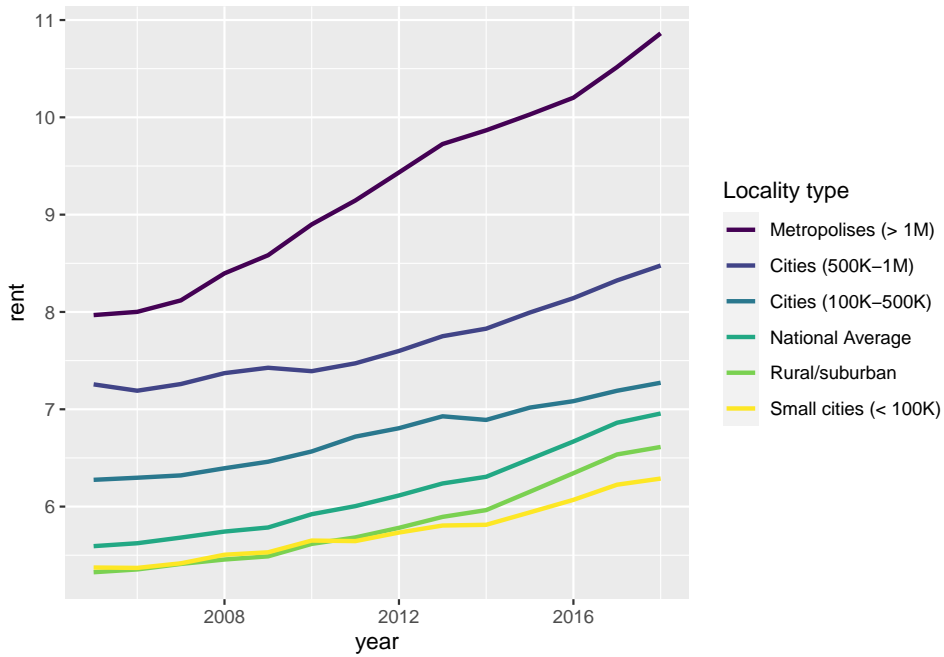
Figure 4: Rental market monitor data: Average trends in local rents by locality type.
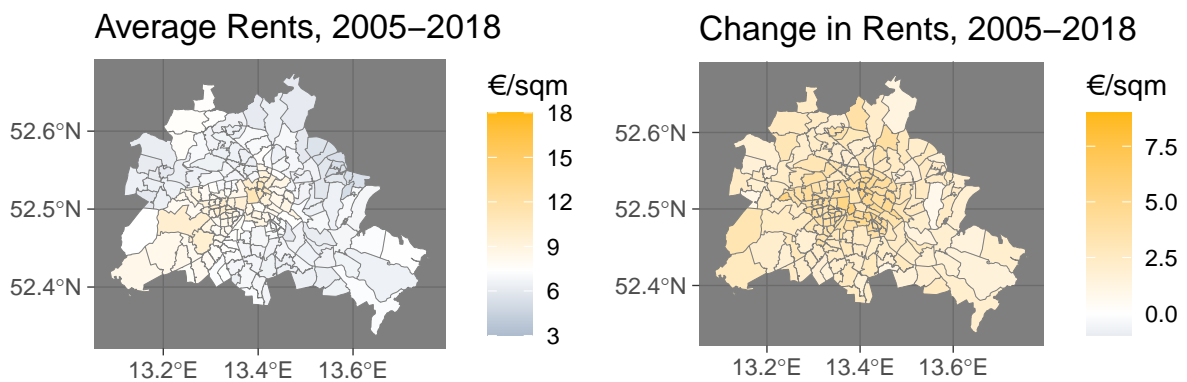

Figure 5: Rental market monitor data: Average levels and changes of local rents at the postcode level in Berlin.

While these overall patterns may suggest that rental market dynamics follow a regional rural-urban divide, Figure 5 zooms in on a single city – Berlin – to show that the picture is much

more intricate when we take the local level into account. The figure shows astounding patterns at the postcode-level with respect to the heterogeneity in rent levels and rent developments as well as with respect to their mutual correlation. Whereas average rents are highest in the central district of Berlin-Mitte and the wealthy south-western parts of the city, prices have increased most strongly in the central districts surrounding Berlin-Mitte and also in several peripheral districts in the north and west. This highlights that even though the German rental market is broadly structured along an urban-rural divide, individual exposure to rental market risks varies considerably across neighborhoods within one and the same locality.

The correlates of local market rents

Descriptive analyses of the correlates of local market rents, presented in Table 1, confirm a few likely expectations. We first retrieve twoway fixed-effects estimates of the effect of local rents from bivariate models using various household level outcomes from the GSOEP. Unsurprisingly, higher local rents drive higher individual rents. On the flip side, we see that local rents exert much greater effects on the overall asset for owners than for renters, which can, in large part, be explained by the effect of market rents on owner's net wealth from their primary residence (i.e., its market value minus mortgages). This underlines the strong discrepancy in how rental market dynamics affect the economic fortunes of renters in comparison to owners.

Outcome	Level	Effect	N_{Obs}	N_{PLZ}
Rent/sqm (R)	Household	0.34 (0.29, 0.39)	97467	4641
Asset wealth (R)	Household	6531.30 (422.78, 12391.44)	19363	3560
Asset wealth (O)	Household	45468.03 (20752.37, 68489.22)	19785	3835
Net wealth from residence (O)	Household	37818.88 (32097.11, 43550.30)	19363	3560
Social Status	Neighborhood	0.04 (0.03, 0.05)	118922	6044
Purchasing Power	Neighborhood	414.66 (373.56, 462.24)	132283	6060

Table 1: Effects of local rents on various outcomes at the level of households and neighborhoods, based on bivariate linear models with twoway fixed effects.

In a second set of analyses, we leverage the MICROM data available at the GSOEP Research Data Centre. MICROM is a market research company that collects various data on the composition of small-scale neighborhoods, typically just a few blocks of houses with no more than 500 residents. These neighborhoods are perfectly nested within postcode areas, which allows us to study the effects of local rents on neighborhood characteristics. Our estimates show positive effects on social status and purchasing power. This suggests that as local rents increase, the social composition of neighborhoods changes in that more economically affluent individuals move into the area.

Empirical strategy

These descriptive findings have important implications for our modeling strategy in that they show that local rental market dynamics affect residential contexts by changing the *composition* of neighborhoods. This implies an important scope condition of our proposed geotropic mechanism, which emphasizes how local rental market risks threaten the established social, economic, and residential position of renters. People who have only recently moved into a neighborhood not only have weaker ties the local area and lack a frame of reference for how the local rental market has changed compared to previous years. They may also have deliberately selected into a booming neighborhood for the very reason of its ongoing upvaluation. This clearly sets them apart from long-term residents, who have been continuously exposed to the geotropic effect of the changing local rental market. As our proposed mechanism thus only applies to long-term residents who have lived in a given neighborhood for some time and have thus experienced the changing nature of their residential environment, we focus on individuals who have lived in the same postcode area (though not necessarily at the same address) since entering the GSOEP panel or longer.

Our argument emphasizes the latent threats from changing local rental markets on the party preferences of renters. To capture this argument empirically, our quantity of interest is the *controlled direct effect* of local market rents. Accordingly, we estimate the effect of local market rents on party preferences while blocking the indirect or mediated effect that operates through renters actual household rents (measured in €/sqm). This allows us to adequately capture the geotropic effects of local rents while blocking the portion of the effect of local rents that potentially unfolds through individuals' pocketbooks. The causal logic of this mechanism is illustrated in Fig. 6.
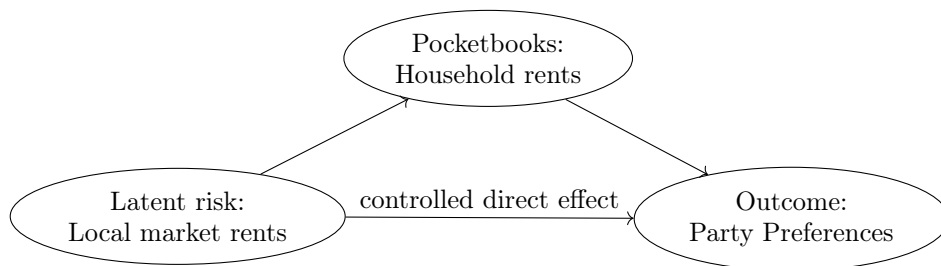

Figure 6: Causal mechanism illustrated: Local market rents may affect party preferences partly via actual household rents (indirect pocketbook effect) and partly directly (controlled direct effect).

To juxtapose the political effect of local market rents for renters on the one hand and owners on the other, we supplement our renter models with models ran on a a subset of respondents who are owners of their primary residence.[2] To capture the expected dependency

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[2]As we can only observe household rents for renters, we can control for actual household rents in our renter models only. Our owner models do not include this variable.

of local rental market risk on households' economic resources, we interact local market rents with household income. Specifically, we use the households' net monthly income, equivalized by the square root of the number of household members, and take the natural logarithm of this variable. In a subsequent extension, we study this interaction across regional subsets to test for heterogeneity in the proposed mechanism between rural, suburban, and urban areas.[3]

Our focus is on *within-individual effects* of changing local rent levels on party preferences. We retrieve estimates of these within-effects using a within-between model with individual-level random effects (Bell and Jones, 2015), a variant of Mundlak's (1978) correlated-random effects estimator. In its basic form, this model yields identical effects to a model with individual-level fixed effects. Unlike the fixed effects model, however, it can be easily extended to account for additional levels of clustering through additional random effects. This is crucial for our application, because our main predictor, local market rents, is a postcode-level variable. Furthermore, we should expect notable spatial dependence among individuals from the same county or city (both of which are identical administrative categories in Germany). To account for these spatial dependencies, we extend the model to include postcode-level and county/city-level random effects.

While this modeling strategy allows us to eliminate unobserved between-individual heterogeneity in the estimation of our within-effects, our estimates remain prone to dynamic confounding: Rent price appreciation and the political developments of mainstream party decline and increasing niche party support are processes that are likely correlated, but by far not all of this correlation can be attributed to a causal relationship between the two. We therefore include year fixed effects, which absorb annual levels in both local rents and party support and thereby allow us to retrieve within-individual effects at fixed points in time. Thus, our modeling strategy vastly corresponds to a two-way fixed-effects models, but allows to take into account the clustering of units in postcode sectors and counties/cities.

We further minimize the risk of confounding by controlling for a number of possible time-varying confounders. On the one hand, these include household characteristics, such as household composition, the proportion of economically active household members, and whether a household moved in the past 12 months (within the same zip-code area). On the other hand, we control for individual-specific variables: Respondents' labor market status and their personal contribution to the overall household income. Given the within-between formulation of our model, we include unit-demeaned versions of these variables along with their unit-means. Further information on the model specification is presented in Online Appendix D.

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[3]Our classification is a simplified version of a municipal-level typology of residential-structural areas presented by the Federal Office for Building and Regional Planning. We define so-called "core cities" as urban, municipalities in high and medium-density counties within broader urbanized and agglomeration areas as sub-urban, and municipalities within rural countries as rural.

Our outcome variable, party support, is a binary indicator based on the yearly item which party (if any) a respondent leans toward. Given the fairly recent entry of the AfD into the German party system, all models analyzing individual support for the AfD use a time series from 2014 to 2018. All of our models use time-varying cross-sectional sampling weights. In all of our analyses, we address the problem of missing data via multiple imputation using Amelia II (Honaker, King and Blackwell, 2015). We run each model on five imputed data sets and combine the estimates by first simulating the sampling distribution of the model parameters within each imputation and subsequently pooling the simulated sampling distributions across imputations. Our reported estimates show the medians (point estimates) along with the 2.5 and 97.5 percentiles (95% confidence intervals) of these pooled simulations.

Results

Effects of rental market risk on AfD support

We present the main results of our empirical analysis in Figure 7, which shows the marginal effect of increases in local rent levels on the probability to support the AfD conditional on household income. The results are displayed separately for renters (left) and homeowners (right). The values of equivalized household income on the horizontal axis are reported on the log-scale.[4]

The findings presented in Figure 7 are in line with various of our theoretical expectations. First of all, the left-hand plot confirms that rising local rental prices significantly increase the probability of supporting the radical right AfD among renters with lower household income. Over and beyond changes to respondents' actual household rents, a hypothetical 1 €/sqm increase in local market rents increases the probability of AfD support by over four percentage points among respondents with very low equivalized household incomes. In contrast, we find the opposite effect for residents with higher levels of household income. Here, a hypothetical 1 €/sqm increase in local market rents decreases the probability of AfD support by more than five percentage points. Our findings, thus, support the idea that household income strongly moderates the geotropic effect of local rent prices. For those with lower income, higher rents constitute a significant threat to their social status, which results in a higher propensity to support the radical right. For renters with higher household income, however, increasing local

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[4]This means that the farther we move to the right of the scale, the farther spread out the values of the underlying true scale become: The minimum value of 5 corresponds to a monthly net household income of 150€, the center of the scale at 7.5 corresponds to approximately 1,800€, and the maximum value of 10 corresponds to a monthly net income of 22,000€.
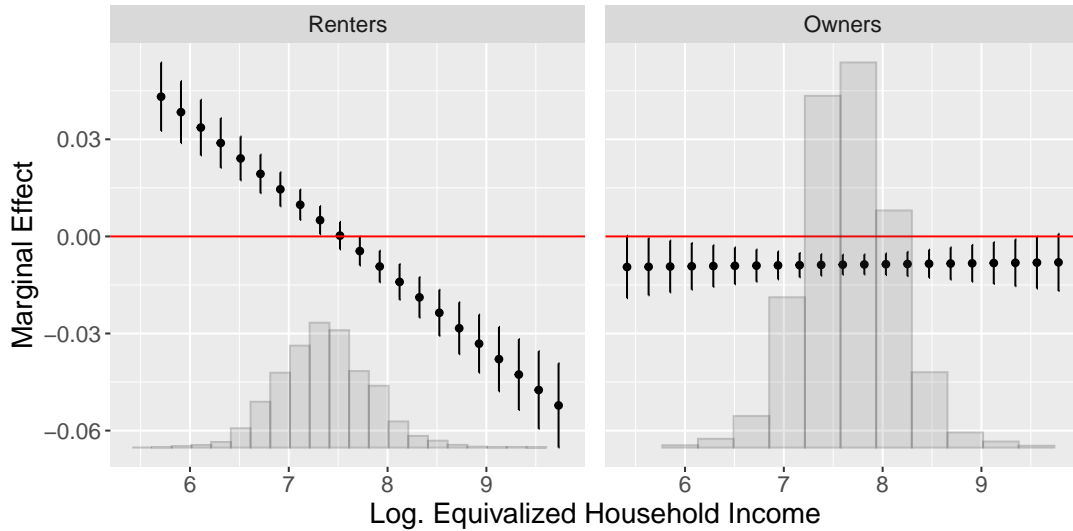
Figure 7: Conditional marginal effects of local market rents on the probability of AfD support as a function of logged equivalized household incomes for long-term resident renters (left) and homeowners (right). Point estimates with 95% confidence intervals. Based on the estimates reported in Table D.1 in the Online Appendix.

rents lead to less support for the radical right. We suggested that this pattern among high-income voters can be explained by a perspective of neighborhood upgrading related to the fact that this group has the financial means to enjoy the upsides of local urban development.

A direct observable implication of our argument about rental market risks is that home-owners should be shielded from the potential threat of increasing rents. The right-hand side of Figure 7 supports this expectation. For homeowners, we do not find that higher rents lead to higher support for the AfD. To the contrary, we find a negative effect, which is constant at all levels of household income. Regardless of households income streams, a hypothetical 1 €/sqm increase in local market rents decreases the probability of AfD support by roughly one percentage point. Similarly to renters with high household incomes, homeowners are beneficiaries of neighborhood upgrading, which makes them less prone to support the radical right.

Locality-specific effects

Rental markets dynamics have been heterogeneously distributed across Germany: While rents have increased nearly everywhere, this development has been particularly pronounced in cities and suburban agglomerations (see Figures 3 and 4). We have argued that we should thus not expect the hypothesized mechanism to apply uniformly across the geo-political landscape of Germany. Instead, we expect that these developments will be particularly pronounced in high-density areas where the effects of gentrification are most tangible. In these regions, the

risk of rental cost overburden is highest and the threat of being forced out of one's long-term residential and social environment is greatest.
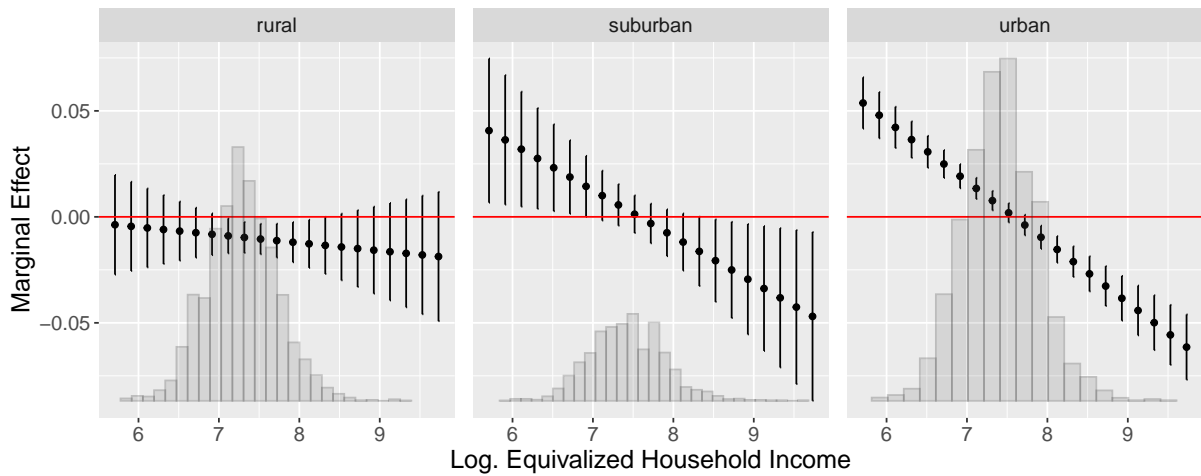

Figure 8: Conditional marginal effects of local market rents on renters' probability of AfD support as a function of logged equivalized household incomes for long-term resident renters in rural (left), suburban (center), and urban (right) localities. Based on the estimates reported in Table D.2 in the Online Appendix.

To test this expectation, Figure 8 shows the conditional within-effect of a 1 €/sqm increase in local rents by household income for renters living in rural (left), suburban (center), and urban (right) localities. While we find that the within-effect of rental market risk on AfD support decreases with equivalized household incomes across all three types of localities, the effect patterns differ markedly. In rural localities, rental market risk has no significant effect on low-income renters and, if anything, a moderately negative effect on renters in medium-to-high-income households. In contrast, we find that the effect pattern previously reported in Figure 7 is strongly pronounced in suburban and especially in urban localities.

This shows that our proposed mechanism unfolds most strongly in those areas that are severely affected by rent price appreciation and where, concurrently, the proportions of individuals living in rental housing is highest. Our findings therefore uncover a dynamic mechanism that contributes to the explanation of the electoral consolidation of the AfD in 'booming' suburban agglomerations and urban centers. In cross-sectional analyses of radical right support, these regions are typically overlooked in favor of declining regions or the static rural periphery, where radical right voting is most widespread. Our analyses thus offer new complementary evidence: Whereas structural compositional differences *between* localities predict the strong electoral appeal of the radical right in declining regions and the rural periphery, we show that even and especially in booming regions, a sizable segment of socially and economically vulnerable individuals turns to the radical right as rental market risks intensify *within* localities.

Mechanism: Rental market risk vs. pocketbook effects

Our key argument is that local market rents, as a distinct source of geotropic economic risk, affect radical right support beyond individual pocketbooks. While our findings strongly support this notion, the question remains how our proposed mechanism relates to the competing pocketbook mechanism, according to which financial burden from increasing *actual* rent loads drives individuals toward the radical right. To empirically disentangle those two channels, Section B in the Online Appendix analyzes indirect effects of local market rents that unfold via long-term renters' base rents in €/sqm. Figure B.3 in the Online Appendix shows the two constitutive links of this mechanism – the effect of local market rents on household rents and the effect of household rents on AfD support, respectively, along with the corresponding indirect effect. As in our main analyses, we condition all effects on renters' equivalized household incomes, which allows to assess if economic resources moderate the proposed effects.

Our supplementary analyses do not show any support for a significant pocketbook channel. Whereas we find a positive, significant, and sizable effect of local market rents on household rents, household rents do not significantly affect radical right support when concurrently adjusting for local market rents. This finding holds at all levels of household income. This suggests that potential effects of individual household rents on radical right support can most likely be attributed to concurrent effects of local rent price appreciation on both household rents and radical right affinity. This underlines the relevance of our proposed mechanism: The increasing risk of forced relocation due to rising local rental prices – not actual price hikes in current household rents – explain why individuals in tightening housing markets turn to the radical right.

As a potential caveat against the validity of our evidence on the underlying mechanism, critics might argue that the null effects of household rents are driven by certain aspects of our model specification – e.g., modeling pocketbook effects per the interaction of household square-meter rents conditional on household income or the specific inclusion of potential dynamic confounders. We preempt these concerns by replicating the exact same model specification in the analysis of a different outcome: Individuals' worries about their own financial situation, which one should expect to heighten when household rents increase. As we show in Fig. B.4 in the Online Appendix, household rents exert a positive within-effect on respondent's economic worries over and beyond local market rents at all levels of household income. Thus, our model specification is well-suited to detect plausible pocketbook effects of household rents that operate over and beyond the effect of local market rents. Whereas pocketbook consideration affect egotropic economic concerns, they do not, however, contribute to the explanation of radical right support.

Robustness checks

We scrutinize the robustness of our findings in a series of additional analyses, which we report in Section C of the Online Appendix. First, we rerun our longitudinal analyses akin to a first difference approach, where we use respondents' vote choice in the 2013 and 2017 German Federal Election (as retrospectively reported in the 2014 and 2018 waves of the GSOEP) in place of the annual 2014-2018 measures of respondents' disclosure of their party preferences. The corresponding evidence, reported in Figures C.5 and C.6 in the Online Appendix, confirms our findings reported above.

Secondly, we offer two alternative specifications of the moderating local context. Instead of distinguishing rural, suburban, and urban localities, we use two use categorizations that tie the geographical context more strongly to our discussion of the economic discrepancies across local housing markets. Specifically, we use tertile-bins of local 2018 rent levels as well as 2005-2018 rent level changes therein. The corresponding findings, reported in Figures C.7 and C.8 in the Online Appendix, are fully in line with our argument. Using either of the two alternative specifications, we find no significant effects of local market risks in the bottom tertile and the strongest effects in the top tertile: In localities with the highest levels of rent prices and the highest rates of rent price appreciation, we find strong negative effects of rent price appreciation on AfD support among renters in high-income households, which are mirrored by strong positive effects among those at the lower end of the income distribution.

Conclusion

This article studies how rental market dynamics affect political behavior. Our results suggest that rent price appreciation – a widespread phenomenon in many metropolitan and suburban areas in Europe, even beyond the German-speaking countries – are a highly relevant but so far neglected source of changing electoral behavior in Europe. We contribute to a growing literature on the electoral implications of housing shortages (Adler and Ansell, 2020; Ansell et al., 2022; Chou and Dancygier, 2021; Cavaillé and Ferwerda, 2023) by introducing the concept of rental market risk. Our empirical analysis draws on very granular rental market data to demonstrate that increases in local rent prices exert significant positive effects on individual support for the radical right. This result only applies to lower-income voters who lack the financial cushion to absorb a potential rent increase.

The concept of rental market risk is helpful to better understand the relationship between the rental market and political behavior. It allows us to move beyond compositional differences *between* regions. Booming socio-economic regions have been shown to be the home of left-liberal voters while declining regions see higher levels of support for the radical right. Studies have successfully linked electoral behavior and political attitudes and resentment to the development of local identities and economies. These studies, however, have strongly focused on the effects of grievances resulting from structural regional decline. By highlighting how dynamic changes *within* places affect party preferences, our study provides an explanation for why we also happen to observe increasing support for the radical right in booming regions. By zooming in on local heterogeneity in rental market risks within localities and taking the moderating role of individual economic circumstances into account, we have provided evidence that the chance of supporting the radical right can increase even in booming regions when individuals are at risk of being overburdened and driven out by these developments.

In line with other studies of radical right support, we find that it is not experiences of acute economic hardship that drives individuals towards the radical right but the looming threat of impending economic decline in the form of latent economic risks. We do not find an effect of individuals' *actual* household rents on support for the AfD but demonstrate the crucial role of structural changes in the *local rental market.* In response to heightened exposure to these rental market risks, which pose a significant threat to individuals' social and economic status, voters may turn to political actors who fundamentally challenge the political status quo. Our finding that it is the radical right – and not the mainstream left – that attracts voters who face increasing economic risks in the housing market resonates with and extends recent research on status politics, which has labor market vulnerability and status anxiety to radical right support (Gidron and Hall, 2017; Kurer, 2020; Engler and Weisstanner, 2021; Abou-Chadi and Kurer, 2021). In line with those insights, we find that people exposed to profound economic risks do not necessarily turn to left-wing parties in search of economic policy solutions. Instead, the grievances that result from status threat translate into support of the populist and nativist appeal of the radical right.

While our study presents significant advancements towards better understanding the role of neighborhood effects for changes in electoral support, it can only offer a first step in this important direction. First of all, the politics of housing are of course much more far-reaching than the relationship that we analyzed in this article. We do not analyze policy supply and party platforms in terms of housing. We have thus not taken into account specific policy positions on this issue by political parties but have focused on economic risks as a driver of radical right support. Future research should indeed incorporate a perspective in which parties have more agency and study how parties' programmatic strategies can shape political competition around the issues of housing policy. Moreover, we want to note that despite a

vast literature in urban and regional sociology that study phenomena such as gentrification, there is very little exchange between this literature and political science research on electoral behavior. We hope that our work will inspire future studies to turn towards different aspects of changing social, economic, and cultural contexts within neighborhoods, and to study their downstream consequences on political preferences, political behavior, and electoral change.

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Online appendix: Rental market risk and voting for the radical right

A. The German housing market

A.1. Correlation between 2018 market rents levels and 2005-2018 market rent changes

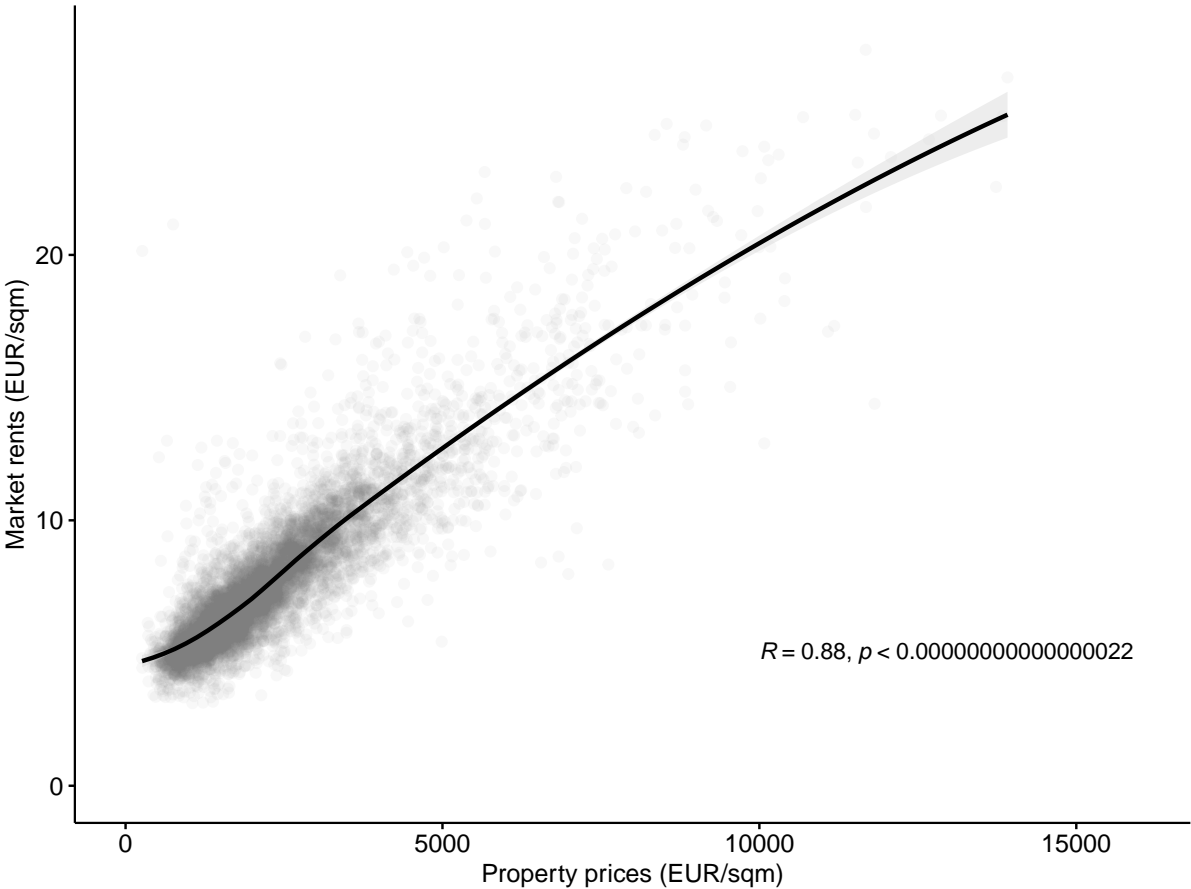*R* = 0.88, *p* < 0.00000000000000022

Figure A.1: LOESS estimate of the postcode-level relationship between 2018 market rents (x-axis) and 2005-2018 changes in market rents (y-axis). R gives the Pearson correlation coefficient. Based on F+B Rental Market Monitor data.

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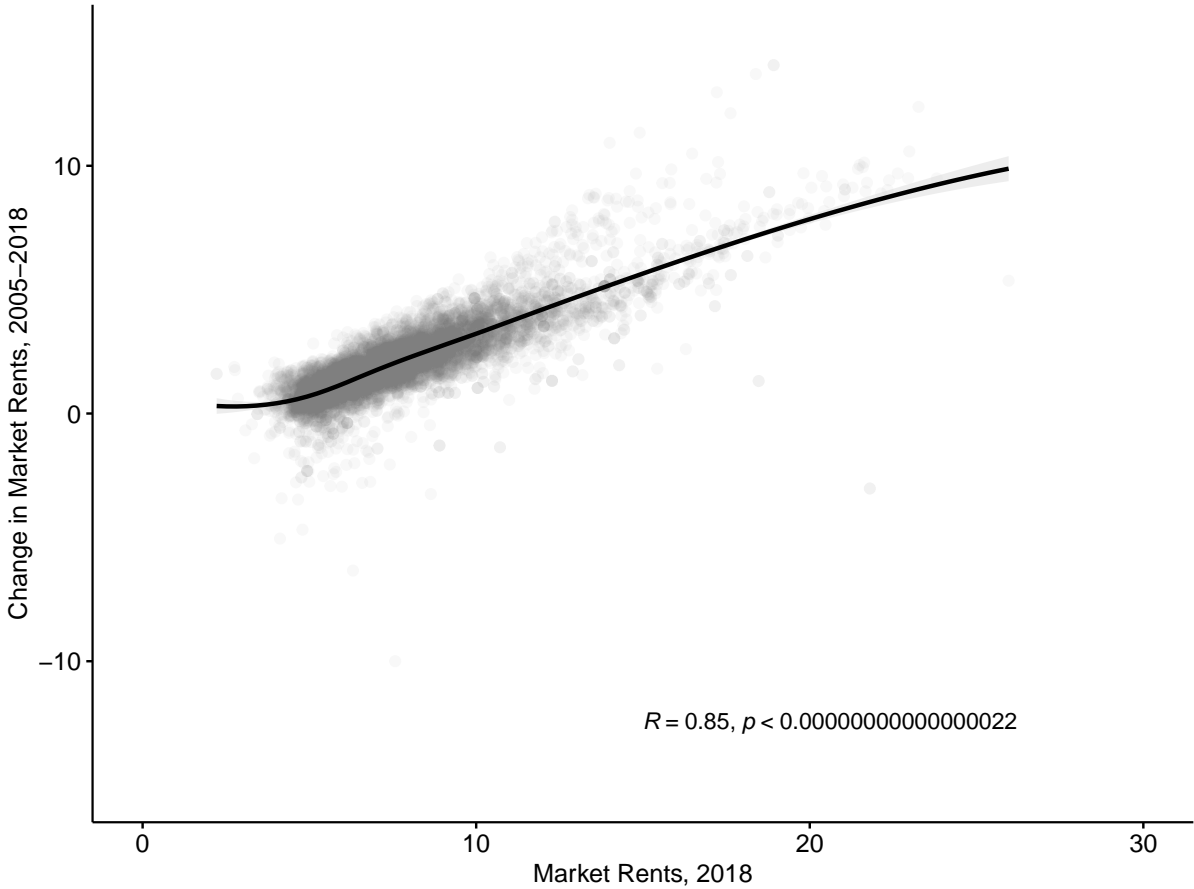## A.2. Correlation between market rents and property purchase prices

Figure A.2: LOESS estimate of the postcode-level relationship between market prices for property purchases (x-axis) and market rents (y-axis). R gives the Pearson correlation coefficient. Based on RWI-GEO-RED data (RWI; ImmobilienScout24, 2021a,b)

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B. Mechanism evidence: Rental market risk vs pocketbook effects

B.1. Pocketbook effects on AfD support

Our argument posits that even though local market rents may affect renters' party preferences partly via actual household rents (the indirect effect, indicative of what we call the *pocketbook mechanism*), we expect them to affect radical right support primarily beyond individual pocketbooks (via the controlled direct effect, indicative of what we call the *geotropic mechanism* or the net effect of rental market risk).

Strong and significant effects of household rents (the mediator) on party preferences (the outcome) are a prerequisite for the presence of indirect effects through which the pocketbook effects of local market rents on party preferences may unfold. If we found such effects of the mediator on the outcome (along with affects of local market rents on the mediator, whose presence we have already confirmed in Table 1 and again turn to below), this would indicate support for both geotropic and pocketbook mechanisms, and we could subsequently assess their relative importance. If, however, we found no effect of household rents on party preferences after controlling for local markets, this would be indicative of a different causal story: Namely that local market rents *confound* the relationship between household rents and party preferences. In this case, effects of household rents on party preferences would be spurious, driven by the joint effects of local market rents on both variables.

The results presented in the main text lend strong support to the presence of a controlled direct effect, thus supporting our argument regarding the presence of an income-dependent geotropic effect. To assess the substantive importance of the geotropic effect vis-à-vis a potential pocketbook effect, we present estimates of the marginal effect of local market rents on household rents (the mediator), of household rents (the mediator) on party preferences (the outcome), as well as the combined indirect effect, which, given our use of linear models, we compute by the product rule.

Fig. B.3 displays the corresponding evidence, showing the marginal effect of local market rents on actual household rents (left), the marginal effect of actual household rents on AfD support (center), and the indirect effect of local market rents on AfD support that unfolds via household rents (right). Whereas we find a significant, sizable, and positive effect of local market rents on household rents, household rents do not significantly affect radical right support when adjusting for local market rents. This finding holds at all levels of household income. Evidence in support of the pocketbook mechanism is therefore likely an artifact of confounding by local market rents. This underlines that geotropic threat – *not* egotropic pocketbook effects – matter for party preferences, which, in turn, underlines the importance of our theoretical argument.
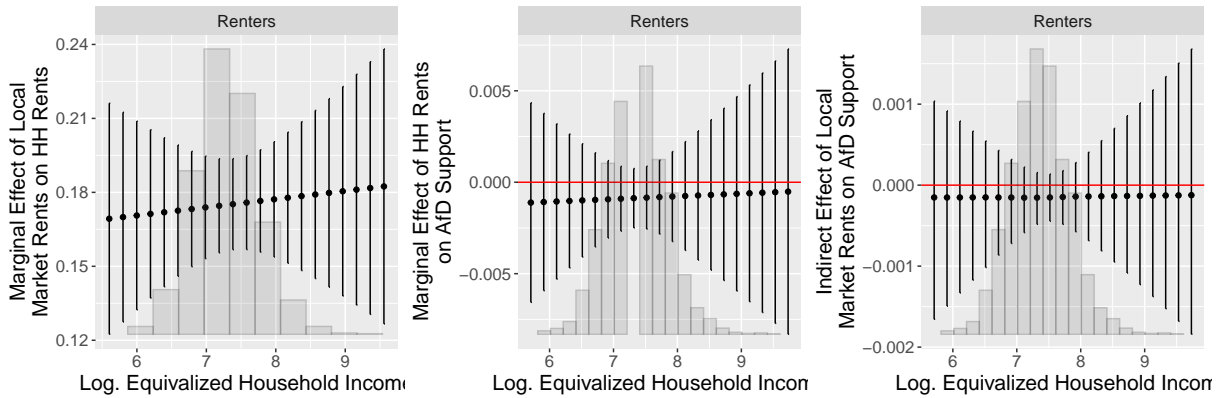
Figure B.3: Income-dependent pocketbook effects on AfD support. Left: Marginal effect of local market rents (in € /sqm) on actual household rents (in € /sqm). Center: Marginal effect of actual household rents (in € /sqm) on AfD support (on the probability scale). Right: Average indirect effect of local market rents on AfD support that unfolds via household rents. Point estimates and 95% confidence intervals.

B.2. Pocketbook effects on worries about respondents' personal finances

As a potential caveat against the validity of the mechanism evidence presented above, critics might argue that the null effects of household rents are driven by certain aspects of our model specification – e.g., studying pocketbook within-effects per the interaction of household square-meter rents conditional on household income, or the rigorous inclusion of potential dynamic confounders. We preempt these concerns by replicating the exact same model specification in the analysis of a different outcome: Individuals' worries about their own financial situation, which one should expect to heighten when actual household rents increase.
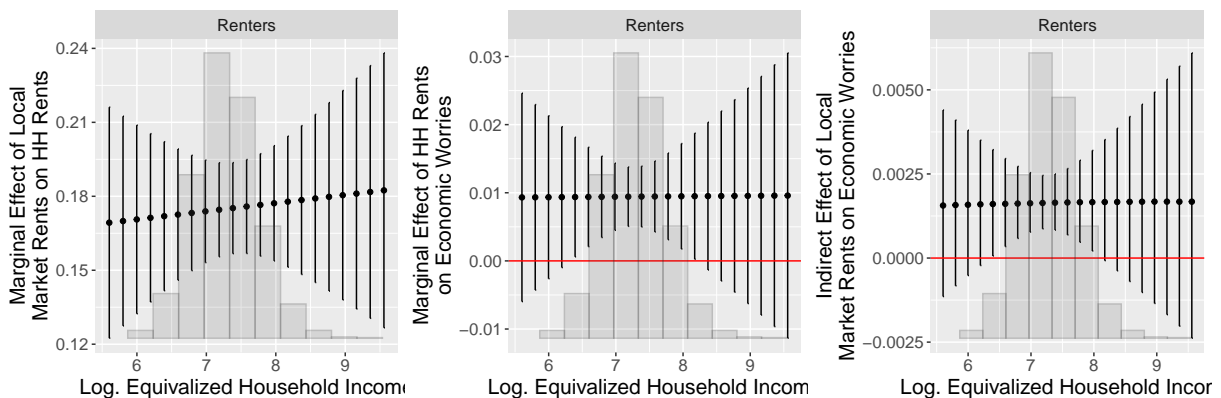
Figure B.4: Income-dependent pocketbook effects on respondents' worries about their personal financial situation. Left: Marginal effect of local market rents (in € /sqm) on actual household rents (in € /sqm). Center: Marginal effect of actual household rents (in € /sqm) on economic worries (measured on a three-point scale ranging from -1 to +1). Right: Average indirect effect of local market rents on economic worries that unfolds via household rents. Point estimates and 95% confidence intervals.

Next to the same estimate of the marginal effect of local market rents on actual household rents presented in Fig. B.3 (left), Fig. B.4 shows the marginal effect of actual household rents on respondents'

worries about their personal financial situation (center) and the indirect effect of local market rents on these worries that unfolds via household rents (right). As we can see in the center plot, household rents exert a positive within-effect on respondent's economic worries over and beyond local market rents at all levels of household incomes. Except for the thinly populated tails of the distribution of the moderator, this effect is statistically significant. Correspondingly, the plot on the right also shows significant indirect effects. This underlines that our model specification is well-suited to detect plausible indirect pocketbook effects on relevant outcomes. While pocketbook consideration affect egotropic economic concern, they do not, however, contribute to the explanation of radical right support.

C. Robustness checks

C.1. Alternative measurement of the outcome: AfD vote choices in 2014 and 2018

Figure C.5: Conditional marginal effects of local market rents on the probability of AfD votes as a function of logged equivalized household incomes for long-term resident renters (left) and homeowners (right). Point estimates with 95% confidence intervals.

Figure C.6: Conditional marginal effects of local market rents on renters' probability of AfD votes as a function of logged equivalized household incomes for long-term resident renters in rural (left), suburban (center), and urban (right) localities.

C.2. Alternative measurement of the local context

C.2.1. Tertiles of local 2017 rent levels

Figure C.7: Conditional marginal effects of local market rents on renters' probability of AfD support as a function of logged equivalized household incomes for long-term resident renters in low-rent (left), medium-rent (center), and high-rent (right) localities.

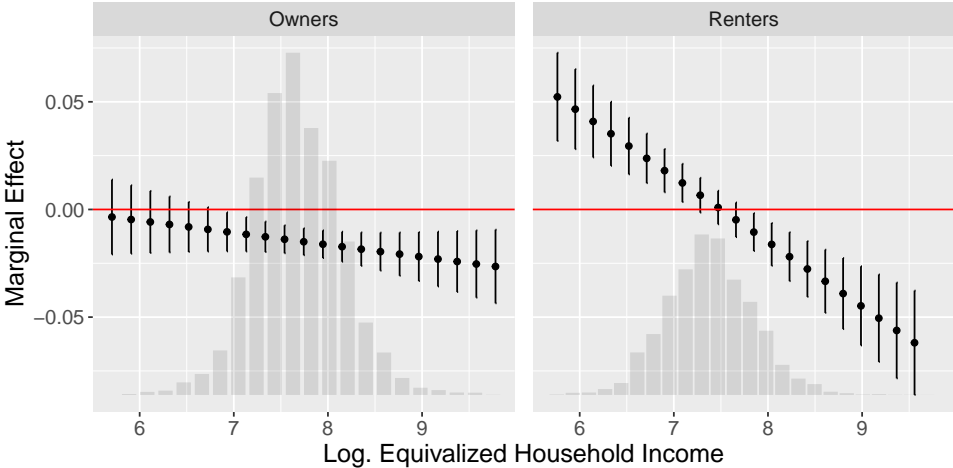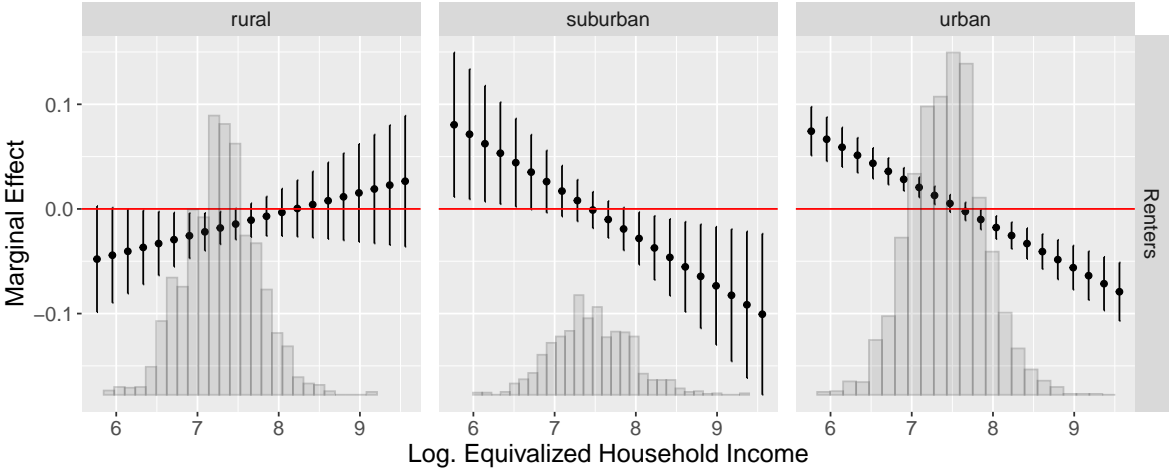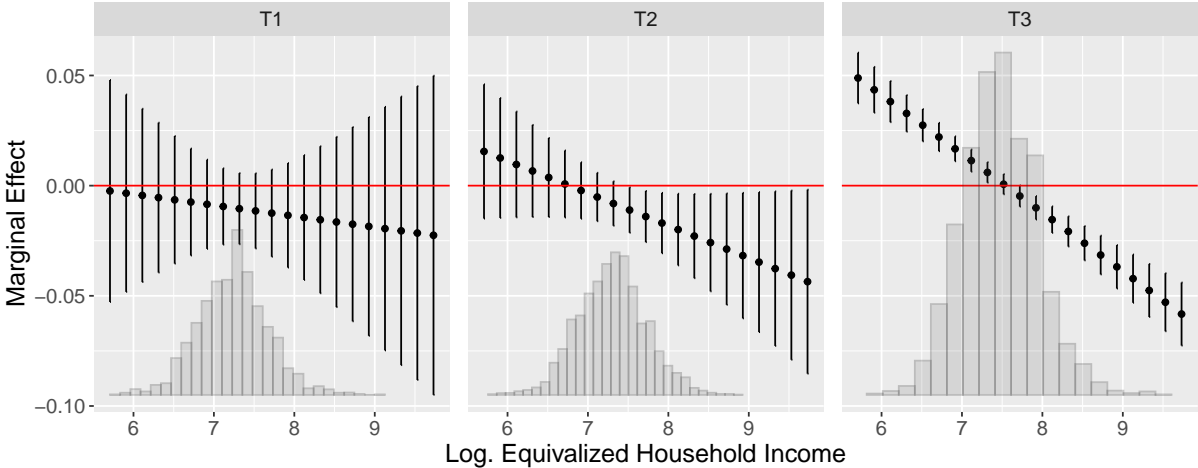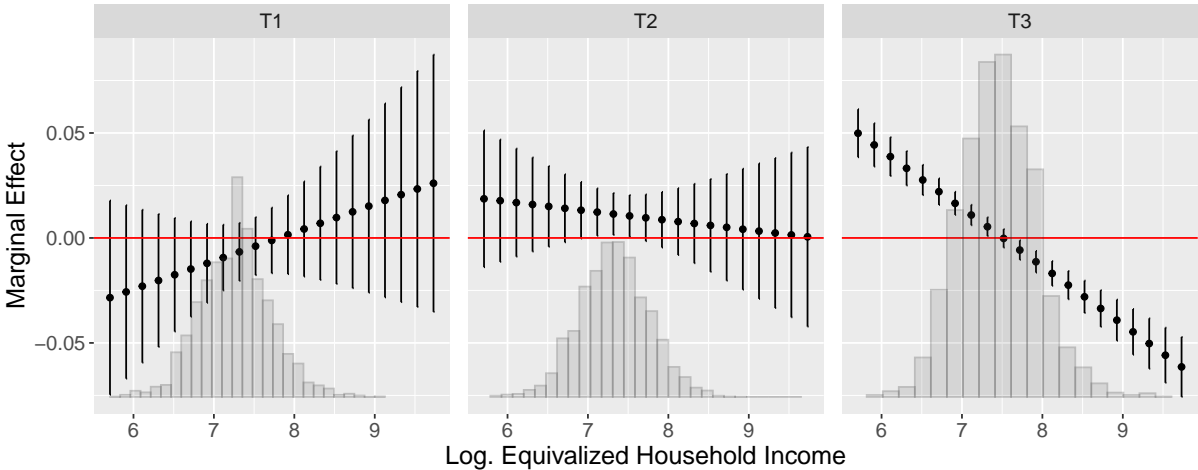### C.2.2. Tertiles of local 2005-2018 rent level changes

Figure C.8: Conditional marginal effects of local market rents on renters' probability of AfD support as a function of logged equivalized household incomes for long-term resident renters in localities with low (left), medium (center), and high (right) levels of rent price appreciation.

D. Regression models

D.1. Details

We estimate variants of linear within-between models (Bell and Jones, 2015) at the individual-level with additional random effects to account for spatial dependencies at the postcode and city/county levels. We implement within-between decompositions for most time-varying predictors. Coefficients for the within-demeaned predictors indicate *within effects* whereas the coefficients for the respondent means indicate *between effects* in Tables D.1 and D.2 below. Additionally, for time-invariant variables (like gender and, given that we focus on long-term residents, locality type) as well as so-called 'sluggish' variables that hardly change over time (like educational degrees), we include the original (undemeaned) versions, whose coefficients we denote as *mixed effects*. These also apply to our year fixed effects.

Multiplicative interaction effects of local market rents and household incomes (as well as analogous interactions of actual household rents and household incomes) are products of the non-demeaned levels of household incomes and within-demeaned rent variables (conditional within effects) or respondent-means of the rent variables (conditional between effects), respectively. This specification allows us to assess how the within and between effects of rents vary as a function of the time-varying levels of equivalized household incomes.

D.2. Tables

Variables	Renter model	Owner model
Within effects		
Local market rent (EUR/sqm)	0.180 $[0.124, 0.230]$	-0.012 $[-0.049, 0.029]$
Equiv. household income (log)	0.003 $[-0.023, 0.029]$	0.004 $[-0.010, 0.018]$
Proportion personal income	-0.015 $[-0.033, 0.003]$	-0.018 $[-0.030, -0.006]$
Proportion econ. active household members	-0.042 $[-0.060, -0.025]$	0.002 $[-0.009, 0.013]$
Number of household members	-0.020 $[-0.028, -0.012]$	-0.008 $[-0.012, -0.003]$
Labor market status (ref: Full-time employment)		
Atypical employment	-0.002 $[-0.010, 0.006]$	-0.001 $[-0.008, 0.006]$
Economically inactive	-0.029 $[-0.045, -0.013]$	0.003 $[-0.006, 0.012]$
Unemployed	-0.032 $[-0.049, -0.015]$	-0.011 $[-0.025, 0.004]$
In education	-0.021 $[-0.044, 0.003]$	-0.013 $[-0.026, 0.001]$
Retired	-0.043 $[-0.061, -0.025]$	-0.004 $[-0.014, 0.007]$
Household rent (EUR/sqm)	-0.001 $[-0.035, 0.028]$	
Local market rent (demeaned) $\times$ household income	-0.024 $[-0.031, -0.016]$	0.000 $[-0.005, 0.005]$
Household rent (demeaned) $\times$ household income	0.000 $[-0.004, 0.005]$	
Mixed effects		
Intercept	0.232 $[-0.132, 0.655]$	0.086 $[-0.087, 0.262]$
Age	0.000 $[-0.001, 0.001]$	0.000 $[0.000, 0.001]$
East/West residence (ref: West)		
East	0.010 $[-0.020, 0.039]$	0.018 $[-0.003, 0.038]$
Sex (ref: Male)		
Female	-0.020 $[-0.033, -0.006]$	-0.017 $[-0.026, -0.009]$

Education (ref: < Upper secondary)

Upper-secondary	0.007	−0.004
	[−0.024, 0.025]	[−0.026, 0.012]
Post-secondary non-tertiary	0.003	−0.003
	[−0.030, 0.044]	[−0.029, 0.025]
Higher vocational	0.002	−0.013
	[−0.030, 0.046]	[−0.042, 0.008]
Tertiary	−0.004	−0.011
	[−0.036, 0.019]	[−0.034, 0.007]

Locality (ref: Rural)

Suburban	0.011	0.009
	[−0.023, 0.045]	[−0.012, 0.029]
Urban	−0.006	0.007
	[−0.037, 0.026]	[−0.015, 0.029]

Year (ref: 2014)

2015	0.001	0.008
	[−0.005, 0.006]	[0.005, 0.013]
2016	0.011	0.018
	[0.005, 0.017]	[0.014, 0.022]
2017	0.011	0.021
	[0.003, 0.018]	[0.016, 0.026]
2018	0.018	0.028
	[0.009, 0.027]	[0.022, 0.034]

Between effects

Equiv. household income (log)	−0.028	−0.009
	[−0.082, 0.020]	[−0.031, 0.014]
Local market rent (EUR/sqm)	−0.072	−0.004
	[−0.107, −0.038]	[−0.027, 0.018]
Proportion personal income	0.001	−0.003
	[−0.030, 0.031]	[−0.021, 0.014]
Proportion econ. active household members	−0.005	−0.004
	[−0.054, 0.043]	[−0.031, 0.023]
Number of household members	−0.001	0.000
	[−0.010, 0.008]	[−0.006, 0.005]

Labor market status (ref: Full-time employment)

Atypical employment	0.000	0.001
	[−0.035, 0.036]	[−0.022, 0.024]
Economically inactive	−0.004	−0.002
	[−0.046, 0.039]	[−0.024, 0.021]
Unemployed	−0.006	−0.010
	[−0.057, 0.045]	[−0.068, 0.046]

In education	−0.005	−0.012
	[−0.068, 0.058]	[−0.049, 0.025]
Retired	−0.013	−0.015
	[−0.062, 0.033]	[−0.041, 0.011]
Household rent (EUR/sqm)	0.028	
	[−0.035, 0.084]	
Local market rent (mean) × household income	0.010	0.001
	[0.005, 0.014]	[−0.002, 0.003]
Household rent (mean) × household income	−0.004	
	[−0.011, 0.005]	

N		
Observations	20343	37836
Individuals	7533	11519
Postcode areas	2377	2724
Counties/cities	391	397

Standard deviations of intercepts

$\sigma_{\text{Individuals}}$	0.238	0.173
$\sigma_{\text{Counties/cities}}$	0.067	0.047
$\sigma_{\text{Postcode areas}}$	0.147	0.104
$\sigma_{\text{Observations}}$	0.100	0.097

Table D.1: Coefficients and simulation-based 95% confidence intervals from hierarchical linear within-between models, estimated across $M = 5$ imputations.

Variables	Renter model	Owner model
Within effects		
Local market rent (EUR/sqm)	0.017	−0.018
	[−0.079, 0.113]	[−0.065, 0.029]
Equiv. household income (log)	0.004	0.004
	[−0.023, 0.030]	[−0.010, 0.018]
Proportion personal income	−0.015	−0.018
	[−0.033, 0.003]	[−0.030, −0.006]
Proportion econ. active household members	−0.041	0.002
	[−0.059, −0.024]	[−0.009, 0.013]
Number of household members	−0.020	−0.008
	[−0.028, −0.012]	[−0.012, −0.003]
Labor market status (ref: Full-time employment)		
Atypical employment	−0.002	−0.001
	[−0.010, 0.006]	[−0.008, 0.006]
Economically inactive	−0.030	0.003
	[−0.045, −0.014]	[−0.005, 0.012]
Unemployed	−0.031	−0.010
	[−0.048, −0.014]	[−0.024, 0.004]
In education	−0.022	−0.013
	[−0.046, 0.002]	[−0.026, 0.001]
Retired	−0.043	−0.004
	[−0.060, −0.025]	[−0.014, 0.007]
Household rent (EUR/sqm)	0.032	
	[−0.009, 0.073]	
Local market rent (demeaned) × household income	−0.004	0.001
	[−0.017, 0.009]	[−0.005, 0.007]
Market rent (demeaned) × suburban locality	0.150	−0.010
	[−0.079, 0.361]	[−0.105, 0.103]
Market rent (demeaned) × urban locality	0.201	0.042
	[0.089, 0.310]	[−0.031, 0.116]
Household rent (demeaned) × household income	−0.005	
	[−0.010, 0.001]	
Household rent (demeaned) × household income × suburban locality	−0.015	
	[−0.157, 0.092]	
Household rent (demeaned) × household income × urban locality	−0.046	
	[−0.099, 0.009]	
Market rent (demeaned) × household income × suburban locality	−0.018	0.002
	[−0.046, 0.012]	[−0.013, 0.014]
Market rent (demeaned) × household income × urban locality	−0.025	−0.005
	[−0.040, −0.010]	[−0.015, 0.004]

Household rent (demeaned) × household income × suburban locality	0.003 [−0.011, 0.022]	
Household rent (demeaned) × household income × urban locality	0.006 [−0.001, 0.014]	

Mixed effects

Intercept	0.187 [−0.406, 0.787]	−0.159 [−0.440, 0.116]

Locality (ref: Rural)

Suburban	−0.189 [−2.593, 1.593]	0.363 [−0.058, 0.776]
Urban	0.245 [−0.647, 1.016]	0.536 [0.118, 0.961]
Age	0.000 [−0.001, 0.001]	0.000 [0.000, 0.001]

East/West residence (ref: West)

East	0.008 [−0.023, 0.038]	0.018 [−0.004, 0.039]

Sex (ref: Male)

Female	−0.019 [−0.033, −0.006]	−0.017 [−0.026, −0.009]

Education (ref: < Upper secondary)

Upper-secondary	0.007 [−0.023, 0.025]	−0.004 [−0.026, 0.011]
Post-secondary non-tertiary	0.004 [−0.030, 0.045]	−0.003 [−0.029, 0.025]
Higher vocational	0.002 [−0.029, 0.046]	−0.013 [−0.042, 0.008]
Tertiary	−0.004 [−0.036, 0.019]	−0.011 [−0.033, 0.007]

Year (ref: 2014)

2015	0.001 [−0.004, 0.007]	0.009 [0.005, 0.013]
2016	0.012 [0.006, 0.019]	0.018 [0.014, 0.022]
2017	0.013 [0.006, 0.020]	0.021 [0.016, 0.026]
2018	0.022 [0.013, 0.030]	0.028 [0.022, 0.034]
Household income × suburban locality	0.027 [−0.211, 0.347]	−0.046 [−0.098, 0.008]

Household income × urban locality	−0.036 [−0.138, 0.084]	−0.067 [−0.121, −0.013]

Between effects

Equiv. household income (log)	−0.020 [−0.101, 0.059]	0.023 [−0.013, 0.059]
Local market rent (EUR/sqm)	−0.109 [−0.205, −0.012]	0.035 [−0.009, 0.081]
Proportion personal income	0.000 [−0.030, 0.031]	−0.003 [−0.021, 0.014]
Proportion econ. active household members	−0.006 [−0.054, 0.043]	−0.004 [−0.031, 0.023]
Number of household members	−0.001 [−0.010, 0.008]	−0.001 [−0.006, 0.005]

Labor market status (ref: Full-time employment)

Atypical employment	0.000 [−0.036, 0.036]	0.001 [−0.022, 0.024]
Economically inactive	−0.003 [−0.046, 0.039]	−0.002 [−0.025, 0.021]
Unemployed	−0.007 [−0.058, 0.043]	−0.007 [−0.063, 0.050]
In education	−0.007 [−0.071, 0.057]	−0.012 [−0.049, 0.024]
Retired	−0.013 [−0.061, 0.034]	−0.015 [−0.041, 0.011]
Household rent (EUR/sqm)	0.087 [0.004, 0.171]	
Local market rent (mean) × household income	0.015 [0.002, 0.028]	−0.005 [−0.010, 0.001]
Market rent (mean) × suburban locality	0.121 [−0.105, 0.375]	−0.049 [−0.115, 0.017]
Market rent (mean) × urban locality	0.032 [−0.073, 0.136]	−0.079 [−0.140, −0.019]
Household rent (mean) × household income	−0.012 [−0.023, −0.001]	
Household rent (mean) × household income × suburban locality	−0.107 [−0.260, 0.139]	
Household rent (mean) × household income × urban locality	−0.083 [−0.202, 0.047]	
Market rent (mean) × household income × suburban locality	−0.017 [−0.051, 0.013]	0.006 [−0.002, 0.015]

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Market rent (mean) × household income × urban locality	−0.004	0.010
	[−0.018, 0.010]	[0.002, 0.018]
Household rent (mean) × household income × suburban locality	0.015	
	[−0.017, 0.035]	
Household rent (mean) × household income × urban locality	0.011	
	[−0.006, 0.027]	

N

Observations	20343	37836
Individuals	7533	11519
Postcode areas	2377	2724
Counties/cities	391	397

Standard deviations of intercepts

$\sigma_{\text{Individuals}}$	0.237	0.173
$\sigma_{\text{Counties/cities}}$	0.067	0.047
$\sigma_{\text{Postcode areas}}$	0.146	0.104
$\sigma_{\text{Observations}}$	0.100	0.097

Table D.2: Coefficients and simulation-based 95% confidence intervals from hierarchical linear within-between models, estimated across $M = 5$ imputations.