

Sheltering Populists? House Prices and the Support for Populist Parties*

Short title: SHELTERING POPULISTS

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Populist parties, particularly from the right of the political spectrum, have sharply increased their electoral support in recent years, creating great media and scholarly interest. Existing work examining the economic underpinnings of populist support has focused on labor market shocks and the presence or absence of government compensation. In this paper we suggest that the housing market may have been as important as the labor market in defining who switched to populist voting and where they were located. We build on existing work that connects house prices to ‘first dimension politics’ of redistribution and classic left-right political identification to argue that house prices might also shape preferences on the ‘second dimension’ of politics: support for populist nationalism versus liberal cosmopolitanism. Using both novel precinct- and individual-level data from Denmark, we show that negative shocks to house prices over the election cycle are strongly associated with shifts to support for the Danish People’s Party, a pattern that has amplified over recent elections. We then turn to corroborate this relationship using local housing data in Sweden, Norway, and Finland.

Keywords: housing, populism, radical right, economic voting

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European countries have seen a resurgence of populist voting over the past decade. In many countries, particularly those with proportional electoral systems, this has displaced the traditional mainstream axis of political competition, with both Christian Democratic and Social Democratic parties dramatically losing vote and seat share (Gingrich and Häusermann 2015). Along with this surge in populist voting has come a wave of political science analyses of its causes. Are voters attracted to populist or radical right-wing parties for cultural reasons, related to antipathy towards immigration or ethnic heterogeneity (Gidron and Hall 2017; Inglehart and Norris 2017)? Or instead, is support for populism underpinned by economic discontent - a revolt of the 'left behinds' (Becker, Fetzer and Novy 2017; Colantone and Stanig 2018a; Fetzer 2019)?

There has, however, been a rather surprising omission in recent studies of voting for populist right-wing parties. The core economic story of the past two decades in wealthy countries has been the surge of house prices in the early 2000s and the ensuing crash from 2008, followed by a more recent boom associated with quantitative easing (Shiller 2015). Asset markets, especially in housing, the asset most widely held and most sentimentally important to people, have been enormously volatile and have spilled over into the 'real' economy of production and employment (Stroebel and Vavra 2019). Furthermore, the development in housing prices has been geographically unequal, causing the house owners in some areas to become much wealthier, while house owners in other areas have been less fortunate. Indeed, wealth inequality in most European countries is far higher than income inequality (Sierminska, Brandolini and Smeeding 2006). Yet, we know very little about whether there is a direct connection between housing booms and busts and the relative success of populist parties. The only existing work on this connection is Adler and Ansell (2020), which examines single elections in France and the UK. What we do not yet know is whether house prices and populist support are related over time, whether this relationship is concentrated among homeowners, and whether it is confounded by other local economic conditions.

In this paper, we analyse highly disaggregated, dynamic data on housing and populist support in Scandinavia to address these important questions. We connect local housing market dynamics to support for populist right parties over the past two decades in four Nordic countries, Denmark,

Sweden, Norway, and Finland, where such parties have been particularly successful in recent years. We argue that changes in house prices shape changes in local support for populist parties, with support higher in those localities where house price growth has been relatively lower. By contrast, support for these parties has been weakest in localities where house price growth has been relatively high. We argue that this relationship is particularly concentrated among homeowners through the *pocketbook* effect of house prices on their satisfaction with status-quo mainstream political parties, though we also expect some *geotropic* affects of house prices for all residents. Importantly, we argue, and empirically demonstrate, that the effects of housing are not confounded by the composition of local labor markets or by the demographic and ethnic makeup of neighborhoods. Nor are they produced by voters of different partisan persuasions sorting into particular areas.

In order to substantiate these claims we conduct two empirical analyses. We begin with an in-depth analysis of house prices and support for the Danish People's Party using registry data in Denmark. With this data we can explore voting patterns and house price levels and changes at a very low level of aggregation – precincts with electorates of around 3,000 eligible voters. We show, using a variety of generalized difference-in-difference models, that changes in house prices are strongly negatively associated with changes in support for the Danish People's Party. We find that this effect holds across precincts with different levels of mobility, when looking only at within-Copenhagen area variation, and is not apparent in support for non-populist parties. We support these precinct-level analyses with geo-coded survey data to demonstrate the effect at the individual level is concentrated among homeowners.

We then turn to examine whether this finding holds up in the broader Nordic context, examining data at the municipality level in Sweden, Norway, and Finland. Once more, we find strong evidence of a negative relationship between changes in local house prices and changes in support for populist parties. We conclude the paper by summarizing and discussing the scope conditions of our findings.

A Theory of Housing and Populist Support

While political scientists have long studied the emergence of radical right and extremist parties in Europe, the rise of a more electorally significant populism over the past decade has produced a wide-ranging debate as to its causes and likely consequences.¹ Early work on the relative success of the radical right focused on the relative importance of economic factors such as unemployment and economic growth (Jackman and Volpert 1996), political institutions such as electoral system type and party fragmentation (Golder 2003), and cultural forces such as levels of immigration (Coffé, Heyndels and Vermeir 2007). That division into material (economic and political) versus cultural factors remains key to the contemporary debate about the populist resurgence since 2008.

In particular, the most prominent approaches in terms of explaining the new populist wave split into those that see globalization and the credit crisis as key and those that identify migration and counter-cosmopolitan attitudes. In the former case, the differential economic geography of Europe (and within countries) has taken center-stage. Colantone and Stanig (2018*b*) argue that those European regions most highly exposed to Chinese trade competition saw the strongest upswing in voting for populist parties (see also Gingrich 2019). The same authors find a similar pattern at the subnational level in terms of voting for the United Kingdom to leave the European Union in 2016 (Colantone and Stanig 2018*a*). Other scholars focused on the material causes of populism have pointed to varied patterns of government spending and economic performance since the credit crisis. Fetzer (2019) argues that those British regions with greater cuts in government spending were more likely to vote for Brexit and Carreras, Irepoglu Carreras and Bowler (2019) find a similar pattern with regard to relative regional economic performance (see also Dal Bó et al. 2019).

By contrast, cultural and attitudinal approaches argue that populism can be viewed as a counter-reaction to increasing levels of immigration, ethnic diversity, and more generally cosmopolitan attitudes across the industrialized world. Particularly influential has been the approach of Norris

¹Our definition of populism follows Müller (2017): populists present themselves as the exclusive moral representatives of a 'people,' defined in opposition to a corrupt 'elite' (see also Mudde 2004). This definition is particularly germane in the case of right populist European political parties, our focus here, as opposed to the leftist populism more prevalent in Latin America.

and Inglehart (2019) who see a cultural backlash across Britain, Europe and the USA. At the micro-level Goodwin and Milazzo (2017) show that rising local immigration was correlated with support for Brexit, and Schaub and Morisi (2020) find that local broadband connectivity is associated with higher support for the AfD in Germany and M5S in Italy, with the argument being that the internet disseminates anti-elite discourse. Finally, Gidron and Hall (2017) connect this attitudinal approach to the material dimension by arguing for the importance of perceived relative status, a subjective feeling of pride or resentment, but connected to lived economic experience (see also Kurer 2020).

What much of this new work analyzing populism has in common is a focus on 'place'—a conjecture that local cultural and economic geography shapes individual voting preferences and behavior. The literature has also recently coalesced on a synthetic consensus: it is likely that both economic and ideational forces matter in terms of explaining support for populism. Where people live and how they live connects both of these forces in a theoretically coherent way. However, surprisingly little thought has been placed into thinking about how the housing that people live in and that ties them into their local communities might matter for populist support.

Wealth embodied in housing is quite distinct from labor market incomes in its connection to place. Housing is geographically *specific* in the two meanings of that word - it belongs both to a specific location and it is specific in the sense that investment in housing is illiquid and specific to that use. Investing in housing means investing in a particular location—so the fortunes of that place become intimately connected to the value of housing in that location—and doing so in a manner that is not easily divested—so investment is for the long run. These kinds of long-run ties to particular places make housing an important conduit of place-based attitudes. When the relative status of particular locations rises or falls that is made manifest in the cost of property there. Thus if populism is driven by relative status considerations across locations, for example, comparing declining provincial towns to the booming capital city, it ought to be connected to relative house prices, not simply labor market incomes.

In recent years, political scientists have begun to examine the role that homeownership and house prices play in affecting political behavior. There is a tradition in political sociology, be-

ginning with Kemeny (1981) of seeing private homeownership as in some sense an alternative to the welfare state. Houses are costly to initially purchase, which may create tax aversion among potential homebuyers seeking to save for a down-payment. Housing also provides a stock of wealth, which might be relied upon during times of lower income—including unemployment and old age—in lieu of social transfers and social insurance (Ansell 2014; Conley and Gifford 2006). Analysis of panel survey data appears to show a negative effect of increasing house prices on support for redistributive and social insurance policies among homeowners (Ansell 2014). Connected to these effects on redistributive attitudes, studies of electoral behavior also typically show homeowners are more likely to vote for economically conservative parties (Studlar, McAllister and Ascuí 1990). This is particularly the case when homeowners have positive equity (André et al. 2018).

There is then ample evidence that home ownership and changes in house prices affect political behavior, from redistributive preferences to voting on the economic left-right dimension - the standard 'first dimension' of electoral politics. But does this extend to voting along the 'second dimension' of cultural or group identity preferences that connects to support for populist (as opposed to mainstream) parties? This second dimension is shaped by perceptions of relative group status (Gidron and Hall 2017), often contrasting 'cosmopolitan elites' in large cities with 'the people' living in smaller towns and rural areas. Recently some scholars have argued that local economic conditions may reflect both individual economic fortunes and more diffuse views about the relative status of one's community (Larsen et al. 2019), often defined ethnically as well as geographically (Hersh and Nall 2016). As we noted above, attraction to populist parties which reject the political and economic status quo and cast aspersions on cosmopolitan, metropolitan elites, reflects both individual experiences of economic misfortune and broader communal experiences of relative decline (Cramer 2016). Accordingly, housing prices, which play a key role in determining both economic fortune and a communal experience of relative decline, may drive support for right-wing populist parties.

Adler and Ansell (2020) argue that housing provides a focal point for both the individual and

communal economic distress that drives much of the populist vote. This is an important intervention; however, their empirical analysis is of single elections in Britain and France using cross-sectional evidence about house prices. Changes in relative status are however a dynamic force - people care about how their area is faring relative to both other areas and to the recent past. We argue that the impact of housing on political attitudes manifests most clearly through over-time changes in relative house prices. By matching local housing data to survey data we are also able to examine whether this relationship is driven by homeowners in particular.

Causal mechanisms

We outline three key channels that connect house prices to voting for populist parties: *pocketbook* effects directly impacting homeowners, *geotropic* effects reflecting communities' relative status, and *mobility* effects concerning the ease of moving from declining to booming areas. Below, we lay out these mechanisms in more detail, showing that there are several good reasons for why housing prices might affect support for right wing populist parties. However, we emphasize that this article will not be able to identify the exact relative importance of these mechanisms. Even so, we cast some light on the role of pocketbook and mobility effects by comparing how responsive homeowners and renters are to housing prices.

The standard way of connecting individual economic experience to political behavior is the 'pocketbook' model (e.g., Lewis-Beck 1985). Typically associated with assessing support for incumbent politicians, pocketbook models assume that direct individual economic experience drives vote choice - hence individuals who receive wage increases are more supportive of the incumbent, those who lose their job or suffer pay declines are less supportive.

Our use of the 'pocketbook' model moves beyond simply voting for the incumbent to look at general satisfaction with the political status quo and the mainstream parties that represent it. We view pocketbook effects as an individual's material gain or loss from changes in house prices. We expect that when house prices are rising, homeowners will be happier with mainstream political parties and the political status quo; when they are declining they ought to be less happy and more

inclined to vote for anti-system, populist parties. This pattern should hold not only in terms of absolute house price gains and losses but also for relative (to other regions) gains and losses. Relative gains matter because housing is ultimately a positional good (Ahlquist and Ansell 2017): land is fixed in quantity and well-located property is valuable *precisely* because it cannot be shared. Thus, even if house prices are rising everywhere, homeowners in places with slow growth are pulled ever further apart from those who live in booming areas—increasing the former's resentment of the latter.

There are four key assumptions that need to hold if the pocketbook model is to explain why declining house prices should be associated with rising support for right-wing populist parties. First, rather than simply voting against the incumbent, individuals experiencing declining house prices should be more attracted to non-mainstream parties. Second, these parties should be right-wing, as opposed to left-wing, populist parties. Third, individuals must respond to changes in their wealth in a similar fashion to standard pocketbook model assumptions about responsiveness to income - that is, even though most homeowners do not *directly* experience changing house prices, unless they sell their houses, they must nonetheless punish mainstream parties for perceived declines in wealth (and vice versa, reward them for rising house prices). Fourth, this effect ought to be most concentrated among homeowners as opposed to renters. One might be concerned that rising house prices would feed into rising rents, causing pocketbook dissatisfaction among renters that offsets the benefits felt by homeowners.² However, in the Scandinavian cases we examine the rental market is strongly regulated, decoupling the residential property and rental markets (Cuerpo et al. 2014). Hence pocketbook effects should be focused among homeowners. In the empirics below we show these four assumptions hold.

As well as individual pocketbook effects, there may also be 'geotropic' effects of changes in house prices on political behavior (Reeves and Gimpel 2012). Geotropic approaches take local geography and community seriously as a level of aggregation that shapes and channels values and

²Many renters will want to enter the housing market at some point. Rising prices also have offsetting pocketbook effects for them. On the one hand they may make it harder to afford an initial downpayment. On the other they may increase the attractiveness of housing as an investment asset.

preferences in ways distinct from an individual's direct pocketbook experiences of house prices.

Why might local conditions matter for vote choice? We argue that a person's community both provides information about the likelihood of various economic outcomes for oneself (a *learning* effect) and matters in and of itself inasmuch as people care about their local community above and beyond their own individual utility (an *altruism* effect) (Kinder and Kiewiet 1981). In terms of learning, there is both statistical learning—if people near me 'look like me' and become unemployed, maybe I am also likely to lose my job; and economic learning—if there is lower demand for goods and services from my region, maybe people won't be able to hire me / buy from me. In terms of altruism, if people care about what happens to their community, above and beyond any individual effect on them, then local economic decline should make them unhappy even if they are completely materially unaffected.

How do house prices affect individual voting behavior through this geotropic mechanism? For homeowners, the learning mechanism operates similarly to the pure pocketbook model above as they update their expectations about the value of their house. But under the learning mechanism, even non-homeowners may be concerned about declining house prices, since they signal that the market doesn't value places like the one in which they live, and hence by extension, 'people like them'. Presuming that this dissatisfaction galvanizes discontent with mainstream parties, local house price declines will drive greater support for right-wing populism. The altruism mechanism is even simpler—if I care strongly about my community and house prices are decreasing (both absolutely or relative to other parts of the country), I feel concerned about a decline in the relative status of my community. This decline may be very visible in the everyday life via, for example, local stores shutting down. Presuming that people then make a mental comparison to those parts of the country doing well, and that those parts are associated with mainstream elites, this provides another channel to greater support for populist right-wing parties.

A final mechanism connects individual and geotropic effects: relative mobility. As the house price differential between different regions and localities rises it becomes harder for people to move between them to seek work, be near family etc. More precisely, it becomes ever harder to

afford to move from a low house price area to a high house price area. This will be particularly pronounced for homeowners who must sell their (lower-valued) property to move permanently. Accordingly, people living in cheaper areas may feel 'locked in' to stagnating or declining regions, amplifying their discontent with their relative status. It may also mean they know fewer people from those expensive areas (and vice versa) as fewer of their friends or relatives are able to move there. Put simply, house price differentials solidify and accentuate existing geographical differences in fortune, status, and satisfaction with the status quo.

In sum, while we expect the pocketbook effect to be the main channel by which changing house prices alter support for populist right parties, geotropic and mobility considerations mean that there are alternate reinforcing mechanisms by which non-homeowners may respond similarly to changes in the housing market. Empirically this means that we expect declining house prices in a region to increase support for right populists *even where* homeownership is low. However, we anticipate the strongest effects to be among homeowners, for whom pocketbook, mobility, and geotropic considerations are most pronounced.

Before moving to our empirical analysis it is worth considering why we expect this relationship between housing and voting to be focused on right populist parties. One might question whether voting for a right-wing populist party is really a political choice along the cultural 'second dimension' of politics. Might it not also reflect attitudes of welfare chauvinism, i.e. a desire to limit the receipt of public goods to in-groups, defined by nationality or ethnicity? If the policy offer of right-wing populist parties is substantially more generous in terms of social spending than traditional right-wing conservative parties – at least for those voters meeting group-based criteria – and such voters live in declining localities, how is this distinct from a simple materialist story where those in declining areas vote right populist and those in booming areas vote right conservative?

The missing factor in this formulation is of course, left-wing parties, the traditional promoters of greater social spending. The question arises as to why voters in areas with declining house prices support right-wing populist parties rather than socialist or social democratic parties, if social spending is the key factor driving behavior? Or further, why they do not vote for non-traditional

left-wing parties such as greens or left-wing populists?

Our argument is that populist right parties place particular emphasis on the relative status of declining areas vis-à-vis booming, typically metropolitan, regions. Hence they are particularly well-suited to pick up on resentments that are specifically place-based, which are reflected by growing gaps in the relative value that society attaches to particular places—house prices. By contrast, left parties—of material and postmaterial types—tend to emphasize solidarity and are more concerned with poverty and economic inequality per se than relative status. Voters motivated by place-based status concerns are, we argue, more likely to gravitate to the populist right, a conjecture supported by substantial existing evidence (Gest, Reny and Mayer 2018; Gidron and Hall 2017; Iversen and Soskice 2019; Norris and Inglehart 2019). As Rodden (2019) shows, left parties have also become increasingly based *within* cities, as opposed to declining peripheral regions with declining house prices. Finally, the Scandinavian countries we examine lack the successful left-wing populist parties increasingly common in Latin America and Southern Europe (Hopkin 2020).

Summarizing the claims of this section, we argue that local house prices shape support for populist right-wing parties both through direct individual effects and local communal effects. Where prices are rising, citizens feel individually and communally satisfied with the political and economic status quo and continue to vote for mainstream parties. Where prices are decreasing (absolutely or relatively) individuals feel that the status of their local community and their own economic situation is in decline, and they turn to the populist right. Finally, these effects should be most pronounced among homeowners.

Empirical Context: Housing and Populism in the Nordic Countries

We evaluate our argument using data on local economic conditions and voting behavior in the Nordic countries (Denmark, Sweden, Norway, and Finland). These four countries are ideal cases for testing the relationship between housing prices and voting for populist parties. For one, all four countries have low levels of income inequality, a strong welfare state, making them least likely

cases in the context of studying the link between economic deprivation and populism. At the same time, these countries have seen an increase in housing prices and support for populist parties, which is geographically unequal. Furthermore, unlike what is the case for most other countries, data on housing prices is available on at least the municipal level for all four countries for more than twenty years back in time.

Although traditionally categorized as five-party systems (Knutsen 2001) largely 'frozen' since the advent of universal suffrage in the 1920s, party systems in the Nordic countries have fragmented since the 1970's (Bengtsson et al. 2014). This fragmentation is partly a reflection of the emergence of right-wing populist parties, but also the emergence of Green and Christian parties. Hence, while originally exceptionally static in international comparison, Nordic party systems have diverged over time and now in most respects resemble party systems in other Western multi-party democracies. In each of these four countries, we focus on the current dominant right-wing populist party. These are the Danish People's Party (in Denmark), the Sweden Democrats (Sweden), the Progress Party (Norway), and the True Finns (Finland). We select these parties based on the classification in Rooduijn (2019), which identifies these parties as right-wing populist. We omit one party in Denmark, *Fremskridtspartiet*, which Rooduijn (2019) also identifies as right-wing populist, as it left parliament in 2001 and has been practically non-existent since.³

These parties belong to a broader European family of right-wing populist parties which also includes France's *Rassemblement National*, Germany's *Alternative für Deutschland*, and United Kingdom's *UK Independence Party* (Rooduijn 2019). This family of modern right-wing populist parties typically offers a 'new winning formula' of authoritarian sociocultural policy and centrist or even left-wing economic policy (De Lange 2016). To be sure, not all classifications agree on which parties can be properly labeled right-wing populist. Specifically, Jungar and Jupskås (2014) argue that while the three of the four parties studied here fit the label, Norway's *Progress Party* is a somewhat awkward fit, and should be considered a hybrid between a right-wing populist

³We do not include data from the 2019 Danish Parliamentary election, because much of the registry data is not yet available, and consequently we also omit two new right-wing populist parties which were formed after the 2015 election. Likewise, we do not include the 2019 Finnish parliamentary election.

and a traditional conservative party. Moreover, for all their present-day political similarities, the history of right-wing populist parties differ between the four countries. The Swedish Democrats originated from the extreme-right milieu, while the Danish People's Party and the Progress party have a background in less extreme right-wing movements. Furthermore, the parties have a very different electoral history. The Progress Party in Norway has a parliamentary history dating back more than 40 years, whereas the Swedish Democrats only gained access to parliament in 2010.

While acknowledging this heterogeneity across countries, our focus on these parties is motivated by their political role within each country. Building on the theoretical framework outlined above, we expect voters to support right-wing populist parties over mainstream parties as a means of expressing political discontent with relatively low local housing prices. Hence, although Norway's Progress Party is not as purely right-wing populist as its Nordic counterparts, its traditional anti-establishment profile still renders it the most natural choice for voters seeking to express discontent. Even so, we expect the Progress Party to be less able to profit on the voters' discontent than the other three right-wing populist parties we examine.

Some Descriptive Statistics

As shown in Figure 1, the nordic countries provide ample variation in housing prices as well as right-wing populist party support. Average housing prices rise steadily in all four countries, with a noticeable boom- and bust-cycle in the run-up to the global financial crisis in the late 2000s. The magnitude of the changes, amounting to two- to five-fold increases, mean that the price of housing has grown sharply relative to wages as well as other goods. These average increases in the price of housing are driven by sharp increases in the most expensive areas, leading to increasingly unequal distributions of housing prices. This is seen for Denmark in the bottom-left of Figure 1, and for the remaining Scandinavian countries in Appendix E.

The same time span has seen a steady rise in support for right-wing populist parties. Whereas in the late 1990s electoral support for populist right wing parties in three of the four countries were small or negligible, by the late 2010s support was at 16 percent. or more. Interestingly, the

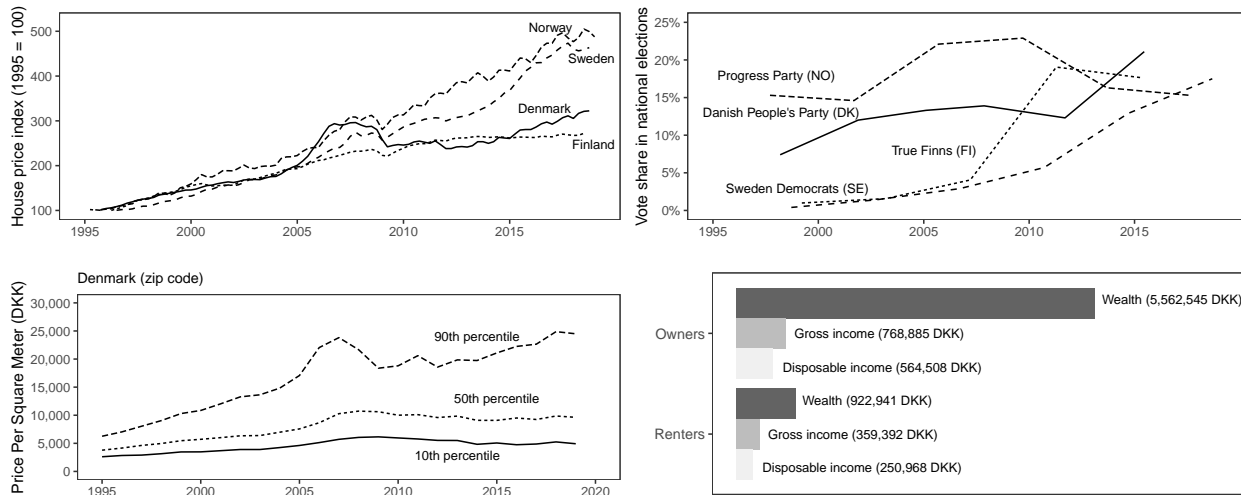


Figure 1: Development of housing prices and support for right populist parties. The top-left figure shows trends in house prices in the Nordic Countries, the top-right figure shows trends in support right populist parties. The bottom-left figure shows the development in house price for the 10th, 50th and 90th percentiles of zip codes in Denmark. The bottom-right figure shows the average wealth and income, by household, for both owners and renters in Denmark using data from Statistics Denmark. Data on house prices for the Nordic Countries (top-left) is from the Bank of International Settlements.

two trends are therefore positively correlated at the macro-level, as housing prices and support for right-wing populist parties rise in tandem. As we will show in the following analyses, however, the sub-national relationship is negative, because support for right wing populist parties have increased more in the places within each where prices have stayed flat.

In our analysis, the primary focus is on the Danish case, because the data we can obtain on housing markets and electoral outcomes in Denmark is much more detailed. 57 percent of Danes lived in an owned residence, which is below the EU mean of 70 percent (Eurostat 2020). As seen in Figure 1 home owners are better off economically compared to renters; a household of owners have 6.2 times as much wealth and earns 2.3 times as much after taxes compared to renters. Fortunately for renters, the Danish rental market is characterized by strong rent control and a large stock of social housing (Cuerpo et al. 2014). This means that renters typically do not have to worry that increasing housing prices turn into rent hikes. Therefore, we can disaggregate the geotropic and egotropic effects of housing prices more cleanly when comparing the electoral response of Danish

renters and owners (see Appendix E for this and more information on the Danish housing market).

Voting for the Danish People's Party

We measure support for the Danish People's Party (DPP) at national and EU elections from 1998 to 2015. By including both type of elections our measure of support for the DPP becomes more tightly spaced. (We show in Appendix A that our results are robust to excluding EU elections.) This gives us a total of ten elections with six national and four EU elections. We measure DPP support at the electoral precinct level. Each precinct corresponds to a single polling place, and is the smallest unit at which election returns are recorded in Denmark. There are roughly 1,400 precincts and each precinct covers on average 3,000 eligible voters.⁴ Our independent variable is the average nominal price of one square meter of housing in DKK 10,000 (ca. EUR 1,350) sold in each precinct's zip code in the quarter of the election. We obtain data on local housing prices from The Danish Mortgage Banks' Federation. They publish quarterly data on the average price per square meter of all non-commercial property sales at the zip code level, which we link to our precinct data by acquiring the zip code of each precinct's polling place. Appendix B presents more details on our matching procedure.

We also construct a large set of control variables from the national Danish population registries. All of these variables are aggregated to the zip code level so that they most effectively control for our housing price measure. We use the zip code median income and the unemployment rate to measure the state of the economy. We use population density, the percent single family homes and percent 10+ family apartment buildings to measure urbanization. We use percent non-western immigrants to measure ethnic diversity. We control for education levels by calculating the percent of 20-65 year olds without secondary education and the percent with a postgraduate degree. Finally, we construct measures of the percent of high-skilled and low-skilled (split into service and manufacturing) jobs in the zip code to measure composition of the labor market. The control variables are described further in Appendix C, while descriptive statistics are found in Appendix D.

⁴In order to make a balanced panel of precincts, we fix the precincts geographical boundaries at the most recent election (2015), and adjust vote returns to match with precincts in the reference election. For details of how returns from the redistricted precincts are calculated, see Søren Risbjerg Thomsen's research note at bit.ly/205OIPi.

Support for the DPP Decreases with Housing Prices

Figure 2 shows the relationship between precinct level support for the DPP and housing prices over time. Three trends stand out. First, there has been a massive increase in support for the DPP, especially near the end of the period. Second, housing prices have become more unequal, with a brief reversion of this trend in the years following the credit crisis (i.e., 2009). Third, it is primarily in the precincts where prices are low that support for the DPP increases.

Figure 3 presents the same data using a simple difference-in-difference set up. The figure shows differences in DPP support over time across two sets of precincts: (1) the ten percent of precincts where prices increased the most from 1998 to 2015 ('Boom areas'); and (2) the ten percent where prices increased the least ('Left Behind areas'). The real housing prices *decreased* by an average of 15 percent in the Left Behind areas, whereas they *increased* by an average of 100 percent in the Boom areas. The level and trend in DPP support is similar across Boom and Left Behind areas in the first two elections, but then as the price differential increases (see the dashed line), the Left Behind areas become more likely to support the DPP relative to the Boom areas. At the last elections the difference in DPP support between Boom and Left-Behind areas is almost 10 percentage points. This within-precinct analysis thus tells the same story as the cross sectional analysis presented in Figure 2. From a causal inference standpoint, it is reassuring that the trends in DPP support across the Boom and Left Behind areas are initially similar, as it suggest that DPP support might have continued to follow the same trajectory if there had been no divergence in housing prices (Angrist and Pischke 2008).

A Generalized Difference-in-Differences Model

While the results presented in Figure 3 are quite clear, they leave out a lot of data, and censor the variation in housing prices by pooling data from different precincts into the Boom and Left Behind areas. To use our data more efficiently, we estimate the following generalized difference-in-differences model:

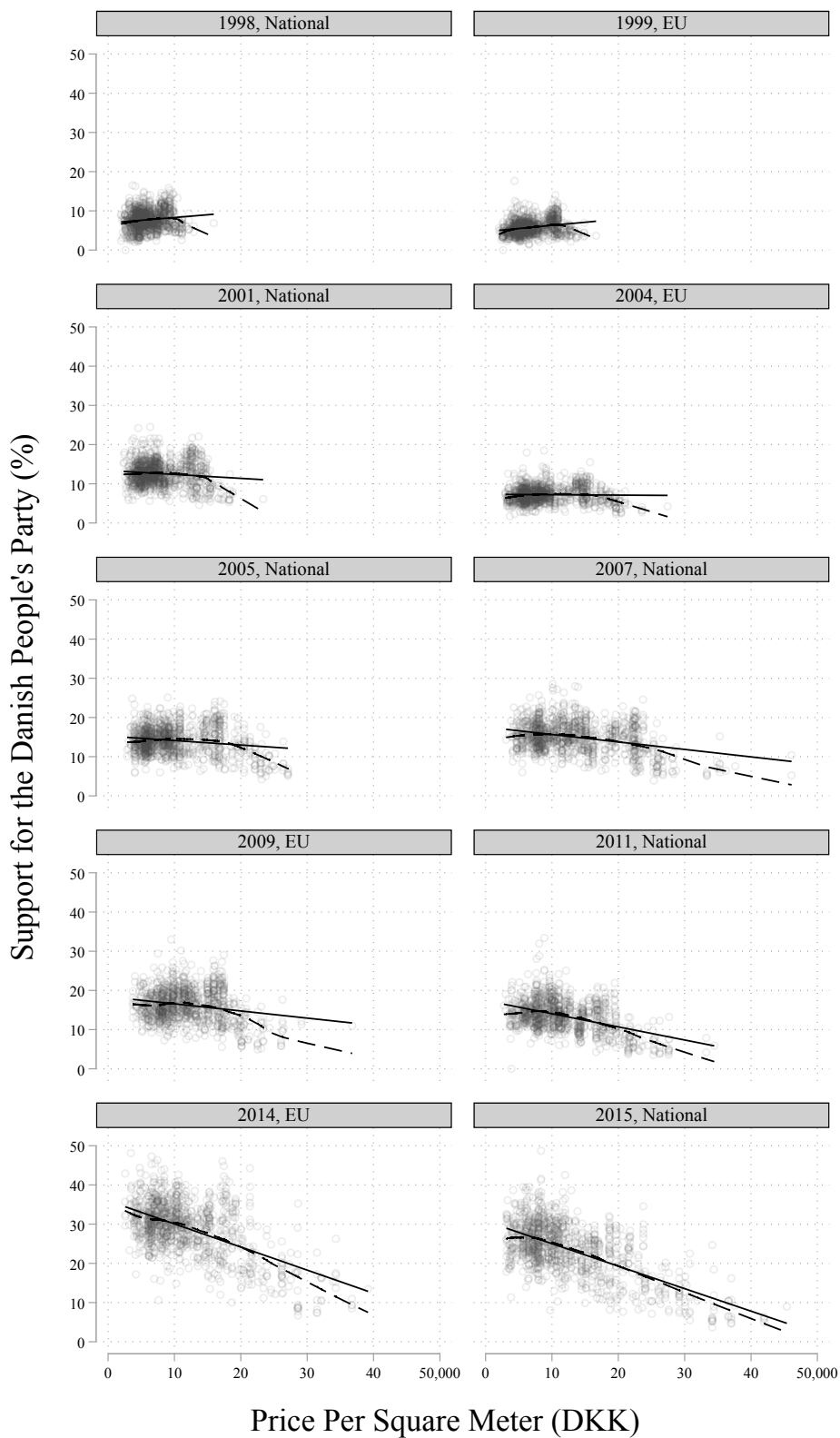


Figure 2: Is there a relationship between housing prices and support for the Danish People's Party? Dots represent precincts. Solid line is linear fit and dashed line is a lowess fit.

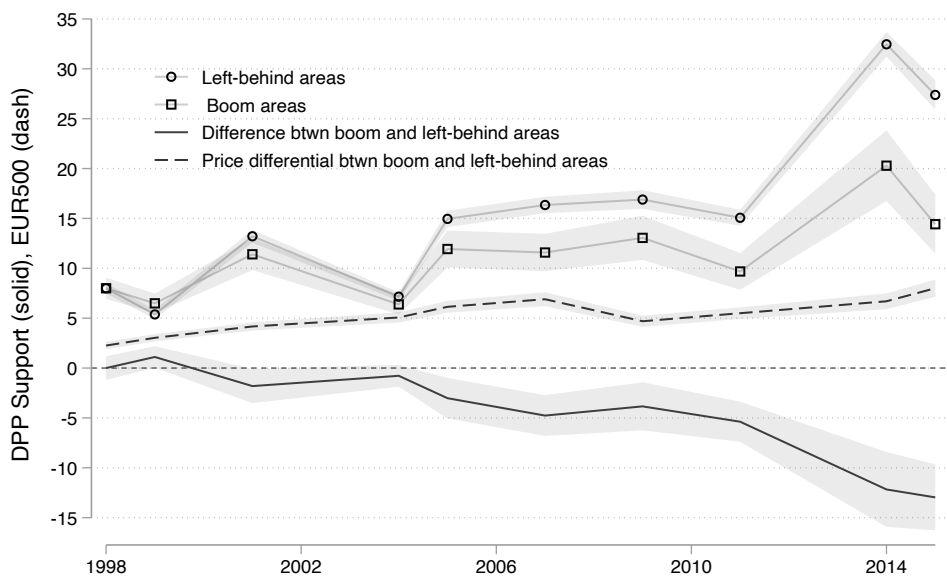


Figure 3: Is there a relationship between housing prices and support for the DPP? Average support in and across ‘Boom’ and ‘Left Behind’ areas over time. Dashed line is difference in price per square meters. Shaded areas are 95 percent confidence intervals estimated with clustering at the zip-code level.

$$\Delta DPP_{ij} = \beta \Delta Prices_{ij} + \Delta X_{ij} \gamma + \theta_j + \epsilon_{ij}, \tag{1}$$

where ΔDPP_{ij} is changes in support for the Danish People’s party in precinct i at election year j , $\Delta Prices_{ij}$ is changes in the housing prices in the precinct’s zip code, ΔX_{ij} is a vector of zip code level controls and θ_j are election year fixed effects. We take account of autocorrelation in the error term (ϵ_{ij}) by clustering the estimated standard errors at the zip code level (i.e., the level where our housing price variable is measured). We use a first-difference specification rather than fixed effects to more effectively deal with the substantial temporal autocorrelation in housing prices (Angrist and Pischke 2008). (We show later that including precinct fixed effects yields similar results.) The key coefficient of interest is β which estimates what happens to DPP support when prices increase by 10,000 DKK. Notably, this specification implies a relative comparison, not an absolute one. Given the distribution of housing price changes, β should be interpreted not as a comparison of price increases versus decreases, but rather as one of strong versus weak

growth in house prices. Estimating an effect that relies on a relative comparison, fits well with our theoretical argument, which highlighted that support for populist party is driven by a sense of relative decline.

Table 1 presents estimates from our model without any precinct-level controls. This gives us an estimated coefficient for housing prices of -3.0, implying that an increase in a precinct's housing prices of 10,000 DKK per square meter will decrease support for the DPP with roughly 3 percentage points. Figure 2 showed that the bivariate relationship between local housing prices and DPP support became stronger over time. We also find this over-time difference when using these more advanced estimation methods. In particular, the effect size doubles following the financial crisis in 2007 (see Appendix G for a discussion of this trend in the effect size)..

Importantly, the generalized difference-in-difference model removes all precinct-specific and time-invariant shocks as well as time-varying shocks that are constant across precincts. This means that our model effectively controls for a host of confounders, such as macroeconomic conditions and geography. Even so, potential threats to causal inference remain. If relative increases in housing prices are the result of some underlying precinct-level variable that also affects support for the DPP, our estimates will be biased. The flexibility of our panel data and the richness of demographic information that can be drawn from the Danish population registries makes it possible for us to address this potential threat to causal inference in different ways. First, we employ a number of detailed controls for changes in the urbanization, ethnic diversity, economic standing and labor markets of the different precincts. These controls are included in columns two through five of Table 1. The controls are described in detail above. The controls make little or no difference in the estimated effect size.

We want to dwell on three parts of the results in Table 1. First, while median income is negatively associated with DPP support its inclusion does not affect the estimated effect of house prices. Second, by controlling for the economic trajectory of local areas, such as changes in the unemployment rate and median income, we also control for changes in the business environment which could confound our results - i.e., whether local businesses are closing. Third, the effect re-

mains statistically and substantively significant even after controlling for the composition of local labor markets and education. Low-skilled workers are typically located outside of big cities, where housing prices are lower, and recent studies have found that the concentration of low-skilled workers is a powerful predictor of support for populist parties (Colantone and Stanig 2018a; Dal Bó et al. 2019), making it a potentially important confounder. However, it appears that labor markets and asset markets have distinct impacts on right populist support.

Table 1: Support for the Danish People’s party and Housing Prices

	(1)	(2)	(3)	(4)	(5)
Housing Prices (DKK 10,000)	-3.0 (0.3)	-3.0 (0.3)	-3.0 (0.3)	-3.0 (0.3)	-3.0 (0.4)
Log(Population Density)		-1.1 (1.3)	-1.1 (1.3)	-1.3 (1.3)	-1.0 (1.5)
Single Family Homes		-0.1 (0.1)	-0.1 (0.1)	-0.1 (0.1)	-0.1 (0.1)
Ten Family Apartments		-0.4 (0.2)	-0.4 (0.2)	-0.5 (0.2)	-0.5 (0.2)
Non-western Immigrants			0.0 (0.1)	-0.0 (0.1)	0.0 (0.1)
Unemployment Rate				-0.1 (0.1)	-0.0 (0.1)
Median Income				-3.7 (2.1)	-3.2 (2.2)
Postgraduate degree					0.0 (0.0)
Without Secondary Education					0.0 (0.0)
Low Skilled Service					0.1 (0.0)
Low Skiled Manufacturing					-0.0 (0.1)
High Skilled and Manager					-0.0 (0.1)
Year FE	✓	✓	✓	✓	✓
Observations	9878	9808	9808	9808	7659
RMSE	2.526	2.521	2.521	2.521	2.550

Clustered standard errors in parentheses.

Statistical control is no panacea. If unobserved forces that put precincts on a trajectory of increasing housing prices are related to decreases in support for the DPP, then we might be confounding the effect of housing prices with these unobserved forces. To check this, we regress past changes in support for the DPP on current changes in housing prices including year fixed effects

in our fully controlled model. Figure 4 presents the effect of changes in housing prices on one, two, three, four, and five period lags of changes DPP support as well as the effect on concurrent changes in support for the DPP. Current changes in housing prices are unrelated to the past trend in DPP support, mirroring what we found in Figure 3. This is reassuring, as it suggest that trends in DPP support are parallel across precincts where housing prices will increase and those where they will decrease - the key identifying assumption in generalized difference-in-difference models.

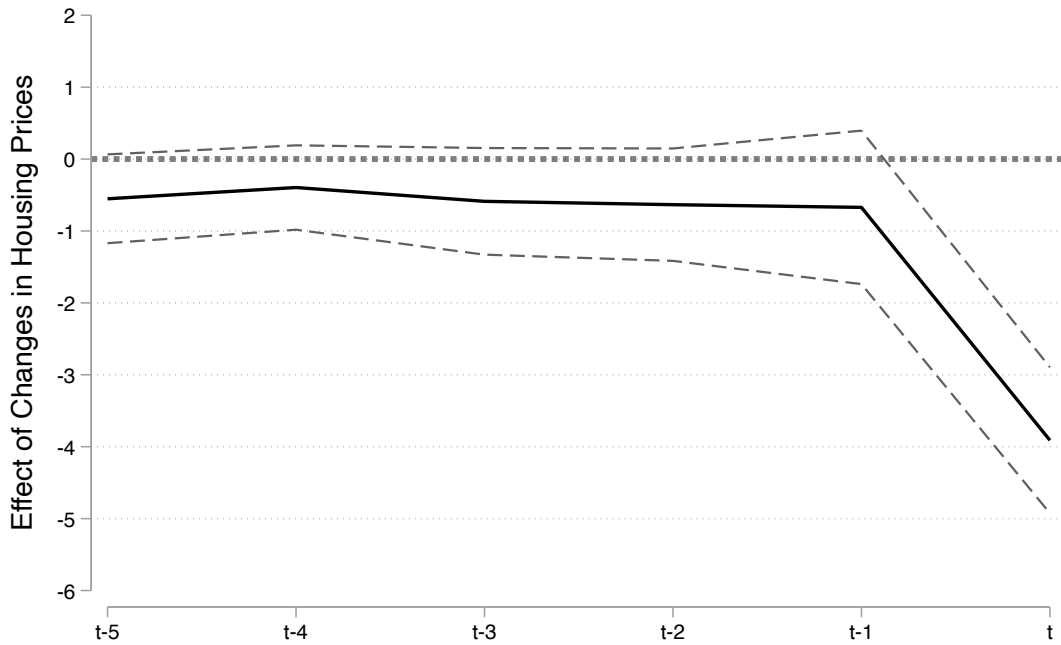


Figure 4: Do changes in housing prices predict past changes in support for the Danish People's party? Estimated effects with 95 percent confidence intervals using full set of controls.

How large is the estimated effect of housing prices? The coefficient in our fully controlled model is -2.9. This implies that an increase in prices per square meter of 10,000 DKK, a little less than two standard deviations, decreases support for the DPP by 3 percentage points, half a standard deviation. This is quite a large effect. In their article on global competition and Brexit, Colantone and Stanig (2018a) find that going from the 10th to the 90th percentile on their import shock variable increases support for Leave by 4.5 percentage points. In comparison, going from 10th to the 90th percentile in housing prices implies an increase in support for the DPP of 5 percentage points. This in spite of the fact that variation in DPP support is constrained by the party rarely

getting more than 25 percent of the vote in a precinct.

Addressing Some Alternative Explanations

Below, we briefly describe a number of additional analyses that bolster our claim that housing prices affects support for the DPP. We try to rule out the possibility that our effects are driven by an increased salience of the urban-rural divide, selection of DPP supporters into low house-price areas, an unobserved confounder, precinct-specific linear trends in DPP support, increased support for left-wing parties or non-incumbent parties. We lay out these findings briefly below, but refer the reader to the Appendix for detailed results.

One concern is that our models conflate the effect of housing prices with diverging electoral trends between urban and rural areas (e.g, Cramer 2016). While we try to control our way out of this problem, it is difficult to perfectly capture the 'ruralness' of an area. To deal with this problem more effectively, we subset our data to precincts within the capital region of Copenhagen, which contains no rural areas, relying on variation in housing prices between more suburban and more urban areas instead. In Appendix H we show that the estimated effect of housing prices in the capital region match those found for the country as a whole.

Another concern is that our results are driven by DPP supporters moving into areas with low housing prices. To deal with this issue, we show in Appendix I that the effect of housing prices is stable across levels of mobility; it persists even in areas with minimal in- and outgoing residential flows. This suggests that the result is driven by a change in the local electorates' preferences rather than a change in the electorates' composition.

We also control for precinct-level trends in DPP support by including precinct fixed effects in our first difference model. In effect, we thus examining whether DPP support decreases more when housing prices in a precinct increase more than they usually do. In Appendix J we show that even in this more restrictive model, we identify a sizeable effect of housing prices on DPP support.

We also estimated how likely it is that our effects are driven by a missing control variable (Cinelli and Hazlett 2020). These tests are reported in Appendix F, and indicate that such a variable

needs to explain away 17 percent of the residual variance in either the dependent or independent variable to reduce the effect of changes in housing prices to zero. To put this into context, an unobserved confounder needs to be twenty times as strong as median income, the strongest observed confounder, to disappear the housing price effect.

Finally, we try to explore whether our findings can be explained by other theories of voter behavior. We rule out that voters simply embrace more (first-dimension) left-wing parties when housing prices become relatively lower, finding no effect of housing prices on support for socialist or social democratic parties. We also rule out that our findings simply reflect retrospective voting. While we do find that incumbents do worse when housing prices are relatively lower, the estimated effect of housing prices on support for the DPP is much larger than the estimated effect on incumbent parties. This suggests that both incumbent and non-incumbent mainstream parties lose out to the DPP when prices are decreasing. We present these analyses in Appendix K.

Evidence from individual-level data: Is the effect driven by homeowners?

A key disadvantage of our precinct-level analysis is that we are not able to distinguish between those who own their home and those who rent. As mentioned above, whether housing prices affect only homeowners or also renters is important, because it gives us an indication as to why people are affected by relative changes in local housing prices. Are they motivated by pocketbook or mobility concerns – that their house has not increased in value, locking them in to their current place of residence – or social grievances – that their community has been shut out of the housing wealth boom.

To answer this question we link our zip code variables to post-election surveys from the Danish National Election Studies. We include surveys from 2007, 2011 and 2015 as these are the only ones where respondents were asked to identify which zip code they lived in. Crucially, respondents were also asked in these surveys who they voted for and whether they owned or rented their home. We then estimate a linear probability model of voting for the Danish People's Party. We use housing prices, the zip code variables from the precinct-level analysis and year fixed effects as regressors.

In some models we also include a small number of demographic controls at the individual level - the respondents' gender, age, income, educational-level and marital status - to control for some of the more obvious differences between home-owners and renters (see Appendix E for details on these differences.). We cluster standard errors at the zip code level.

Table 2: Support for the Danish People's party: An Individual-level Approach

	(1)	(2)	(3)
Housing Prices (DKK 10,000)	-2.4	-2.9	-3.3
	(1.3)	(1.3)	(1.4)
Renter			0.9
			(2.5)
Housing Prices (DKK 10,000) × Renter			0.8
			(1.2)
Demographic controls		✓	✓
Zip-code controls	✓	✓	✓
Year FE	✓	✓	✓
Observations	6869	6869	6869
RMSE	30.743	30.397	30.389

Standard errors clustered on zip codes in parentheses.

Demographic controls: Age, gender, income, education and marital status.

Zip-code controls: See precinct-level analysis.

Table 2 shows that we can replicate the precinct-level findings using the individual-level data. As such, when housing prices increase by 10,000 DKK per square meter in the respondent's zip code, they are approximately three percent less likely to vote for the Danish People's party. This result holds both with and without the inclusion of individual-level demographic controls.

The final column of Table 2 estimates an interaction between housing prices and being a renter as opposed to a homeowner. The interaction effect is statistically insignificant and small. As such, the model implies that the estimated effect of housing prices is -2.5 for renters and -3.3 for home owners. At the same time, the marginal effect for renters is not statistically significant ($p \approx 0.12$) while it is statistically significant for home-owners ($p < 0.05$). This difference in statistical significance may simply reflect that there are fewer renters than homeowners – only 30 percent of respondents rent.

In conclusion, the effects of declining house prices appear most robust for homeowners and less so for renters, though we are unable to reject the hypothesis that homeowners and renters respond similarly. Our findings thus provide mixed support for whether individual or geotropic

factors are at play. That homeowners appear strongly affected by house price changes provides strong support for the pocketbook mechanism, but since we cannot be sure homeowners and renters behave differently, we are also left with some support for the geotropic mechanism. To adjudicate further between the different mechanisms would require more data and, as of yet unavailable, panel surveys to pick up within-respondent changes.

Some additional individual-level results

The individual-level data leveraged here also allows us to examine some other potential mechanisms underlying our findings. We briefly describe these results here, but refer the reader to Appendix L for detailed analysis.

First, the individual level data can be used to study vote-switching patterns. That is, what kind of voters decide to move to the Danish People's party when housing prices in their area fall behind prices in other areas? In particular, our analysis show that it is primarily former right-wing party voters that move towards the DPP, and only to a lesser extent those from the mainstream left. Second, we find that those who own a home in an area with higher housing prices report having a higher levels of home equity, suggesting that voters are aware that there is a personal economic benefit to owning a home in a high-price area. Finally, we find that housing prices are not, or at least only weakly, related to anti-immigration attitudes. This suggests that our housing price measure is not indirectly picking up differences between people who are pro- and anti immigrant, which would be problematic as anti-immigration sentiment is one of the most important individual-level drivers of support for right-wing populist parties. It also suggests that the economic grievances created by lower housing prices do not spill over into anti-immigration attitudes but rather activate other aspects of 'second dimension' politics, such as the relative status of stagnating small towns versus the booming neighborhoods of Copenhagen.

Voting for Populist Parties in Sweden, Norway, and Finland

Are the results unique to Denmark or do they represent a more general pattern? To find out, we now turn to Sweden, Norway, and Finland. The dependent variable in these analyses is the vote share

for the dominant right-wing populist party in each country. We do not have access to precinct-level data for these countries. Instead, we use data on the municipal level. There are currently 290 municipalities in Sweden, 422 in Norway and 295 in Finland (excluding the autonomous region Åland). While the number of municipalities has been constant in Sweden during the period of analysis, there has been mergers of municipalities in Finland and Norway. In Finland, we have been able to transform the data, so all variables in all years correspond to the 295 currently existing municipalities. This has not been possible in Norway, and the number of municipalities therefore vary over time. For all three countries, we examine the last four national parliamentary elections.

In our analysis of Finnish elections we leave out the 15 municipalities with a majority of ethnic Swedes, since ethnically Swedish voters are particularly hostile to the right populist True Finns, whose policies advocate for a more homogeneous “Finnish” national identity. They have, for instance, advocated for an end to compulsory Swedish tuition.

Our main independent variable is the average price of one square meter of residential housing in nominal prices.⁵ To make the results more comparable, we convert the price in SEK in Sweden and in NOK in Norway to EUR using a fixed exchange rate of 0.1 and 0.12 respectively. The data from Sweden has been provided by Swedish Realtors Association (*Svensk Mäklarstatistik AB*), while the data from Norway and Finland are obtained from the national statistical agencies. It should be noted that there is missing data on housing prices in years without any house sales.

We also use a number of control variables, approximating the control variables used in the Danish analysis, however, we were not able to obtain data on the composition of the labor market for these countries. All control variables are from the respective national statistical agencies and are described in Appendix C. Descriptive statistics are found in Appendix D.

Support for Populist Parties Decreases with Housing Prices across the Nordics

Figure 5 shows the relationship between housing prices and the vote for populist parties at the last four parliamentary elections in Sweden, Norway, and Finland. The general trend across countries is similar to what we found in Denmark, namely that support for populist parties increased the most

⁵In Appendix M we have replicated the analysis using real prices.

in areas where housing prices were relatively lower, and that this relationship becomes stronger over time. The negative relationship between prices and right-wing populist support is strongest in Sweden and weakest in Norway, with Finland being somewhere in between. As expected, the majority ethnically Swedish municipalities in Finland do not fit this pattern as they tend to have low housing prices and low levels of support for the True Finns across the four most recent elections.

We model the relationship between housing prices and support for populist parties using a first difference model with year fixed effects and time-varying controls. (This is similar to the precinct-level analysis in Denmark.) The key estimates from these models, the effect of housing prices on populist party support, are presented in Figure 6. For comparison, we also plot the estimates from Denmark. Estimates from the full regression models for Sweden, Norway, and Finland are reported in Appendix N.

The results for Sweden are similar to Denmark, with estimates between -2 and -1, implying that as prices per square meter in a municipality increase with 1,000 EUR, the Sweden Democrats lose one or two percentage points of support in that municipality. The estimated effects in Finland are a bit larger than in Sweden and Denmark, but they are less precisely estimated. The estimated effects for Norway are also in the same direction, with lower housing prices being related to more support for the Progress party, but the effects are smaller than for Denmark and Sweden, and in the most restrictive model, the effect is not statistically significant.

One reason for the relatively weak effect in Norway could be that the Progress Party is not a purely right-wing populist party (Jungar and Jupskås 2014). It has existed for a long time, since 1973, and has been in government from 2013-2020. Research shows that anti-establishment parties that participate in governing coalitions often lose their appeal (Van Spanje 2011). As a result, the Progress Party might not be able to capitalize on the Norwegian voters' frustrations with lower local housing prices in the same way as the remaining Nordic populist parties.

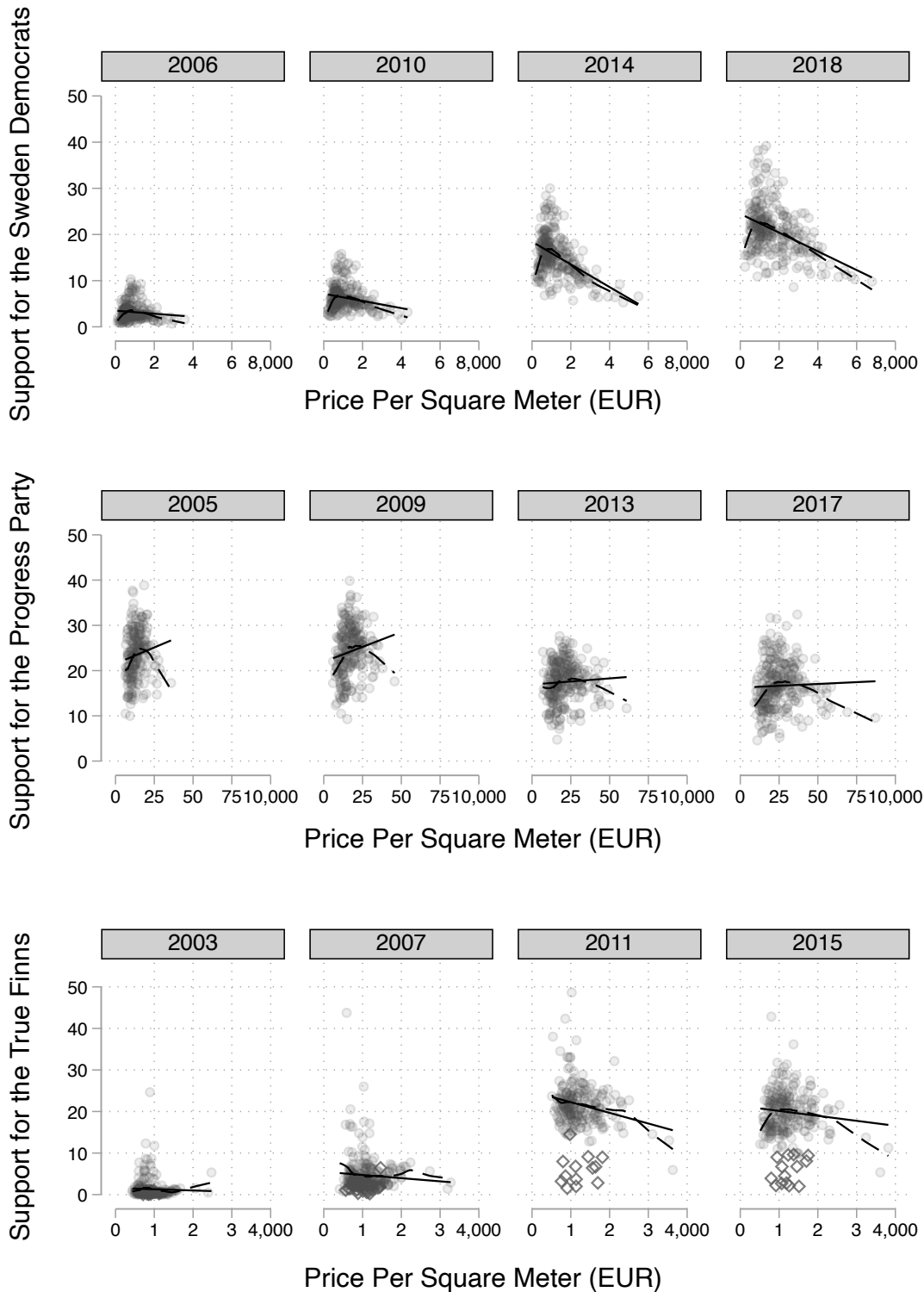


Figure 5: Is there a relationship between housing prices and support for the populist parties in Sweden, Norway, and Finland? Dots represent municipalities. Solid line is linear fit and dashed line is a lowess fit. For Finland circles represents majority Finnish municipalities, while diamonds represents majority Swedish municipalities. Both the linear fit and the lowess fit are based only on majority Finnish municipalities.

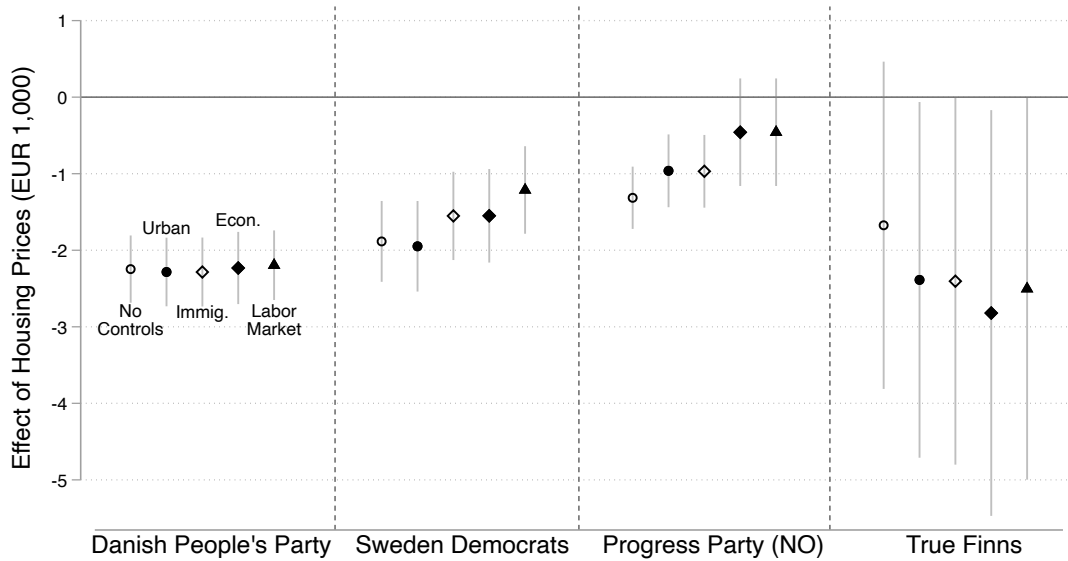


Figure 6: Estimating the effects of housing prices on support for right wing populist parties across the Nordic countries with 95 percent confidence intervals. First difference models that become more restrictive going from left to right. See Appendix N for details on the controls.

Conclusion

In the past two decades we have seen dramatic developments in both the political and the economic sphere in Europe. Right-wing populist parties have increased their vote shares and disrupted traditional political systems. Simultaneously, there has been a highly unequal surge in housing prices, creating a wealth boom in some areas, while leaving other areas behind. Focusing on four Nordic countries, this paper connects these two developments and shows that areas which did *not* experience a surge housing prices became the strongholds of the right-wing populist parties.

Why are housing prices linked to the electoral fate of right-wing populist parties? We have argued that dissatisfaction with being left out of the housing boom leads to a rejection of mainstream political elites and their cosmopolitan values, which, in turn, makes the more socially conservative and welfare chauvinistic right-wing populist parties more palatable. This dissatisfaction can both be motivated by *pocketbook* concerns, where people object to being personally left out of the housing wealth boom, and *geotropic* and *mobility* concerns, whereby people object both to their community being 'left out' and to their being 'locked out' of booming regions. While we have not

been able to fully adjudicate between these three causal channels, we have shown that homeowners are most strongly affected by house price changes, suggesting that the concerns people have are not purely *geotropic*.

While we have shown that the results are consistent across the Nordic countries, one may wonder whether this is a more general phenomenon. We have good reasons to suspect that the patterns are found in many wealthy democracies, particularly in Europe. The Nordic world is not alone in experiencing a geographically uneven surge in housing prices. In fact, some of the largest increases in house prices in later years are found in Budapest and Warsaw (Linhart et al. 2020). This suspicion is supported by recent empirical studies. Adler and Ansell (2020) show that stagnating house prices are related to right-wing populist voting in France and the UK, while other studies have found that a negative shock to the level of wealth is related to populist voting in Eastern Europe, particularly in Poland and Hungary (Ahlquist, Copelovitch and Walter 2020; Gyongyosi and Verner 2020). Furthermore, the home ownership rate in Denmark is low in an European comparison (Eurostat 2020). This, combined with the finding that the effect is more pronounced amongst home owners, lead us to speculate that the association might be stronger in other European countries.

In other wealthy democracies the patterns we demonstrate may be less pronounced. Germany, for example has not experienced the same stark, but unequal surge in housing prices as elsewhere in Europe. Other countries lack a tradition of right-wing populism. Countries such as Canada and Australia have little experience with populist parties, while other countries, mainly in Latin America, mostly have experience with left-wing populist parties. These countries may, at least for now, be outside our scope of inference.

The results in this paper might seem surprising in light of earlier research which has found limited support for the notion that economic deprivation fuels support for populist causes (Mutz 2018). However, the places which are left out of the housing wealth boom are not economically deprived in a traditional sense. In Denmark, for instance, comparing the zip codes with the 10 percent most and least expensive housing we find minimal differences in unemployment, and median

income differing only by € 6,000, less than one standard deviation.

Rather than a traditional economic divide between 'haves' and 'have nots', the divide over housing wealth is a division within the middle class. Political scientists have in recent years begun to examine political splits within the middle-class, typically in terms of their labor market status, for example their employment trajectories (Kurer 2020) or whether they work in the private or public sector (Rosenfeld 2020). We argue that relative wealth matters too in splitting the middle class and that homeowners cannot simply be lumped together. Someone buying a median house in 1998 in central Copenhagen would have seen her housing wealth increase by € 400,000 by 2015, adjusted for inflation. By contrast in Næstved, one hours drive away, they would have made just € 2,400. Our findings thus reflect a voter response not to economic deprivation per se, but rather to the massive and rapidly increasing wealth inequality that characterizes the past two decades in the industrialized world. The new salient political split of the coming years may not be between workers and managers but instead between a provincial 'petite bourgeoisie' and an urban 'bohemian bourgeoisie'.

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sity of Warwick, University of Chicago, University of Bonn, the LSE, University of Geneva, the Institute for Advanced Study in Toulouse.

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Appendix: For Online Publication

Contents

A	No Difference across Election Types	2
B	Merging Zip-codes and Electoral Precincts	3
C	Description of variables	4
D	Descriptive Statistics	10
E	On Homeownership in Denmark	13
F	Sensitivity analysis	17
G	Mainly A Post-Crisis Effect	19
H	Effects in the Capital Region of Denmark	21
I	Effects Across Levels of Mobility (Denmark)	23
J	A More Restrictive Model of Danish People's Party Support (Denmark)	24
K	Housing Prices and Support for Other Parties	25
L	More Individual-level Results	27
M	Effects using real prices	29
N	Full results for Sweden, Norway and Finland	30

A *No Difference across Election Types*

Table A1 analyzes Danish and EU elections separately, revealing no substantial difference in estimated coefficients.

Table A1: Support for the Danish People's Party and Housing Prices by Election Type

	(1)	(2)
	EU	National
Housing Prices (DKK 10,000)	-3.3	-3.2
	(0.4)	(0.4)
Without Secondary Education	-0.0	0.0
	(0.0)	(0.0)
Postgraduate degree	-0.1	-0.1
	(0.1)	(0.1)
Low Skilled Service	0.0	-0.0
	(0.0)	(0.0)
Low Skilled Manufacturing	-0.4	-0.2
	(0.1)	(0.1)
High Skilled and Manager	-0.9	-0.0
	(0.1)	(0.1)
Unemployment Rate	-0.3	0.1
	(0.1)	(0.1)
Median Income	-7.7	4.8
	(2.6)	(2.9)
Non-western Immigrants	-0.0	0.1
	(0.1)	(0.1)
Log(Population Density)	-0.1	-0.7
	(1.3)	(1.3)
Single Family Homes	-0.1	-0.0
	(0.1)	(0.1)
Ten Family Apartments	-0.3	-0.2
	(0.1)	(0.1)
Year FE	✓	✓
Observations	2453	4208
RMSE	2.644	2.127

Clustered standard errors in parentheses.

B Merging Zip-codes and Electoral Precincts

Merging zip code level data on housing prices to the precinct-level data on electoral outcomes is non-trivial. Ideally we would extract the zip code of the address of each polling place and link the polling place to housing prices in that zip code. Unfortunately, full addresses are not available for all polling places. Instead, we use a three-stage approach to linking polling places to zip codes. First, we extract the street address and higher-level voting district of each polling place (the full resulting string is of the format 'Streetname streetnumber, City, Denmark'). Second, we pass this string to the Google Maps API, which geocodes the string and returns latitude-longitude coordinates (available at <https://developers.google.com/maps/documentation/geocoding/intro>). Third and last, we pass these coordinates to the Danish Addresses Web API (DAWA), a public service provided by the Danish Geodata Agency (available at <http://dawa.aws.dk>). The DAWA returns the zip code for each address, allowing us to link polling places to zip codes.

C Description of variables

Denmark

Vote for the Danish People's Party. We use precinct-level data from the Danish Election Database for all non-local elections at which the Danish People's Party was eligible.

Housing prices. We use data from the Danish Mortgage Bank Federation, Realkreditforeningen. This data contains information about the average price per square-meter for both apartments and single family homes at the zip code level from 1993 and until November 2018. We calculate an average for both types of housing by multiplying the number of sold units for each type with the average price for each type. This number is then divided with the total sum of sold units.

Remaining zip code controls. The other variables for Denmark is drawn from the Danish population based registries. We have privileged access to these because we are affiliated with an accredited Danish research institutions. This also means that the statistics used here cannot be found in any public database, however the data used for our analysis will be made public upon publication. For more information we refer to Statistics Denmark. Details on how we created the variables below:

- Population density: We divide the number of inhabitants by the area of the zipcode in square meter (population registry: BEF).
- Single family homes: Proportion of homes where there is only one address per street number/letter (population registry: BOL).
- Ten family Apartments: Proportion of homes where there is more than ten adresses per street number/letter (population registry: BOL)
- Non-western Immigrants: Proportion of inhabitants from a non-western country (population registry: BEF).
- Unemployment Rate: Proportion of inhabitants on unemployment benefits (poulation registry: RAS).

- Median income: Log Median personal pre-tax income in the zip code (population registry: IND).
- Low skilled service : Proportion of workers in the zip code whose job is classified as DISCO-09 categories 4-5 (population registry: RAS).
- Low skilled manufacturing: Proportion of workers in the zip code whose job is classified as DISCO-09 categories 6-9 (population registry: RAS).
- High skilled and manager: Proportion of workers in the zip code whose job is classified as DISCO-09 categories 1-2 (population registry: RAS) .
- Postgraduate degree: Proportion of those aged 20-65 which have obtained a postgraduate degree (population registry: UDDF).
- Without Secondary Education: Proportion of those aged 20-65 which have not obtained any secondary education (population registry: UDDF).

Sweden

Vote for the Sweden Democrats. We use the data provided in Statistics Sweden's database "Election to the Riksdag - results by region and party etc. Number and percent. Year of election 1973 - 2018".

Housing prices. The primary source of data is provided by *Svensk Mäklarstatistik AB*. This data contains information about the average price per square-meter for both apartments and villas on the municipal level from 2005 and until November 2018. We calculate an average for both types of buildings by multiplying the number of sold units for each type with the average price for each type. This number is divided with the total sum of sold units. Secondary, we have used the data provided in the variable "Purchase price, average in 1,000 SEK from Statistics Sweden's database "Sold one- and two-dwelling buildings by region and type of real estate. Year 1981 - 2018". The results are similar when this variable is used.

Population density. We use the variable "Population density per sq. km" from Statistics Sweden's database "Population density per sq. km, population and land area by region and sex. Year

1991 - 2018".

Type of dwellings. We combine the two statistics "The dwelling stock, projections by region and type of building. Old table, not updated. Year 1990 - 2012" and "Number of dwellings by region, type of building and type of ownership (including special housing). Year 2013 - 2018". Both statistics are provided by Statistics Sweden. The analysis is only based on data on one- or two-dwelling buildings and multi-dwelling buildings. Furthermore, one-or two-dwelling buildings are omitted from the regression.

Foreign-born population. Statistics Sweden does not provide data on the percentage of non-western immigrants in the population. Instead, we use data on the percentage of foreign-born population. This statistic is found in "Swedish and foreign-born population by region, age and sex. Year 2000 - 2018". The data is provided by Statistics Sweden.

Employment rate. We have been unable to find data on the unemployment rate on the local level. Instead, we use data on the gainful employment rate. We obtain the data from "Gainful employment rate 20-64 years by region, born in Sweden and foreign born and sex. Year 2004 - 2017". The data is provided by Statistics Sweden. The statistic has not yet been updated and we therefore use the data from 2017 for 2018.

Median income. We use the median gross income for people aged 20 to 64. The statistic is provided by Statistics Sweden in "Sammanräknad förvärvsinkomst för boende i Sverige den 31/12 resp år (antal personer, medel- och medianinkomst samt totalsumma) efter region, kön, ålder och inkomstklass. År 1991 - 2016". The statistic has not yet been updated and we therefore use the data from 2017 for 2018.

Educational attainment. We use the statistic "Population 16-74 years of age by region, highest level of education, age and sex. Year 1985 - 2018". The statistic is provided by Statistics Sweden. We collapse "Primary and secondary education less than 9 years" and "Primary and secondary education 9-10 years" into "Primary school", "Upper secondary education, 2 years or less" and "Upper secondary education 3 years" into "Upper-Secondary school", "Post-secondary education, less than 3 years" and "Post-secondary education 3 years or more" into "Post-secondary education".

Primary school is omitted from the regression.

Norway

14 municipalities are merged in Norway during the period of investigation. For a number of variables it is not possible to recalculate the data, so the number of municipalities is consistent over time. As a result, merged municipalities drop out of the analysis when they are merged.

Vote for the Progress Party. We use the data provided in Statistics Norway's database "08092: Storting election. Valid votes, by party/electoral lists (M) 1945 - 2017".

Housing prices. We use the statistic "06035: Freeholder. Average price per square meter and number of sales (M) 2002 - 2017", which is provided by Statistics Norway. The statistic differs between "detached houses", "row houses" and "multi-dwelling". We calculate an average for all types of buildings by multiplying the number of sold units for each type with the average price for each type. This number is divided with the total sum of sold units.

Population density. We are unable to obtain a variable for population density on the municipal level. Instead, we divide the size of the population with the land area for each municipality. The data on population size is found in "07459: Population, by sex and one-year age groups (M) 1986 - 2018" and data on land area is found in "09280: Area of land and fresh water (km^2) (M) 2007 - 2018". Both statistics are provided by Statistics Norway.

Type of dwellings. We use the data found in Statistics Norway's "06265: Dwellings, by type of building (M) 2006 - 2018". "Detached house" and "House with 2 dwellings" are collapsed into "One- or two-dwelling buildings", while "Multi-dwelling buildings" and "Residence for communities" are collapsed into "Multi-dwelling buildings". "Row house" and "Other building" are treated as other and excluded from the regression.

Non-western immigrants. We use the data found in Statistics Norway's "07110: Immigrants, by country background (world region) and sex (M) 1970 - 2018". Immigrants from Africa, Asia including Turkey, South- and Central-America and Stateless are counted as non-Western, while immigrants from Europe, North America and Oceania are counted as Western.

Unemployment rate. We use the data found in Statistics Norway's "10540: Unemployed persons registered at the Employment Office 15-74 years, by age (per cent) (M) 1999M01 - 2017M11". The data from November is used since it has widest coverage.

Median income. We use the variable "Gross income (median)", which is found in Statistics Norway's database "05671: Main entries from the tax assessment for residents 17 years and older. Median (NOK) (M) 1993 - 2017".

Educational attainment. We use the data provided in Statistics Norway's database "09429: Educational attainment, by municipality and sex (M) 1970 - 2017". "Upper secondary education" and "Tertiary vocational education" are collapsed into "Upper secondary and vocational education". "Basic school level" is omitted from the regression.

Finland

Vote-share for the True Finns. We use the statistic "Parliamentary elections 1983-2015, support for parties", which is obtained from Statistic Finland databases. The vote-share for the True Finns is calculated as votes cast for the True Finns divided by all votes cast. We have recalculated the data for municipalities, which were merged during the period under investigation. The analysis is therefore based on the 295 municipalities, which existed in 2018.

House prices. We use the statistic "Average prices of old dwellings in housing companies and numbers of transactions by municipality". The price is measured in eur/m^2 . This data is not available online, but has kindly been provided by Statistics Finland. We have calculated a weighted average of the house prices in municipalities, which were merged during the period of investigation. The analysis is therefore based on the 295 municipalities, which existed in 2018.

Population density. Data on population density is not readily available from Statistics Finland before 2009. The variable is therefore created by dividing the population of the municipality in the given year with the area of the municipality in 2017. The data on population is obtained from "Population according to age (1-year) and sex by area in 1972 to 2017" provided by Statistic Finland's PX-Web databases. The data on area is from the dataset "Population density by area

1.1.2018"

Type of dwellings. The statistic "Household-dwelling units by number of persons and type of building 1985-2017" found in Statistics Finland's database is used. Terraced house and block of flats are counted as multi-dwelling buildings, while detached house is used as one-dwelling buildings. Other buildings are not included and omitted from the regression.

Non-western immigrants. The statistic "Origin according to background continent by area in 1990 to 2017", which is found in Statistic Finland's databases is used. Immigrants from Asia and Africa are classified as non-western immigrants, while immigrants from Europe, Oceania and America are classified as western. The percentage immigrants of non-western immigrants is calculated by dividing the number of immigrants with the total population, which is also found in the statistic.

Employment rate. The dataset "Proportion of the unemployed among the labor force, %" in "the Municipal key figures 1987-2017" is used. The data is provided by Statistic Finland.

Average income. It is not possible to obtain data on the gross median income per income earner, which is the variable, which is used for the other countries. Instead, we use the variable "Gross income" divided by "Average number of consumption units" to get a measure of average income per person. The data is found in the dataset "004 – Household-dwelling units' average income by type of income and municipality in 1995-2017, which is provided by Statistics Finland.

Educational attainment We use the data provided in the statistic "Population aged 15 or over by level of education, municipality, gender and age 1970-2017". Upper secondary education and short-cycle tertiary education are collapsed to upper secondary education. Master's or equivalent level and doctoral or equivalent level are collapsed to long tertiary education. Basic education is omitted from the regression.

D Descriptive Statistics

Tables D1-D5 present descriptive statistics for the Danish precinct-level data, the Danish individual-level data, and the municipality-level data from Sweden, Norway, and Finland.

Table D1: Descriptive Statistics, Denmark (precinct)

	Mean	SD	Min	Median	Max	n
DPP support	14.52	8.13	0.00	13.11	51.47	13870
SF support	7.73	4.47	0.00	6.74	45.50	13850
SD support	24.64	8.30	3.39	23.97	66.72	13870
Venstre support	26.88	9.69	2.00	26.48	63.84	13870
Enhedslisten support	2.05	2.99	0.00	0.99	31.60	13850
Housing Prices (DKK 10,000)	1.01	0.57	0.20	0.84	4.61	11371
Fixed Housing Prices (DKK 10,000)	1.15	0.59	0.26	0.99	5.25	11371
Without Secondary Education	26.64	7.36	0.00	26.55	81.25	11096
Postgraduate degree	5.50	4.28	0.00	4.34	54.55	11096
Low Skilled service jobs	26.27	14.75	2.33	18.48	64.63	13804
Low Skilled Manufacturing	10.47	4.75	0.79	10.05	30.08	13804
High Skilled and Manager	9.35	5.07	0.84	8.04	32.90	13804
Unemployment Rate	12.53	2.94	4.54	12.25	31.51	12454
Median Income	1.36	0.25	0.81	1.35	2.68	12454
Non-western Immigrants	5.12	4.54	0.05	3.78	42.21	12454
Log(Population Density)	4.68	1.68	-1.73	4.41	10.34	12450
Single Family Homes	78.82	19.72	9.85	84.46	100.00	12454
Ten Family Apartments	3.51	4.15	0.00	2.28	22.77	12454
Mobility	0.08	0.03	0.01	0.07	0.48	12429

Table D2: Descriptive Statistics, Denmark (individual)

	Mean	SD	Min	Median	Max	n
DPP voter	0.11	0.31	0.00	0.00	1.00	6869
Housing Prices (DKK 10,000)	1.50	0.73	0.23	1.33	4.61	6869
Fmr. Right-wing bloc voter	0.53	0.50	0.00	1.00	1.00	6243
Renter	0.31	0.46	0.00	0.00	1.00	6869
Anti-Immigrant Sentiment	0.44	0.37	0.00	0.50	1.00	5922
Home Equity (DKK 10,000)	11.11	12.55	0.00	7.50	65.00	1834

Table D3: Descriptive Statistics, Sweden

	Mean	SD	Min	Median	Max	n
SD support	11.44	8.04	0.30	9.60	39.20	1160
Housing Prices (EUR 1,000)	1.24	0.89	0.10	0.92	6.79	1155
Fixed Housing Prices EUR(1,000)	1.29	0.88	0.12	0.97	6.42	1155
Upper-secondary school	49.26	5.35	23.21	50.04	61.22	1160
Post-secondary education	25.00	7.98	12.94	23.11	59.30	1160
Post-graduate education	0.50	0.66	0.00	0.30	5.86	1160
Employment rate	78.62	4.05	61.30	78.80	88.40	1160
Log Median income	269.79	37.34	192.60	266.95	422.10	1160
Foreign-born population	12.11	6.08	2.95	10.66	42.11	1160
Log(Population Density)	3.35	1.67	-1.61	3.29	8.67	1160
Multi-dwelling buildings	37.40	15.17	6.84	34.33	98.60	1158

Table D4: Descriptive Statistics, Norway

	Mean	SD	Min	Median	Max	n
Progress Party support	18.78	6.28	2.84	18.41	39.85	1717
Housing Prices (EUR 1,000)	1.98	0.94	0.60	1.76	8.71	1047
Fixed Housing Prices EUR(1,000)	2.08	0.90	0.67	1.88	8.26	1047
Upper secondary education	45.77	4.54	27.30	46.20	57.60	1717
Short tertiary education	17.26	3.97	8.30	16.80	31.60	1717
Long tertiary education	3.75	2.42	0.50	3.10	20.90	1715
Unemployment Rate	2.37	1.15	0.00	2.20	9.80	1716
Log Median Income (NOK 10,000)	3.39	0.21	2.83	3.42	3.84	1713
Non-western Immigrants	0.02	0.02	0.00	0.02	0.14	1717
Log(Population Density)	247.85	169.51	-112.12	222.01	757.66	1713
One- or two-dwelling buildings	83.63	12.11	14.36	87.40	98.97	1712
Multi-dwelling buildings	6.57	7.96	0.00	3.67	74.63	1712

Table D5: Descriptive statistics, Finland

	Mean	SD	Min	Median	Max	n
True Finns Support	11.46	9.99	0.00	9.16	53.16	1180
Housing Prices (EUR 1,000)	1.11	0.44	0.41	1.01	3.82	1023
Fixed Housing Prices EUR(1,000)	1.22	0.46	0.47	1.11	3.82	1023
Upper secondary education	40.44	3.77	23.46	40.46	50.56	1180
Shortcycle tertiary education	9.66	2.06	4.45	9.59	15.80	1180
Bachelor's degree	6.07	2.36	1.67	5.65	14.38	1180
Long tertiary education	4.32	2.99	0.84	3.42	32.31	1180
Unemployment Rate	12.01	4.63	2.80	11.70	30.40	1180
Log Average Income	30.79	5.11	21.65	30.24	86.90	1180
Non-western Immigrants	0.38	0.69	0.00	0.15	6.67	1180
Log(Population Density)	2.56	1.45	-1.80	2.40	7.98	1180
One-dwelling buildings	64.43	14.64	7.46	68.20	88.36	1180
Multi-dwelling buildings	32.53	15.24	7.71	27.80	91.24	1180

E On Homeownership in Denmark

A slim majority of people in Denmark (53 percent) own their primary residence. Figure E1 shows the share of homeowners by region in 2020 based on data from Statistics Denmark.⁶ This is below the EU average of 70 percent (Eurostat 2020). It varies across regions. In the Capital Region only 45 percent are homeowners, while it is 65 percent in Region Zealand. Next, we see that there are large differences across age groups. Children mainly live in privately owned houses, while young adults primarily live in rented housing. People then tend to buy a house in their thirties and forties. Towards old age most again rent their house, mainly because they move to a retirement home.⁷

Figure E2 shows that homeowners are wealthier and have higher incomes than renters. The average homeowners has 4.19 times more wealth and earns 1.56 times more after taxes.⁸ Not only are homeowners on average better off than renters, but they are also more likely to belong to high income groups as seen in the bottom half of E2. For example, we find that 24 percent of renters has a household income of less than 200,000 DKK, while it is only 5 percent of renters.⁹

At last, we in Figure E3 show that the development in house prices is uneven across Scandinavia with more expensive areas becoming more expensive, while prices in less expensive are stagnating.

⁶We use the statistic BOL101 found here.

⁷We use data from 2019 based on the statistic BOL201 found here.

⁸The top figure is based on FORMUE5 found here. The average per person are found by dividing the household wealth/income with the average number of people in the household (2.3 for owners, 1.6 for renters).

⁹The bottom figure is based on INDKF102 found here.

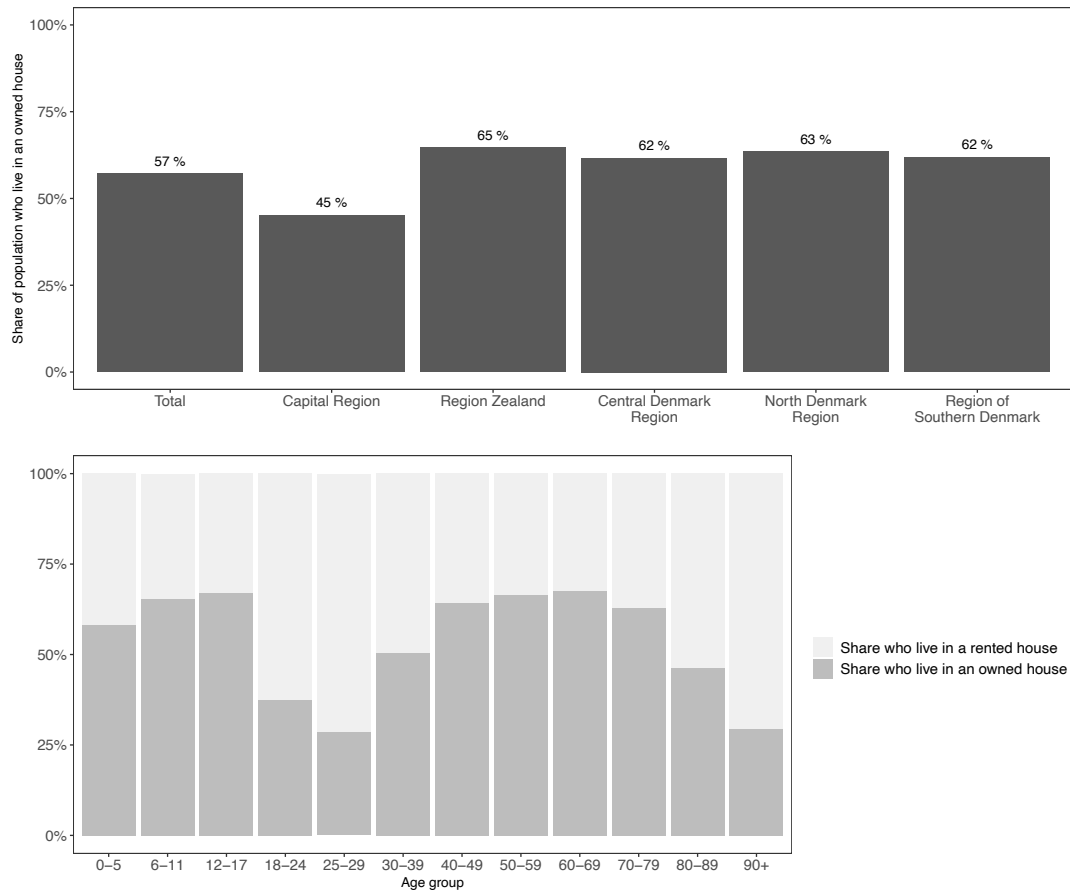


Figure E1: Descriptive Statistics on Homeownership in Denmark. The top figure shows the share of population who live in an owned house across the five regions of Denmark, and the bottom figure shows the share of population that lives in either an owned house or a rented house by age group.

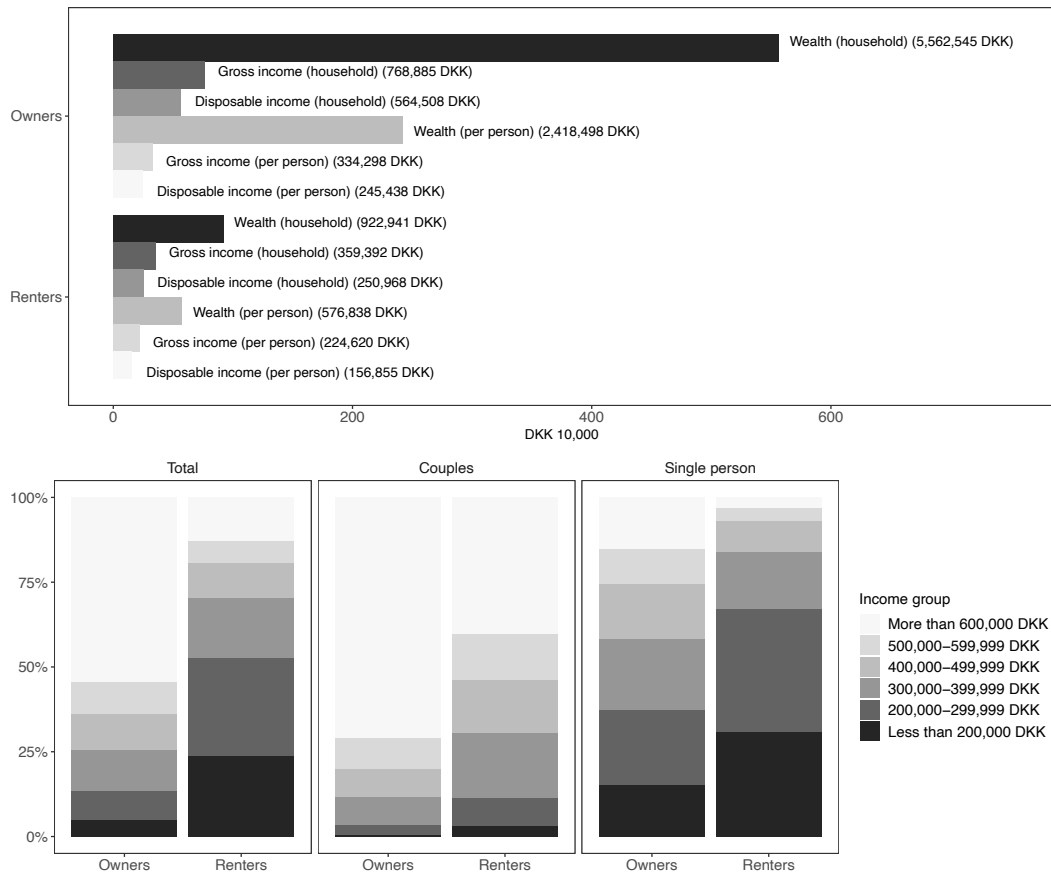


Figure E2: More Descriptive Statistics on Homeownership in Denmark. The top figure shows the average wealth and income, both by household and by person, for both owners and renters, and the bottom figure shows the share of owners and renters by income group (gross) by household type.

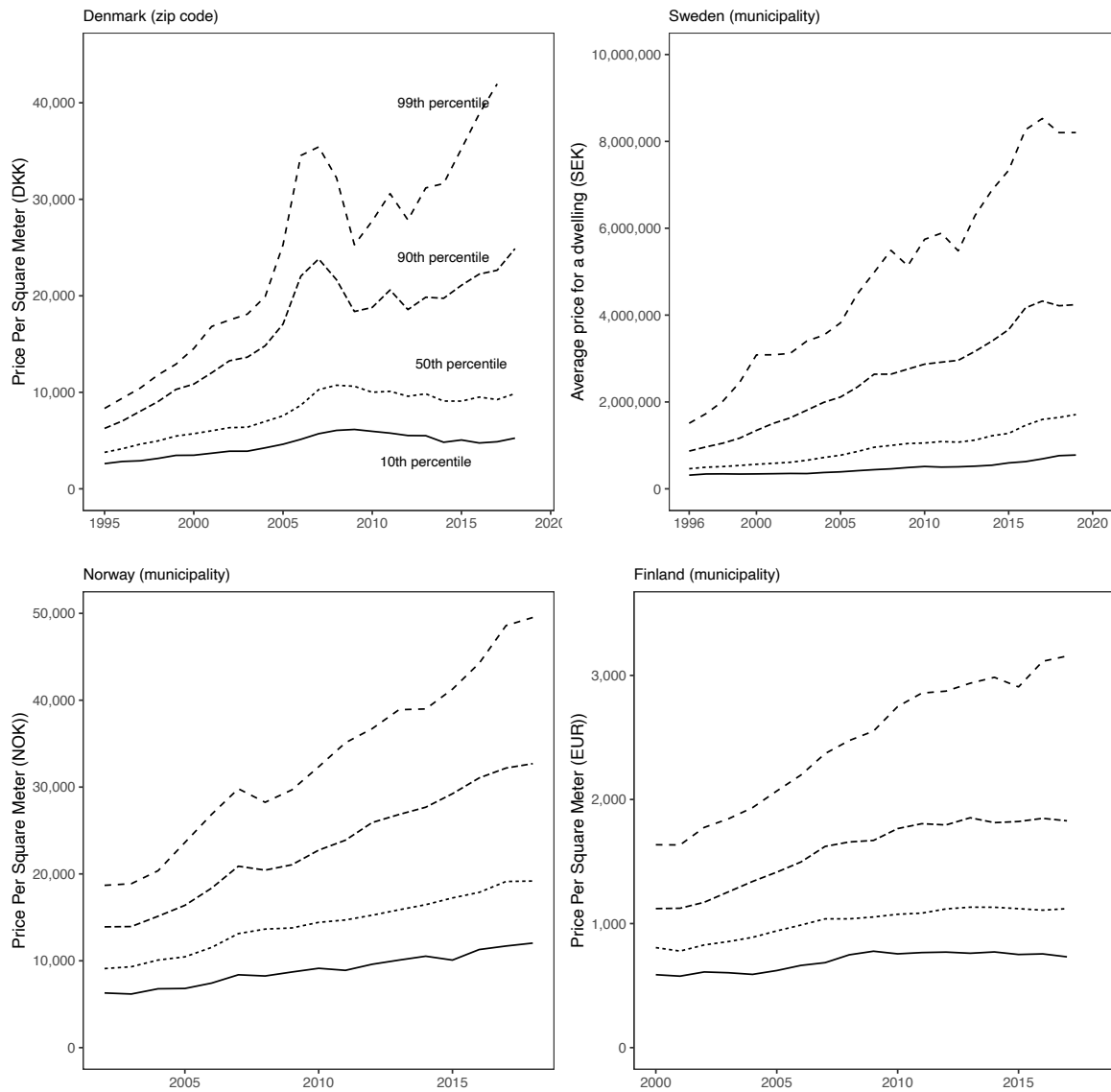


Figure E3: The development in house prices for the 10th, 50th and 99th percentile of municipalities in Denmark, Sweden, Norway, and Finland.

F Sensitivity analysis

Table F1 shows the results from a sensitivity analysis based on Cinelli and Hazlett (2020). The robustness value (RV) of 17 percent means that if the confounder explains less than 17 percent of the residual variance in the independent variable, *changes in Housing Prices* and less than 17 percent of the residual variance in the outcome variable *changes in support for the Danish People’s Party*, then the confounding is not strong enough to overturn the effect of the estimate of *changes in Housing Prices*. Likewise, the $RV_{\alpha=0.05}$ of 15 percent tells us that the confounding would have to explain more than 15 percent of the residual variance in both the main independent and dependent variable for the estimate to lose statistical significance at the 0.05 level. This shows that a confounder needs to be of this size to substantively alter our finding. It should be noted that the package used, *sensemakr*, does not incorporate clustered standard errors. We therefore mainly focus on whether an omitted variable can overturn the results (e.g. change the sign of the coefficient), which also is standard in the literature (Cinelli and Hazlett 2020).

The last row of the table compares this with the “strongest” control variable in 1, namely Median Income. For a variable of this ‘strength’ we can formally determine that confounding explains 0.1 percent of the residual variation in Support for the Danish People’s Party ($R^2_{y \sim Z|X} = 0.1$) and 2.7 percent of the residual variation in Housing Prices ($R^2_{D \sim Z|X} = 2.7$).

Table F1: Regression Results from column 5 in Table 1 with Sensitivity Statistics.

Outcome: <i>Support for the Danish People’ party</i>						
Treatment:	Est.	S.E.	t-value	$R^2_{Y \sim D X}$	$RV_{q=1}$	$RV_{q=1, \alpha=0.05}$
<i>Housing Prices (DK 10,000)</i>	-2.93	0.16	-18	3%	16.6%	14.9%
df = 9789	<i>Bound (1x ‘Median Income’): $R^2_{Y \sim Z X, D} = 0.1\%$, $R^2_{D \sim Z X} = 2.7\%$</i>					

Figure F1 shows how such a confounder would change our result. The figure shows the effect estimate after adjusting for a confounder with the strength of *Median Income* (1 x median income). We also show what would happen with a control that is five times stronger than *Median Income*, as well as fifteen and twenty times stronger. The effect remains positive until we include a confounder

that is 20 times stronger than median income. Therefore, an unobserved confounder would need to be at least twenty times as strong as median income to explain away the effect of housing prices.

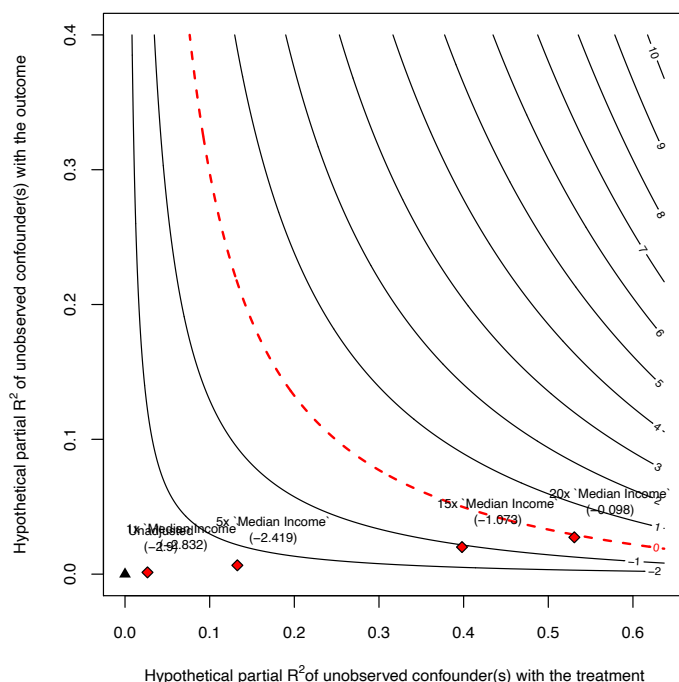


Figure F1: Sensitivity Analysis. Sensitivity of point estimate with bounds using Cinelli and Hazlett (2020) The plot shows benchmark bounds derived from claims that confounding is once, five, fifteen or twenty times “stronger” than changes in Median Income in explaining residual variation in changes in Housing Prices and changes in Support for the Danish People’s Party. The horizontal axis shows hypothetical values for the percentage of the residual variance of the treatment explained by the confounder. The vertical axis shows hypothetical values for the percentage of the residual variance of the outcome explained by the confounder. The contour levels represent the adjusted estimates of the treatment effect. The bound points (diamonds) show the partial R^2 of the unobserved confounder under the assumption that it is k times “as strong” as the observed covariate Median Income. Their placement therefore shows the maximum bias caused by confounding under each assumption on k (1, 5, 10 or 15,20). We see that the point estimate of the treatment effect remains positive for a confounder one, five and fifteen times as strong as Median Income, but disappears at twenty times.

G Mainly A Post-Crisis Effect

Figure 2 suggested that the effect of housing prices became stronger after the financial crisis. Can we find a similar pattern when looking at within-precinct differences? To find out, we re-estimate our first difference model including the full sets of controls on a rolling sample of the elections, starting with the elections in '98, '99 and '01 and ending with the elections in '11, '14 and '15. This gives us eight estimates of the effect of housing prices, which we plot in Figure G1.

The estimated effect of housing prices on support for the DPP is consistently negative, and it is statistically significant for most years. However, there does seem to be an increase in effect size following the crisis. Effect sizes are typically estimated to be between zero and two before the crisis, but following the crisis the effect sizes are between two and four.

Why does the effect become stronger following the crisis? We can only speculate, but one reason could be that the credit crisis heightened the contradictions between winners and losers in the housing market. As can be seen in Figure 1, housing prices decreased dramatically in Denmark, and while urban areas had a relatively fast recovery, more rural areas never really recovered. In this way, the crisis deepened the divide between residents of big cities, whose wealth was steadily increasing simply because of where they lived, and those in smaller cities who lost substantial amounts of housing wealth in the crisis and did not recoup the losses in subsequent years.

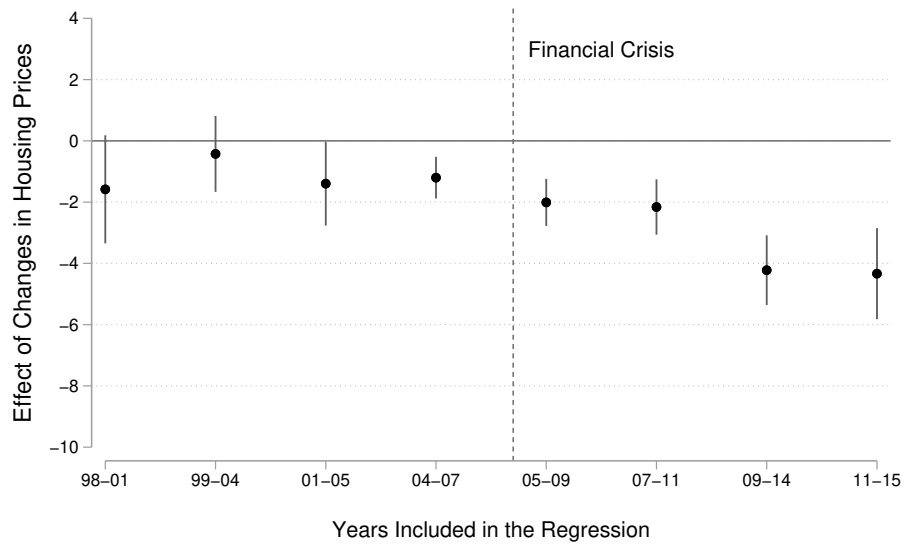


Figure G1: Is there a change in the effect of housing prices over time? Unstandardized effects with 95 percent confidence intervals. Each time period includes three elections. All effects estimated using the full set of zip code level controls.

H Effects in the Capital Region of Denmark

Table H1 re-estimates the models presented in Table 1 using data from the capital region of Denmark. We delineate the capital region as all zip-codes below 3000 which include central Copenhagen as well as the suburbs North, West and South of Copenhagen.

Even within the capital region the effect is statistically significant and of approximately the same size as for the country as a whole. This suggests that our effect cannot simply be explained by an urban rural divide that becomes more salient over time. Even within the capital region of Copenhagen changes in housing prices across suburbs and across suburbs and the city center predict changes in support for the Danish People's party.

Table H1: Support for the Danish People's Party and Housing Prices in the Capital Region

	(1)	(2)	(3)	(4)	(5)
Housing Prices (DKK 10,000)	-3.8 (1.1)	-3.7 (0.9)	-3.4 (0.9)	-3.3 (1.0)	-2.7 (1.0)
Log(Population Density)		-6.3 (2.6)	-5.8 (3.0)	-5.9 (3.0)	-2.9 (2.9)
Single Family Homes		0.6 (0.3)	0.6 (0.3)	0.6 (0.3)	0.6 (0.3)
Ten Family Apartments		-0.3 (0.4)	-0.3 (0.4)	-0.3 (0.4)	-0.2 (0.4)
Non-western Immigrants			0.3 (0.3)	0.3 (0.3)	0.3 (0.3)
Unemployment Rate				-0.1 (0.2)	-0.1 (0.2)
Median Income				-5.3 (3.0)	-7.1 (3.3)
Without Secondary Education					0.5 (0.3)
Postgraduate degree					-1.2 (0.4)
Low Skilled Service					-0.0 (0.1)
Low Skilled Manufacturing					0.5 (0.3)
High Skilled and Manager					0.1 (0.2)
Year FE	✓	✓	✓	✓	✓
Observations	1557	1547	1547	1547	1453
RMSE	2.505	2.460	2.451	2.447	2.385

Clustered standard errors in parentheses.

I Effects Across Levels of Mobility (Denmark)

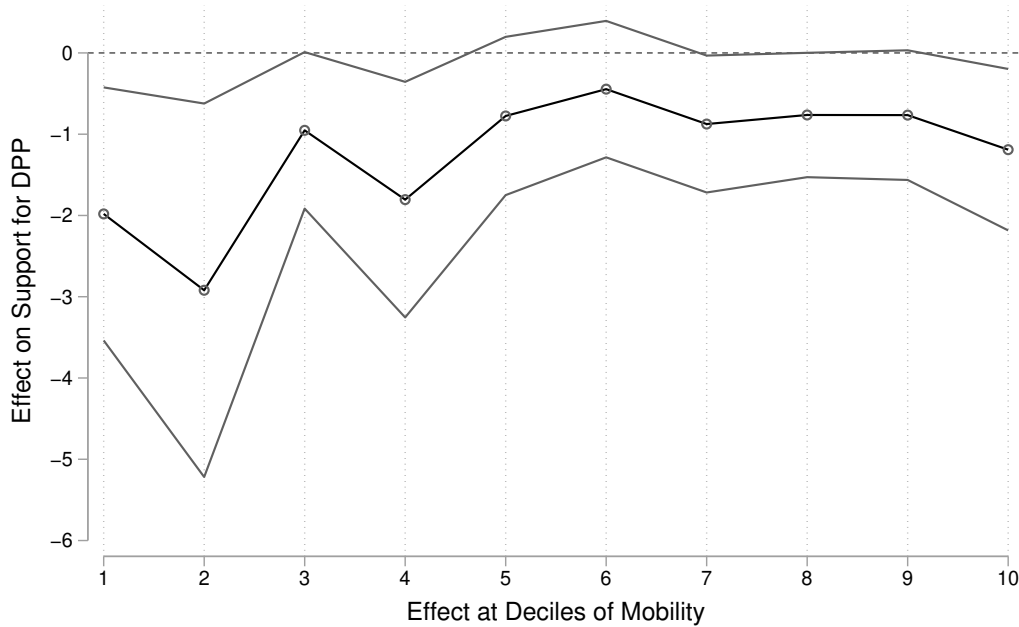


Figure I1: The effect of changes in housing prices on support for the Danish Peoples party at different levels of of mobility. Effect at each decile calculated by interacting decile-dummies and housing prices in our first difference model with the full set of zip code controls.

J A More Restrictive Model of Danish People's Party Support (Denmark)

Table J1 present results from regression models using both first differences as well as precinct fixed effects. Effectively, the model thus controls for precinct-specific trends in housing prices.

Table J1: Support for the Danish People's party using First Differences and Fixed Effects

	(1)	(2)	(3)	(4)	(5)
Housing Prices (DKK 10,000)	-2.2 (0.4)	-2.3 (0.4)	-2.3 (0.4)	-2.1 (0.4)	-2.1 (0.4)
Without Secondary Education	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Postgraduate degree	0.1 (0.1)	0.1 (0.1)	0.1 (0.1)	0.1 (0.1)	0.1 (0.1)
Log(Population Density)		0.7 (1.8)	1.0 (2.0)	0.5 (1.9)	-1.2 (1.8)
Single Family Homes		-0.2 (0.1)	-0.2 (0.1)	-0.2 (0.1)	-0.1 (0.1)
Ten Family Apartments		-0.5 (0.2)	-0.6 (0.2)	-0.6 (0.2)	-0.5 (0.2)
Non-western Immigrants			0.3 (0.2)	0.4 (0.2)	0.5 (0.2)
Unemployment Rate				-0.2 (0.1)	-0.1 (0.1)
Median Income				-3.5 (2.2)	-4.0 (2.3)
Low Skilled Service					0.1 (0.0)
Low Skilled Manufacturing					0.2 (0.1)
High Skilled and Manager					0.1 (0.1)
Year FE	✓	✓	✓	✓	✓
Precinct Trend FE	✓	✓	✓	✓	✓
Observations	7725	7659	7659	7659	7659
RMSE	2.447	2.442	2.439	2.437	2.433

Clustered standard errors in parentheses.

K Housing Prices and Support for Other Parties

Column 1-4 of Table K1 estimates the effect of housing prices on the support for left-wing parties in total, then support for left wing parties split between the Social Democratic party and socialist parties as well as support for the Liberal party which is the mainstream right-wing party in Denmark.

There is no significant relationship between housing prices and support for the other parties. However, if we can trust the sign of the estimates, then it seems like left-wing parties benefit a little when housing prices increase, whereas the main stream right-wing party loses a little. Importantly, there is no sign that voters turn towards the more extreme left-wing parties if housing prices decrease.

The final column of Table K1 examines the relationship changes in housing prices and change in support for non-incumbents who are not populists (i.e., support for all parties except the DPP and the prime minister party). Unlike what we would expect from the economic voting literature, we find that the non-populist opposition actually does better when housing prices are increasing. The effect is roughly 1.5 percentage points for each DKK10.000 increase in the housing price. This positive effect is smaller in absolute terms than the negative effect on support for the DPP, which suggests that incumbents will also do somewhat better when house prices increase (i.e., .6 percentage points). This tells us that the main movement we see in precincts where housing prices remain relatively low is a movement from mainstream left and right opposition parties to the DPP, and - to a smaller extent - a move away from the incumbent prime ministers party. In this way, there is some economic voting involved in changing housing prices - as prior literature also suggests (Larsen et al. 2019) the incumbent fares better as prices increase, but there is also a distinct and larger effect on right-wing populist support.

Table K1: Support for Selected Other Parties and Housing Prices

	Left	Socialist	Social Democratic	Liberal Party	Non-incumbent
Housing Prices (DKK 10,000)	0.1 (0.6)	-0.1 (0.4)	0.2 (0.5)	-0.7 (0.4)	2.4 (0.5)
Without Secondary Education	-0.0 (0.0)	-0.0 (0.0)	-0.0 (0.0)	0.0 (0.0)	-0.0 (0.0)
Postgraduate degree	-0.1 (0.0)	-0.0 (0.0)	-0.1 (0.0)	0.0 (0.0)	0.0 (0.1)
Low Skilled Service	0.0 (0.1)	0.1 (0.0)	-0.1 (0.1)	-0.2 (0.1)	-0.2 (0.1)
Low Skilled Manufacturing	-0.2 (0.2)	-0.0 (0.1)	-0.2 (0.2)	-0.2 (0.2)	-0.2 (0.2)
High Skilled and Manager	-0.4 (0.2)	-0.1 (0.1)	-0.3 (0.1)	0.2 (0.1)	0.3 (0.2)
Log(Population Density)	2.4 (2.1)	-1.3 (1.2)	3.8 (1.8)	-2.9 (2.8)	-2.0 (3.5)
Unemployment Rate	0.3 (0.2)	0.2 (0.1)	0.0 (0.2)	-0.6 (0.1)	-0.5 (0.2)
Median Income	-5.8 (3.5)	-4.9 (1.7)	-1.0 (3.6)	-2.6 (3.4)	0.6 (4.2)
Single Family Homes	-0.1 (0.2)	0.1 (0.1)	-0.2 (0.1)	0.2 (0.2)	0.3 (0.2)
Ten Family Apartments	-0.3 (0.4)	0.1 (0.2)	-0.4 (0.3)	0.6 (0.2)	1.1 (0.3)
Non-western Immigrants	-0.3 (0.2)	-0.0 (0.1)	-0.2 (0.1)	0.0 (0.1)	0.0 (0.2)
Year FE	✓	✓	✓	✓	✓
Observations	7650	7650	7659	7659	7659
RMSE	4.981	2.705	4.303	3.693	4.834

Clustered standard errors in parentheses.

L More Individual-level Results

Table 2 reports the additional individual-level results discussed in the main article. A measure of self-reported home equity was included in the 2011 and 2015 Danish national election study. In particular, home owning respondent's were asked "How much equity is there in your home?" and answered on the following scale: 0, 0-99 thousand DKK, 100-499 thousand DKK, 500 thousand to 1 million DKK, 1-2 million DKK, 2-5 million DKK and more than 5 million DKK. We converted this to numerical values by assigning the midpoint of the chosen interval to each respondent, and assigning 6.5 million to the 22 respondents who reported more than 5 million in home equity.

To measure anti-immigrant sentiment we used agreement on a five point scale to the statement "Immigration is a serious threat to our national character," which was presented to respondents in all three rounds of the Danish national election study we include here. We rescale this variable so that it goes from zero to one. To measure former vote choice we look at whether respondents reported voting for a left-wing party at the last election (the Social Liberal party, the Social Democrats or a Socialist party) or a right wing party (The Liberal Party, The Conservative Party, the Danish People's party or a Libertarian party).

We model the responses using a set of linear regression including both the demographic and zip code level controls applied in the main analysis. Housing prices are strongly related to home equity. As prices increase 10,000 DKK respondents report having roughly 6,000 DKK more in home equity. This is reassuring as it suggests that those living in areas where prices are relatively high recognize that this makes a difference for their material well being.

Housing prices are not strongly related to anti-immigrant sentiment. In particular, the estimated effect of housing price is statistically insignificant at the five percent level. This is important in so far that it suggests that the effect of housing prices on support for the Danish people's party is not mediated by changes in anti-immigrant sentiment.

Finally, there is a statistically significant interaction between voting for a former right-wing party and support for the DPP. The effect for left-wing voters is not statistically significant. This suggests that housing prices primarily move voters from mainstream right-wing parties to right-

wing populist parties.

Table L1: Individual level results

	(1)	(2)	(3)
	Home Equity	Anti-immigrant	DPP support
Housing Prices (DKK 10,000)	5.930	-0.031	-1.310
	(1.396)	(0.017)	(1.335)
Fmr. Right-wing bloc voter			25.928
			(1.867)
Housing Prices × Fmr. Right-Wing Voter			-3.540
			(1.135)
Year FE	✓	✓	✓
Zip code controls	✓	✓	✓
Demographic controls	✓	✓	✓
Observations	1834	5922	6243
RMSE	11.286	0.340	29.569

Standard errors in parentheses

Coefficients show effects in percentage points. Clustered standard errors in parentheses.

Demographic controls: Age, gender, income, education and marital status.

Zip-code controls: See precinct-level analysis.

M Effects using real prices

Table M1 re-estimates the fully controlled first-difference models of populist party support for Denmark, Sweden, Norway, and Finland using fixed prices. In this model, housing prices have been adjusted using the general Consumer Price Index (CPI) from each country.

The results are similar to what we find using nominal prices, however, the coefficient on housing prices in Finland drops slightly, leaving it statistically significant at the 10 percent level.

Table M1: Support for Populist Parties and Fixed Housing Prices

	DK	SE	NO	FI
Housing Prices (1,000 EUR)	-1.6 (0.3)	-1.4 (0.3)	-0.4 (0.4)	-1.9 (1.1)
Year FE	✓	✓	✓	✓
Zip code controls	✓	✓	✓	✓
Observations	9808	860	725	687
RMSE	2.439	1.520	1.838	3.155

Clustered standard errors in parentheses.

N Full results for Sweden, Norway and Finland

Tables N1-N3 present the full regression models of support for the Sweden Democrats, The Progress Party (Norway) and the True Finns (Finland).

Table N1: Support for the Sweden Democrats and Housing Prices

	(1)	(2)	(3)	(4)	(5)
Housing Prices (EUR 1,000)	-1.9	-1.9	-1.6	-1.6	-1.2
	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)
Log(Population Density)		1.8		-2.2	5.9
		(1.9)		(2.1)	(2.2)
Multi-dwelling buildings		-0.0		-0.0	-0.0
		(0.0)		(0.0)	(0.0)
Employment rate				-0.1	-0.1
				(0.0)	(0.0)
Log Median income				-0.0	0.0
				(0.0)	(0.0)
Foreign-born population				0.3	0.4
				(0.1)	(0.1)
Upper-secondary school					0.4
					(0.1)
Post-secondary education					-0.1
					(0.1)
Post-graduate education					-3.9
					(1.0)
Year FE	✓	✓	✓	✓	✓
Observations	860	860	860	860	860
RMSE	1.554	1.554	1.548	1.527	1.521

Clustered standard errors in parentheses.

Table N2: Support for the Progress Party and Housing Prices

	(1)	(2)	(3)	(4)	(5)
Housing Prices (EUR 1,000)	-1.3 (0.2)	-1.0 (0.2)	-1.0 (0.2)	-0.7 (0.2)	-0.5 (0.4)
Log(Population Density)		-0.1 (0.0)	-0.1 (0.0)	-0.1 (0.0)	-0.1 (0.1)
One- or two-dwelling buildings		0.0 (0.1)	0.0 (0.1)	0.0 (0.1)	0.3 (0.1)
Multi-dwelling buildings		-0.0 (0.1)	-0.0 (0.1)	-0.0 (0.1)	0.1 (0.2)
Non-western Immigrants			10.4 (17.5)	6.2 (17.0)	35.0 (31.6)
Unemployment Rate				0.5 (0.2)	0.5 (0.2)
Log Median Income				-0.6 (4.4)	-10.7 (6.4)
Upper secondary education					0.0 (0.2)
Short tertiary education					-0.0 (0.3)
Long tertiary education					0.2 (0.6)
Year FE	✓	✓	✓	✓	✓
Observations	725	725	725	725	725
RMSE	2.307	2.296	2.297	2.272	1.838

Clustered standard errors in parentheses.

Table N3: Support for the True Finns and Housing Prices

	(1)	(2)	(3)	(4)	(5)
Housing Prices (EUR 1,000)	-1.7 (1.1)	-2.4 (1.2)	-2.4 (1.2)	-2.8 (1.4)	-2.5 (1.3)
Log(Population Density)		6.7 (2.3)	6.6 (2.4)	6.6 (2.4)	12.3 (4.2)
One-dwelling buildings		0.0 (0.2)	0.0 (0.2)	0.0 (0.2)	0.0 (0.2)
Multi-dwelling buildings		-0.3 (0.2)	-0.3 (0.2)	-0.2 (0.2)	-0.3 (0.2)
Non-western Immigrants			0.1 (0.7)	0.2 (0.7)	0.3 (0.7)
Unemployment Rate				-0.1 (0.1)	-0.1 (0.1)
Log Average Income				0.3 (0.1)	0.3 (0.2)
Upper secondary education					0.1 (0.2)
Shortcycle tertiary education					-0.2 (0.3)
Bachelor's degree					0.1 (0.3)
Long tertiary education					-1.4 (0.5)
Year FE	✓	✓	✓	✓	✓
Observations	687	687	687	687	687
RMSE	3.190	3.178	3.180	3.163	3.150

Clustered standard errors in parentheses.