

# Sheltering Populists?

## House Prices and the Support for Populist Parties

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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 Finland, Norway, and Sweden.

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# 1 Introduction

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 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 2018; Fetzer 2018)?

There has, however, been a rather surprising omission in recent studies of voting for populist parties. The core economic story of the past two decades in advanced industrial countries has been the surge of house prices in the early 2000s and the ensuing crash from 2008, followed by a more recent boom in many countries associated with quantitative easing (Shiller 2015). Asset markets, especially in housing, the asset that is most widely held and most sentimentally important to people, have been enormously volatile and indeed have spilled over into the ‘real’ economy of production and employment (Stroebe 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. Yet, we know very little about whether there is a direct connection between housing booms and busts and the relative success of populist parties.

In this paper, we connect local housing markets to support for populist parties in four Nordic countries, Denmark, Finland, Norway, and Sweden, where populist and radical right parties have been particularly successful over the past decade. We argue that house prices shape local support for populist parties, with support higher in those localities where house price growth has been relatively lower or declining. By contrast, support for these parties has been weakest in localities where house price growth has been relatively high. We argue that this might both reflect a direct *pocket-book* effect of house prices on individual satisfaction with status-quo mainstream political parties and a *geotropic* effect whereby local house prices proxy for the relative wealth and economic fortunes of different localities. Importantly, we argue, and empirically demonstrate, that the effects of housing are

not confounded by the composition of local labor markets.

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 and that this effect has become much stronger following the global financial crisis of 2008. 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.

We then turn to examine whether this finding holds up in the broader Nordic context, examining data at the municipality level in Finland, Norway, and Sweden. Once more, we find strong evidence of a negative relationship between changes in local house prices and changes in support for populist parties and again it intensifies after the global financial crisis. We conclude the paper by summarizing our findings and noting potential extensions of this work.

## **2 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.<sup>1</sup> 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) and authoritarian attitudes (Werts, Scheepers and Lubbers 2013). That division into material (economic and political) versus cultural factors remains key to the contemporary debate about

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<sup>1</sup>Our 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.

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 (2017) argue that the ‘China Shock’ of import competition with Chinese goods since the liberalization of the Chinese economy in the early 1990s has meant that those European regions that were most highly exposed to Chinese trade competition saw the strongest up-swing 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). Other scholars focused on the material causes of populism have pointed to varied patterns of government spending since the credit crisis. Fetzer (2018) 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. 2018).

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. Particular influential has been the approach of Norris and Inglehart (2019) who see a general 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 (2019) 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.

What is in common among much of this new wave of work analyzing populism 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. Before turning to this connection between housing and populism we discuss recent literature that explores the political dimensions of homeownership and housing prices.

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, beginning 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; Ansell, Broz and Flaherty 2018). Connected to these effects on redistributive attitudes, studies of electoral behavior also typically show homeowners are more likely to vote for economically conservative parties (Kingston, Thompson and Eichar 1984; Studlar, McAllister and Ascui 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. But does this extend to voting along the cultural or group identity dimension that connects to support for populist (as opposed to mainstream) parties? 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 (for additional evidence of this, see Cramer 2016; Skocpol and Williamson 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.

As argued by Adler and Ansell (2019), housing provides a focal point for both the individual and communal economic distress that drives much of the populist vote. We argue that this manifests most clearly through changes in relative house prices. We outline two key channels that connect house prices to voting for populist parties: individual effects di-

rectly impacting homeowners, and geotropic effects reflecting communities' relative status.

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. The extension to thinking about house prices is relatively straightforward. When house prices are rising, we might expect homeowners to be happier with political incumbents; when they are declining they ought to be less happy.

Note, however, that there are four key assumptions that need to hold if this 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). Finally, this effect ought to be most concentrated among homeowners as opposed to renters.

The alternative approach is to examine the geotropic, rather than individual, effects of changes in house prices. This term comes from Reeves and Gimpel (2012), who argue that local socioeconomic conditions shape political preferences in ways distinct from individual pocketbook experience *and* so-called 'sociotropic' economic experiences such as national-level growth or unemployment. Thus geotropic approaches take local geography and community seriously as a level of aggregation that shapes and channels values and preferences in ways that may differ substantially within countries, or even sub-national regions.

Why do 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 community or local group 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. Local altruism forces us away from purist individual economic maximization but it is hardly a stretch to imagine that people may care most about other people who live near them, since that is where the majority of their close friends and family are likely to reside.

How do house prices affect individual voting behavior through this geotropic mechanism? The learning mechanism is likely to operate similarly to the pure pocketbook model above. 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'. Hence geotropic models imply that local house price declines should lead to political dissatisfaction for both homeowners and renters. Moreover, 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 further 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, either directly through purchasing a house or by renting, given the strong correlation between property prices and rents. This means that 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.

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 then arises as to why voters in areas with declining house prices support right-wing populist parties rather than socialist and social democratic parties, if social spending is the key factor driving behavior? In our empirical analysis we examine the relative support of right-wing populist parties versus socialist and social democratic parties to show that there is something beyond a purely materialistic story at work. In this way, we show that being left out of the housing wealth boom does not simply make you yearn for more social spending, but a more radical break with the status quo perpetuated by rich, urban elites.

In sum, 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.

### **3 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. 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, since it left parliament in 2001 and since then for all practical purposes has been non-existent.<sup>2</sup>

As shown in Figure 1, these 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. Lastly, as we show for Denmark in the bottom panel of Figure 1, the average increase in the price of housing are in large part driven by sharp increases in the cost of the most expensive housing, leading to increasingly unequal distributions of housing prices.

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 pct. or more. Interestingly, the 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 the places in each country that have not partaken in the housing wealth boom have turned to right wing populist parties.

We begin our analyses with a close look at voting for the Danish People's Party in Denmark, a case for which we have access to uniquely detailed registry data. We then corroborate the results for Denmark with similar analyses for Sweden, Norway, and Finland. Before we do so, we outline some key contextual features of politics in the Nordic countries, which should help us interpret the results of our analyses.

Although traditionally categorized as five-party systems (Damgaard 1974; Knutsen 2001) largely 'frozen' since the advent of universal suffrage in the 1920s (Rokkan and

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<sup>2</sup>We 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.

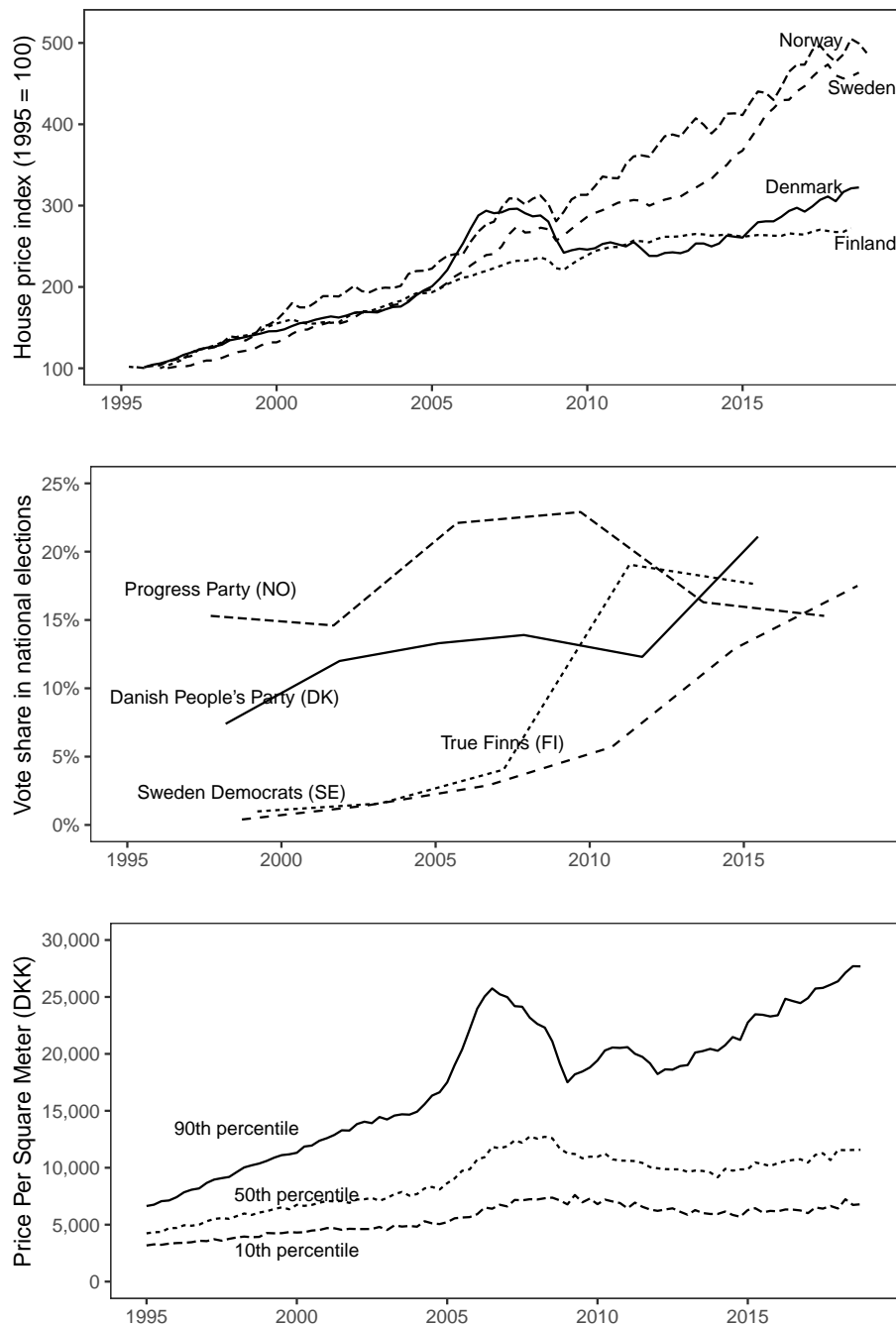


Figure 1: The top figure shows development in house prices in the Nordic Countries, the middle figure shows development in vote share for right-wing populist parties in Nordic Countries, and the bottom figure shows the development in house price for the 10th, 50th and 90th percentile of municipalities in Denmark. Data on house prices for the Nordic Countries (top figure) is from Bank of International Settlements to secure comparability across countries.

Lipset 1967), party systems in the Nordic countries have fragmented since the 1970's (Bengtsson et al. 2013). This fragmentation is partly a reflection of the emergence of right-wing populist parties shown in Figure 1, 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.

The parties we study here 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). For additional context on the history of each of the four parties, we point to recent work covering the Danish People's Party (Christiansen 2016), the Sweden Democrats (Rydgren and van der Meiden 2018), Norway's Progress Party (Jupskås 2016), and the True Finns (Jungar 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 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 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 stagnant 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.

## 4 Voting for the Danish People's Party

Our outcome of interest in the Danish case is support for the Danish People's Party (DPP) at national and EU elections from 1998 to 2015.<sup>3</sup> By including both type of elections our measure of support for the DPP becomes more tightly spaced, however, as discussed below, 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 as the percent of voters who cast a ballot for the DPP in each electoral precinct. 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.<sup>4</sup>

Our independent variable is the average nominal price of one square meter of housing in DKK 10,000 (ca. US\$ 1,500 ) 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 (*Finans Danmark*). 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. (See Appendix A for more details.)

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. 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.

We link support for the Danish people's party, housing prices and our controls using the following first difference model:

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<sup>3</sup>Local elections are excluded because of the very different electoral dynamics.

<sup>4</sup>In 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](https://bit.ly/205OIPI).

$$\Delta DPP_{ij} = \beta \Delta Prices_{ij} + \Delta \mathbf{X}_{ij} \gamma + \theta_j + \epsilon_{ij}, \quad (1)$$

where  $\Delta DPP_{ij}$  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,  $\Delta \mathbf{X}_{ij}$  is a vector of zip code level controls and  $\theta_j$  are election year fixed effects. We take account of autocorrelation in the error term ( $\epsilon_{ij}$ ) by clustering the estimated standard errors at the zip code level (i.e., the level where our housing price variable is measured). The key coefficient of interest is  $\beta$  which reflects the effect of housing prices on support for the Danish people’s party. Following our theoretical discussion, we expect  $\beta$  to be negative.<sup>5</sup>

#### 4.1 *Support for the DPP Decreases with Housing Prices*

Figure 2 plots the relationship between precinct level support for the DPP and housing prices at each of the 10 national level elections where the DPP has been on the ballot. 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 polarized, because the most expensive areas have become more expensive, with a brief reversion of this trend in the years following the credit crisis (i.e., 2009). These two trends is what produced the positive country-level relationship between support for right-wing populist parties and housing shown in Figure 1. However, Figure 2 also reveals a third trend: as housing prices polarize and support for the DPP rises, it is primarily the precincts where prices are stagnant that becomes more supportive of the DPP. That is, the within-country cross-sectional relationship between DPP support and housing prices is strongly and increasingly negative.

In Table 1 we present estimates from a first difference model like the one described in Equation 1, but 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. The coefficient can be interpreted as a generalized difference-in-difference estimate, showing what happens to DPP support in areas where prices remain stagnant compared to places where prices grow.

Importantly, this 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 effec-

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<sup>5</sup>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).

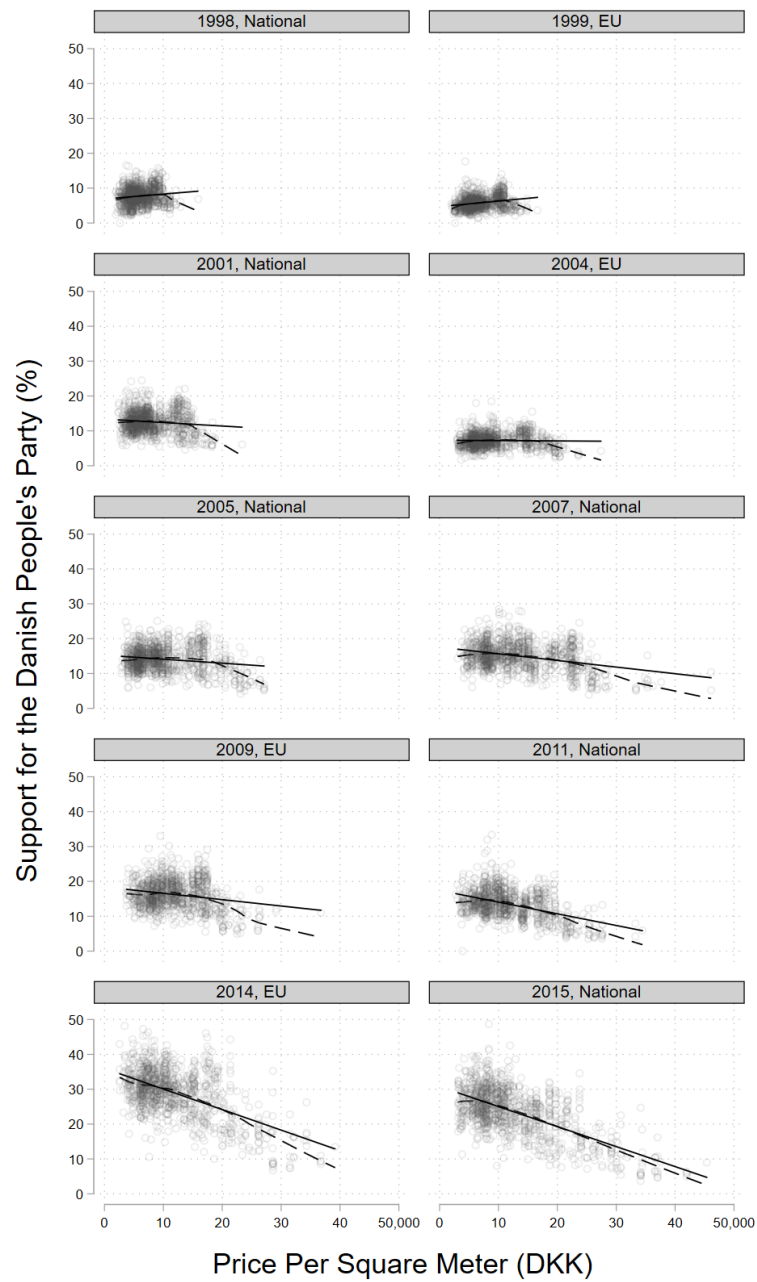


Figure 2: Is there a relationship between housing prices and support for the Danish People's Party? Dots represent precincts. Solid line is linear fit and dashed line is a lowess fit.

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)	-2.9 (0.3)
Log(Population Density)		-1.1 (1.3)	-1.1 (1.3)	-1.3 (1.3)	-1.9 (1.2)
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)	-0.4 (0.1)
Non-western Immigrants			0.0 (0.1)	-0.0 (0.1)	0.0 (0.1)
Unemployment Rate				-0.1 (0.1)	-0.1 (0.1)
Median Income				-3.7 (2.1)	-4.7 (2.0)
Low Skilled Service					0.1 (0.0)
Low Skilled Manufacturing					-0.0 (0.1)
High Skilled and Manager					-0.1 (0.1)
Year FE	✓	✓	✓	✓	✓
Observations	9878	9808	9808	9808	9808
RMSE	2.526	2.521	2.521	2.521	2.516

Clustered standard errors in parentheses.

tively 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. It is notable that median income is also negatively associated with DPP support but its inclusion does not affect the estimates for house prices. In other words, labor markets and asset markets appear to have distinct impacts.

It is notable that the effect remains statistically and substantively significant even after controlling for the composition of the labor market. Notable, because 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 2018; Dal Bó et al. 2018), making it a potentially important confounder.

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 the underlying forces that increase housing prices. To find out whether this is the case, we regress past changes in support for the DPP on current changes in housing prices including year fixed effects and our fully controlled model.

Figure 3 presents the effect of changes in housing prices on a one, two, three, four, and five period lag of changes DPP support as well as the effect on concurrent changes in support for the DPP. Current changes in housing prices seem unrelated to the past trend in DPP support. The only significant result is at  $t - 3$ , and even in this case the difference in past DPP support across changes in current housing prices is substantively small.

If one interprets our models as a generalized difference-in-difference model, this final result is especially reassuring, as it suggest that trends in DPP support are parallel across precincts where housing prices will increase and precincts where housing prices will decrease in the future - the key identifying assumption in difference-in-difference models.



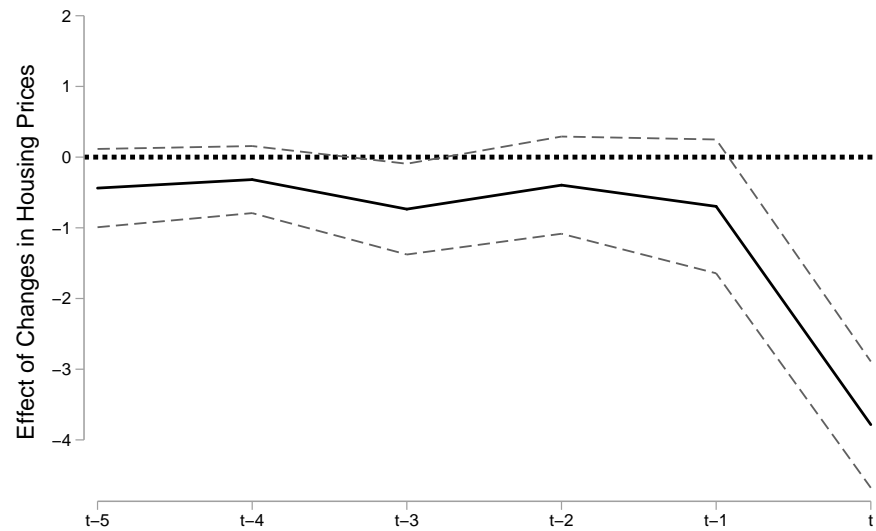


Figure 3: Do changes in housing prices predict past changes in support for the Danish People's party? Unstandardized effects with 95 pct. confidence intervals. All effects estimated using a first-difference approach with the full set of controls.

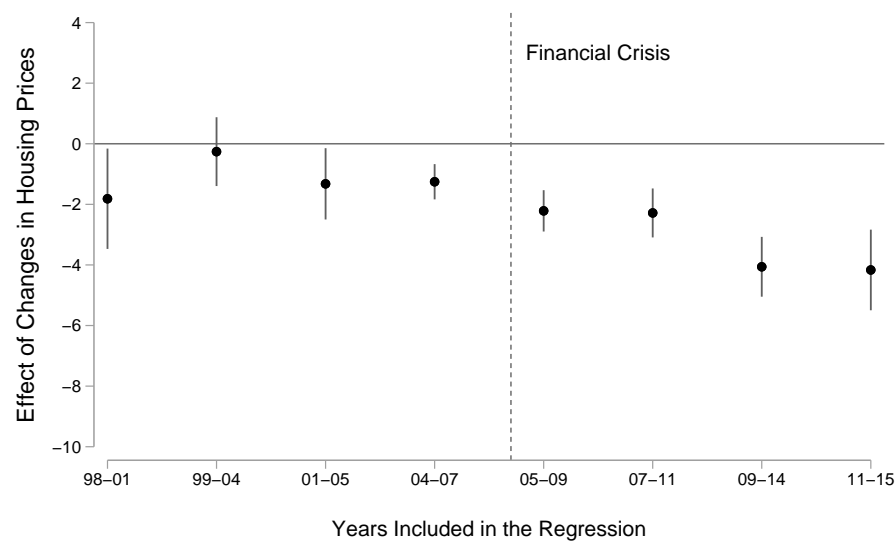


Figure 4: Is there a change in the effect of housing prices over time? Unstandardized effects with 95 pct. confidence intervals. Each time period includes three elections. All effects estimated using the full set of zip code level controls.

How large is the effect? 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 with 3 percentage points, half a standard deviation. This is quite a large effect. In their article on global competition and Brexit, Colantone and Stanig (2018) 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 the party rarely getting more than 25 percent of the vote in a precinct, whereas Brexit got more than 50 percent of the vote in most of the regions Colantone and Stanig examine.

#### *4.2 Mainly A Post-Crisis Effect*

Figure 2 suggests 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 10 estimates of the effect of housing prices, which we plot in Figure 4.

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.

### *4.3 Robustness Checks of the Precinct-Level Data*

We conducted a number of additional analyses to further bolster our claim that housing prices is related to support for the DPP. We briefly describe these additional analyses here, but refer the reader to the Appendix for detailed results.

First, we show in Appendix D that our results do not simply reflect increased salience of an urban-rural divide (Cramer 2016). To do so, we re-estimate our models subsetting on precincts within the capital region of Copenhagen, which contains no rural areas. Instead, these models rely on variation in housing prices between more suburban and more urban areas and between different suburbs. The estimated effect of housing prices in the capital region is approximately the same as the estimates presented in Table 1.

Second, we show in Appendix E that there is no relationship between housing prices and support for Socialist or Social Democratic parties. This is reassuring, because it tells us that voters do not simply embrace more (first-dimension) left-wing parties when housing prices are stagnant rather than rising. Instead, housing prices are only related to support for right-wing populist parties.

Third, in Appendix F we try to examine whether the results are driven by DPP supporters selecting into areas with low housing prices. In particular, we show that the effect of housing prices is stable across levels of mobility, so that it persists even in areas with minimal in- and outgoing residential flows. This in turn suggests that the result is driven by preference change rather than voter population composition.

Fourth, we show in Appendix G that our results are robust to an even more demanding model specification. In particular, we estimate a first difference model including precinct fixed effects, effectively controlling for precinct-level trends in DPP support. Even in this very restrictive model, we find that when housing prices in a precinct is increasing less than what is typical for that precinct, support for the DPP increases more than it typically does.

Fifth and finally, we show in Appendix H that the results do not vary systematically by election type. There is a statistically significant effect of approximately the same size in both national and EU elections.

### *4.4 Is the effect driven by home-owners?*

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 – election returns are, unfortunately for present purposes, not reported separately for owners and renters. As mentioned in the introduction and theory, whether housing prices affect only homeowners or also renters is

important since it gives us an indication as to whether people are motivated by personal grievances – that their house has not increased in value – or social grievances – that their local area has been left out of the housing wealth boom.

In order to try and 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.

The survey responses are modeled by estimating a linear probability model of voting for the Danish People’s Party. We include housing prices and the other zip code variables from the precinct-level analysis as well as year fixed effects as independent variables. In some models we also include a small number of individual level controls, namely the respondents’ gender, age, income, educational-level and marital status, in order to control away some of the more obvious differences between home-owners and renters. 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) $\times$ Renter			0.8
			(1.2)
Year FE	✓	✓	✓
Zip code controls	✓	✓	✓
Individual-level controls		✓	✓
Observations	6869	6869	6869
RMSE	30.743	30.397	30.389

Standard errors clustered on zip codes in parentheses.

Individual-level 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 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 homeowners. At the same time, the marginal effect for renters is not statistically significant ( $p \approx 0.12$ ) while it is statistically significant for homeowners ( $p < 0.05$ ). This difference in statistical significance may simply reflect that there are fewer renters than homeowners – only 30 percent of respondents rent.

The implication of these findings is that 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. This provides 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 pocket-book mechanism but that we cannot be sure homeowners and renters behave differently provides some support for the geotropic mechanism. To adjudicate further would require as yet unavailable panel surveys to pick up within-respondent changes.

The individual-level data leveraged here also allows us to examine some other potential mechanisms underlying our findings. First, we find that those who own a home in an area with higher housing prices report having a higher level of home equity, suggesting that voters are aware that there is a personal economic benefit to owning a home in a high-price area (even if it is not these benefits that drive vote choice). Second, we find that housing prices are not, or at least only weakly, related to anti-immigrant sentiment. 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-immigrant 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 cultural grievances like anti-immigration attitudes. These individual-level results are laid out in more detail in Appendix I.

## 5 Voting for Populist Parties in Sweden, Norway and Finland

Are the results unique to Denmark or do they represent a more general pattern, where areas with stagnating or decreasing house prices increasingly vote for populist parties? To find out, we focus on the last four parliamentary elections in Sweden, Norway and Finland.

The dependent variable in these analyses is the vote share for the dominant right-wing populist party in each country, namely the Sweden Democrats in Sweden, the Progress Party in Norway and the True Finns in Finland. 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 have been mergers of municipalities in Finland and Norway. In Finland, we have been able to recalculate 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.

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 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.<sup>6</sup> 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 kindly been provided by Swedish Realtor Association (*Svensk Mäklarstatistik AB*), while the data from Norway and Finland are obtained from the national statistical agencies. It should be noted that there are missing data on housing prices for some municipalities in years without any house sales.

Furthermore, we use a number of control variables, approximating the control variables used in the Danish analysis. All control variables are from the national statistical agencies and are described in Appendix B.

### 5.1 Results from Sweden, Norway and Finland

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

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<sup>6</sup>In Appendix K we have replicated the analysis using real prices.

across countries is similar to what we found in Denmark, namely that support for populist parties increased the most in areas where housing prices are stagnant, 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 similarly to what we did in the precinct-level analysis of support for the Danish peoples party, i.e. a first difference model with year fixed effects and time-varying controls. We include controls which are as close to those used for Denmark as possible. The main difference is that we have not been able to construct similar labor market controls for these countries. Instead, we look at how well-educated voters in the municipalities are, using this as a proxy for the structure of the local labor market.

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. The full models for Finland, Norway and Sweden are reported in Appendix J.

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, yet 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.

The weakest sign of a relationship between housing prices and support for right-wing populist parties is thus found in Norway. One reason for this might be, as we discussed above, that the Progress Party in Norway is not a purely right-wing populist party, but can instead be seen as a hybrid between a populist party and a more traditional conservative party (Jungar and Jupskås 2014). It has existed since 1973 and has been a part of government since 2013. Research shows that anti-political-establishment parties that participate in governing often lose their appeal to voters (Van Spanje 2011). The other populist parties are much younger, and have not served in government during the period included in the analysis. As a result, the Progress Party might not be able to capitalize on the Norwegian

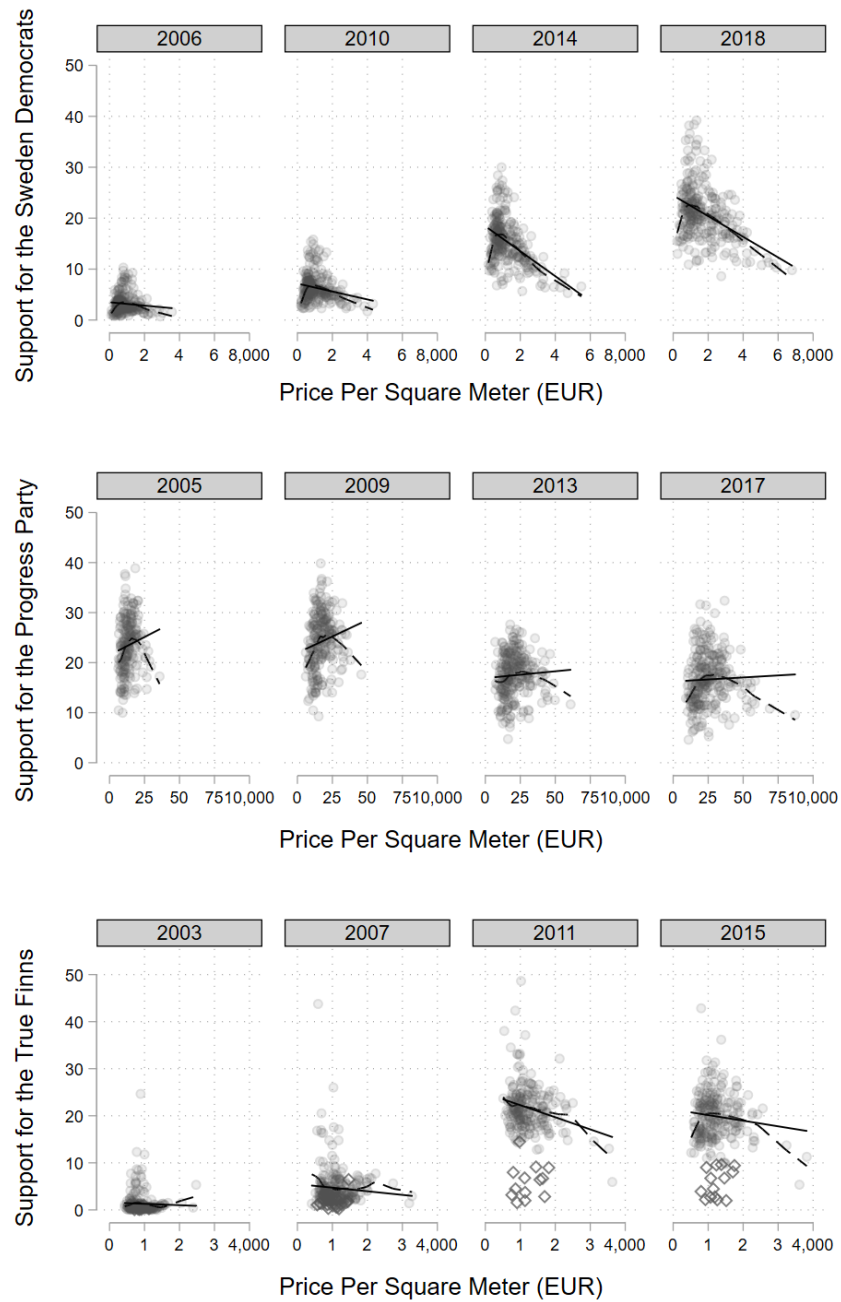


Figure 5: Is there a relationship between housing prices and support for the populist parties in Sweden, Norway and Finland? Dots represent municipalities. Solid line is linear fit and dashed line is a lowess fit. For Finland circles represents majority Finnish municipalities, while diamonds represents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



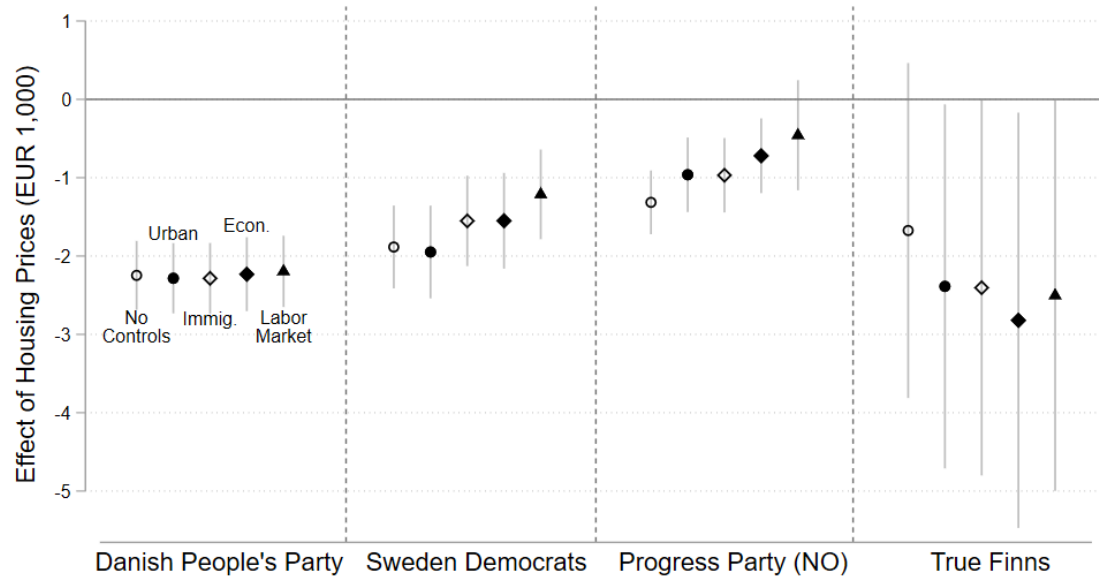


Figure 6: Comparing the effects of housing prices on support for right wing populist parties across the Nordic countries. Dots represent the estimated effect of housing prices and spikes the 95 percent confidence interval of these estimated effects. The models become more restrictive going from left to right as more controls are added (see Table 1) The results for Finland excludes municipalities with a Swedish majority.  $n=9,808$  for Denmark,  $n=860$  for Sweden,  $n=725$  for Norway,  $n=687$  for Finland. In Finland, Norway and Sweden the Labor Market controls have been subbed for education controls. For full models see Appendix J.

voters' frustrations with stagnant local housing prices in the same way that the remaining Nordic populist parties are able to.

A final caveat about the comparisons above is that the results from Denmark are not directly comparable to those from the remaining countries since the data from Denmark is more disaggregated. For example, Copenhagen is divided into a large number of precincts, while Oslo and Helsinki only counts as one observation. It is therefore possible that the results from the other Nordic countries would be different if we had access to more detailed data (Wong 2009).

## 6 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. A relationship which has become even stronger following the global financial crisis.

Why are housing prices linked to the electoral fate of right-wing populist parties? We argue that the finding could both be caused by a *pocketbook* effect where people object to being personally left out of the housing wealth boom and a *geotropic* effect whereby people object to their community being left out. Individual-level data from Denmark suggested that the effect was strongest among home-owners, but there was no statistically significant difference in how home-owners and renters were affected, suggesting that that voters are motivated by a geotropic motive. No matter where it comes from, however, our results clearly indicate that the dissatisfaction with being left out of the housing wealth 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.

These results 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, the zip codes with the 10 percent most expensive housing only had a slightly lower unemployment rate than the zip

codes with the 10 percent least expensive housing, and the difference between these areas in median pre-tax income was only € 6,000 per year, corresponding to 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. That is not to say that the differences in question are immaterial or inconsequential. A person buying a median sized home in 1998 in the centre of Copenhagen would have seen her housing wealth increase by € 400,000 by 2015, adjusted for inflation. This increase amounts to around a quarter of the median level of retirement savings in Denmark. By contrast, a person buying similar-sized home in Næstved, a town one hours drive south of Copenhagen, would have made just € 2,400 in the same time span. As such, we document a voter response not to economic deprivation per se, but rather to massive and rapidly increasing wealth inequality.

In essence, our article thus suggests that citizens’ discontent with local economic decline and increases in regional wealth inequality are important drivers of support for right-wing populist parties. Whether the increased political power of right-wing populist parties will mean that the political system will address these economic sources of discontent remains an open question.

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## Appendix: For Online Publication

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## *A 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 ‘Street-name 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.

## *B 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 addresses 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 (population 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)

## 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.

## C Descriptive Statistics

Table C1: 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
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 C2: 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
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 C3: 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 C4: 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 C5: 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

### *D Effects in the Capital Region of Denmark*

Table D1 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 D1: 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)	-3.3 (1.0)
Log(Population Density)		-6.3 (2.6)	-5.8 (3.0)	-5.9 (3.0)	-4.7 (3.5)
Single Family Homes		0.6 (0.3)	0.6 (0.3)	0.6 (0.3)	0.7 (0.3)
Ten Family Apartments		-0.3 (0.4)	-0.3 (0.4)	-0.3 (0.4)	-0.3 (0.4)
Non-western Immigrants			0.3 (0.3)	0.3 (0.3)	0.4 (0.4)
Unemployment Rate				-0.1 (0.2)	-0.1 (0.2)
Median Income				-5.3 (3.0)	-6.3 (3.4)
Low Skilled Service					-0.0 (0.1)
Low Skilled Manufacturing					0.4 (0.4)
High Skilled and Manager					-0.0 (0.2)
Year FE	✓	✓	✓	✓	✓
Observations	1557	1547	1547	1547	1547
RMSE	2.505	2.460	2.451	2.447	2.443

Clustered standard errors in parentheses.

## *E Housing Prices and Support for Other Parties*

Tabel E1 estimate 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.

Table E1: Support for Selected Other Parties and Housing Prices

	Left	Socialist	Social Democratic	Liberal Party
Housing Prices (DKK 10,000)	0.5 (0.6)	0.3 (0.4)	0.2 (0.5)	-0.6 (0.4)
Low Skilled Service	-0.0 (0.1)	0.1 (0.0)	-0.1 (0.1)	-0.2 (0.1)
Low Skilled Manufacturing	-0.1 (0.2)	0.0 (0.1)	-0.2 (0.2)	-0.1 (0.1)
High Skilled and Manager	-0.5 (0.2)	-0.2 (0.1)	-0.2 (0.1)	0.3 (0.1)
Log(Population Density)	3.0 (1.7)	-0.6 (0.9)	3.6 (1.5)	-0.6 (2.1)
Unemployment Rate	0.2 (0.2)	0.2 (0.1)	-0.0 (0.1)	-0.6 (0.2)
Median Income	-9.0 (3.4)	-5.9 (1.8)	-3.1 (3.4)	-2.5 (3.7)
Single Family Homes	-0.2 (0.2)	0.0 (0.1)	-0.2 (0.1)	0.1 (0.1)
Ten Family Apartments	-0.4 (0.4)	0.0 (0.2)	-0.4 (0.3)	0.4 (0.3)
Non-western Immigrants	-0.2 (0.3)	-0.0 (0.2)	-0.2 (0.2)	0.1 (0.3)
Year FE	✓	✓	✓	✓
Observations	9799	9799	9808	9808
RMSE	4.796	2.609	4.138	3.804

Clustered standard errors in parentheses.

*F Effects Across Levels of Mobility (Denmark)*

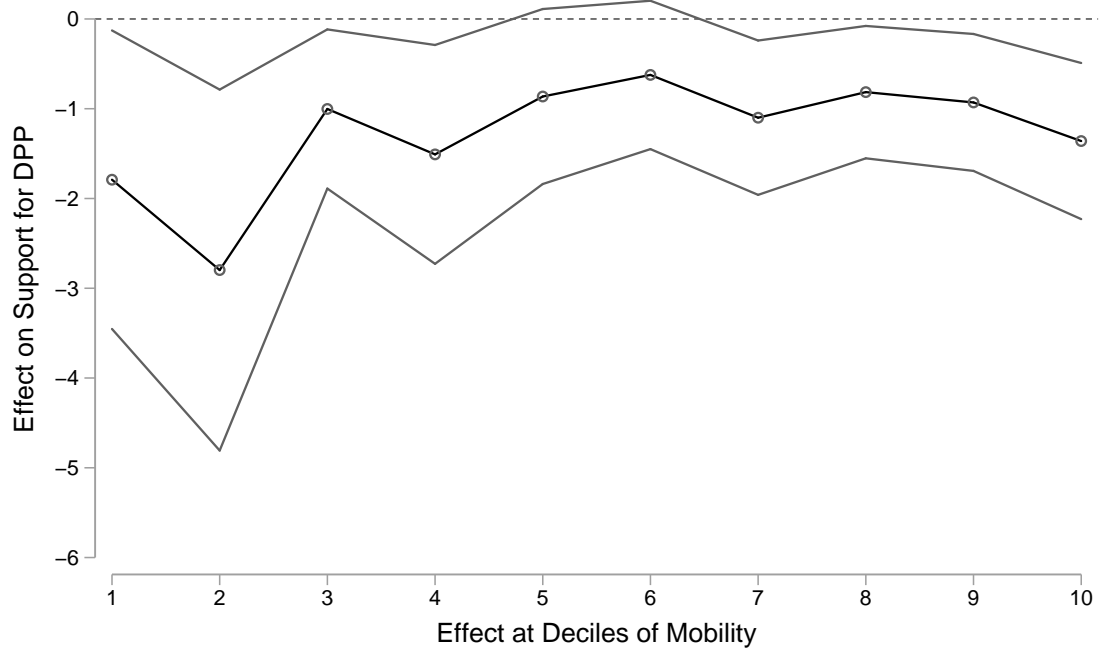


Figure F1: The effect of changes in housing prices on support for the Danish Peoples party at different levels of mobility. Effect at each decile calculated by interacting decile-dummies and housing prices in our first difference model with the full set of zip code controls.

### *G A More Restrictive Model of Danish People's Party Support (Denmark)*

The model below uses both first differences as well as precinct fixed effects. Effectively, the model thus controls for precinct-specific trends in housing prices.

Table G1: 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 (0.3)	-2.2 (0.3)	-2.2 (0.3)	-2.0 (0.3)	-2.0 (0.3)
Log(Population Density)		-0.6 (1.5)	-0.6 (1.6)	-0.9 (1.5)	-2.0 (1.3)
Single Family Homes		-0.1 (0.1)	-0.1 (0.1)	-0.1 (0.1)	-0.1 (0.1)
Ten Family Apartments		-0.5 (0.2)	-0.5 (0.2)	-0.5 (0.2)	-0.4 (0.2)
Non-western Immigrants			0.3 (0.2)	0.4 (0.2)	0.4 (0.2)
Unemployment Rate				-0.2 (0.1)	-0.2 (0.1)
Median Income				-4.7 (2.1)	-5.5 (2.1)
Low Skilled Service					0.1 (0.0)
Low Skilled Manufacturing					0.2 (0.1)
High Skilled and Manager					0.0 (0.1)
Year FE	✓	✓	✓	✓	✓
Precinct Trend FE	✓	✓	✓	✓	✓
Observations	9878	9808	9808	9808	9808
RMSE	2.452	2.446	2.445	2.441	2.437

Clustered standard errors in parentheses.

### *H No Difference across Election Types (Denmark)*

Table H1 analyzes Danish and EU elections separately, revealing no substantial difference in estimated coefficients.

Table H1: Support for the Danish People's Party and Housing Prices by Election Type

	(1)	(2)
	EU	National
Housing Prices (DKK 10,000)	-3.8 (0.4)	-3.6 (0.3)
Low Skilled Service	0.0 (0.0)	-0.0 (0.0)
Low Skilled Manufacturing	-0.3 (0.1)	-0.2 (0.1)
High Skilled and Manager	-0.8 (0.1)	-0.1 (0.1)
Unemployment Rate	-0.2 (0.1)	0.1 (0.1)
Median Income	-5.9 (2.6)	4.7 (2.7)
Non-western Immigrants	-0.0 (0.1)	0.0 (0.1)
Log(Population Density)	-1.6 (1.2)	-1.0 (0.9)
Single Family Homes	0.0 (0.1)	-0.0 (0.1)
Ten Family Apartments	-0.2 (0.1)	-0.2 (0.1)
Year FE	✓	✓
Observations	3231	5464
RMSE	2.664	2.187

Clustered standard errors in parentheses.

## I More Individual-level Results

Table 2 examines the relationship between housing prices and self reported home equity and anti-immigrant sentiment using our individual-level data.

To 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 having 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.

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.

Table I1: Housing Prices, Home Equity and Anti-immigrant Sentiment

	(1)	(2)
	Home Equity (10,000 DKK)	Anti-immigrant
Housing Prices (DKK 10,000)	5.930 (1.396)	-0.031 (0.017)
Year FE	✓	✓
Zip code controls	✓	✓
Demographic controls	✓	✓
Observations	1834	5922
RMSE	11.286	0.340

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.

*J Full results for Sweden, Norway and Finland*

Table J1: Support for the Sweden Democrats and Housing Prices					
	(1)	(2)	(3)	(4)	(5)
Housing Prices (EUR 1,000)	-1.9 (0.3)	-1.9 (0.3)	-1.6 (0.3)	-1.6 (0.3)	-1.2 (0.3)
Log(Population Density)		1.8 (1.9)		-2.2 (2.1)	5.9 (2.2)
Multi-dwelling buildings		-0.0 (0.0)		-0.0 (0.0)	-0.0 (0.0)
Employment rate				-0.1 (0.0)	-0.1 (0.0)
Log Median income				-0.0 (0.0)	0.0 (0.0)
Foreign-born population				0.3 (0.1)	0.4 (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 J2: 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 J3: 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.

### *K Effects using real prices*

Table K1 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 K1: 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.