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Spatial housing market polarisation: National and urban dynamics of diverging house values

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Abstract

Housing is central in the reproduction of social inequalities. Beyond divides across populations, trends point to increasingly unequal housing-market dynamics across space. Nonetheless, little systematic evidence exists on the spatial inequality of housing values. In this paper we address this through a detailed investigation of house-value developments in the Netherlands over time and space. We draw on national registers including longitudinal and geocoded data for the entire housing stock over the 2006–2018 period. Spatial polarisation is examined across different scales at the national, provincial, and urban level. We further investigate how housing-market inequality trends vary over time, particularly between periods of economic boom and house-price increases or, conversely, periods of downturn. Our analyses expose a substantial and widespread trend of spatial polarisation. Rising spatial inequality between neighbourhoods is clearly apparent at the national level, within all but one province, as well as for 44 of the 50 largest municipalities. The polarising trend appears structural and pervasive. While boom periods saw the strongest increases, inequality levels, remarkably, remained stable or even saw continued increases over the period of declining house prices. These patterns of spatial polarisation in house values have fundamental societal implications towards uneven wealth accumulation and in amplifying socio-economic cleavages across populations and space.

KEYWORDS

housing, spatial inequality, spatial polarisation, the Netherlands, urban change, wealth inequality

1 | INTRODUCTION

Housing is central in the reproduction of social inequalities (Piketty, 2014; Savage, 2015). On the one hand, housing markets have always reflected broader class divides. Those with the strongest financial position can buy into the most in-demand housing segments, while lower-income groups “take up whatever is left after everyone else has exercised choice” (Harvey, 1973, p. 168). On the other hand, housing also influences class position, for example, by offering the prospect of wealth accumulation to those able to buy property. Housing and class position are thus mutually constitutive (Rex & Moore, 1967). Subsequent waves of housing commodification, deregulation, and social-housing residualisation have

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ostensibly strengthened the links between housing and class position. Recent trends indicate home-ownership access becoming increasingly reserved for the more privileged (Forrest & Hirayama, 2015).

Housing markets are inherently spatial, and current housing-market developments reveal substantial variation between regions, cities, and neighbourhoods. Current trends point to intensifying spatial inequalities. In Europe, recent house-price increases, following the slump of the Global Financial Crisis, have been particularly steep in major cities (Inchauste et al., 2018). Gentrification has further intensified in select neighbourhoods, while other areas are left behind. Such spatial variations in housing-market dynamics may crucially structure not only residential segregation and access to locational advantages such as proximity to jobs and amenities, but also wealth-accumulation prospects.

A body of theory has linked spatially uneven developments to broader processes of ongoing housing marketisation and state restructuring (Brenner, 2004), and more recently the financialisation of real estate (Van Loon & Aalbers, 2017). Nonetheless, little systematic evidence exists on the extent to which, if at all, recent housing-market dynamics translate into greater spatial inequality. We address here this key gap, and offer an innovative methodological framework to study spatial housing-market inequality.

In this paper, we gauge spatial (housing-market) inequality by unravelling house-value developments in the Netherlands over time and at detailed spatial scales. We are particularly interested in uncovering trends of spatial housing-market polarisation, which we define as increasing disparities between more and less expensive neighbourhoods in terms of house values. Simply put, spatial housing-market polarisation indicates that already high-value neighbourhoods have become (relatively) more expensive, while low-value neighbourhoods have become (relatively) cheaper. Alternatively, we may find instances of spatial homogenisation, which indicates decreasing spatial inequalities. Disparities in house values and uneven developments are part of a broader and multi-dimensional concept of spatial inequality, which may also include related dimensions such as the segregation and spatial marginalisation of specific populations, alongside uneven access to locational advantages.

Recent housing-market dynamics may deepen existing spatial inequalities, but could conversely also dampen them. Additional factors deserve specific attention here: first, processes of spatial polarisation or homogenisation may differ across space and scales. That is, the housing markets of some cities may see local disparities increasing over time, while the opposite may be the case for other cities. At the same time, levels and trends of spatial inequality may further differ at the urban, regional, and national level. Second, these trends may differ over time, particularly between periods of economic boom and house-price increases, and those of economic downturn and house-price declines. We address these topics in the following twofold research question: (1) How have housing values developed over time and space and (2) to what extent has this contributed to increasing or decreasing spatial housing-market inequality at different scales?

To answer this we turn to the case of the Netherlands, where we investigate housing-market developments at the national level, provincial (i.e., regional) level, and within the country's 50 largest municipalities, with further focus on the four largest. We draw on data from the System of Social-statistical Datasets from Statistics Netherlands, which includes longitudinal and geocoded data for the entire housing stock for the 2006–2018 period. We track house-value developments over time, unravelling spatial variations based on the fine-grained neighbourhood level unit.

The Netherlands presents a particularly valuable case to study, as it has undergone substantial housing marketisation over the studied period (Musterd, 2014). The expansion of market housing (both home ownership and private rent) and reductions in rent regulation allow for greater social differentiation and spatial sorting. The Dutch housing market is furthermore a highly financialised one, where long-term house-price increases have been fuelled by very high levels of mortgage debt (Fernandez & Aalbers, 2016), and demonstrating strong wealth inequality (Reuten, 2018). Mortgage-lending practices have been somewhat tightened in the aftermath of the Global Financial Crisis, but have been supplemented by increased capital investments in housing by both private households and institutional investors (Aalbers et al., 2018). The financialisation of housing markets, it is often argued, may exacerbate trends set in motion by previous waves of marketisation (Aalbers, 2016), thus potentially contributing to greater spatial inequality. The examined study period over 2006–2018 includes the pre-crisis housing boom, the subsequent economic and housing-market downturn, and the most recent period of economic growth.

The paper progresses as follows. We begin by outlining potential forces for housing-market polarisation and their underlying causes from the literature. We then elaborate on our data and methods, before turning to our findings on housing-market polarisation in the Netherlands. We conclude by discussing key analytical points from our findings and their critical wider relevance.

2 | LITERATURE

2.1 | Housing-market dynamics

Housing markets in a wide range of countries have seen long-term house price inflation (Ryan-Collins, 2018). Price increases cannot simply be ascribed to an imbalance in supply and demand, but are primarily the outcome of widespread and sustained political, societal, and economic support for marketised private home-ownership. Long-term price increases have been fuelled by the expansion of mortgage credit, fiscal subsidies, and monetary policies such as quantitative easing (Fernandez & Aalbers, 2016; Schwartz & Seabrooke, 2008; Stiglitz, 2012). This is especially the case in financialised housing markets, where generous mortgage lending typically exists alongside fiscal stimulation, as exemplified by the Dutch mortgage-interest tax deductibility (Fernandez & Aalbers, 2016). These dynamics are further embedded in a strong cross-national ideological push for home ownership, casting it as the superior or even “natural” tenure (Arundel & Ronald, 2018; Ronald, 2008). Widespread support for home ownership and increasing house prices, alongside diminished returns in other assets, have enhanced housing's appeal as an investment object (Green & Bentley, 2014), for private individuals and institutional investors alike.

For decades, price inflation went hand in hand with the expansion of home ownership, allowing ever more households to buy and accumulate housing wealth (Conley & Gifford, 2006; Forrest & Hirayama, 2015). These trends diverged, however, in the mid-2000s with home-ownership rates decreasing in several countries (e.g., the UK and USA) or stagnating in others, as in the Netherlands. Especially since the Global Financial Crisis, access to home ownership has become more difficult, particularly so for prospective entrants (Arundel & Ronald, 2018; Lennartz et al., 2016).

With housing assets representing the most important wealth holding for most households (Rowlingson & McKay, 2012; Smith, 2008), restricted access to home ownership has had crucial implications on wealth inequality (Allegré & Timbeau, 2015; Arundel, 2017). While income inequality is relatively modest in the Netherlands, wealth disparities are strong in international comparison, with the housing market cited as a key driver (Reuten, 2018; Van Bavel & Frankema, 2017). Housing wealth inequalities crucially overlap with – or reinforce – other dimensions of socio-economic, class, and racial divides (Allegré & Timbeau, 2015; Dorling, 2014; Krivo & Kaufman, 2004). Substantial wealth divides exist particularly along age lines, as older generations have typically both benefited from easier access to home ownership and substantial increases in property values, while these same mechanisms exclude younger “outsiders” from housing-market entry (Arundel, 2017; McKee, 2012). Such housing wealth inequalities are reproduced, or amplified, across generations through inter-generational support, particularly towards housing purchase (Arundel & Hochstenbach, 2018; Helderma & Mulder, 2007; Hochstenbach & Boterman, 2017; Öst, 2012).

It is, however, not only a matter of access to home ownership that structures wealth accumulation. The potential for accumulation is also crucially determined by the timing, conditions, and location of purchase. In this paper, we bring much-needed attention to this latter dimension, examining the critical implications of location towards housing value dynamics and charting developments in spatial housing-market inequality.

2.2 | Spatial dynamics

Housing markets are intrinsically spatial in nature. Patterns of house-price appreciation and stagnation differ importantly across space and scales (Hamnett, 1999; Meen, 2001). Various factors are contributing to a changing geography of housing markets and house-price developments.

Ongoing waves of housing commodification and financialisation have seemingly intensified spatial divisions across housing markets. Housing's growing role as a safe store of wealth and a vehicle for further accumulation have generated new domestic and global capital flows into housing (Aalbers, 2016; Doling & Ronald, 2010). However, capital is not randomly invested into housing but is disproportionately channelled into prime locations, particularly in major cities (Fernandez et al., 2016; Hamnett & Reades, 2018). The ample availability of capital in the post-crisis period, promoted by policies of quantitative easing and low interest rates, “has catalysed a global search for higher yielding but safe assets. Landed property, particularly in international cities, proved to be one of the most attractive assets for investors” (Ryan-Collins, 2018, p. 87).

Various types of investors increasingly turn to housing. This includes a growing share of private households investing in additional housing, as a supplemental income stream or future pension provision (Aalbers et al., 2018; Arundel, 2017; Ronald & Kadi, 2018). Transnational wealth elites consider urban real estate a “safe deposit box” (Fernandez et al., 2016; Ho & Atkinson, 2018), while major institutional investors also increasingly concentrate investments in high-gain locations and submarkets (Van Loon & Aalbers, 2017). Looking at private buy-to-let purchases, a Dutch study found these

predominantly concentrated in large cities or student towns (Aalbers et al., 2018). Broadly speaking, housing financialisation dynamics have led to both increasing and increasingly uneven capital flows into housing as local housing markets are linked to (global) capital flows (Newman, 2009; Weber, 2010). The cyclically reinforcing spatial strategies of both private and institutional investors may thereby exacerbate spatial housing-market polarisation.

2.3 | Urban divides

Uneven investments in housing markets point to an increasing divide between urban and non-urban areas as well as growing hierarchies between and within cities. The growth of highly skilled labour markets increasingly concentrates in selected cities, attracting and retaining high-earning professionals for urban regions (Moretti, 2012; Sassen, 1991). The continued expansion of higher education has led to more young adults moving to the city to study (Fielding, 1992; Ley, 1996). Demographically, the last few decades have seen a sharp increase in single-person households. This relates to increasingly prolonged and flexible transitions to adulthood with young adults relatively often opting for urban living during this period (Buzar et al., 2005; Hochstenbach & Boterman, 2017; Van de Kaa, 1987). The increase in high-earning dual-income households has also shifted demand to urban areas for time-space reasons (Boterman, 2012; also Hägerstrand, 1970). Culturally, increased demand for amenities, services, and consumption has contributed to the increased popularity of urban living (Butler & Robson, 2003; Zukin, 1989). Conversely, many peripheral regions and former industrial towns see ongoing decline, in both population and economic strength, intensified in part by the selective outmigration of higher income or upwardly mobile populations (Martinez-Fernandez et al., 2012). These developments all point to a long-term spatial shift in housing demand where particularly urban neighbourhoods may move up the housing-market “hierarchy.”

Beyond substantial and growing divides between certain successful cities and broader struggling regions, there is evidence of further dynamics that may intensify within-city housing-market divides. The large body of gentrification literature emphasises growing neighbourhood-level differentiation (Lees et al., 2008). Already in the 1990s, the expansion of mortgage markets opened up new urban neighbourhoods for global capital investment (Aalbers, 2007; Wyly & Hammel, 1999). Specific capital flows also predominantly concentrate in certain areas and submarkets, such as buy-to-let investments in gentrifying neighbourhoods (Paccoud, 2017). Likewise, parental support for young adults entering the housing market sees wealth flowing particularly into expensive or gentrifying urban neighbourhoods – revealing the geography of intergenerational house purchases (Hochstenbach, 2018).

More broadly, housing commodification, as reflected in the rise in private home-ownership and reduced rent regulation, implies an increasing role of market mechanisms on housing allocation and spatial sorting of populations across socio-economic lines. This will typically result in stronger divides based on household purchasing power. Indeed, segregation between rich and poor across European and North American cities has increased in recent years, mirroring underlying housing dynamics (Reardon & Bischoff, 2011; Tammaru et al., 2016). Processes of population sorting thereby entrench and promote increasing disparities in housing value appreciation at multiple scales.

Critical urban theory on uneven development posits that regional inequalities may intensify as investment in one place is linked to disinvestment elsewhere (Smith, 1984). However, these dynamics may be complex where contradictory forces of polarisation and homogenisation occur over different periods. The mass project of post-Second World War suburbanisation absorbed and fixed surplus capital in space (Harvey, 1982, 2001). These investments were directly linked to prolonged inner-city disinvestment and decay (Smith, 1984). Likewise, the current focus of capital investment on prime urban locations may structure decline elsewhere, as evidenced for example by an accelerating suburban decline in many regions (Hochstenbach & Musterd, 2018; Kneebone & Berube, 2013).

The concentration of housing demand and capital investment in specific locations may eventually lead to the spatial displacement of housing demand, such as to adjacent or nearby areas (Hamnett, 2009). This could set in motion a ripple effect of increasing house prices spreading across space (Grigoryeva & Ley, 2019; Meen, 1999). A recent Dutch study has shown that price developments in Amsterdam have a ripple effect covering much of the rest of the country (Teye et al., 2018). If these ripple effects continue, they could eventually countervail polarisation and contribute to regional spatial homogenisation (Le Goix et al., 2019). In sum, existing work suggests housing commodification and financialisation contribute to spatial housing-market polarisation, while associated spill-over demand may provide a (partial) counterweight.

2.4 | State policies

States also influence levels of spatial inequality through their urban and housing policies. States are spatially selective, prioritising intervention and investment in some areas over others (Jones, 1997). Underlying rationales shape the decision on

where to intervene. Brenner (2004) describes a structural shift in the spatial focus and aims of state policies. He argues that in the post-war decades states prioritised redistributive policies, investing in declining regions to dampen spatial inequality, such as through relocating jobs and services to those regions. Over time, policies have shifted towards stimulating further economic growth of already successful regions, envisioning agglomeration economies and trickle-down effects benefiting other regions (also Terhorst & Van de Ven, 1995).

At the urban level, it is possible to identify both redistributive and entrepreneurial state policies (Harvey, 1989). In the Netherlands, integrated urban policies have been particularly ambitious in targeting disadvantaged neighbourhoods to disperse poverty and ethnic concentrations (Musterd & Andersson, 2005). Such urban policies typically undertake selective demolition of social-rental housing and the construction of more expensive market housing, aiming for a “desirable” social mix (Uitermark, 2014). Specific rationales and other consequences aside, it is expected these policies played a role in reducing spatial segregation.

As part of a longer-term shift towards more entrepreneurial growth-oriented spatial policies, and especially following the Global Financial Crisis and associated austerity measures, such urban policies have been scaled down in many countries. Dutch housing policies have shifted towards intensified efforts to promote gentrification in already well-performing urban neighbourhoods (Hochstenbach, 2017). These policies are further part of urban strategies to accommodate highly educated households with preferences for inner-city living (Van Gent, 2013). Instead of reducing segregation, such new approaches may indeed amplify spatial divides. Taken together, these shifting state policies appear to contribute to exacerbating levels of both regional and intra-urban spatial inequality.

This literature section outlined housing-market developments and their potential role towards driving spatial polarisation. Although not the focus of our paper, it is important to stress that spatial polarisation does not necessarily imply overall decreasing housing affordability. House-value depreciation in already low-status neighbourhoods may in fact improve housing affordability but exacerbate spatial inequality. Similarly, ripple effects of high housing demand may suppress spatial inequality but decrease affordability across the board. Key factors that contribute to a changing geography of house values include economic, demographic, and cultural drivers that push demand for urban housing, the ongoing commodification and financialisation of housing, and spatially selective state policies. These factors form the backdrop that motivates our examination of uneven development of house values over time and, crucially, how this plays out across space and at different scales.

3 | DATA AND METHODS

To investigate spatial housing-market polarisation or homogenisation, we draw on register data from the System of Social-statistical Datasets (SSD) from Statistics Netherlands. These registers include data for the entire Dutch housing stock and are available for the 2006–2018 period. These data are longitudinal and geocoded, enabling analyses over time and space.

We measure the development of house values over the 2006–2018 period. All dwellings in the Netherlands are annually assigned a house value (Dutch: *WOZ*), based on their characteristics and actual sale prices in the vicinity. These house values are used for various administrative purposes, including local real-estate taxation. All analyses in our paper draw on inflation-adjusted house-value figures (Rijskoverheid, 2018). An important difference between house values and sale prices is that all dwellings get a house value assigned, including rental units and owner-occupied units that did not change hands. Because rental units tend to have a lower house value than owner-occupied dwellings, average house values are typically lower than average sale prices. Another difference is that house values are measured with a one-year time lag – i.e., 2006 house values are based on 2005 sale prices. A caveat is that house values smooth rapid changes in actual sale prices, which may translate into more muted changes in spatial inequality, thus underestimating rates of change. Conversely, a benefit is that annual patterns and trends in house values are not directly affected by the type and characteristics of dwellings sold, giving more robust and stable outcomes.

We only include dwellings in our analyses that were assigned a house value for each year of the 2006–2018 period: a stable housing stock. In so doing, we control for the distorting influence of demolitions and new developments. To give an example: demolishing small rental units and replacing these with larger family units will typically boost local house values, but mostly because one type of dwelling has been replaced by another. We appropriately exclude such change in stock, whereas potential spill-overs of such developments remain included in our analyses as they are captured by the house values of the stable housing stock. We also exclude a small number of dwellings with missing real-estate values in any year, as well as dwellings with extreme (inflation-adjusted) values of below 10,000 euros or above 30,000,000 euros. Finally, to comply with privacy requirements of Statistics Netherlands, we exclude all dwellings in

neighbourhoods with less than 10 dwellings. Two small municipalities (Bernheze and Steenberg), both with around 10,000 dwellings, had to be almost completely excluded due to missing values. Given their small size, their exclusion has no substantial impact on results. This leaves 5,859,464 dwellings in our analyses – compared to a total stock of around 6,900,000 in 2006.

By way of a robustness check, we have also compared data on this stable housing stock with data on the total 2006 and 2018 housing stock. For both 2006 and 2018, mean house values of the stable stock are strongly correlated with those of the total stock at the neighbourhood level (0.986 for both years). House-value change over this period shows a strong 0.916 neighbourhood-level correlation as well. In the results section, we briefly discuss the extent to which patterns and trends of spatial housing-market inequality are similar when analysing the total rather than stable housing stock.

Simply comparing dwelling-level developments in house values does not tell anything about levels of spatial inequality. Dwellings with high and low values can sit side-by-side, and the same goes for dwellings with very positive and negative developments. We therefore aggregate dwelling-level values to the neighbourhood level, taking the mean of all dwelling values. We follow the official neighbourhood classifications of Statistics Netherlands, which are typically bounded by major infrastructure or natural barriers and cover the entire country. We use stable neighbourhood boundaries comparable over time. Our analyses include a total of 11,145 neighbourhoods with on average 526 dwellings (ranging from a minimum of 10 to a maximum of 11,381 dwellings).

We are thus interested in how house values developed at the neighbourhood level, and how these differed between neighbourhoods. Using a Geographic Information System (GIS), we first map the uneven geography of house values and developments. At the national level, we use cartograms where neighbourhood size is intentionally distorted based on actual dwelling numbers, to visually correct for differences in neighbourhood size and density (Gastner & Newman, 2004). Subsequently, we use ratios and Gini coefficients to measure the unequal distribution of house values across neighbourhoods. The 90:10 ratio divides house values in the 90th percentile by those in the 10th percentile. A ratio of 3 would imply that house values in the 90th percentile are three times higher than those in the 10th percentile. The Gini coefficient ranges from 0 to 100 – where 0 means a completely equal distribution and 100 absolute inequality. The Gini coefficient is typically used to measure income or wealth inequality. In our adaptation, the Gini coefficient captures the degree to which house values are unequally distributed across neighbourhoods. In this case, a coefficient of 0 would indicate that house values are exactly the same across all neighbourhoods, while a score of 100 would indicate that one neighbourhood takes up all house values. Because neighbourhoods almost always consist of a mixture of dwelling types, tenures, and prices, it is to be expected that ratios and Gini coefficients are lower at the neighbourhood than at the dwelling level. The neighbourhoods in our analyses are of different sizes. To circumvent the potential problem that small neighbourhoods exert a disproportionate influence and skew our results, we weight for differences in dwelling numbers when calculating Gini coefficients and percentile ratios.

As we are interested in housing-market developments across space and scales, we apply our analyses at the national level, as well as at the level of regional and urban submarkets. We therefore further differentiate developments in spatial housing-market polarisation at the provincial level and within the top 50 largest municipalities, with a specific focus on the four largest cities.

4 | RESULTS

4.1 | Housing-market developments

The first step in our analyses is to compare neighbourhood-level average house values in 2006 and 2018 (presented values are always inflation-adjusted). As is expected, a very strong neighbourhood-level correlation between 2006 and 2018 house values exists (Figure 1). Nevertheless, there is substantial variation in terms of neighbourhoods experiencing house-value increases (on the left-hand side of the $x = y$ line) and those experiencing depreciating house values (right-hand side of the line). Some 82% of all Dutch neighbourhoods saw a decrease in house values over the studied period, while 18% saw increasing values. The distribution toward somewhat higher house values in 2006 than in 2018 is also reflected in the density plot in Figure 1.

House values develop unevenly over time and space (Figure 2). Mean Dutch house values increased between 2006 and 2009, during the economic boom period preceding the Global Financial Crisis. In the following years, house values collapsed from a peak of €269,000 in 2009 to a low of €203,000 in 2015, before starting to increase again to €221,000 in 2018. To reiterate, house values lag behind sale prices, which reached their low point in 2013 (CBS

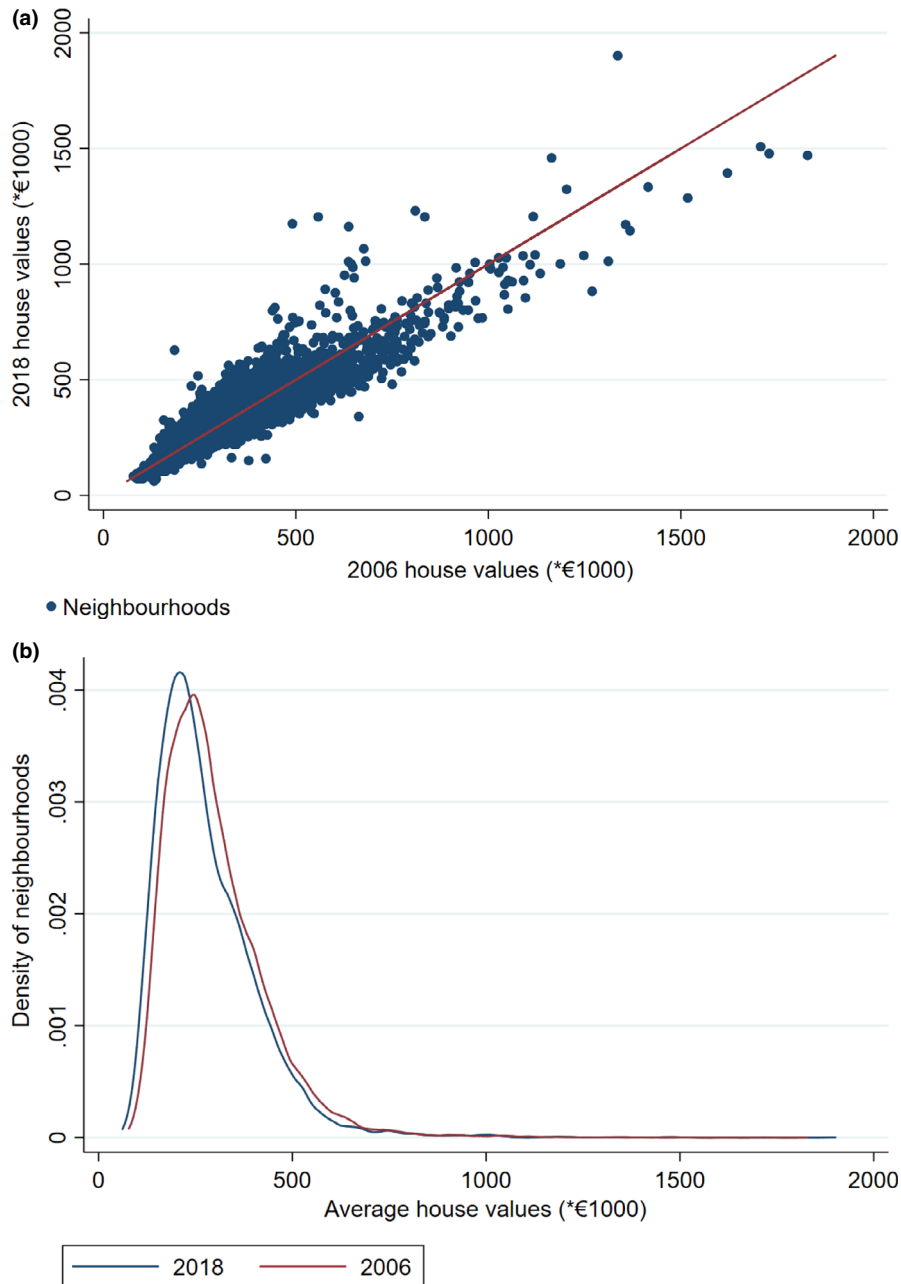


FIGURE 1 Distribution of data: a scatterplot (top panel) and density plot (bottom panel) of neighbourhood-level inflation-adjusted house values in 2006 and 2018.

Source: SSD, own calculations [Color figure can be viewed at wileyonlinelibrary.com]

2019). Nevertheless, these patterns reflect the impact of the protracted crisis on the Dutch housing market. It is also important to emphasise that these house values are lower and the developments less pronounced than actual sale prices due to (1) the inclusion of rental units which tend to be cheaper and (2) the fact that we only look at the stable housing stock, excluding demolished dwellings that are mostly relatively cheap, as well as more expensive new dwellings.

Patterns for the four largest Dutch cities differ substantially as well. Especially in the most recent boom period, Amsterdam house values have exploded – rapidly increasing from €220,000 in 2015 to €319,000 in 2018. While average Amsterdam house values were only 8% above the Dutch average in 2015, they were 44% higher in 2018. This figure is all the more remarkable given the relatively small size of Amsterdam housing units. House values have also rapidly increased in Utrecht in the 2015–2018 period. Growth rates in house values for Rotterdam and Den Haag have only slightly outpaced

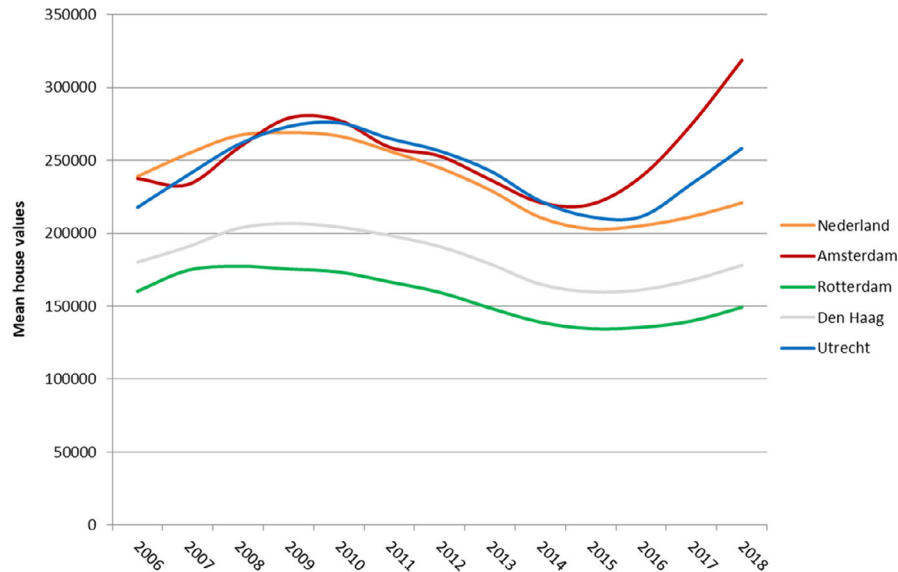


FIGURE 2 Mean inflation-adjusted house values in the Netherlands and the four largest cities for the 2006–2018 period. *Source:* SSD, own calculations [Color figure can be viewed at wileyonlinelibrary.com]

nationwide developments in recent years. These changes in house values already suggest increasing spatial unevenness in housing-market dynamics across the country.

4.2 | Spatially uneven developments

We map the percentage change in house values at the neighbourhood level for our entire study period (2006–2018) as well as for the three most recent years (2015–2018), representing generally the period of post-crisis house-value gains (Figure 3). The results are presented as a cartogram distorted by the number of dwellings to visually correct for the relative size of the housing stock per neighbourhood. The maps reveal a striking pattern. Over the full 2006–2018 period, house values decreased in large parts of the country. However, there are some prominent exceptions. Amsterdam and Utrecht saw substantial house-value appreciation. The same goes for parts of Rotterdam and Den Haag, though to a lesser extent and only in select areas of both cities. House values also increased in successful medium-sized cities like Groningen and Haarlem (directly to the west of Amsterdam). Patterns for the 2015–2018 period reveal, on the one hand, relatively stable or minor increases in house values across the country, with the particularly notable exception of Amsterdam which saw major post-crisis gains alongside some above average gains in other major cities, or specific areas within them. The patterns highlight starkly uneven developments across space. House-value gains over the study period predominantly concentrate in urban neighbourhoods, while they decreased in the majority of suburban and rural areas. Especially the housing-market dynamics in Amsterdam appear increasingly distinct from those in the rest of the country. These urban dynamics influence wealth accumulation potential for current owners while enhancing exclusion for prospective entrants.

Nationwide, only 18% of neighbourhoods saw an increase in inflation-adjusted house values between 2006 and 2018, while house values decreased in 82% of neighbourhoods (Figure 4). These patterns are highly different when focusing on the four major cities. In Amsterdam, house values increased in 92% of neighbourhoods, with many neighbourhoods showing strong gains of around 50%. Similarly, in Utrecht, 83% of neighbourhoods saw an increase in house values. The neighbourhood distribution in house-value change in Rotterdam is comparable to the nationwide distribution, but with a somewhat larger bulk of neighbourhoods (30%) showing increasing values. A similar pattern applies for Den Haag, though more skewed towards increasing values (40% of neighbourhoods). These patterns signal clearly diverging housing-market dynamics, whether between the national and urban level or between different cities.

Diverging spatial housing-market dynamics also exist within cities. Figure 5 focuses on this intra-urban differentiation, showing how neighbourhood-level house values developed relative to the urban average using standard deviations from the mean. We do so for the four major cities: Amsterdam, Rotterdam, Den Haag, and Utrecht.

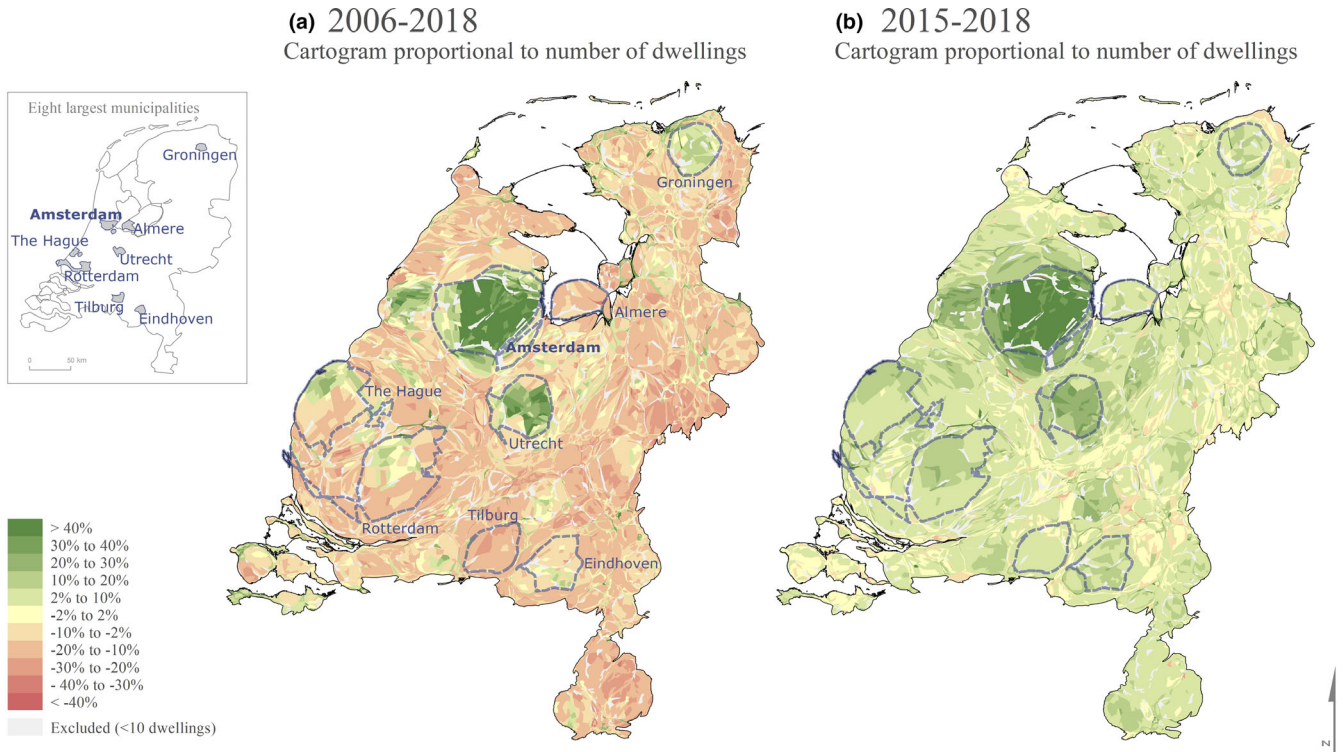


FIGURE 3 Neighbourhood-level percentage change of house values for the 2006–2018 period (left map) and the 2015–2018 period (right map). The cartogram is distorted based on the number of dwellings per neighbourhood.
 Source: SSD, own calculations [Color figure can be viewed at wileyonlinelibrary.com]

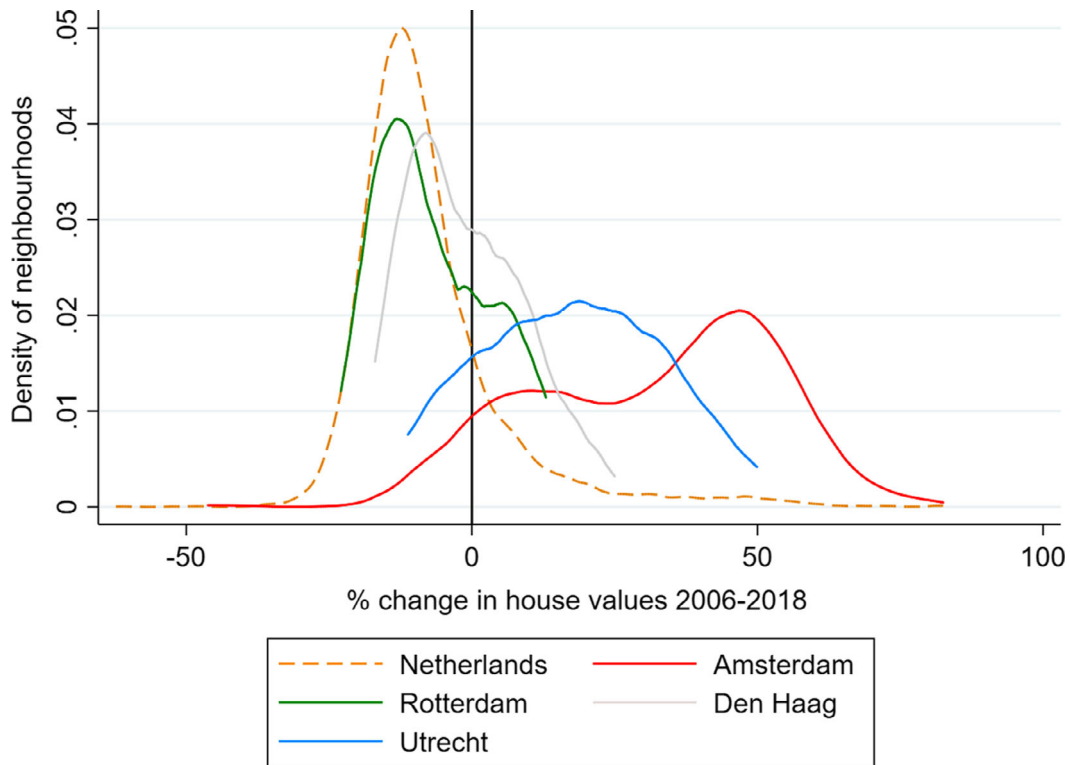


FIGURE 4 Density distribution of neighbourhoods in terms of 2006–2018 percentage change in mean house values in the Netherlands and the four largest cities.
 Source: SSD, own calculations [Color figure can be viewed at wileyonlinelibrary.com]

A common pattern across the four cities is that house value developments over the 2006–2018 period in many relatively cheap neighbourhoods lag behind the urban trend. This particularly goes for post-war developments in the urban peripheries. In Amsterdam, most neighbourhoods in the north, (outer) west, and south-east saw relatively weak house-value developments. In Rotterdam, most neighbourhoods in the south already had low house values and saw further decreases. In Den Haag, a city with particularly strong spatial divides, house values in lower-value neighbourhoods in the south saw relative decline. While in Utrecht the pattern is more complex, house values in cheap neighbourhoods in the north and inner south-west tended to lag behind.

Conversely, house values appreciated in many of the already expensive neighbourhoods in all four cities. Prime examples include Amsterdam's historic inner city and elite borough in the inner south, Rotterdam's leafy northern neighbourhoods, Den Haag's affluent "sand" neighbourhoods along the coast, and historic neighbourhoods in Utrecht's inner east. Yet, house-value appreciation was the strongest in many central neighbourhoods – close to these affluent areas but still somewhat more affordable. These housing-market dynamics are an essential component of expanding and intensifying central-city gentrification (Hochstenbach & Van Gent, 2015). In Amsterdam, rapid gentrification has taken hold of more or less the entire pre-war constructed neighbourhoods. Likewise, in Utrecht, most of the central city is experiencing ongoing gentrification (corresponding to areas indicated by green on the right-hand map). In Rotterdam, gentrification concentrates in the inner north and inner east, close to both the city centre and already established higher-value areas.

4.3 | Spatial polarisation

The spatial unevenness of housing-market dynamics can have different effects on outcomes of spatial inequality. Put simply, if house-value increases concentrate in relatively lower-value areas, spatial inequality will decline, while if these increases particularly occur in already high-value neighbourhoods, spatial inequality will rise. We refer to the former trend as spatial homogenisation, and to the latter as spatial polarisation. To gauge the direction and intensity of developments, we have calculated Gini coefficients for house values at the neighbourhood level. These coefficients capture the degree to which house values are unequally distributed across neighbourhoods. We have calculated the Gini coefficient at various spatial scales: (1) at the national level, where we include all neighbourhoods in the country; (2) at the provincial level; and (3) within the country's 50 largest municipalities. In Table 1 we report the 2006 and 2018 Gini coefficients across spatial scales, while Figure 6 visualises the municipal-level absolute change. Because the size and delineation of neighbourhoods differ between municipalities, some caution should be taken when comparing levels of inequality between contexts. However, because neighbourhoods here are stable over time, it is possible to directly compare change over the years.

Our data overwhelmingly point to spatial housing-market polarisation. At the national level, the Gini coefficient went up from 18.7 in 2006 to 20.6 in 2018 (+1.9). In other words, house values have become more unequally distributed between neighbourhoods across the country. Expensive neighbourhoods have become more expensive, while cheaper neighbourhoods increasingly lag behind. The same applies at the provincial level, where spatial inequality across neighbourhoods has increased within 11 out of 12 provinces. At this scale, spatial housing-market polarisation was strongest in Noord-Holland, wherein Amsterdam is located, with the Gini coefficient there increasing sharply by 3.8 points (from 18.7 to 22.5).

Moving to the urban level (visualised in Figure 6), we find an increasing Gini coefficient in 44 out of 50 municipalities – indicating spatial housing-market polarisation within them. Looking at the four largest in population, Amsterdam and Utrecht are among the cities with the strongest increase in spatial inequality, recording an increase in Gini of 4.4 and 4.1 points respectively. Within the two other major cities, Rotterdam and Den Haag, the trend towards greater spatial polarisation was also relatively strong, with Gini increases of 2.8 and 2.7 points respectively.

The strongest increase in spatial inequality can be found in Delft (+4.6). Other cities with relatively strong increases include Nijmegen (+4.3), Maastricht (+3.7), and Leiden (+3.4). These cities share in common that they are medium-sized cities with a relatively large student population and academic staff. One explanation is that private investors purchase centrally located property to cater to these populations, thus driving up localised house prices (see Aalbers et al., 2018), which may add to uneven developments. While there is important differentiation in intensity, taken together, these dynamics at the national, provincial, and urban level point to spatial housing-market polarisation being a widespread and pervasive process across space and scales.

As a robustness check, we further calculated 2006 and 2018 neighbourhood-level house-value Gini coefficients using the total rather than stable housing stock. Results (available on request) reveal highly similar, though somewhat less

TABLE 1 Neighbourhood-level Gini coefficient of house values at different spatial scales for 2006 and 2018 and absolute change

	2006	2018	Change		2006	2018	Change
The Netherlands	18.7	20.6	1.9	Municipal level (continued)			
				Arnhem	16.4	19.2	2.9
Provincial level				Zoetermeer	10.3	11.2	1.0
Noord-Holland	18.7	22.5	3.8	<i>Maastricht</i>	14.8	18.5	3.7
Zuid-Holland	20.3	21.1	0.8	Alkmaar	13.5	15.0	1.4
Utrecht	17.7	18.0	0.2	Zwolle	15.1	15.1	0.0
Drenthe	16.0	17.8	1.8	Dordrecht	17.3	18.5	1.2
Overijssel	16.8	17.4	0.5	<i>Leiden</i>	13.5	16.8	3.4
Groningen	16.3	17.0	0.8	Alphen ad Rijn	12.9	14.3	1.4
Gelderland	15.5	17.0	1.5	Heerlen	11.5	15.1	3.6
Friesland	15.8	16.9	1.1	Leeuwarden	19.7	19.7	0.0
Limburg	14.6	16.4	1.7	<i>Delft</i>	13.5	18.1	4.6
Zeeland	15.8	16.3	0.5	Sittard-Geleen	10.7	12.0	1.4
Noord-Brabant	16.1	16.2	0.1	Venlo	16.0	16.6	0.7
Flevoland	14.6	14.5	-0.1	Deventer	18.1	19.1	1.0
				Emmen	10.8	11.8	1.0
Municipal level (top 50, largest to smallest)				Nissewaard	13.4	14.7	1.3
AMSTERDAM	17.8	22.2	4.4	Hilversum	20.6	23.4	2.8
ROTTERDAM	15.2	18.0	2.8	Hengelo	14.5	15.1	0.6
DEN HAAG	22.0	24.7	2.7	Leidschendam-Voorburg	19.5	20.6	1.2
UTRECHT	16.1	20.2	4.1	Súdwest-Fryslân	13.4	14.3	0.9
<i>Eindhoven</i>	13.7	14.6	0.9	Helmond	20.6	20.2	-0.3
<i>Groningen</i>	15.9	16.1	0.3	Schiedam	17.5	18.8	1.4
<i>Tilburg</i>	15.9	16.5	0.6	Ede	14.5	17.0	2.5
Almere	10.8	9.5	-1.3	Purmerend	10.9	11.3	0.4
<i>Nijmegen</i>	12.2	16.6	4.3	Westland	10.1	10.7	0.6
Breda	17.4	18.5	1.1	Oss	14.3	14.1	-0.3
Apeldoorn	16.0	16.4	0.4	Roosendaal	13.3	14.0	0.6
Haarlem	17.7	21.1	3.4	Amstelveen	7.9	8.8	1.0
Den Bosch	15.3	15.4	0.1	Gouda	11.3	12.2	0.9
Zaanstad	10.5	11.8	1.3	Capelle aan den IJssel	17.7	19.0	1.3
Amersfoort	15.6	16.9	1.3	Hoorn	12.4	13.1	0.7
<i>Enschede</i>	16.7	16.3	-0.4	Velsen	17.2	21.4	4.2
Haarlemmermeer	9.0	9.4	0.4	Vlaardingen	12.9	14.5	1.6

Coding for municipalities: capitals = four largest cities; italic = university towns.

Source: SSD, own calculations

pronounced polarisation. At the national level, the house-value Gini went up by 1.9 points for the stable stock (see above) and 1.5 points for the total stock. The same goes for the provincial level and most municipalities. Changes in the housing stock – i.e., through demolition and construction – thus slightly dampen the polarising trend. One example would be the demolition of cheaper social-rental housing in declining neighbourhoods with the construction of larger and more expensive units in their place. Our analyses of the stable stock, however, are a more accurate representation of polarising trends in house values because they exclude such compositional effects.

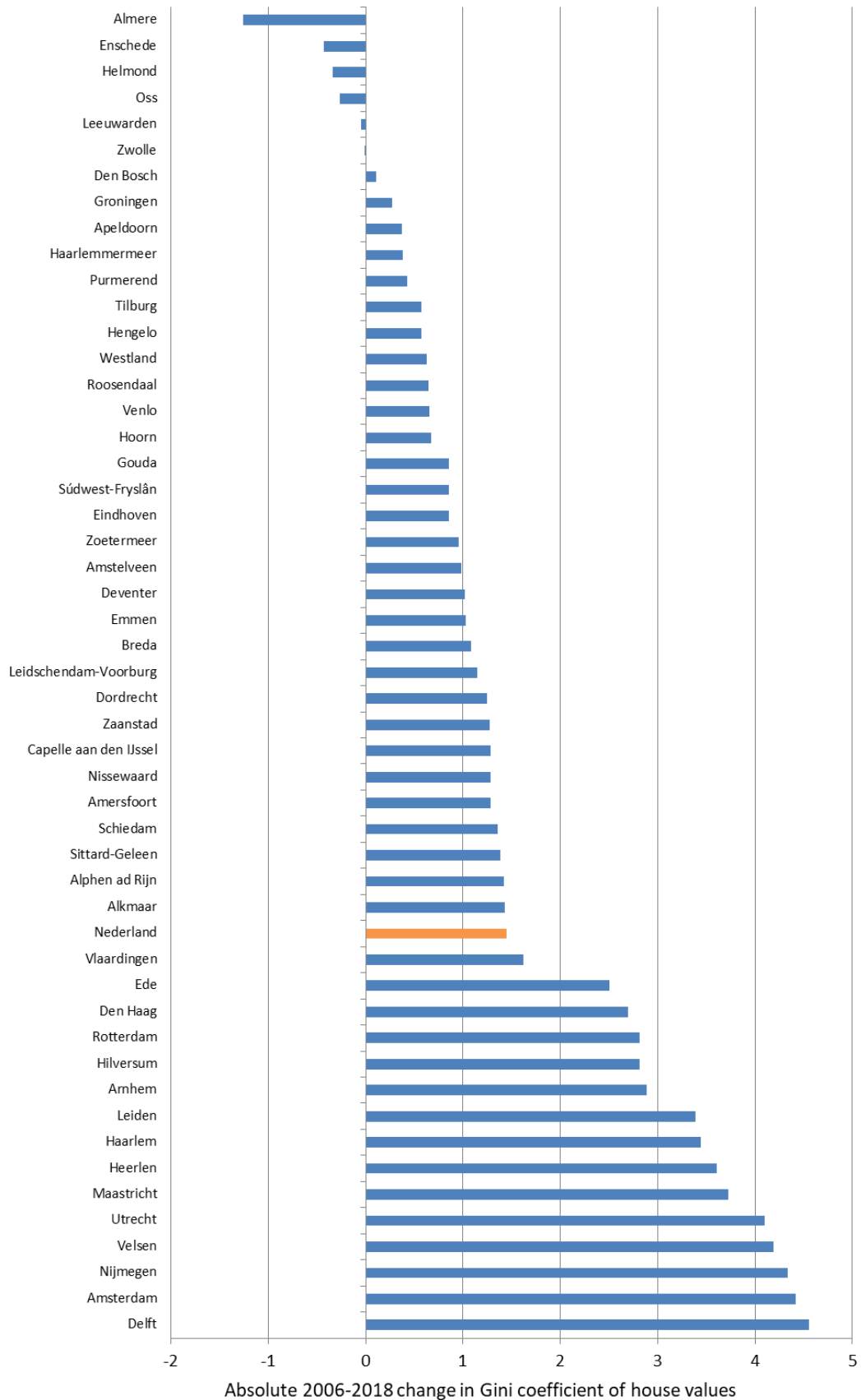


FIGURE 6 Absolute change in neighbourhood-level Gini coefficients of house values between 2006 and 2018 in the 50 largest municipalities. Values above 0 indicate an increase in house-value polarisation between neighbourhoods.

Source: SSD, own calculations [Color figure can be viewed at wileyonlinelibrary.com]

4.4 | Temporal dynamics

We are also interested in understanding the temporal dynamics involved in the pervasive trend of spatial housing-market polarisation. Specifically, we unravel how spatial polarisation develops in boom periods, when house values are on the rise, and in bust periods, when values drop. To do so, we examine annual data over the 2006–2018 period. In addition to Gini coefficients, we also calculate 90:10 ratios where we compare house values in the 90th percentile to those in the 10th percentile. Similarly, we calculate 95:5 ratios.

We compare housing-market developments over three time periods: 2006–2009 representing the pre-crisis boom with house values peaking in 2009, the 2009–2015 period capturing the protracted crisis period with house values reaching their low point in 2015, and the subsequent 2015–2018 economic boom (Table 2). We compare changes in house values, Gini coefficient, and 90:10 and 95:5 ratios over these time slots. We do so at the national level, and for the four largest cities (visualised in Figures 7 and 8 respectively).

Development in house values and spatial housing-market inequality vary over time. Nationally, spatial inequality increased during the two economic boom periods (Table 2, Figure 7). Yet, remarkably, the opposite was not found during the 2009–2015 bust period. Instead, even during this period of declining values, spatial inequality stabilised or even continued to slightly increase. Nationally, the Gini coefficient increased by 0.6 points during the 2006–2009 boom period, still modestly rose by 0.2 points during the 2009–2015 housing-market slump, and subsequently increased at an accelerated rate between 2015 and 2018 by 1.2 points.

Among the four major cities, some differentiation in housing-market dynamics over these same periods exist (Table 2, Figure 8). In Amsterdam, trends are similar to those at the national level, though substantially stronger. In Den Haag, spatial inequality also increased, along with rising house values. During the downturn, inequality levels in Den Haag did show

TABLE 2 Mean house values, neighbourhood-level Gini coefficients of house values, neighbourhood-level 90:10 and 95:5 ratios of house values

						Absolute change		
		2006	2009	2015	2018	2006–2009	2009–2015	2015–2018
Netherlands	House value (€)	239,078	269,237	203,063	220,917	30,159	–66,174	17,854
	Gini coefficient	18.7	19.2	19.4	20.6	0.6	0.2	1.2
	90:10 ratio	2.2	2.3	2.3	2.4	0.1	0.0	0.1
	95:5 ratio	2.9	3.0	3.0	3.2	0.1	0.1	0.2
Amsterdam	House value (€)	237,601	279,079	219,888	318,706	41,478	–59,191	98,818
	Gini coefficient	17.8	20.7	21.3	22.2	2.9	0.7	0.9
	90:10 ratio	2.0	2.3	2.4	2.5	0.3	0.1	0.2
	95:5 ratio	2.5	2.9	3.2	3.5	0.4	0.2	0.3
Rotterdam	House value (€)	160,265	175,486	134,672	149,292	15,221	–40,814	14,620
	Gini coefficient	15.2	15.8	16.8	18.0	0.6	1.1	1.2
	90:10 ratio	1.7	1.7	1.7	1.9	0.0	0.0	0.2
	95:5 ratio	2.4	2.3	2.4	2.6	–0.1	0.1	0.2
Den Haag	House value (€)	180,206	206,755	159,877	178,013	26,549	–46,877	18,136
	Gini coefficient	22.0	23.8	23.0	24.7	1.8	–0.8	1.7
	90:10 ratio	2.4	2.5	2.4	2.5	0.1	–0.1	0.1
	95:5 ratio	3.1	3.5	3.3	3.7	0.4	–0.1	0.3
Utrecht	House value (€)	217,860	273,301	211,324	258,269	55,441	–61,977	46,945
	Gini coefficient	16.1	17.7	19.2	20.2	1.5	1.5	1.1
	90:10 ratio	2.0	2.3	2.4	2.7	0.3	0.2	0.2
	95:5 ratio	2.1	2.6	2.8	3.2	0.5	0.2	0.3

All indicators concern inflation-adjusted house values.

Source: SSD, own calculations

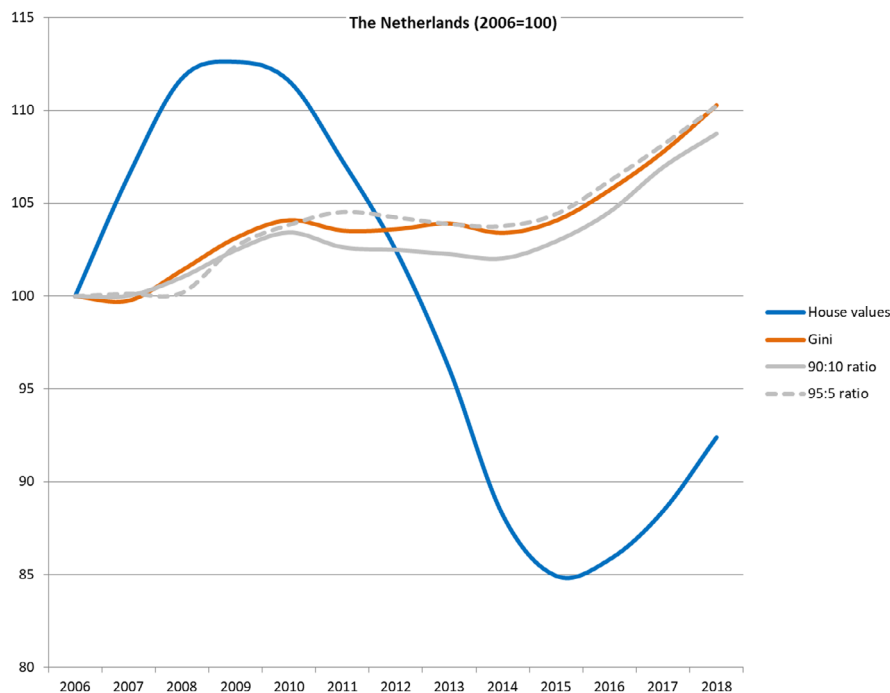


FIGURE 7 National-level development of mean house values, neighbourhood-level Gini coefficients, 90:10 ratios and 95:5 in the Netherlands (2006=100). All indicators concern inflation-adjusted house values.

Source: SSD, own calculations [Color figure can be viewed at wileyonlinelibrary.com]

a slight decrease – though unable to compensate for increasing inequality in other periods. In both Rotterdam and Utrecht, inequality levels increase rather consistently over the entire 2006–2018 period regardless of large bust and boom swings in house prices. Despite differences, a common trend nationally and in the four cities is that inequality increased most sharply in periods of rising house values; however, decreasing values over the downturn were remarkably not, or hardly, matched by decreasing spatial inequality. This combination of trends adds up to a substantial spatial polarisation over the entire 2006–2018 period.

In both Amsterdam and Utrecht, levels of spatial housing-market inequality showed a slight decrease between 2017 and 2018 (Figure 8). It is currently unknown whether this marks a turning point or a temporary aberration in a continuing spatial polarisation. Both cities are prime examples of strong and accelerating house-value appreciation. Further increases in house prices in already expensive neighbourhoods lead to a spill-over of housing demand to lower-status neighbourhoods. This contributes to expanding and intensifying urban gentrification and a local ripple effect in house values. As this ripple effect translates into a “catching up” of cheaper neighbourhoods, it may reduce local spatial inequality.

5 | DISCUSSION AND CONCLUSION

In this paper we have investigated uneven housing-market developments over time and across space in the Netherlands, revealing a clear trend of spatial housing-market polarisation, with a widening gap between expensive and cheap areas. From our key findings, we can derive some significant conclusions.

First, our findings reveal that while polarisation trends are relatively strong in Amsterdam and Utrecht, two major cities with high levels of housing-market demand, they are certainly not limited to larger cities. Instead, we show rising polarisation at the national level, across all but one province, and within 44 out of the 50 largest municipalities. Spatial polarisation was also particularly strong in many medium-sized university cities. While stronger in some places than others, the overall polarising trend appears structural and pervasive. At the national level, spatial polarisation is in part driven by a growing divide between economically successful cities and struggling regions. To give an example: while average house values in Amsterdam and Utrecht increased by 34% and 19% respectively between 2006 and 2018, they decreased by 8% at the national level. At the intra-urban level, polarisation is driven by dynamics relating to expanding central-city gentrification and the downgrading of many neighbourhoods in the post-war periphery.

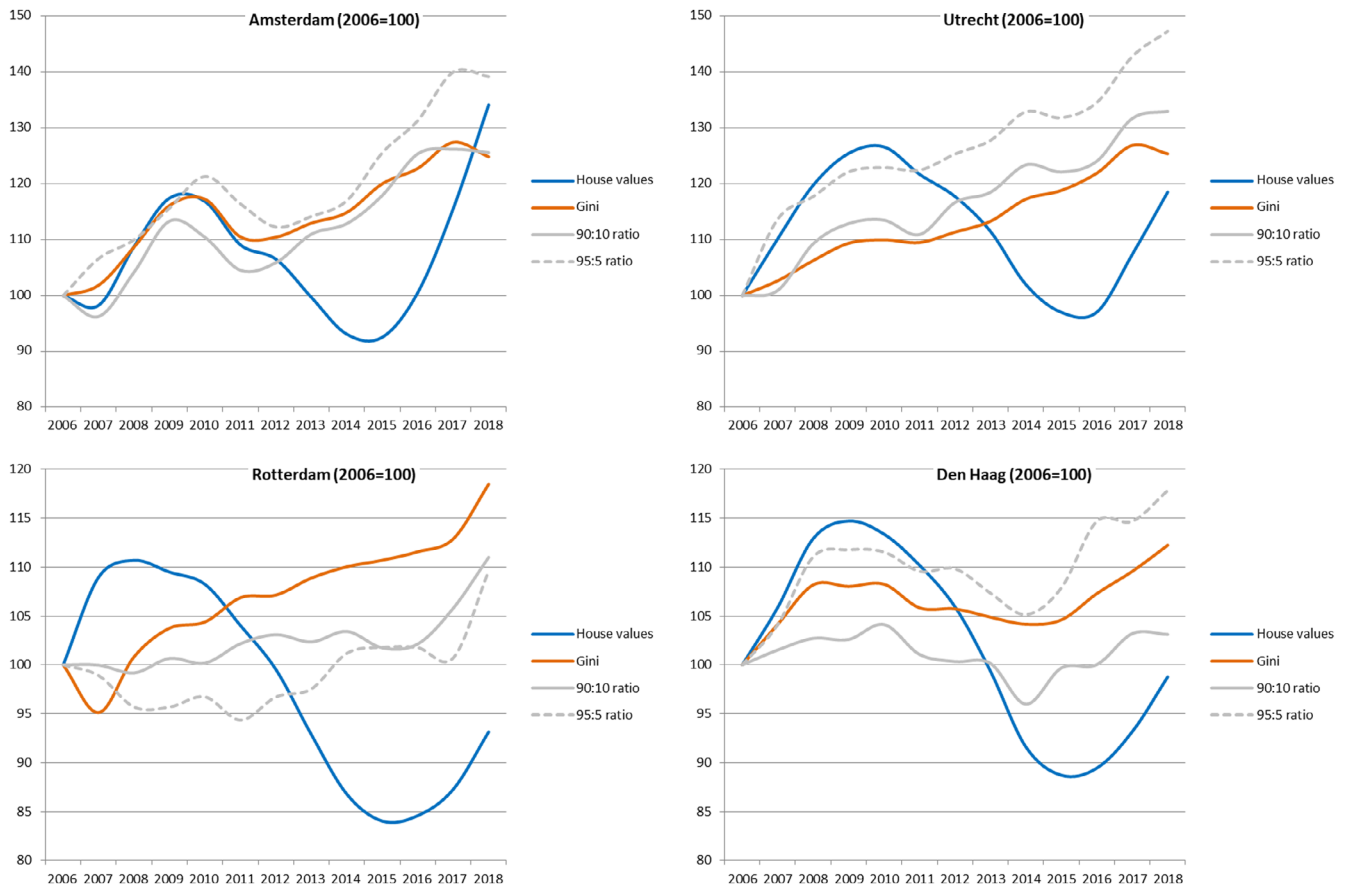


FIGURE 8 The development of mean house values, neighbourhood-level Gini coefficients, 90:10 ratios and 95:5 per city (2006=100). Scale on the y-axis differs between cities (80–120 or 80–150). All indicators concern inflation-adjusted house values.

Source: SSD, own calculations [Color figure can be viewed at wileyonlinelibrary.com]

While we have not empirically investigated potential structural drivers of polarisation, explanations may include state restructuring facilitating housing privatisation and liberalisation (Van Gent, 2013). Such reforms allow for more market-induced differentiation. The particularly strong increases in major cities and student towns may also relate to concentrated local housing demand, as well as associated spatial investment strategies. Indeed, previous studies have shown spatially selective housing market investment of institutional investors (Van Loon & Aalbers, 2017), buy-to-let landlords (Aalbers et al., 2018) and affluent parents (Hochstenbach, 2018) in higher-demand neighbourhoods in popular cities. Increased capital flows into specific – often already successful – locations thus contributes to spatially uneven developments. Interestingly, whereas we find a clear trend towards greater spatial polarisation, Le Goix et al. (2019) recently found evidence for spatial homogenisation within the single-family dwelling market in the Parisian suburbs. This points to the potential of simultaneous dynamics of an outward ripple effect of higher-value submarkets on adjacent locales. Such findings further highlight the importance of understanding cross-country variations as well as how inequality dynamics play out across different scales and within specific submarkets.

Second, our paper points to important variations over time. Specifically, housing-market polarisation increases in periods of economic growth when overall house-price gains are matched by even stronger increases in already expensive locations. Surprisingly, the opposite is not the case: in the economic downturn following the outbreak of the Global Financial Crisis, the housing-market collapse and house-price decreases were not matched by declining levels of spatial inequality. Instead, inequality levels stabilised over this period or even saw continued slight increases. This indicates that spatial polarisation in house values is a structural phenomenon that, at least partly, defies the dramatic swings in housing-market volatility that we have seen over recent boom–bust–boom periods.

Third, developments in house values can provide a valuable means to study evolving spatial inequalities. It is to be expected that spatial polarisation in house values will translate into deepening socio-spatial divides between population groups. This will not take place overnight, as local house values may be more volatile than population distributions.

Residential turnover is usually slow, and moves that do take place often reproduce neighbourhood composition (Sampson, 2012). Nonetheless, in places with higher residential-mobility rates, such as large cities with many young households, population distributions may be quicker to adapt to new housing-market constellations. Levels of house-value inequalities and socio-spatial disparities will also not resemble a perfect one-to-one relationship. In the Dutch context, the continued presence of a substantial stock of de-commodified social-rental housing – where tenant protection is in place and rents are offered below market rates – allows lower-income groups to remain, or acquire housing in locations where market-rate housing would be unaffordable. However, continuing housing marketisation and reductions in social-rental housing, tenant protection and rent regulation will result in a tighter match between housing-market dynamics and social divides.

This paper has presented compelling evidence of spatial housing-market polarisation. The polarising trend is substantial and appears a structural one: it has proven “crisis resistant” and exists across space and scales. In the face of increasing housing commodification and the growing centrality of property wealth for households, the potential major implications of rising spatial inequality in housing values should not be dismissed. As spatial polarisation continues, the housing market will increasingly function as an engine of inequality, fostering uneven wealth accumulation, uneven access to locational advantages, and deepening social cleavages across space.

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