Income Inequality and Access to Housing in Europe

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Abstract: This article analyzes the relationship between income inequality and access to housing for low-income homeowners and renters 'at market rent' across Europe. We develop three arguments that explain how inequality affects housing affordability, quality, and quantity—together these dimensions indicate 'access to housing'. First, it is the absolute level of resources, not their relative distribution, that affects access to housing. Second, inequality leads to rising aspirations and status competition, which in turn influence the dimensions indicating access to housing. Third, the impact of inequality is mediated by housing market dynamics. Multilevel models for 28 countries indicate that: (i) higher income inequality increases the likelihood of affordability problems for low-income renters 'at market rent'; (ii) there is a positive relation between inequality and crowding; and (iii) higher income inequality is associated with lower housing quality. Although income inequality restricts access to housing for low-income households, this relationship is complex and not mediated by national house price trends.

Introduction

In recent years, much research has focused on the rise in economic inequality that welfare states have faced since the late 1970s. According to the *Growing Unequal* report (OECD, 2008: p. 15), this increase is '*widespread and significant, but moderate*'. In *The Spirit Level*, Wilkinson and Pickett (2009) suggest to investigate the relationship between income inequality, debt, and changes in housing markets. They speculate that because households in the upper part of the income distribution had more money to invest and to lend, it became increasingly difficult for people with fewer resources to realize their aspirations.

Although the idea of a link between income inequality and housing outcomes is intriguing, the underlying mechanisms are complex. In general, trends in income inequality imply relative changes between income groups. These might take place across the whole income distribution (the rich becoming richer, the poor becoming poorer), but might also be limited to part of the distribution, for example, when the top groups experience disproportionate income growth or when incomes at the bottom lag behind. Furthermore, the relationship between income inequality and housing outcomes can operate through different mechanisms. For example, higher investment in property by wealthy households could result in changes in property prices and in other housing market dynamics. Does the 'conspicuous consumption' of the rich result in higher aspirations, anxiety, and status competition among less-affluent households, pushing them to spend more on (presumably higher-quality) housing? Or, do different (housing) consumption patterns across the income distribution have negative repercussions for the type and quality of housing that is available at a certain price? We explore some of these questions from a cross-sectional, yet comparative, angle, and estimate multilevel models based on data from the 2009 *Statistics on Income and Living Conditions* (*EU-SILC*) for 28 countries.

We identify three mechanisms linking income inequality with access to decent housing: (i) the absolute level of resources; (ii) rising aspirations; and (iii) housing market dynamics. We argue that income inequality, through its impact on housing markets, has a greater effect on low-income households. Low-income households are the least flexible when confronted with exogenous income changes or pressures arising from housing market dynamics (Rothenberg *et al.*, 1991). Hence, we focus on the impact of income inequality on access to decent housing (affordability, quantity, and quality) of *low-income* homeowners and renters 'at market rent'. As homeownership rates across Europe have increased over time, low-income homeownership

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became more widespread (1). The 'residualization' of social housing further implies that in many countries, a substantial part of low-income households are now living in private rental accommodation, often characterized by insecurity of tenure and poor price–quality ratios (Kemp, 2011).

In *EU-SILC*, an unusual distinction is made between 'renting at market rate' and 'renting at reduced rate' (see also Data and Methods). In this article, we do not focus on 'renters at reduced rate', a category that includes households in social housing. These households often enjoy long-term security of tenure and rent levels and are therefore less affected by the theoretical mechanisms we put forward. Our focus is on *low-income* homeowners and renters 'at market rent'.

Income Inequality and Access to Housing: Linking Mechanisms

In the late 19th century, most households in Western countries lived in private-rented dwellings, which were expensive and of low quality (Fahey and Norris, 2011). As the scope of the (welfare) state expanded, housing gradually moved into the realm of public policy. In some countries, owner-occupation was encouraged early on, whereas in other countries, public policy goals were achieved through public housing. Homeownership rates rose over time, while, beginning in the 1970s, in many countries, governments cut back on social housing. Since then, the relationship between housing markets, the welfare state, and the economy as a whole has been restructured (Lowe, 2011). More demand for owner-occupation, reinforced by government subsidies as well as financial deregulation, led to house price inflation (OECD, 2011). This in turn encouraged households to invest even more in housing (including second homes and properties to let or resell). As more households became owners, the costs of homeownership increased, and so did mortgage debts. Deregulation furthermore entailed the integration of mortgage finance in the global economy.

Some argue that the shift towards owner-occupation is accompanied by an 'ideology of homeownership' (Ronald, 2008). This ideology is inspired by neo-liberal policies aimed at shifting responsibility for their welfare onto households and individuals. At the individual level, it has resulted in a 'financialization of the self', turning the owner-occupied house from a basic need into an investment that allows for capital gains, which can then finance other consumption (Lowe *et al.*, 2011).

In this section, we discuss several causal mechanisms relating income inequality to access to decent housing for low-income homeowners and renters 'at market rent'. Recent studies (Norris and Winston, 2012) define housing outcomes in terms of tenure type, affordability (housing cost), quantity (crowding), and quality (housing problems). When confronted with affordability problems, households can adapt by reducing their housing consumption (Matlack and Vigdor, 2008), that is, by accepting lower space or quality standards. Therefore, we look at three indicators: (i) housing costs; (ii) crowding; and (iii) housing quality. 'Restricted access to decent housing' therefore refers to higher housing costs (less affordability), more crowding, and lower housing quality.

Mechanism 1: Absolute Incomes

In more unequal countries at similar levels of economic affluence, the absolute level of resources held by those at the bottom of the income distribution is lower than in countries with a more equal income distribution. For households at the bottom, these lower incomes might translate directly into restricted access to affordable housing of decent quality and quantity. They have fewer resources at their disposal, and hence have to spend a higher proportion of their income on housing, or reduce their housing consumption accordingly. Furthermore, countries differ in terms of their 'absolute' level of economic affluence, which is associated with housing costs and standards. If the negative influence of inequality is caused by the absolute level of resources rather than the relative distribution of income, then the effect of inequality should disappear when the level of resources is controlled for:

Hypothesis 1

In countries with higher income inequality, access to housing for low-income homeowners or renters 'at market rent' is restricted. The effect of income inequality disappears when household-level income and 'absolute' economic affluence are controlled for.

Mechanism 2: Rising Aspirations

Wilkinson and Pickett (2009) argue that the negative impact of income inequality on societal outcomes cannot only be explained by *absolute* incomes. What matters are the *relative* income differences between people. Larger income differences trigger status competition and rising aspirations, resulting in a range of undesirable outcomes (Lancee and Van de Werfhorst, 2012; Paskov and Dewilde, 2012).

Several authors point out that a house is the largest consumer good that people purchase, providing them with an opportunity for both 'conspicuous' and 'emulative' consumption (Dwyer, 2009). The latter concepts are

derived from the work of Thorstein Veblen (1998/1899). While 'conspicuous consumption' refers to the display of their wealth by the leisure class to affirm their status, the lower classes mimic the consumption patterns of the former through 'emulative consumption'. According to Beer *et al.* (2011: p. 2), housing is an indicator of social and economic success and has become '*a commodity embedded with social, personal and economic meanings that can serve to encourage increased consumption regardless of real needs*'. The increasing (housing) affluence of the rich might have pushed the middle- and lower-income groups into upgrading their perceptions of the type of housing that is required to live a good life, at the cost of overinvestment and increasing levels of debt—institutionally supported by mortgage deregulation and pro-homeowner policies. It is also possible that people pay more for housing because it is (or was) seen as a good investment: as long as people have '*the false impression that they a have unique property that is going to become extremely valuable in the future, then they may consume more*' (Schiller, 2007: p. 36).

In a study on the consequences of rising income inequality on the stratification of 'McMansions' in the United States, Dwyer (2009) finds evidence of 'upgrading', 'convergence', and 'divergence' from the 1960s to the 1990s. Increasing income inequality is related to an upgrading in the size of houses across all income levels. This is explained by the acceleration of the 'normal' process of increasing housing standards and 'filtering' over time: as the affluent move into bigger houses, their former homes are occupied by the ones below them on the social ladder. At the same time, the growth of 'big house' ownership was clearly larger for the higher-income groups. The living standards of the 'merely affluent', however, became closer to those of the 'very rich', indicating convergence.

Following this argumentation, one would predict contradictory outcomes for low-income owners:

Hypothesis 2

In countries with higher income inequality, status competition leads to more affordability problems for low-income homeowners (because of larger mortgage costs), but to a *higher* quantity and quality of low-income owner-occupation overall—when the absolute incomes of households and economic affluence at the country level are controlled for.

It is unclear to what extent low-income renters are affected by such a process of status competition. For younger people, private renting is a temporary phase, for example, because it allows them to save money for a deposit to become a homeowner (they might 'under-consume' when renting), or simply because it provides

higher flexibility. The housing history of *low-income* renters (who are often 'poorer' than low-income home-owners) is furthermore characterized by constraints rather than choice. Among renters, residential moves are frequent and mostly due to external factors such as rent increases, job loss, and landlords forcing a move (Beer *et al.*, 2011; Kemp, 2011).

Mechanism 3: Housing Market Dynamics

Our third mechanism is rooted in the idea that exogenous factors, such as different levels of, and trends in, income inequality, influence how housing markets work, and hence affect access to housing. This happens because there is no such thing as 'the' housing market, but rather a set of interrelated submarkets, graduated according to tenure and quality (Rothenberg *et al.*, 1991). Income trends affecting different social groups' consumption of and investment in housing can alter the attractiveness and physical qualities of specific submarkets. Given the relative inelasticity of housing supply, such dynamics often have repercussions for other submarkets. The strength of these repercussions is inversely related to the quality differential, and therefore substitutability, between any two given segments.

For the United States, Matlack and Vigdor (2008) find that in the context of a tight housing market and rising income inequality, the poor experience more crowding (i.e. consume fewer housing services). More limited evidence supports the idea that increasing income inequality increases the price of housing for those at the top and the bottom (when household income is controlled for). Another study (Public Policy Institute of California, 2001) finds that decreasing incomes at the bottom of the income distribution induce households to move out of better-quality housing and to enter the lower end of the housing market, bidding up prices at the bottom. Changes in the upper part of the income distribution might also affect the housing market. As people at the top become richer, access to owner-occupied housing might become more expensive for everyone. If more households aspire to homeownership and the upper part of the income distribution can afford higher prices, then house prices increase. This happens because the demand for owner-occupied housing is usually higher than the existing stock plus newly built houses (2). The impact of income inequality on house prices, and hence on the cost of (entering) homeownership, is however dependent on the stratification of housing markets. If different income groups operate in different housing market segments, then rising income inequality might even *reduce* demand for 'inferior' housing (Matlack and Vigdor, 2008). This is, for instance, the case when the middle class develops more 'distinguishing' housing

aspirations (remember the 'filtering process' and the 'McMansions' discussed previously). Higher-income groups might only enter the 'less attractive' market segments when demand for owner-occupied housing in their preferred segments is higher then supply, for instance when planning restrictions make it difficult to build new housing that sets them apart from the existing housing supply in the owner-occupied segment.

The demand for properties might also have repercussions for the rental market, as middle-income households aspiring to homeownership seek more affordable properties. At the same time, landlords are keen to sell at high profit. There might therefore be indirect effects on the access to housing for low-income renters, caused by the impact of income inequality on housing market dynamics, and in particular on house prices. If house prices are high, private landlords (in particular in the low-quality housing sector) might decide that they are financially better off selling their property. Such a process limits the availability of decent and affordable rental accommodation for low-income households. Recent research for Belgium (Albrecht and Van Hoofstat, 2011) suggests that high house prices in the 'cheaper' segment of the market reduce the returns to investment in rental properties, compared with the profits that can be made when selling these properties. Low-income renters usually do not have the financial means to allow private landlords to upgrade their rents in line with house prices. For high-income renters, owning became more attractive compared with renting. The combination of both factors leads to an 'impoverishment' of the supply of private rental accommodation for a more selective group of low-income households, both in terms of quality and in terms of the price–quality ratio (the best properties are sold first and hence become part of the homeownership segment). Similar dynamics have been reported for the United Kingdom, where landlords in regions with high house prices prefer shorter contracts with younger and richer people, making it easier to increase rents in successive contracts, or to sell the property (Izuhara and Heywood, 2003).

On the other hand, it has been suggested that high house prices renew the housing stock available for private renting, as the rich invest their money in buy-to-let property—which is of higher quality, but mainly aimed at students and young professionals (Kemp, 2011). However, such a process would not benefit low-income households. We thus formulate Hypothesis 3 as follows:

Hypothesis 3

In countries with higher income inequality, access to housing is restricted for low-income homeowners and renters 'at market rent'—when the absolute incomes of households and economic affluence at the country level are controlled for. The negative impact of income inequality is mediated by housing market dynamics.

Hypothesis 3 contradicts Hypothesis 2, except for the outcomes regarding housing affordability. Furthermore, Hypothesis 3 refers to both low-income homeowners and renters. Note that we take account of the 'selectivity' of renters 'at market rent' in different countries by controlling for household income, as well as for a range of other household characteristics.

Data and Methods

We test our hypotheses with data from the *EU-Statistics on Income and Living Conditions* for 2009. *EU-SILC* is coordinated by EUROSTAT and contains data from the European Union member states plus Iceland and Norway (EUROSTAT, 2009). The sample is a representative probability sample of the population residing in private households within each country.

As housing conditions are typically a household characteristic, our unit of analysis is the household. We selected all households that earn less than the 30th percentile value of equivalized (3) disposable household income of the residence country. Robustness checks (see Supplementary Appendix) indicate that our findings are not sensitive to the choice of this cutoff point. As the tenure situation, income position, and lifestyle deprivation of older people differ substantially from the younger population, we exclude households where the oldest household member is 65 years or older. As stated in the Introduction, our analyses concern low-income homeowners and renters 'at market rent'. In *EU-SILC*, 'renting at market rate' is distinguished from 'renting at reduced rate' (EUROSTAT, 2009). Private renters rent their accommodation 'at prevailing or market rates', even when the rent is partly or fully recovered from housing benefits or other sources—this is in line with official statistics. 'Reduced-rate renters', however, include those renting social housing, renting at a reduced rate from an employer, and those in accommodation where the actual rent is fixed by law. This distinction causes deviations from official statistics on private and public/social renting. Furthermore, in countries where there is no clear distinction between a 'prevailing rent' sector and a 'reduced rent' sector, all renters are classified in the former category. This procedure appears to have been followed for Austria, Denmark, The Netherlands, and Sweden, which are all countries with a so-called unitary rental market (Kemeny, 1995). Further analyses (see Supplementary Appendix) show that housing costs for renters in these countries (all classified as 'renters at market

rate') are fairly high and in line with the level of market rents in countries where 'renters at market rate' more closely approximate private sector renters. The similarity in rent levels underscores the validity of the conceptual distinction made in *EU-SILC*. Our analytic sample consists of 38,330 households: 27,768 that own their dwelling, and 10,562 that rent it at market conditions, clustered within 28 countries (we do not include Romania).

Dependent Variables

To measure 'access to housing', we look at: (i) affordability; (ii) quantity; and (iii) quality. Affordability is operationalized as housing costs amounting to less than 40 per cent of disposable household income, while suffering from a maximum of one quality deficit (see later in the text for a list of indicators) (4). Households that do *not* fulfil these conditions are classified as having affordability problems. Housing costs include costs connected with the household's right to live in the accommodation (5). Utility costs (water, electricity, gas, heating) are also included. Housing quantity is operationalized in terms of crowding, following closely Rybkowska and Schneider (2011) and EUROSTAT. People are considered as living in a crowded dwelling if the household does not have at its disposal, a minimum number of rooms: one room for the household plus one room per couple in the household; one room for each single person aged 18 or more; one room per pair of people between 0 and 17 years. In terms of housing quality, we identify 'housing deprivation' when a dwelling suffers from at least two of the following six conditions: a leaking roof, no bath or toilet, too dark, too noisy, no hot running water, and not being able to keep the home adequately warm. All three dependent variables are dichotomous, and take the value '1' if the household suffers from restricted access to housing—and '0' otherwise.

Independent Variable

Our independent variable is the Gini coefficient for 2008, taken from Solt (2009). The Gini coefficient has a theoretical range from 0—indicating that all households have an equal share of income—to 100—indicating that one household receives all income. The Gini coefficient is based on the Lorenz curve and is represented graphically as the ratio of the area that lies between the line of equality and the Lorenz curve, divided by the total area under the line of equality. Robustness checks using the Theil coefficient and the 80/20 percentile ratio yield similar results (see Supplementary Appendix). This indicates that our findings are independent from our choice of inequality measure.

Control Variables on the Country Level

We control for economic affluence by including gross domestic product (GDP) per capita expressed in purchasing power parities (PPPs, 2008) (EUROSTAT, 2011). We also include social expenditure (expressed as a per cent of GDP, 2008, EUROSTAT). We furthermore control for possible differences characterizing the former socialist regimes by constructing a dummy variable. Post-socialist countries have high rates of (unmortgaged) owner-occupation, following the mass 'give away' privatization or restitution to their previous owners of state-provided housing. However, the housing stock is often of low quality, resulting in high housing-related costs, which are further exacerbated by sharp increases in utility costs caused by the liberalization of energy markets (Mandic, 2010). Differences in housing markets are further captured by including the homeownership rate in 2008 (EMF, 2009; Dol and Haffner, 2010; Andrews and Caldera Sánchez, 2011). We also include the percentage change in house prices between 2003 and 2008 (EMF, 2009; Bank of International Settlements, 2011). We could not locate a reliable indicator measuring 'cross-sectional' house price differences between countries. Together, the homeownership rate and our house price change indicator figure as intermediating variables for 'Mechanism 3'—housing market dynamics. Descriptive statistics for country-level indicators can be found in the Supplementary Appendix.

Control Variables on the Household Level

To control for the level of resources, we include equivalized disposable household income (corrected for within-household non-response), standardized by the country median (6). To account for heterogeneity in housing costs, quantity, and quality between low-income homeowners and renters 'at market rent', we pool both groups and include an indicator for renting 'at market rent' (as opposed to being a homeowner). Finally, we control for household composition, household size, age of the oldest household member (also squared), the highest educational attainment in the household, and whether one or more household members are unemployed or born outside the country of current residence.

Results

Income Inequality and Housing Market Dynamics: The Macro Level

We first report on the relationship between income inequality trends and our housing market variables: homeownership rates and the change over time in

Table 1 Ordinary least squares estimates, predicting homeownership rates in 2008 and the per cent change in house prices between 2003 and 2008 (macro-level data)

Independent variables	b	SE	β
Dependent variable: homeownership rate 2008			
Constant	95.564		
Gini coefficient 2008	0.351	0.517	0.097
GDP 2008	−0.021	0.056	−0.065
Social spending 2008	−1.408*	0.561	−0.493*
Post-socialist	9.012	7.067	0.287
$R^2 = 0.624$			
$N = 28$			
Dependent variable: per cent change in house prices 2003–2008			
Constant	−234.291		
Per cent change Gini coefficient 2003–2008	33.795*	12.555	0.386*
GDP growth 2003–2008	11.04	8.56	0.314
Homeownership rate 2008	1.899	0.963	0.418
Post-socialist	−6.848	34.52	−0.048
$R^2 = 0.570$			
$N = 27$			

*$P < 0.05$, Two-tailed test.

house prices. Concerning the relationship between the Gini coefficient and the homeownership rate (both measured in 2008), Table 1 shows that the impact of inequality on the homeownership rate, when economic affluence, social spending, and 'post-socialist' countries are controlled for, is positive yet not statistically significant. The only variable reaching statistical significance ($P < 0.05$) is social spending, which is associated negatively with the homeownership rate. This is in line with the fact that in high-spending social-democratic welfare states, a larger proportion of the population lives in social housing. These countries are characterized by a unitary rental market, with a large and 'inclusive' social housing sector that offers high-quality housing to different income groups. An alternative interpretation is that in countries with low social spending, homeownership constitutes an alternative source of social insurance (Kemeny, 1995).

A more interesting finding concerns the relationship between the percentage change in inequality and the percentage change in house prices for the years 2003–2008. When GDP growth, homeownership rates in 2008, and our 'post-socialist' dummy are controlled for, house prices have increased significantly more in countries with a higher increase in the Gini coefficient. This is in line with Hypothesis 3, which states that inequality restricts access to housing through housing market dynamics.

Multilevel Results

We now consider multilevel models. As households are clustered within countries and we are interested in the effect of country-level variables, we estimate random intercept models (7) (Snijders and Bosker, 1999). Earlier, we defined three dependent variables indicating 're-stricted' access to housing: problematic housing costs (affordability); crowding (quantity); and housing deprivation (quality). For reasons of space, we only present the coefficients that are necessary to evaluate our hypotheses. Full tables, including the results for household-level control variables, can be found in the Supplementary Appendix. Our modelling strategy is as follows. In Model 1, we estimate the impact of income inequality, without controlling for household income and macro-level characteristics. Model 2 tests Hypothesis 1 and controls for the level of resources at the country and household level. Model 3 includes all macro-level control variables, whereas Model 4 contains only the statistically significant country-level characteristics ($P < 0.05$). Finally, in Model 5, we interact the Gini coefficient with renting 'at market rent' (versus owning), to tease out possible differences in the impact of income inequality for both tenures.

We start with our models predicting *problematic housing costs* (Table 2). When comparing Model 5 with Model 1–4, we note that in countries with more income inequality, the likelihood of experiencing problematic housing costs is significantly larger, but only for

Table 2 Random intercept model predicting the likelihood of problematic housing costs for low-income homeowners and renters 'at market rent'

Independent variables	Model 1 b	Model 1 SE	Model 2 b	Model 2 SE	Model 3 b	Model 3 SE	Model 4 b	Model 4 SE	Model 5 b	Model 5 SE
Gini coefficient	0.135***	0.030	0.077*	0.031	0.079**	0.030	0.110**	0.035	0.055	0.035
GDP			−0.009**	0.003	−0.005	0.003			−0.009**	0.003
Social expenditure					−0.013	0.037				
Homeownership rate					−0.004	0.013				
Per cent change in house prices 2003–2008					0.002	0.002				
Post-socialist					0.513	0.434				
Equivalent disposable household income	0.825***	0.032	−4.575***	0.079	−4.575***	0.079	−4.575***	0.079	−4.757***	0.081
Renting at market rent			0.765***	0.034	0.766***	0.034	0.763***	0.034	−1.943	1.098
Gini × renting at market rent									0.101**	0.038
Constant	−2.402**	0.901	1.988	1.069	1.838	1.987	0.056	1.040	2.895*	1.194
Log-likelihood	−21,068.3		−19,093.8		−19,091.0		−19,098.3		−18,812.4	
Variance country	0.412		0.398		0.327		0.552		0.556	
Variance renting slope									0.496	
Intra-class correlation	0.111		0.108		0.090		0.144		0.242	

*P < 0.05, **P < 0.01, ***P < 0.001, Two-tailed test.

Note: To calculate the intra-class correlation, we use the latent variable approximation, as suggested by Snijders and Bosker (1999).

Source: EU-SILC 2009.

low-income renters 'at market rent'. The main effect for the Gini coefficient in Model 5 concerns the effect for low-income homeowners; this coefficient is positive, but not significant at the 5 per cent level. The significant effect of income inequality for renters 'at market rent' also holds when a separate model is estimated for this subgroup, with all variables at the household and country level controlled for. Although this outcome is in line with Hypothesis 3, the effect is not mediated by our indicators of housing market dynamics—the home-ownership rate and house price changes. Note that our house price indicator measures changes in house prices over time, rather than house price differences between countries. We can only speculate that housing market dynamics might play a role here. Low-income renters at 'market rent' are probably more strongly affected by external pressures caused by income inequality trends and their potential impact on demand for owner-occupied housing, on house prices, and on the balance between housing market segments. In fact, mortgage deregulation combined with low interest rates have ensured that, although in most countries house prices where high and increasing up to 2007, monthly mortgage costs for low-income homeowners remained more or less affordable.

Next, we turn to our indicator of housing quantity—*crowding*. From Table 3, we learn that inequality restricts the 'quantity' of housing for low-income households. This effect is, however, not immediately evident: comparing Model 2 with Models 3–4, we see that the positive effect of the Gini coefficient on the odds of experiencing crowding only becomes apparent when taking account of the underlying heterogeneity caused by the inclusion of 'old' and 'new' European Union member states and our indicator of social spending. In countries with higher income inequality, low-income households live in smaller houses (relative to their household size and composition). Again, this effect is not mediated by our housing market indicators, negating the linking mechanism proposed in Hypothesis 3. Looking at Model 5, we see that income inequality has a strong and significant positive impact on the odds of crowding for the reference category of low-income homeowners. For low-income renters 'at market rent', the interaction term is negative and significant, indicating that for this tenure, the impact of income inequality is smaller $(0.118{-}0.058 = 0.06; \; P < 0.05)$. This might reflect the fact that low-income renters 'at market rent' usually have less choice concerning the type of dwelling they rent: rather than scaling down, they might have to settle for the type of rental housing that is available on the market. Note, however, that renting as such is strongly associated to the experience of crowding, when

Table 3 Random intercept model predicting the likelihood of crowding for low-income homeowners and renters 'at market rent'

Independent variables	Model 1 b	Model 1 SE	Model 2 b	Model 2 SE	Model 3 b	Model 3 SE	Model 4 b	Model 4 SE	Model 5 b	Model 5 SE
Gini coefficient	0.085	0.076	0.019	0.072	0.096*	0.038	0.102**	0.038	0.118**	0.042
GDP			−0.016*	0.006	0.008*	0.004	0.008	0.004	0.005	0.005
Social expenditure					0.192***	0.048	0.165***	0.044	0.161***	0.047
Homeownership rate					0.019	0.015				
Per cent change in house prices 2003–2008					−0.000	0.002				
Post-socialist					4.418***	0.563	4.556***	0.556	4.578***	0.602
Equivalent disposable household income	1.293***	0.045	−0.613***	0.090	−0.614***	0.090	−0.615***	0.090	−0.570***	0.090
Renting at market rent			1.245***	0.046	1.247***	0.046	1.246***	0.046	3.037***	0.667
Gini × renting at market rent									−0.058*	0.023
Constant	−2.312	2.258	1.671	2.441	−10.300***	2.580	−8.437***	2.136	−8.846***	2.317
Log-likelihood	−12,971.1		−12,943.7		−12,924.6		−12,925.4		−12,878.2	
Variance country	2.649		2.130		0.470		0.498		0.582	
Variance renting slope									0.165	
Intra-class correlation	0.446		0.394		0.125		0.131		0.185	

*$P < 0.05$, **$P < 0.01$, ***$P < 0.001$, Two-tailed test.
Source: EU-SILC 2009.

compared with being in homeownership. Hypothesis 2 predicted that rising aspirations caused by higher income inequality would 'tempt' low-income homeowners into consuming more housing, trying to keep up with those higher up in the income distribution. One could, however, also think of status competition in terms of aspiring to the status of homeowner in the first place. In high-inequality countries, status competition could push low-income households into homeownership, at the 'cost' of buying a smaller house. In the theoretical section, following Matlack and Vigdor (2008), we suggested that income inequality increases the cost of housing for everyone, as people in the higher regions of the income distribution can afford to pay more for housing and consequently exert upward pressure on house prices. Thus, it could be the case that low-income homeowners in high-inequality countries avoid affordability problems by living in smaller properties.

Regarding our final dependent variable (Table 4), *housing quality*, we find a positive and significant effect for the Gini coefficient: in countries with more income inequality, the odds of experiencing housing deprivation are higher for both homeowners and renters 'at market rent'. This effect holds when resources at the household and country level are controlled for, and when all macro-level controls are included. These outcomes are again in line with Hypothesis 3, which states that high income inequality restricts access to decent housing, mainly through housing market dynamics causing upward pressures on house prices and/or on the demand for affordable owner-occupied housing, leading to an inflow of formerly (private) rented properties (as well as part of the better-off renters) into the homeownership segment. In contradiction to Hypothesis 3, however, this process is not mediated by our housing market indicators.

A possible alternative interpretation of our findings is that status competition in high-inequality countries might increase the demand for homeownership, attracting more low-income households to owner-occupation, but at the cost of low quality and quantity of housing. Such an interpretation is in line with our finding that income inequality increases both the likelihood of crowding and housing deprivation for low-income homeowners. However, one would expect that the more heterogeneous profile of low-income homeowners (caused by the process described previously) in high-inequality countries would have been picked up by our household-level controls. Finally, for renters, we also find an effect of inequality on housing quality and quantity. This brings us to another alternative explanation, which argues that status competition caused by income inequality does not lead to an upgrading of housing standards, as suggested by Dwyer (2009), but to a process of 'consumption competition'. It is

Table 4 Random intercept model predicting the likelihood of housing deprivation for low-income homeowners and renters 'at market rent'

Independent variables	Model 1 b	Model 1 SE	Model 2 b	Model 2 SE	Model 3 b	Model 3 SE	Model 4 b	Model 4 SE	Model 5 b	Model 5 SE
Gini coefficient	0.147***	0.032	0.106***	0.029	0.102***	0.021	0.089***	0.021	0.087***	0.021
GDP			−0.009***	0.003	−0.004	0.002	−0.005**	0.002	−0.005*	0.002
Social expenditure					−0.043	0.026	−0.052**	0.019	−0.057**	0.019
Homeownership rate					−0.012	0.009				
Per cent change in house prices 2003–2008					0.004**	0.001	0.004**	0.001	0.004**	0.001
Post-socialist					0.536	0.304				
Equivalent disposable household income			−1.152***	0.080	−1.150***	0.080	−1.150***	0.080	−1.145***	0.080
Renting at market rent	0.696***	0.039	0.672***	0.039	0.676***	0.039	0.678***	0.039	0.384	0.430
Gini × renting at market rent									0.009	0.015
Constant	−6.647***	0.975	−4.060***	1.011	−3.120*	1.398	−3.042***	0.910	−2.885**	0.909
Log-likelihood	−15,799.5		−15,691.8		−15,680.8		−15,682.7		−15,679.0	
Variance country	0.474		0.347		0.154		0.178		0.174	
Variance renting slope									0.047	
Intra-class correlation	0.126		0.095		0.044		0.051		0.063	

*$P < 0.05$, **$P < 0.01$, ***$P < 0.001$, Two-tailed test.
Source: EU-SILC 2009.

conceivable that in high-inequality countries, the lifestyles and consumption patterns of the rich push low-income households into emulative spending patterns (e.g. regarding holidays, electronic gadgets, etc.), resulting in money being spent on consumer items, rather than on housing. This would imply that people compromise on housing standards to compete for status. It is, however, not clear why the consumption of housing would be treated differently from other consumption. Furthermore, as mentioned before, several studies document how the housing options of low-income households are characterized by constraints, rather than choice (Beer *et al.*, 2011; Izuhara and Heywood, 2003; Kemp, 2011).

Conclusion and Discussion

In this article, we analyzed how relative income differences are related to 'access to housing' in 28 European countries. In line with previous research, our three indicators of access to housing refer to affordability (problematic housing costs), quantity (crowding), and quality (housing deprivation). We discussed three mechanisms that explain how income inequality restricts access to housing: (i) the absolute level of resources; (ii) rising aspirations; and (iii) housing market dynamics. Given that more vulnerable households will be affected more strongly by changes in their income (position) or by exogenous pressures on their housing situation, our analyses concern *low-income* homeowners and renters 'at market rent'.

Our first hypothesis predicted that the effect of income inequality in countries of a similar level of economic affluence is caused by the absolute level of resources, as differences in affluence determine access to housing. This hypothesis was not confirmed: our analyses for all three dependent variables indicate that income inequality influences access to decent and affordable housing in Europe, also when the level of resources at the household and country level is controlled for.

According to the literature, homeownership has become an investment as well as a status good, possibly resulting in speculation and overconsumption. We hypothesized that social pressure and status competition might lead to higher housing standards. Such an outcome could result from people trying to keep up with those situated in the richer part of a wider income distribution. Furthermore, as the rich improve their housing standards, a filtering process might occur: the former homes of the rich are occupied by the households 'below' them on the social ladder. However, our findings show that this hypothesis is not supported. This is in line with older empirical research on urban housing markets, which found that filtering effects do not trickle down to

the lowest-income groups (Rothenberg *et al.*, 1991). Rather than improving the standard of housing, we find that income inequality is positively related to the likelihood of experiencing crowding and housing quality deprivation for low-income homeowners. There is, however, an alternative explanation that is consistent with a process of status competition: if the home is a status good, then low-income homeowners in more unequal countries might be willing to enter homeownership at the expense of living in a smaller property.

From studies on house prices and housing market dynamics, we derived the hypothesis that income inequality affects the working of the housing market, in particular through house price developments, and disturbs the balance between different housing market segments. By rendering housing more expensive for both rich and poor, income inequality restricts access to decent and affordable housing. This outcome is confirmed: in countries with a higher level of income inequality, both low-income homeowners and renters 'at market rent' experience more crowding and housing quality deprivation, whereas low-income renters are also more often confronted with affordability problems. However, the Gini coefficient remains significant when a number of housing market variables are controlled for, herewith rejecting the mechanism proposed in Hypothesis 3.

Further analyses should look into a range of alternative explanations for our findings. One possible explanation for the fact that the mechanism in Hypothesis 3 remains unconfirmed is that our crude housing market indicators are not able to pick up important differences between countries. Although we established a relationship between income inequality trends and house price changes at the country level, more detailed high-quality information is lacking for many countries. For instance, as national housing market indicators mask important regional differences, a step forward would be to look at housing market dynamics at a lower level of aggregation.

A 'data-driven' explanation concerns the way housing-related variables are measured. The aim of *EU-SILC* is to provide information on living conditions, which is reflected in the questionnaire. Rather than rents and mortgage costs (8), one has decided to include an indicator of total housing costs. The latter are not only influenced by housing market characteristics, but also by differences in utility costs across countries. Furthermore, compared with the *European Community Household Panel*, the distinction between different tenures became blurred. This might also contribute to our lack of support for the linking mechanism proposed in Hypotheses 3. Finally, a stronger test of our hypotheses would make use of longitudinal data, trying to establish a relationship over time between trends in income

inequality and changes in the housing situation of different tenure and social groups.

There may also be a more substantial explanation for our lack of support for the linking mechanism proposed in Hypothesis 3: housing standards could be sacrificed for other expenditure. This might especially be the case for low-income households. In a situation where high levels of income inequality result in a display of extravagant living standards by the rich, poorer households struggle to keep up and might chose to spend money on clothing, cars, or holidays, instead of on housing.

An important conclusion from this article is that—for low-income European homeowners and renters 'at market rent'—relative income differences influence access to decent and affordable housing. Given the upward trend in income inequality and the financial difficulties most countries are facing, this is an important and policy-relevant finding. Bad housing conditions are associated with a range of negative outcomes, particularly for young children (e.g. increased morbidity and mortality, lower educational attainment) (Bradley and Corwyn, 2002).

Notes

1 The per cent of 'income-poor' (60 per cent-poverty line) homeowners ranges from 19.7 per cent for Germany and 30.1 per cent for The Netherlands to more than 80 per cent in post-socialist member states (own calculations, *EU-SILC 2009*).

2 Although the elasticity of new housing supply varies cross-nationally (OECD, 2011), construction of new housing usually lags behind and in many European countries, fell sharply after 2007 (EMF, 2009).

3 We use the modified OECD-equivalence scale: a weight of 1 is attributed to the first adult in the household, each additional adult is given a weight of 0.5, and each child younger than 14 years of age is attributed a weight of 0.3.

4 Housing cost = (unequivalized housing cost − housing allowances)/(unequivalized household income − housing allowances). The combination of housing costs with housing quality was suggested by an anonymous reviewer.

5 For *owners*, housing costs include mortgage interest payments (net of any tax relief), structural insurance, mandatory services and charges (sewage removal, refuse removal, etc.), regular maintenance and repairs, and taxes. For *renters*, housing costs include rent payments, gross of housing benefits

(i.e. housing benefits included), structural insurance (if paid by the tenants), services and charges (sewage removal, refuse removal, etc.) (if paid by the tenants), taxes on dwelling (if applicable), regular maintenance and repairs.

6   Including household income expressed in PPPs as an alternative indicator for the household's level of resources has a similar effect (results available on request).

7   As a first step, an empty model is estimated to check whether there is significant variation at the country level. This is indeed the case for all dependent variables ($P < 0.001$). To calculate the Intraclass Correlation Coefficient (ICC), we use the latent variable approximation, as suggested by Snijders and Bosker (1999) $\left(ICC = \frac{\sigma_u^2}{\sigma_u^2 + \pi^2/3} \right)$ (see Tables).

8   EU-SILC provides information on rental costs for renters, but not on mortgage costs for owners.

Supplementary Data

Supplementary data are available at *ESR* online.

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