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# The political economy of housing in England

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## ABSTRACT

Problems of housing affordability have been afflicting parts of the UK, especially the South East of England, for a number of years. The problem is closely related to shortages in housing supply, which are, in turn, largely associated with constraints imposed by the English land planning system. A leading theory for explaining these constraints posits that they reflect political economy forces that convey the interests of current homeowners to planning decisions in disproportionate and excessively influential ways. We test this theory by examining survey data on public attitudes to house building in local communities; and by investigating whether these attitudes are related to local planning decisions. We find that there is a tendency for owner-occupiers to express greater opposition to local house building and that, in the decade to 2011, the housing stock grew significantly less in local authorities with higher proportions of owner-occupiers among local households. The results suggest the risk that planning decisions might have been distorted in favour of current homeowners is real and economically significant. We discuss a range of historical, socio-economic and policy trends that help explain why successive governments of various stripes have been reluctant to address head-on problems in housing supply and put a curb on house prices.

## KEYWORDS

Housing supply; political economy; housing affordability; homeownership

## JEL CLASSIFICATIONS

H54; O52; R14; R31; R52

## 1. Introduction

Problems of housing affordability have been afflicting parts of UK for a number of years and are especially acute for families with low-to-modest incomes (Barker 2004).<sup>1</sup> The growth and volatility of real house prices over the last 40 years in the UK are among the top of the Organisation for Economic Co-operation and Development rankings (Figure A1). The size of new houses has been decreasing and is now smaller than in many other advanced economies such as the Netherlands, Germany and the USA, where house prices are also cheaper than in the UK.<sup>2</sup>

More than 3.3 m adults between the ages of 20 and 34 were living with parents in 2013 – more than a quarter of the total – according to data from the Labour Force Survey.<sup>3</sup> Among those who have afforded to buy a house, it has been estimated that the number of households struggling to keep up with their mortgage payments is likely to double to 2.3 million by 2018 under a scenario of small, gradual interest rate rises as suggested by the Bank of England (Blacklock and Whittaker 2014).<sup>4</sup>

The problem is intimately related to shortages in housing supply (e.g. Barker 2004, 2006, Allmendinger *et al.* 2005, Bramley and Leishman 2005, Hilber and Vermeulen 2010, Caldera and Johansson 2013, Hilber 2015). In the 19 years from 1969 to 1989, over 4.3 million houses were built in England,

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while in the 19 years from 1994 to 2012, despite significant acceleration in population growth, fewer than 2.7 million houses were built.<sup>5</sup> England's population is projected to grow by around 7 million over the next 20 years, driven by high birth rates, increased life expectancy and net inwards migration.<sup>6</sup> Given recent patterns of household formation, it has been estimated that we need to build around 240,000 homes a year to accommodate this increase (Holmans 2013). Yet, we have only built an average of 137,000 homes per year over the last 10 years.<sup>7</sup>

Existing empirical evidence suggests that shortages in housing supply are associated with constraints imposed by the English (land) planning system.<sup>8</sup> 'Planning' is used here in a relatively broad sense to include: (i) national policy set out in planning acts and planning policy statements; (ii) local plans and development control practice and (iii) other policies and processes (e.g. those related to the provision of infrastructure) that affect the fulfilment of planning conditions.

A leading theory for explaining these constraints posits that they reflect the interplay of political economy forces underlying the housing market, such that the interests of current homeowners are disproportionately represented and excessively influential in planning decisions (e.g. Cheshire *et al.* 1992, Fischel 2001, Glaeser *et al.* 2005, Hilber and Robert-Nicoud 2013). Some of the key features of the English planning system, and the wider institutional environment where it operates, are likely to exacerbate that problem. Among the existing evidence we review in this paper, three such features stand out: (i) weak or absent city-wide/regional planning coordination; (ii) high fiscal centralisation and (iii) 'development control' (i.e. any change of land use being subject to planning permissions rather than to a general set of rules).

While political economy explanations of housing supply shortages in England have been proposed before (e.g. Evans 1991, Pennington 2002), they have not, as far as we are aware, been exposed to systematic empirical testing. This paper seeks to address this gap. We do it in three steps.

First, we discuss a set of historical, background trends in public attitudes towards homeownership, government policy and the economy that were highly influential in shaping the current political economy landscape around housing in England: for example, the long-term rise of homeownership, especially in the second half of the last century, incentivised by an array of policy initiatives; the decline in the construction of council houses in the 1970s; the vast increase in the market value of the housing assets of the middle classes from the late 1970s onwards, and with it, the spreading of perceptions in the electorate that homeownership is a golden ticket for individual prosperity; the ever greater reliance of the financial sector on property prices; and the rise of local community opposition to house building. These trends help to explain why successive governments of various stripes have been reluctant to address head-on problems in housing supply and, thus, put a curb on house prices.

Second, we use survey data on public attitudes to local housing development to examine (partial) correlations between opposition to house building and a series of social, demographic and political features that characterise the survey respondents.

Third, we investigate if those attitudes/preferences have an impact on local planning decisions. This involves multivariate regression analysis of the empirical association between the growth of the housing stocks in 349 English local authorities, between 2001 and 2011, and a range of variables capturing the proportion of local households who are owner-occupiers; the proportion of local developable land; local electoral results; and various economic, demographic and regional controls. Our central finding is that, in the decade to 2011, the housing stock grew significantly less in local authorities with higher proportions of owner-occupiers among local households. This suggests the risk that planning decisions might have been distorted in favour of current homeowners is real and economically significant.

The paper is organised as follows. The next section presents a brief review of historical shifts in public attitudes to housing, as well as economic, social and policy trends that have come to shape the political economy of housing in England. Section 3 examines the origins of the rise in house prices from the perspective of market fundamentals of supply and demand. Planning restrictions are found to play a dominant role in house price increases in certain parts of England, so Section 4 starts our investigation of the root causes of these restrictions, examining the theory behind

opposition to local housing development. Section 5 uses an empirical approach to address the same question. It briefly reviews the existing literature and presents our own empirical analysis. Section 6 offers some concluding thoughts.

## 2. The political economy of housing in England: long-run social and political trends

Homeownership was on the rise for most of the twentieth century, especially from 1953 onwards. It has been the dominant form of tenure since the early 1970s.<sup>9</sup> A succession of governments encouraged and protected homeownership, which was seen as core to the interests and aspirations of the general public, and was increasingly relied upon as a model of private asset-based welfare, and a vehicle for financialised growth strategies (e.g. Kemeny 2005, Schwartz and Seabrooke 2008, Watson 2008, Ansell 2014, Montgomerie and Büdenbender 2015). A wide range of policy instruments were used to help people buy a home. Some of the most significant examples include mortgage tax relief (which has since been abolished); capital gains tax relief; high loan-to-value ratios; no imputed rental incomes; a regressive local property (council) tax and the 'Right to Buy' scheme that helped tenants to buy their local authority home at a discount. Crucially, most of these initiatives focused on increasing affordability through favourable tax treatment of homeownership and improving access to credit, rather than increasing housing supply.

From the late 1970s onwards, the rise in homeownership met an increasingly unresponsive housing supply. Challenging economic conditions in the early 1980s imposed hard fiscal constraints on local authorities, which found it increasingly difficult to finance the building of new social housing. The election of Margaret Thatcher as British Prime Minister in 1979 brought important changes in the political approach to social housing (e.g. through the 'Right to Buy' scheme) and to the post-war intention to address the bulk of housing needs with public sector-led urban regeneration programmes and by constructing new and expanded towns. At the same time, lack of effective regional planning coordination left local authorities to pursue mostly defensive, negative planning policies.

Property prices soared in England between 1982 and 1989 – approximately 80 per cent growth in real terms.<sup>10</sup> They fell sharply but briefly from 1989 to the mid-1990s (about 40 per cent in real terms), and then increased again dramatically till the great recession in 2008 (about 150 per cent in real terms). With soaring house prices came large increases in wealth for a vast number of homeowners, which is likely to have contributed to disseminating the idea that homeownership is a ticket for individual prosperity and that 'getting on the housing ladder' is of utmost importance.

Data from the 2010 British Social Attitudes (BSA) survey on public perceptions about homeownership suggested that the vast majority of the public would prefer to buy a house then to rent. The most-commonly cited advantage of ownership is that it represents a good investment.<sup>11</sup> With respect to problems of affordability and how government might try to address them, most of the public seemed to think that government should give financial assistance to first-time buyers and increase access to mortgages.<sup>12</sup> In the 2010 BSAS, overall, those who opposed building more homes in their local areas seemed to outnumber those who supported it.

The rise of homeownership, together with strong increases in real house prices in parts of the country, has led to the creation of very strong ties between the housing market and the macro economy. Property prices have become critical to individuals' long-term financial security, access to credit and consumption. The performance of the housing market has also become important to the health of the UK financial system, since about 80 per cent of the lending of UK banks supports household mortgages or commercial property (Turner 2014).

The weight of homeowners in the electorate, the shape of public preferences about homeownership and housing policy and the close ties with the macro-economy help to explain why successive governments have exhibited an ambivalent approach to easing supply restrictions and putting a curb on house prices. It is an ambivalence that cuts through the (conflicting) views and interests of the electorate itself, and that is compounded by the potential effects on the performance of the economy as a whole.

In his 2014 Mansion House Speech, the Chancellor of the Exchequer, Osborne, was particularly candid in his remarks about these contradictions:

The challenge is that we want several things which don't sit comfortably together. For most people, their home is the biggest investment of their lifetime. And, of course, they want that asset to increase in value over time. But a home is also a place to live and build our lives – and we want all families to be able to afford security, comfort and peace of mind. That means homes have to be affordable – whether you're renting or buying. The only way that can be achieved over the long term is by building more, so supply better matches demand. But we are a small and crowded island, keen to protect our green spaces and ready to object to new development. So the British people want our homes to go up in value, but also remain affordable; and we want more homes built, just not next to us. You can see why no one has managed yet to solve the problems of Britain's housing market. (Extract from Osborne 2014)

Governments of various stripes have also been struggling to find a sensible balance between fostering a balanced representation of interests in planning decisions, which requires some form of regional/national planning coordination, and ensuring that planning decisions are accountable to local communities. The planning reforms adopted by the 2010–2015 coalition government are a case in point. When that administration came into power in 2010, it took a number of steps to implement a 'localism' agenda, including returning power to local government to determine housing need and abolishing centrally determined 'targets'; dismantling the regional planning apparatus; and strengthening community control through 'neighbourhood development plans' and 'neighbourhood development orders'. Two years later, however, the Government introduced changes to planning rules pulling in the opposite direction. The National Planning Policy Framework (NPPF), published in March 2012, included a highly controversial 'presumption in favour of sustainable development', calling on authorities to adopt the default position of granting planning permission unless there is clear cause not to. It signalled the return of an element of strategic leadership above the local level (Gallent *et al.* 2013).

In July 2015, the Conservative Government announced additional reforms to the planning system designed to streamline and speed up local planning processes; intervene in those local authorities that fail to produce a timely plan to accommodate future housing need; strengthen cooperation between local authorities; use development corporations to deliver higher density development in commuter transport hubs; give new planning powers to mayors and combined authorities and create a 'zonal system' for statutory registers of brownfield land, which will be granted automatic planning permission (HMT 2015). Taken together, these reforms represent a significant departure from the 'localism agenda' of 2010 of the previous government.

### 3. The problem: housing supply and planning constraints

With relatively abundant land, relatively flexible land regulation and little binding topographical constraints, one would expect the supply of urban land to be more or less perfectly elastic and house prices to be mainly driven by construction costs, so that they would be stable or even slightly decreasing in the long run owing to technical progress in the construction industry (Glaeser *et al.* 2008, Cheshire *et al.* 2014). This is consistent with evidence from long-run trends in house prices in countries where the supply of land is relatively flexible, for example, Germany, Switzerland and parts of the USA (Figure A1). It is also in line with the experience of England and Wales until the late 1960s (Figure A2). Between 1892 and the last pre-WWII population census in 1931, there was a 61 per cent increase in household numbers and a 25 per cent increase in real household incomes, but no increase in the real price of housing land. The construction of transport systems – suburban railways and roads – and other infrastructure, expanded usable urban land supply at a more or less constant real cost.

This contrasts markedly with the post-war experience, after development control was enacted in 1947. Between 1955 and 2008, real house prices increased by a factor of 4.5 (mainly since 1971). This

growth was intimately related to the changes in the real price of housing land, which in the same period increased by a factor of 12.3 (Cheshire *et al.* 2014).

In most local areas in England, the effects of physical constraints (e.g. scarcity of developable land, presence of steep slopes or flood plains) on house prices is generally small (Hilber and Vermeulen 2010). In the most urbanised areas, lack of developable land is important, but regulatory restrictions (in the form of height restrictions) also play a significant role in constraining development. The Foresight Land Use Futures (2010) showed that 9.95 per cent of England was in urban development, almost half of this in the form of parks or gardens. Domestic and industrial and commercial buildings accounted for just 1.8 per cent of England's surface.

Rising house prices in England have been found to be mainly driven by supply constraints associated with the planning system (Barker 2004, 2006, 2008, Allmendinger *et al.* 2005, Bramley and Leishman 2005, Nickell 2009, Hilber and Vermeulen 2010, Caldera and Johansson 2013). The perverse effects of urban containment policies were noted as early as 1973 (Hall *et al.* 1973), and were put under the spotlight by an independent review of UK housing supply commissioned by the Labour Government in 2003, which concluded that 'the underlying constraint on housing is the supply of land' (Barker 2003: 10).

In explaining what drives this constraint, the Barker Review drew attention to the planning system and its influence over the amount of land which is made available and the delivery of necessary infrastructure; the increasingly complex nature of sites (especially brownfield), where significant remediation might be required; the complexities of land ownership and difficulties in site assembly where ownership is fragmented; weak local incentives to develop land; and the politically contentious nature of land use at the local level (local communities often worry about the possible loss of open space, the changing nature of their town or village, potential impact of development on property values, and increased pressure on infrastructure and local services). The Review also noted that, with limited land supply, competition in the house building industry tends to focus on land acquisition rather than on satisfying consumers. Its profitability depends on obtaining valuable land rather than building high-quality homes.

In 2012, a study of the impact of restricting housing supply on house prices and affordability, commissioned by the now extinct National Housing and Planning Advice Unit, investigated the causal role of English planning policies in raising the price of housing, controlling for the effects of physical restrictions on land supply such as areas of water and the fact that land is already developed or is unbuildable for other reasons such as its steepness (Hilber and Vermeulen 2010). The study concluded that, while the effects of physical restrictions are significant, their contribution to variations in house prices is small relative to variations in planning restrictiveness across local authorities. According to their central estimates, if the South East, the most regulated English region, had the regulatory restrictiveness of the North East, the least restrictive English region but still highly regulated in an international context, house prices in the South East would be approximately roughly 25 per cent lower.

In 2014, Sir Michael Lyons led a review charged with setting out the changes to housing and planning policies required to deliver these new homes. The review concluded that 'artificial scarcity of land' for housing had created distortion in the land market. It issued a variety of recommendations designed to strengthen the responsibility of councils to identify sufficient land for new homes in local plans (including interventions of the planning inspectorate if they failed to do so), while ensuring that their ability to deliver these plans was also improved (e.g. through increased devolution of funding).

The sharp increase in house prices in England over the last 40 years cannot be attributed to supply factors alone. Increases in real income combined with declining long-term real interest rates, easing in credit conditions (until the Great Recession), population growth (including immigration) and household fragmentation are all likely to have played important roles in increasing demand and in driving up house prices (e.g. Barker 2008). But the failure of supply to accommodate the increase in demand was ultimately the dominant driver of the increase in real house prices and rents.

#### 4. Opposition to housing development: the theory

The prevailing message so far is that restrictive planning approaches in some part of England, and in the last few decades, are likely to be important in explaining rigidities in housing supply in those areas and, as a result, increases in house prices. This, of course, raises the question of what is driving those planning constraints. We now turn to this question, reviewing the theory that underpins opposition to housing development.

New development may impose costs on local residents, some temporary (e.g. short-term disruption associated with the construction phase), some permanent (loss of amenities, congestion of local facilities and infrastructure) with negative knock-on impacts on property values.<sup>13</sup> If these costs materialise,<sup>14</sup> they tend to be localised and of a significant magnitude for those who bear them – typically local residents (especially owner-occupiers) who might feel that they would lose out from development, and who are easily mobilised and politically empowered to block development. The gains from new development are usually dispersed, small, and uncertain from an individual perspective – mostly would-be house-buyers, many of whom are not yet local voters, as well as renters who tend to be a minority alongside owner-occupiers.

These asymmetries have important consequences. First, local support for development is likely to be sensitive to the costs that it imposes on local communities, especially when there is no compensating mechanism in place (e.g. Fischel 2001). Second, planning decisions made exclusively at the local level may fail to allow for the full range of interests affected by development, and increase the risk of property rights re-allocation to existing homeowners.<sup>15</sup> Third, local planning controls may have impacts on the demand for land and housing in other (usually neighbouring) areas, leading local authorities to engage in non-cooperative, strategic interactions to the detriment of regional and national prosperity (Brueckner 1995, Helsley and Strange 1995). There are a number of features of the governance of housing supply in England that are likely to exacerbate these problems.

Planning decisions in England are mostly devolved to local authorities. It is not their role to initiate development but to designate preferred amounts, types and locations of dwellings, through formal planning frameworks and associated statements of policy, which are nested within a national planning policy (now unified as the NPPF), and until recently, a range of regional strategies. Developers apply for planning permissions for schemes they wish to initiate. Their applications are evaluated by local authorities through the process of development control, which where ‘local planning principles and politics are played out’ (Ball 2010: 12).

Direct ‘affected party’ consultation is an important component of English development control, much more so than in many other countries where it is limited to the plan formulation stage, or not even contemplated at all. Consultation usually involves local people and a variety of agencies in the assessments of planning applications. A series of discussions take place with developers, who may have to resubmit proposals, or appeal to planning inspectors, before being given final approval. Some will have their schemes rejected altogether (Ball 2010).

In the English planning system, any change of land use legally defined as ‘development’<sup>16</sup> is subject to development control and requires individual planning permission. This stands in stark contrast to the planning principles of some other countries such as the Netherlands, Germany and the USA where developers have the legal right to put their plans in practice with only administrative approval, and without the need to seek ‘development permission’, as long as these plans conform to the requirements set down by planning regulations for the particular site.

Development control has been found to promote uncertainty and delays, raising the expected returns that developers require for a project to be viable, and rendering the supply of housing less ‘price elastic’ (Pendall 1999, Mayer and Somerville 2000, Mayo and Sheppard 2001, Ball and Allmendinger 2008, Killian and Pretty 2008, NAO 2008). The complexities and uncertainties associated with development control also seem to have important implications for the structure and behaviour of the construction industry. It is likely to incentivise developers to build up land banks; it increases the

number of planning applications required for a given level of output; it slows their response to increases in demand; and it acts as a disincentive for market entry and therefore damages competition in the sector (e.g. OFT 2008, Ball 2010).

England has a highly centralised fiscal system which offers few explicit incentives for local authorities to facilitate urban development. Local authorities have statutory obligations to provide services for new residents, but receive little direct return from them to their tax revenues. Around 23 per cent of budgeted revenue expenditure of English local authorities in 2013–2014 is estimated to be funded through council tax (Young 2013). Evidence from other countries (e.g. Bassett and Malpass 2013, Monk *et al.* 2013)<sup>17</sup> suggests that this plays an important role in shaping the willingness of local communities to accommodate development.<sup>18</sup>

There have been attempts to capture some of the ‘planning gain’ that comes with changes in land designation. ‘Section 106’ agreements require developers to commit to providing community benefits such as infrastructure, open space and/or low-cost homes in the development, in return for planning permission. The Community Infrastructure Levy (CIL) allows local authorities in England and Wales to charge a fee on new developments to support development by funding infrastructure that the council, local community and neighbourhoods want, like new or safer road schemes, park improvements or a new health centre (Smith 2014). Yet, ‘Section 106’ and CIL capture a relatively small part of the value uplift that arises from granting planning permission, involve high transaction costs and their application has raised concerns about transparency, predictability and consistency (Nickell 2009, Mirrlees *et al.* 2011, CLGC 2014).

In 2011, the coalition government introduced a ‘New Homes Bonus’ scheme aimed at encouraging local authorities to grant planning permissions for the building of new houses in return for additional revenue (Wilson 2015). The National Audit Office published a report on the impact of the New Homes Bonus in March 2013, where it noted that, while it was too early to assess whether the scheme would increase house building, it had found ‘little evidence that the Bonus had yet made significant changes to local authorities’ behaviour towards increasing housing supply’, and that it had ‘mainly rewarded home creation that was not incentivised by the Bonus’ (NAO 2013: 11).

England is also an outlier in having weak regional layers of planning governance. This promotes political fragmentation, which has been found to have important impacts on several dimensions of urban development, including density, the spatial extent of urbanised land area and property values (Fulton *et al.* 2001, Glaeser *et al.* 2001, Carruthers, 2002, 2003, Carruthers and Ulfarsson, 2002, Searl and Fillion 2011). For example, it has been estimated that since the abolition of ‘regional spatial strategies’ in 2010, there has been a reduction of about 8 per cent of land previously allocated for housing with the largest reductions occurring in the highest-demand regions (Morton 2012).

International experience suggests that attempts to make housing supply more responsive to demand and to create more sustainable development patterns involved some degree of rebalancing of planning powers from the local to the state level. The triggers for reform included competitive pressures between cities striving to attract investment; increasing influence of the development industry on state governments and rising public concern regarding the economic and environmental sustainability of urban sprawl.<sup>19</sup>

## 5. Opposition to housing development: the empirical evidence

The previous section discussed features of the governance of land in England that are likely to have an impact on planning decisions and, therefore, on housing supply. After briefly reviewing existing empirical studies of the drivers of land-use regulation, this section presents new empirical evidence around political economy drivers of planning restrictions in England.

It has been noted that residents may object to proposed housing developments for many reasons: the particular design of a structure; effects on neighbourhood character; added traffic; the possibility of ‘undesirable’ people moving in to the neighbourhood; effects on public services or loss of open



space. Most of these motives are linked to concerns about local property values (Haselhoff and Ong 2007).

Yet, very few empirical studies focus on individual motivations underpinning opposition to housing development. The classic reference is Pendall (1999). It examined 182 development projects in the San Francisco Bay Area in the 1980s and tried to identify aspects of proposals, sites, surroundings or processes that tended to be associated with protest. He found that affordable housing and multi-family developments were most likely to cause opposition, but the explanatory power of his models was weak.

There is, however, a flourishing theoretical literature focusing on the drivers of planning restrictions which has been expanding to include empirical tests. These tests are almost exclusively focused on North American cities and the results are still widely contested. Some of the variables that have been studied include population growth/density (e.g. Bates and Santerre 1994, Evenson and Wheaton 2003, Glaeser and Ward 2009), income (e.g. Pogodzinski and Sass 1994, Evenson and Wheaton 2003, McDonald and McMillen 2004), local political ideology (e.g. Kahn 2011) and homeownership rate (e.g. Dubin *et al.* 1992, Clingermyer 1993, Pogodzinski and Sass 1994, Brueckner 1998, Glaeser and Ward 2009, Gordon 2009).

Another strand of literature has focused instead on homeowners' support/opposition to individual projects or policy initiatives that are perceived to have an impact on property values. These studies have tended to find support for the hypothesis, discussed in Section 1, that local planning decisions are likely to be influenced by the interests of homeowners in protecting the value of their houses (e.g. Brunner *et al.* 2001, Brunner and Sonstelie 2003, Dehring *et al.* 2008, Hilber and Mayer 2009, Ahlfeldt and Maennig 2012). The influence of pressure groups other than resident homeowners has only been tested in a handful of cases (e.g. Lubell *et al.* 2005, Glaeser and Ward 2009, Solé-Ollé and Viladecans-Marsal 2011, Hilber and Robert-Nicoud 2013, Schone *et al.* 2013). Tests of strategic interactions/non-cooperative behaviour between local planning units are even scarcer (e.g. Brueckner 1998, Schone *et al.* 2013).

As far as we are aware, similar research focused on the English housing market is confined to exploratory work by Hilber *et al.* (2014), and a small number of case studies of the English countryside, offering anecdotal evidence that planning processes have been subverted in ways that favour the exclusionary preferences of certain groups (e.g. Sturzaker 2010, Powe and Hart 2011). There is also some qualitative evidence suggesting that interests represented at the local level (parish councils in particular) are likely to be skewed towards those of property owners and older residents (e.g. Gallent and Robinson 2012, Gallent *et al.* 2013).

Ball (2010), for example, presents evidence from interviews with planners in four local authorities in England, where there are reports that:

new house building in middle-class neighbourhoods, or in what were seen locally as areas of 'architectural interest and heritage', was vociferously opposed and local meetings well attended. It was stated that although there was local sympathy with the issue of housing need, there was little direct support for the need to build new housing. For many people the link between local housing affordability and housing supply was not clear. It was difficult to get individuals to share a common ground – for many people these issues appeared to relate to their own pre-conceived ideals. (Ball 2010: 64)

There is, however, little systematic, quantitative evidence around these issues. To help fill this gap, we used data from the 2010 BSA survey – the first to include a detailed section on housing – to investigate the drivers of opposition to development, and in particular, possible associations with social, economic, political and individual characteristics. The BSA is an annual survey conducted by NatCen which interviews over 3000 adults in the UK on a number of topics, using a random probability sampling technique to arrive at a representative sample. In the 2010 BSA survey, 29 per cent of respondents supported more homes being built in the local area while 46 per cent opposed and 23 per cent neither supported nor opposed. Support was particularly high among those renting from a local authority (46 per cent) or from a housing association (47 per cent), followed

by private renters (33 per cent), and particularly low for homeowners (just 23 per cent support). Interestingly, the proportion of private renters that opposed development (36 per cent) was greater than the proportion that supported it (33 per cent).<sup>20</sup>

Our aim was to test for significant correlations between background characteristics of respondents and their attitudes towards house building. We ran a probit regression model where the question 'Would you support or oppose more homes being built in your local area?' was used as a dependent (binary) variable (OppHom), which took the value '1' if respondents 'oppose' or 'oppose strongly' homes being built in their local area.<sup>21</sup> The independent variables in our model include dummies for owner-occupiers ('1' if the respondent was a homeowner and '0' otherwise); political party preference (Labour and Conservative preferences based on the question 'Do you think of yourself as a little closer to one political party than to the others?'); as well as controls for age, income and geographical location.<sup>22</sup> Age and income were also treated as categorical variables to test for robustness of results. The analysis was performed using sampling weights provided by the BSA to correct for the probability of certain sections of the sample being overrepresented.<sup>23</sup> The results are presented in Table 1.

Owner-occupiers, party preferences, and residence in a big city were all found to be statistically significant. With all other variables at their respective means, the probability of opposition to house building increased from 37 to 50 per cent if the respondent was an owner-occupier. Preferences for the conservative party were associated with a higher probability of opposition (from 44 to 50 per cent), while respondents with Labour party preferences were less likely express opposition to local housing development (from 48 to 41 per cent), as were respondents from big cities (down to 36 from 47 per cent).

We replicated our analysis with data from the 2013 BSA survey. The results need to be interpreted with caution since the question on opposition to house building, in this case, applies to a much smaller sample (~1000). Owner-occupiers were still found to be significantly associated with a higher probability of opposition to local house building, but none of the other explanatory variables was robustly significant. The lack of significance of the political variables is particularly interesting, as it could suggest increasing cross-party support for house building.

All in all, these findings lend some empirical support to the hypothesis that homeowners are more likely to be sensitive to anything that might have an impact on the value of their houses and, therefore, more likely to oppose local housing development. The next step is to investigate whether, in practice, this actually matters, that is, whether homeowners' preferences and interests influence local planning decisions. If they did, this would raise concerns about the range of interests reflected in local planning, and thus, their political legitimacy.

**Table 1.** Probit regression results.

Number of observations = 2795						
Wald $\chi^2(8) = 85.02$		Prob > $\chi^2 = 0.0000$				
Prob > $\chi^2 = 0.0000$		Pseudo $R^2 = 0.0298$				
Log pseudolikelihood = -1904.7616						
OppHom	Coef.	Std. err.	Z	P > z	[95% conf. Interval]	
Age	0.002	0.002	1.210	0.227	-0.001 0.005	
Owner-Occupier <sup>a</sup>	0.344	0.065	5.300	0.000	0.217 0.471	
High Income	0.012	0.061	0.200	0.845	-0.107 0.131	
Conservative <sup>b</sup>	0.143	0.067	2.130	0.033	0.011 0.274	
Labour <sup>b</sup>	-0.165	0.067	-2.470	0.014	-0.297 -0.034	
Big City <sup>b</sup>	-0.289	0.118	-2.440	0.015	-0.521 -0.057	
Small City	-0.033	0.070	-0.480	0.633	-0.171 0.104	
Suburbs	0.072	0.079	0.920	0.358	-0.082 0.226	
__cons	-0.403	0.115	-3.520	0.000	-0.628 -0.179	

<sup>a</sup> $p < .01$ .

<sup>b</sup> $p < .05$ .

Some might argue that whole point of having local authorities is precisely to ensure that land-use regulation reflects the preferences and interests of local residents. There are, however, three fundamental problems with this view. First, in such a world, the interests of prospective buyers and renters, who by definition are not local residents, would tend to be ignored. Second, pure local accountability would amount to a fundamental change in the terms and conditions that underpinned the transfer of property rights to the original owners of the local housing stock many years ago. For most of the second half of the last century, there was an expectation that housing supply would respond to increases in demand, through publicly led urban regeneration development and the creation of new cities. This expectation was reflected in property prices. Changing social contract so that the planning system becomes purely accountable to local residents would amount to a fundamental redistribution of property rights, across tenures and across generations. Third, where homeowners oppose local housing development because of concerns about lack of accompanying investment in infrastructure and public services, it would still be the case that planning decisions responding to those fears would be more a by-product of policy failures than outcome of a healthy local democratic process.

We took these issues to the data, investigating the drivers of English local authorities' willingness to expand their residential dwelling stock. We tested the empirical association between the growth of local dwelling stocks (our dependent variable) and a range of variables, including: the proportion of local households who are owner-occupiers; the proportion of local developable land (i.e. land that is not already built nor subject to administrative or natural restrictions – e.g. greenbelts and national parks); local electoral results; and a series of economic, demographic and regional controls.

The empirical tests are based on ordinary least squares (OLS) regressions using a cross-section of up to 349 English local authorities.<sup>24</sup> The explanatory variables are measured in or around 2001. The growth of local authorities' dwelling stock (our dependent variable) covers the 2001–2011 period. Variable definitions, descriptive statistics and details of their spatial distribution are presented in the [Appendix](#).

Before we discuss our results, our choice of dependent variable bears some further elaboration. We have used the growth of the dwelling stock in local authorities as an indicator of the willingness of local authorities to allow their housing stock to expand, and therefore, as an indicator of local authority regulatory restrictiveness. One obvious alternative would be to use the rejection/refusal rate of planning applications at the local authority level, but this has two important limitations. First, there are a significant number of local authorities in our data where both the refusal rate and the growth of their dwelling stock are relatively high (Figure A3). In other words, high refusal rates *per se* do not imply high restrictiveness, defined as relatively low willingness to accommodate further housing development in the local area. For a given number of planning applications, local authorities can adjust their refusal rate so as to achieve the amount of development they are willing to accept. Second, the planning application data available does not contain information on the exact number of new dwellings that were submitted to a local authority, but only on the number of applications that concerned 10 or more dwellings (so-called 'major residential planning applications'). Differences in the average number of dwellings per planning application between local areas could distort comparisons of refusal rates across different local authorities.

Our main results are presented in [Table 2](#). They suggest that there is a negative, statistically significant association between the proportion of owner-occupiers among local households and the growth of local authorities' dwelling stock. The magnitude of the effect remains stable across a range of specifications and the variable is always significant at the 1 per cent level. In (2), our benchmark model with region-fixed effects, a 10 percentage point higher proportion of homeowners is associated with a 1.2 percentage point lower dwelling stock growth between 2001 and 2011 (average growth was 8.75 per cent). This is about a third of a standard deviation in dwelling stock growth, which is a non-trivial effect.

The estimate of the coefficient for our indicator of developable land is statistically significant and positive. A 10 percentage point higher proportion of developable land is associated with

**Table 2.** OLS regression results.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Owner-occupier households	-11.59*** (1.694)	-12.16*** (1.954)	-14.08*** (2.224)	-14.53*** (2.293)	-11.46*** (2.143)	-14.01*** (2.028)	-11.85*** (2.042)
Developable land	4.614*** (0.573)	4.772*** (0.609)	4.658*** (0.614)	4.740*** (0.623)	4.599*** (0.635)	4.576*** (0.623)	4.659*** (0.624)
Planning applications relative to dwelling stock	1.193*** (0.102)	1.104*** (0.107)	1.107*** (0.106)	1.094*** (0.108)	1.114*** (0.111)	1.025*** (0.111)	1.075*** (0.109)
Structurally not controlled local authorities	0.963** (0.448)	0.951** (0.439)	1.029** (0.440)	1.037** (0.440)	0.874* (0.470)	0.828* (0.444)	0.891** (0.449)
Household density			-0.0382 (0.0233)	-0.0387* (0.0233)			
Median income (log)				1.144 (1.424)			
Labour controlled local authorities					0.146 (0.491)		
Conservative controlled local authorities					-0.321 (0.422)		
Region dummies	No	Yes	Yes	Yes	Yes	Yes	Yes
Constant	10.16*** (1.230)	11.92*** (1.568)	13.85*** (1.927)	3.133 (13.47)	11.57*** (1.699)	13.84*** (1.653)	11.76*** (1.642)
Observations	349	349	348	348	331	319	333
R <sup>2</sup>	0.434	0.485	0.491	0.492	0.473	0.465	0.472

Note: Standard errors are in parentheses. All regressions run using linear OLS with dwelling stock growth as the dependent variable. Our benchmark results in (1) are robust to the inclusion of region-fixed effects in (2), density in (3) and income in (4). In (5), we include categorical variables for districts that have been controlled by one of the major parties for 8 or more years between 1998 and 2008. In (6), we drop districts with very low growth and low refusal rates. In (7), we drop districts with high growth and low income. The results stay broadly unchanged.

\*  $P < .1$ .

\*\*  $P < .05$ .

\*\*\*  $P < .01$ .

approximately 0.47 percentage point higher dwelling stock growth. As we move from low to high shares of developable land, we are usually moving from local authorities characterised by dense urban areas to local authorities composed of rural villages and/or small cities surrounded by countryside. There are various possible interpretations for this association. For example, local authorities where land is relatively abundant (i.e. where there are greater opportunities for greenfield development) could face less community opposition than local authorities that rely more on infill development. The correlation could be reflecting the fact that it is technically more challenging (and, thus, more expensive) to build in densely populated areas. It could also be capturing the interests/lobbying of owners of undeveloped land (e.g. Hilber and Robert-Nicoud 2013). Our model does not shed light on the merits of these different interpretations, so we remain agnostic about the exact nature of this association, but decide to keep the variable in the model as a control.

We have also controlled for the degree of local authority attractiveness measured by the number of planning applications received relative to the local housing stock. This variable is statistically significant and positive, with a unit increase associated with 1.1 percentage points higher growth. Again, we can only speculate about the mechanisms underpinning this correlation. It could be that local authorities receiving higher numbers of planning applications (relative to their dwelling stock) have options to grow in ways that other local authorities do not, for example, by tapping into a wider pool of high-quality planning applications. In contrast, one might expect property owners in more attractive local authorities to have stronger incentives to oppose development, which would support a correlation in the opposite direction – that is, all else being constant, the growth of the local dwelling stock in more attractive local authorities would tend to be smaller than in other areas. As in the previous case, we include the variable in the model as a control.

We also introduced a range of other controls in (3) and (4) (e.g. household density and income) which turned out not to be significant or only marginally so.

The results for our political variables suggest that there might be a positive difference in dwelling stock growth between the group of local authorities that have remained mostly under no overall control by any one party between 1998 and 2008 vis-à-vis other local authorities. All else constant, local authorities in the former group are associated with approximately 1 percentage point higher growth. We also introduced dummies for local authorities controlled by either of the two parties (5) and found that these do not seem to have a significant association with growth, suggesting that it is control that matters, not political complexion. We should note, however, that these are tentative results, which depend on the way political control is defined/measured.<sup>25</sup> Also, at this stage, we could only speculate as to the intuition behind this association.

We ran a series of robustness checks. We dropped from our sample (6) districts that had simultaneously low refusal rates and low dwelling stock growth, as these were likely to be relatively depressed areas where dwelling growth was constrained by lack of planning applications. In those cases, our dependent variable is not a good indicator of local authorities' willingness to expand. In (7), we dropped districts with high growth rates and low income to test whether our results were being biased by growth being 'dumped' in low-income areas. Both specifications left our major results unchanged. Additionally, we experimented with small changes to the definitions of our variables (e.g. the benchmark used for the number of years that local authorities where uncontrolled required for them to be classified as such) and also used robust standard errors to correct for possible heteroscedasticity. The pattern of results stayed the same.

All in all, our results show a robust empirical association between homeownership and increases in housing supply. The nature of our analysis is such that it does not enable us to establish a nexus of causality between the two. This is, however, to the best of our knowledge, the first time that such a correlation has been established with UK data.

The results also lend support to the thesis that the amount of developable land available at the local level plays a significant role in the way local authorities are able to accommodate demand for development. This, in turn, highlights the importance of current debates about the effects of greenbelts and the ability of existing cities to expand (Rudlin and Falk 2014). But a more sensible discussion of the impact of greenbelts, and of the trade-offs between greenfield development and environmental values, should be part of a wider debate about density.<sup>26</sup>

## 6. Conclusion and implications

Parts of England (the South East most clearly) are facing a housing crisis. House prices have risen by about 150 per cent,<sup>27</sup> in real terms, between the mid-1990s and 2008. People are being crammed into ever smaller houses, and younger generations are increasingly priced out of the market and forced to live longer with their parents. Huge redistribution has taken place from renters and prospective house-buyers to some groups of homeowners. The rise in house prices has also been identified as a source of financial instability, and drag on business, and an important cause of the increase in the share of income that goes to capital (Rognlie 2015).

The drivers of the increase in house prices are well known. Housing demand has been steadily increasing, fuelled by rising real incomes, population growth (including immigration), household fragmentation, declining long-term real interest rates and easing in credit conditions before the international financial crisis. At the same time, housing supply has largely failed to accommodate the increase in demand. The result is a substantial increase in real house prices and rents.

Our review of the existing evidence, together with new empirical analysis of public attitudes to housing development and local planning decisions, suggests that, in the decade to 2011, supply constraints were the product of important failures in the governance of land in England, which tended to favour the interests of current homeowners. We conclude, in particular, that planning decisions mostly confined to the local level are unlikely to allow for the full range of interests affected by development, especially in the absence of effective city-wide/regional planning coordination. Groups whose interests are not properly catered for include would-be house-buyers, many of whom are

not even part of the local electorate, and renters who tend to be a minority alongside owner-occupiers. The problem is likely to be amplified by the requirement that any change of land use legally defined as 'development' be subject to individual planning permission; and by a highly centralised fiscal system, which does not properly allow for the costs of infrastructure and public services that are complementary to housing development. Moreover, limited competition in the construction industry and incentives for developers to build up land banks are also likely to play a significant role in limiting housing supply (e.g. OFT 2008, Ball 2010).

These shortcomings in the governance of land/construction in England are set against dramatic changes in housing policy and public attitudes to housing development over the last three decades. The 1980s brought an end to major public sector-led urban regeneration programmes and construction of new and expanded towns. At the same time, homeownership became the dominant form of tenure, supported by a long series of demand-side policy interventions designed to help people buy a home – most notably the 'Right to Buy'. Soaring property prices in the 1980s and from the mid-1990s till the international crisis in 2008 brought large increases in wealth for a vast number of homeowners. It helped to consolidate the perception that rising prices are a regular, healthy feature of the English housing market and a barometer of confidence in the economy, and stimulated the impetus to 'get on the housing ladder'. A large part of the electorate took the view that the appropriate response to problems of housing affordability should simply involve government giving more financial assistance to first-time buyers and increase access to mortgages. This was also the time when local community opposition to housing development began to thrive.

The weight of homeowners in the electorate, the shape of public preferences about homeownership and housing policy, and the macroeconomic implications of housing wealth, all help explain why successive governments proved to be ambivalent about intervening to fix the foundations of housing supply, and simply pandering to the interests of current homeowners. They also explain why institutional reform in this area is a particularly difficult enterprise.

That said, there have been signs recently that this political economy landscape might be changing. First, we have been witnessing a structural shift in homeownership, which has been on a declining trend for about two decades (Figure A4), particularly among those born from the mid-1970s onwards (Belfield *et al.* 2014). Second, there have also been signs that voters' preferences might be changing. Survey data indicate that opposition to new homes fell substantially between 2010 and 2013, with 31 per cent of respondents in the BSA survey saying that they would oppose new homes being built in their local area in 2013, compared to 46 per cent in 2010. The data also suggest that the proportion of respondents who supported new house building increased from 28 per cent in 2010 to 47 per cent in 2013. If the decline in homeownership were to continue, it would imply a rebalancing of the electoral weight of groups in different housing tenures, and could lead to increasing political pressure to boost housing supply. Shifts in public attitudes towards housing could act as an additional catalyst for change.

The ultimate aim of this article is to shape the debate about the UK housing crisis. Our core argument is that the obsession with boosting demand through financialisation and tax breaks should be replaced with efforts to better understand the root causes of supply-side bottlenecks. This should be taken as a starting point, however. Many issues deserve further attention. Clearly, we need to know more about the inner workings of the planning system, and disentangle the economic and political factors that are putting a brake on house building. But it is critical this research engage with the way British political institutions constrain the incentives facing local and national politicians. In this respect, the electoral politics of housing is an obvious focus for future studies.<sup>28</sup> In the same vein, scholars should pay more attention to the formation of distributional coalitions in favour and against housing developments. The big question here is whether the shifting political equilibrium – for example, the rise of the so-called 'generation rent' – is actually going to shake the foundations of a highly path-dependent housing regime. This means the new political economy of housing should also focus on the politics of different forms of tenure, including the neglected area of social housing.

Finally, we are fully aware that much of the causal complexity surrounding our story cannot be observed at the level of analysis used in this paper. Our work should, therefore, be supplemented by qualitative case studies delving into the processes mediating public preferences and government policy. This is crucial for validating our findings and developing a more nuanced understanding of the specific mechanisms behind the ongoing housing crisis. Yet, whatever the remaining limitations, there are strong reasons to believe that our findings are not simply capturing a set of spurious correlations. There are, instead, likely to be reflecting conflicting and disquieting forces in the political economy of housing in England, that have not gone unnoticed in Whitehall. In the words of Chancellor Osborne in his 2014 Mansion House speech:

the British people want our homes to go up in value, but also remain affordable; and we want more homes built, just not next to us. You can see why no one has managed yet to solve the problems of Britain's housing market. (Extract from Osborne 2014)

This article seeks to lead a new generation of research aimed at untangling this political economy conundrum.

## Notes

1. In England, the ratio of lower quartile house prices to lower quartile earnings peaked at 7.2 in 2007. In London, this ratio was 9.0 in 2011 (130 per cent higher than 1997) (Keep 2012).
2. Housing Statistics in the European Union 2010 (see Dol and Haffner 2010).
3. Labour Force Survey, Young Adults Living with Parents 1996–2013 (see Demographic Analysis Unit 2014, Office for National Statistics).
4. This would mean that one in four households would face repayment problems if rates rose by steps to a moderate 2.9 per cent by 2018.
5. Department for Communities and Local Government, live tables on house building: <https://www.gov.uk/government/statistical-data-sets/live-tables-on-house-building>.
6. Office for National Statistics, '2012-based Subnational Population Projections for England', 29 May 2014, [http://www.ons.gov.uk/ons/dcp171778\\_363912.pdf](http://www.ons.gov.uk/ons/dcp171778_363912.pdf).
7. Department for Communities and Local Government, live tables on house building: <https://www.gov.uk/government/statistical-data-sets/live-tables-on-house-building>.
8. See ESRC/BA (2014) for a good summary of the evidence.
9. Data for England and Wales indicate that by 1971, there was an equal proportion of households owning and renting. Homeownership continued to increase, reaching a peak of 69 per cent in 2001 and then declined slightly in the following decade (see ONS, 'A Century of Home Ownership and Renting in England and Wales').
10. Based on data underlying Figure A2.
11. Eighty-six per cent said that if they had a free choice they would buy, while only 14 per cent said that they would choose to rent. This figure has changed very little over the last 25 years; in 1996, 85 per cent said that they would choose to buy and 15 per cent said that they would choose to rent. When asked about the main advantage of owning a home, the most common responses were that it is a good investment (26 per cent); it is more secure than renting (23 per cent) and that it gives you the freedom to do what you want with it (21 per cent). A further 14 per cent said that the main advantage is that it works out less expensive than renting, while 12 per cent felt that having something to leave your family is the most important advantage of owning a home (DCLG 2011).
12. When asked about ways government could make homes more affordable in the 2010 BSAS, the most common response was to give financial assistance to first-time buyers, with 29 per cent choosing this option. Twenty-three per cent of respondents said that the government should increase access to mortgages, while 19 per cent said that the government should give more money to housing associations and local authorities to build social homes for those on low incomes. Only 5 per cent said that government should allow developers to build more homes. When asked about their first priority for extra government spending, five per cent of respondents chose housing. This was the fourth most popular area after health (41 per cent), education (33 per cent) and help for industry (6 per cent), and was closely followed by police and prisons (5 per cent) and defence (4 per cent).
13. For example, see Wiley (2009) for a study of the effects of infill development in residential neighbourhoods in Montgomery County, Maryland, on the prices of surrounding houses.
14. Depends on the extent to which disruption associated with the construction phase is minimised and made insignificant, as well as on there being investment in new infrastructure (e.g. roads, hospitals, schools) to avoid congestion and/or service quality deterioration.
15. For example, Cheshire *et al.* (1992); Glaeser *et al.* (2005); Bramley (2011) and Hilber and Robert-Nicoud (2013). For a discussion of the redistributive effects of changes in the fundamental value of houses, see Buiter (2010).

16. For example, changing from agricultural to housing or housing to office use; significant increases in a building's size; changing the use of a shop from selling one product/service to selling another.
17. For example, Germany, Switzerland and (parts of) Canada are examples of countries that raise a substantial amount of income from local property taxes.
18. For example, Burge and Ihlanfeldt (2006) investigate the effect of impact fees (to finance public infrastructure) on the construction of new homes, drawing on data from Florida. They found that impact fees earmarked for public services other than water and sewer system improvements increased the construction of small homes within inner suburban areas and of medium and large homes within all suburban areas.
19. McLaughlin (2012) offers a good survey. See Podemiski (2013) and Been *et al.*, (2010) on New York; Owens (2009) and Tomalty (2002) on Vancouver; Gray (2005) and Boarnet *et al.* (2011) on Florida and Maryland; and Glen and Bunker (2010), Williams and Maginn (2012), Hsieh *et al.* (2012) and Williams (2014) on Australia.
20. See Department of Communities and Local Government (DCLG) Public attitudes to housing in England: Report based on the results from the BSA Survey (2011).
21. Alternative ways of defining this variable were used in robustness checks, including a variable capturing support for house building, and a graded variable with 1 denoting least opposition and 5 denoting most opposition.
22. Using alternatively regions, e.g. North East, South West, and type of place, e.g. big city, suburb, small city etc. Both types yielded similar results.
23. Replicating our model without sampling weights produced very similar results.
24. Clarification of our unit of analysis is in order. We use local planning authorities as our unit of analysis as this is where town planning powers reside. Local planning authorities' boundaries coincide with those of metropolitan boroughs, London boroughs, unitary authorities (UAs) and non-metropolitan districts, which have jurisdiction over housing applications within their boundaries. Non-metropolitan districts were part of a two-tier system with county councils till the 1990s but now wholly consist of authorities with district status or have been converted to UAs through local government restructuring. The powers of county councils have been commensurately reduced, being limited to aspects such as strategic planning, social services, education and fire services.
25. More details about this definition can be found in the [Appendix](#).
26. Not just density defined as number of dwellings per hectare, but also density as floor space per hectare, so that the height restrictions imposed by the planning system are taken into consideration. In this context, see Whitehead (2008).
27. Based on data underlying Figure A2.
28. In this line, see the recent work by Lund (2015).

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No potential conflict of interest was reported by the authors.

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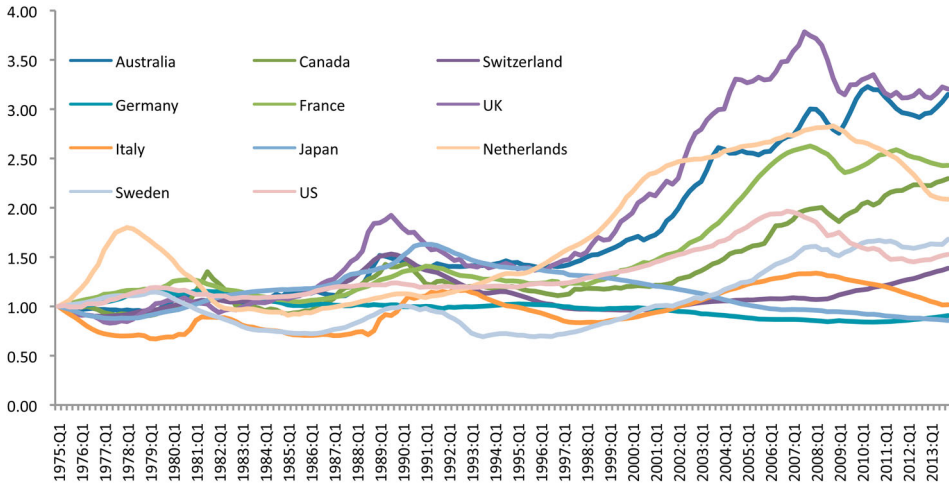
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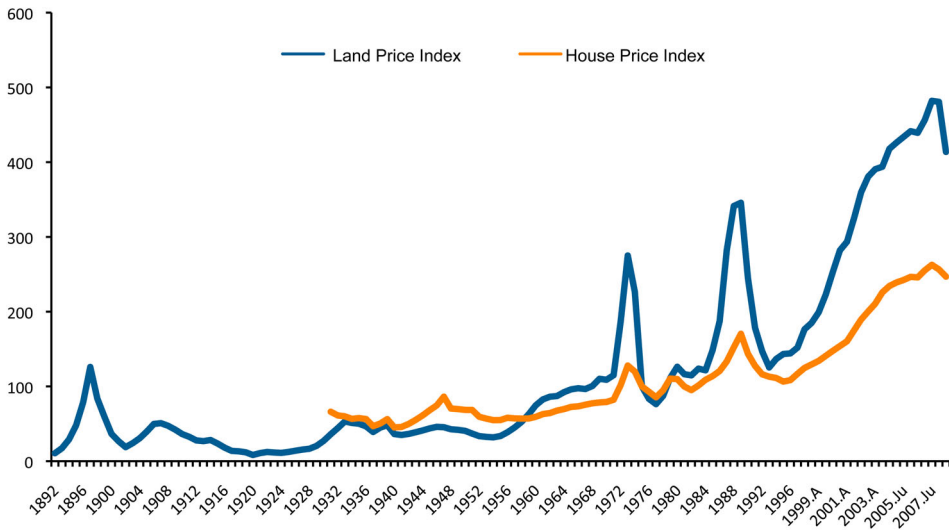
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## Appendix



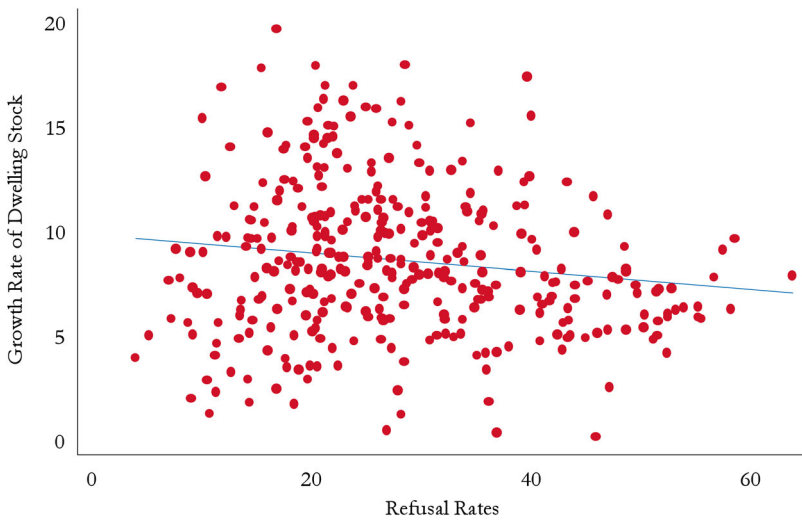
Source: International House Price Database, Federal Reserve Bank of Dallas

**Figure A1.** Real house prices, international comparison, 1975Q1–2013Q4, 1975Q1 = 100. Source: International House Price Database, Federal Reserve Bank of Dallas.

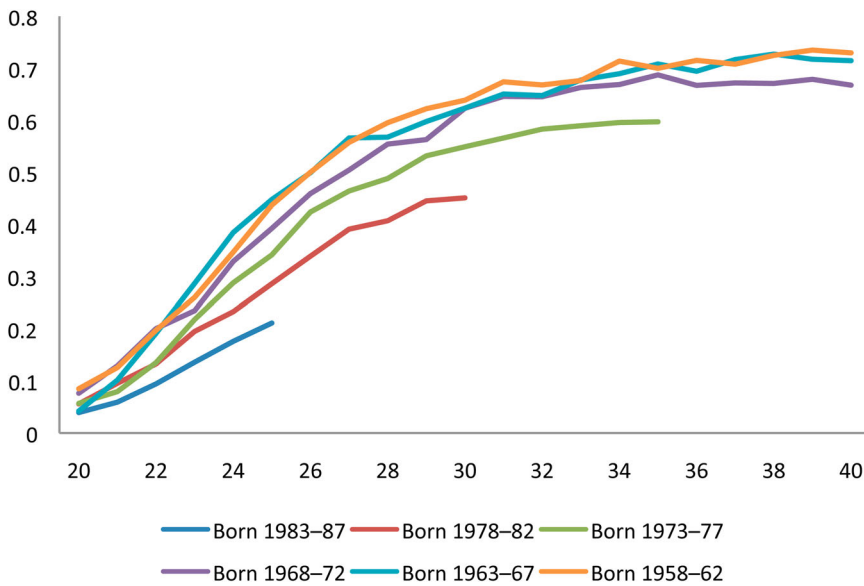


Source: Cheshire *et al.* (2014)

**Figure A2.** Real land and house prices indices (1975 = 100), England and Wales. Source: Cheshire *et al.* (2014).



**Figure A3.** Dwelling stock growth vs refusal rates.



**Figure A4.** Homeownership rates by birth year and age. Source: Belfield *et al.* (2014) – Figure 3.1.3, using data from the Families Expenditure Survey and the Family Resources Survey for various years.

**Definitions and descriptive statistics**

**Dwelling stock growth**

Dwelling stock by local planning authority for 2001 and 2011 was obtained from census data using Nomis. Census defines ‘dwelling’ as a single self-contained household space, so these statistics count only residential spaces.

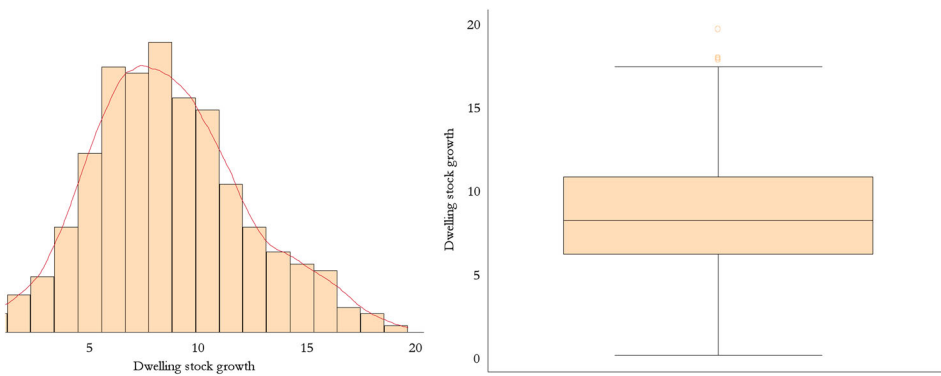
For the 37 districts that were merged into larger UAs in the 2009 local government restructuring, the annual series on Dwelling Stock Estimates (HM Government, *Live tables on dwelling stock (including vacants)*, GOV.UK website, 2014, Retrieved 16 October 2014 <https://www.gov.uk/government/>

statistical-data-sets/live-tables-on-dwelling-stock-including-vacants) was used to estimate share of dwelling growth in future UAs, that could be attributed to individual districts between 2001 and 2009. This was then used to impute the increase in dwelling stock between 2009 and 2011 for these 37 districts.

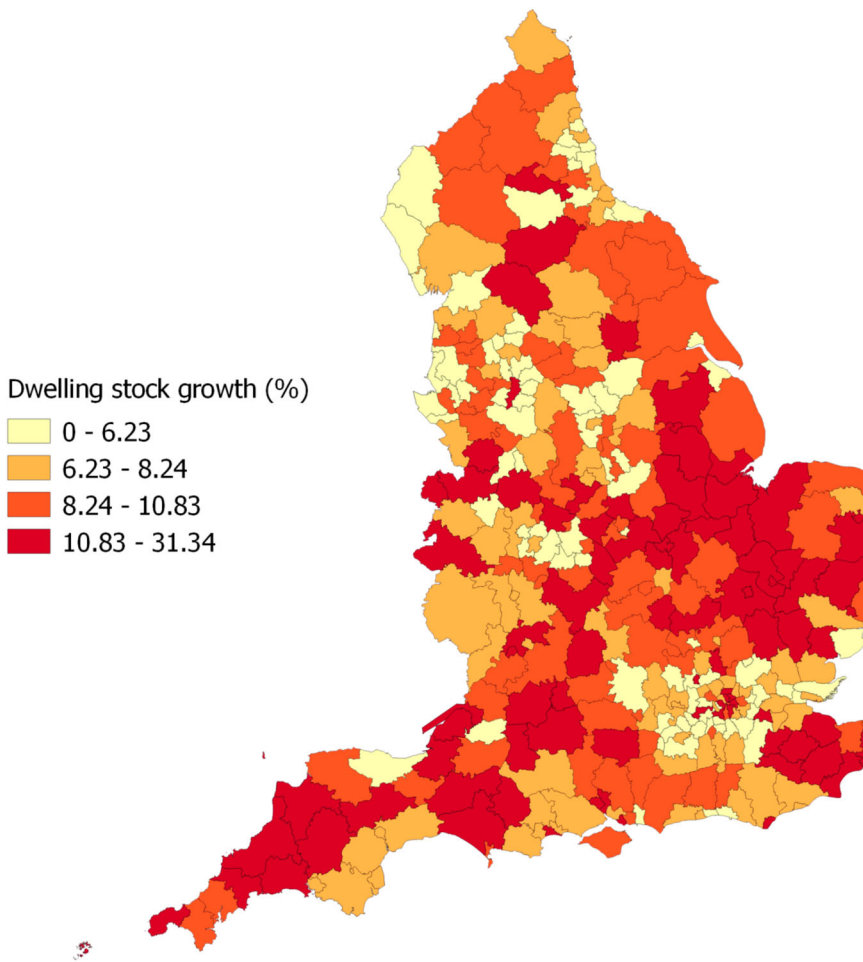
We ended up with 354 observations (including City of London and Isle of Scilly) and computed a growth variable (dwelling stock in 2011–dwelling stock in 2001/dwelling stock in 2001\* 100). A similar variable was also created between the 2001 and 2008, but the model’s results stayed broadly unchanged.

### Summary statistics

Variable	Obs	Mean	Std. dev.	Min	Max
Dwelling stock growth	354	8.75	3.77	0.16	31.34



**Figure A5.** Histogram and box plot. Note: Tower Hamlets with a growth rate of 31.3 per cent has been excluded from above graphs for presentation purposes.



**Figure A6.** Growth rates (quartiles).

### ***Owner-occupier households***

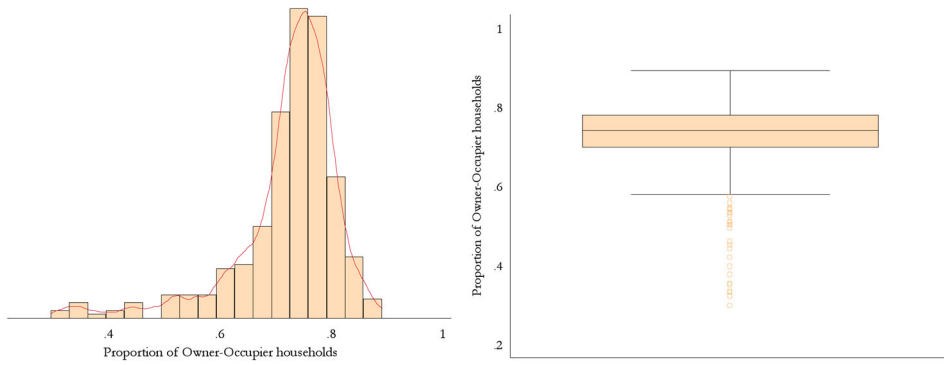
Proportion of households that are owner-occupiers/private renters/social renters/council renters.

These variables were created using 2001 Census Area Statistics data from the Nomis website based on Household Reference Person (HRP). By norm, the HRP is the oldest economically active adult in a household. The census collates HRP data for age categories up to 74 years. The owner-occupier households variable was then = (total number of owner-occupier households in district/total number of households in district). Population-based estimates were also calculated side by side for robustness checks.

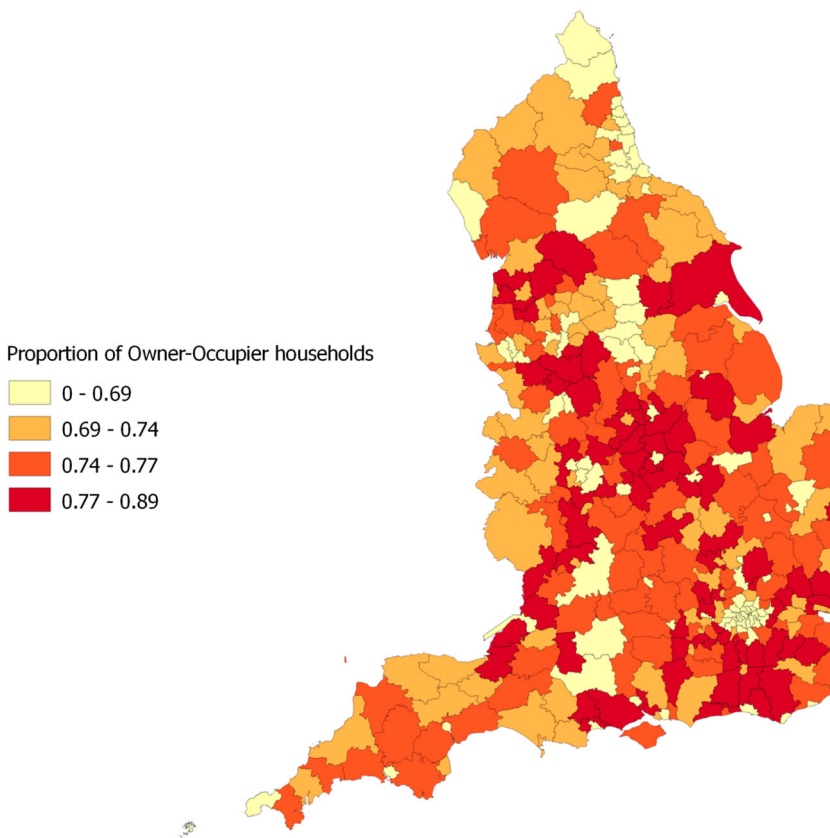
### ***Summary statistics***

Variable	Obs	Mean	Std. dev.	Min	Max
Proportion of owner-occupier households	354	0.72	0.09	0.29	0.89





**Figure A7.** Histogram and box plot.



**Figure A8.** Owner-occupier proportions (quartiles).

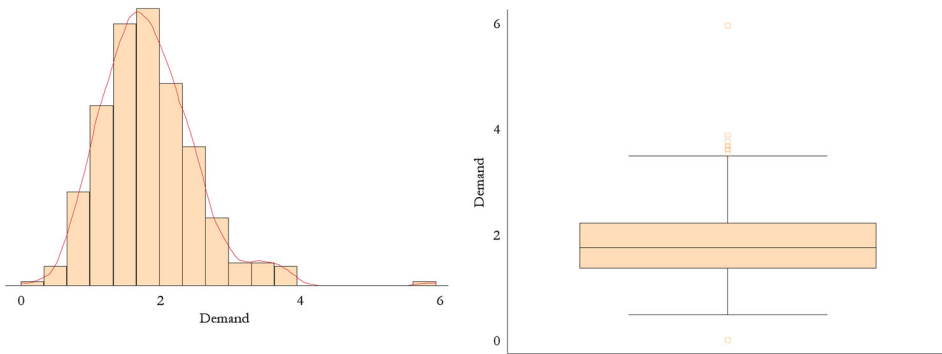
***Number of major planning applications relative to dwelling stock***

Data on major residential planning applications (projects that involve building of 10 or more houses) were obtained from the DCLG. The total number of such applications made over the period 1998–2007 was used as a measure of attractiveness of a district (2008 was left out due to data concerns, that is, significant number of missing values, while data past 2009 suffered due to the reorganisations).

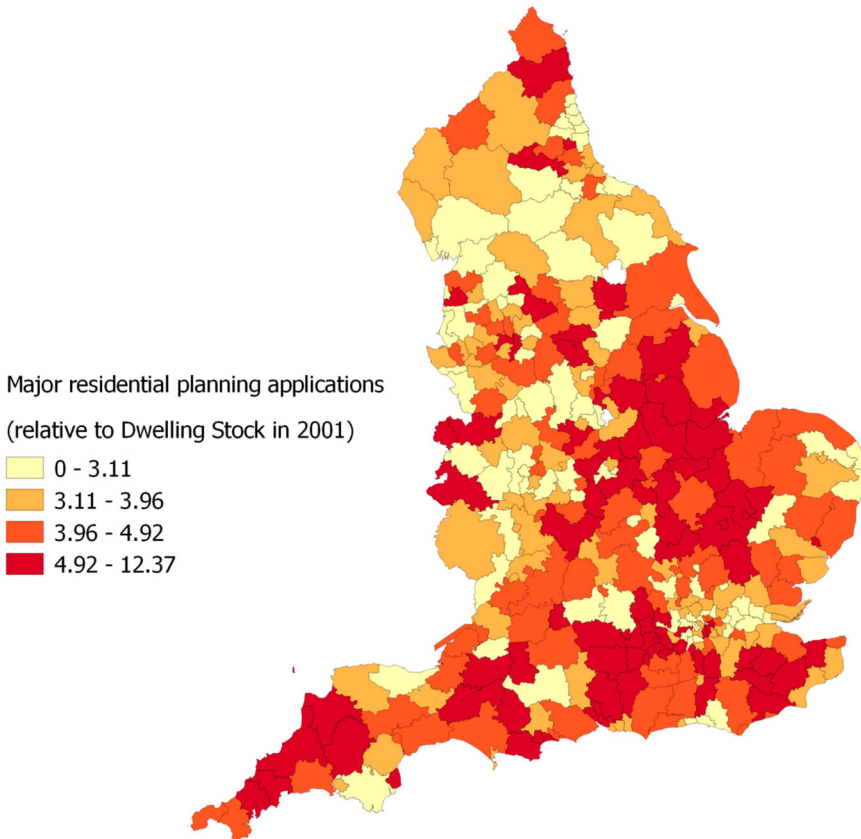
This measure was divided by dwelling stock in 2001. For missing values of data in 2007, data were imputed by linear estimation using 2006 and 2008/2009 data. As a robustness check, this variable was also created by weighting it by population instead of dwelling stock.

**Summary statistics**

Variable	Obs	Mean	Std. dev.	Min	Max
Planning applications relative to dwelling stock	350	4.15	1.55	0	12.37



**Figure A9.** Histogram and box plot.



**Figure A10.** Planning applications relative to dwelling stock by district (quartiles). Note: Missing values for Nottingham, York, Isle of Wight and Isle of Scilly.

### Developable land

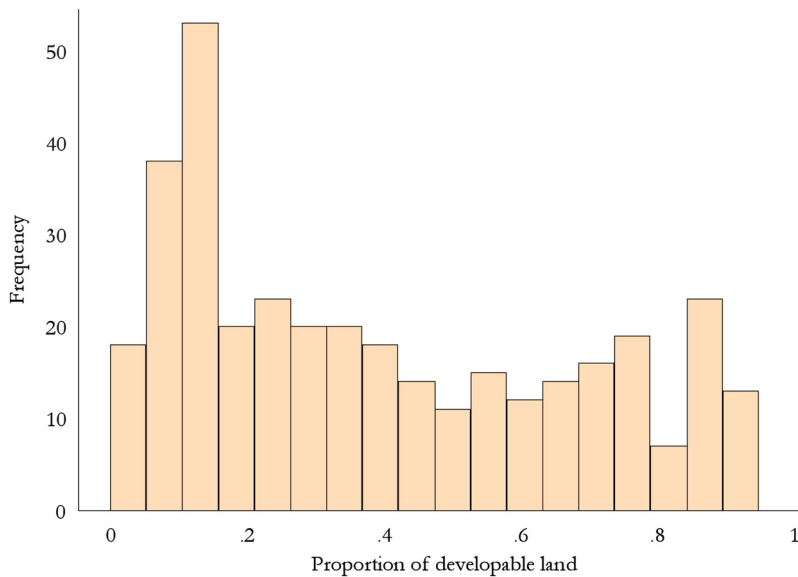
Share of developable land: Using GIS software, the following categories were subtracted from the total area of each district.

- Built-up land and areas subject to natural restrictions, using Land Cover Map 2000 from the Centre of Ecology and Hydrology.
- Areas designated as 'special conservation areas', 'special protection areas', 'sites of special scientific interest', local and national nature reserves, Ramsar sites, and 'areas of outstanding natural beauty', using data from Natural England website.
- Greenbelts and national parks, using Office of National Statistics data.

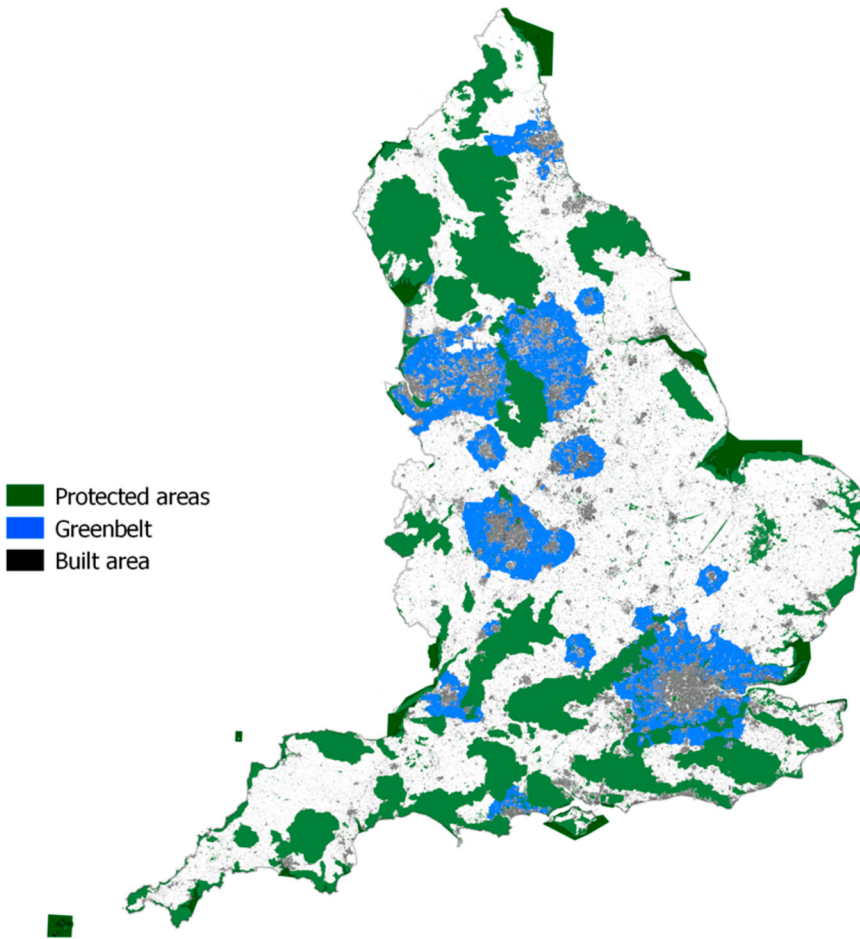
Land that did not fall into any of these categories was classified as developable land for the purposes of our analysis.

### Summary statistics

Variable	Obs	Mean	Std. dev.	Min	Max
Developable land	354	0.39	0.28	0.00	0.94



**Figure A11.** Histogram of 'developable land' variable.



**Figure A12.** Built, greenbelt and designated protected areas.

### ***Refusal rates***

This variable was compiled using the same data set used for the demand variables, where refusal rates were the percentage of major residential applications refused over the time period 1998–2007.

### ***Summary statistics***

Variable	Obs	Mean	Std. dev.	Min	Max
Refusal rates	348	27.83	11.97	4.08	63.87

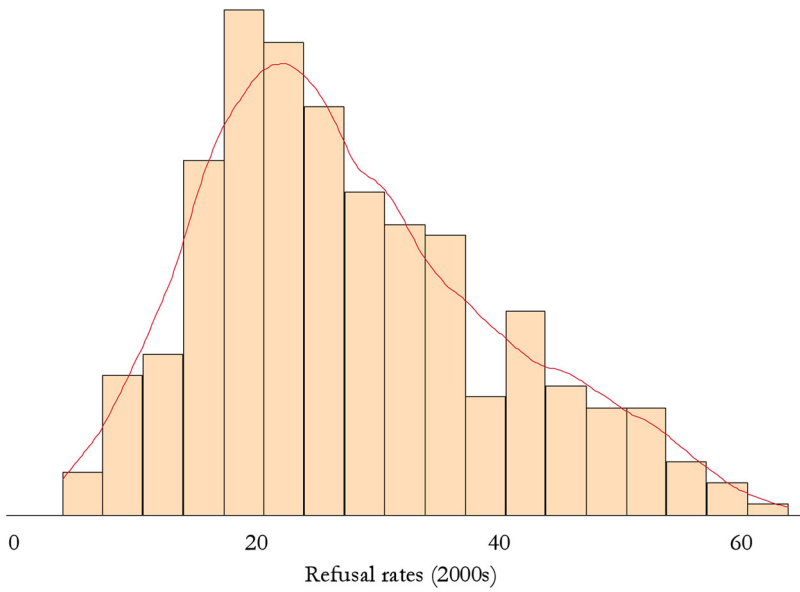


Figure A13. Histogram and box plot.

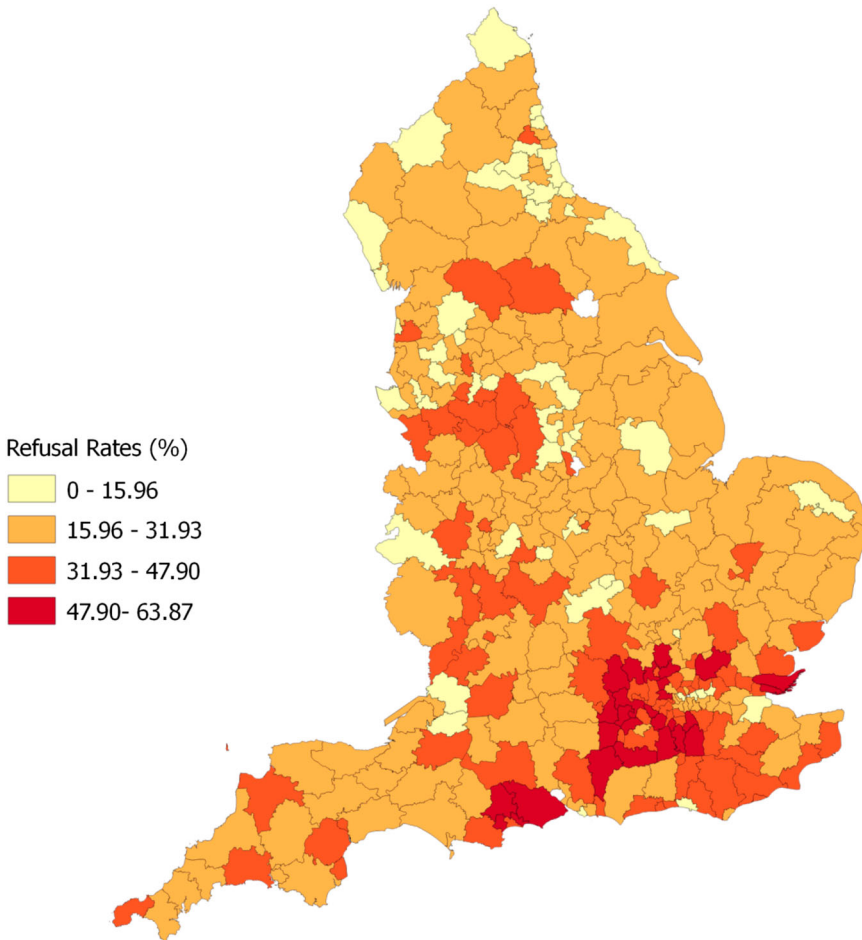
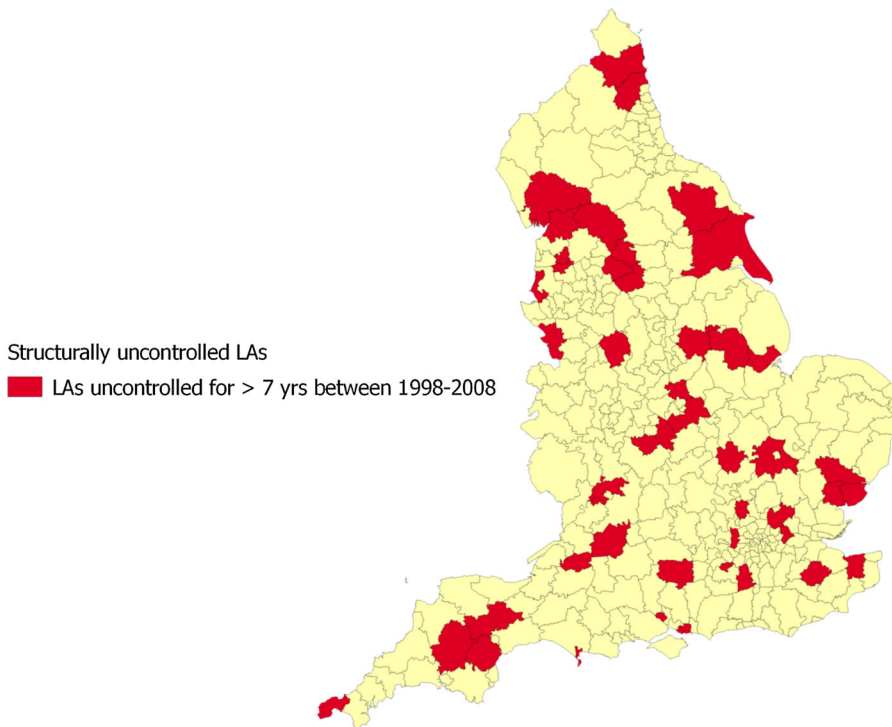


Figure A14. Refusal rates. Note Missing values for Nottingham, York, Isle of Wight and Isle of Scilly.

### Political variables

Political variables include party seat share, party majority and uncontrolled districts. All political variables were created over the 1998–2008 period using data supplied by The Elections Centre at Plymouth University. We stopped this analysis at 2008 due to the 2009 reorganisations, the assumption being that the growth in dwelling stock over the decade could largely be considered a function of political decisions made a few years before 2001, and a few years before 2011.

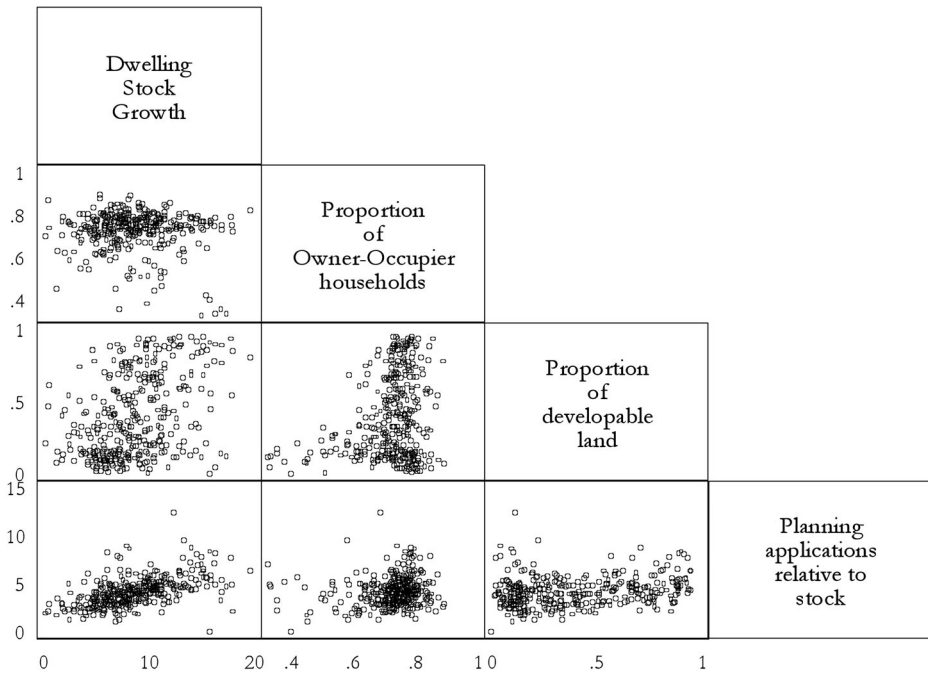
Seat share variables were the average seat share of a particular party in a particular district. Party majority variables were dummy variables for whether a party had overall control of a particular local council for more than seven years or whether there was ‘no overall control’. (Parallel variables using different year benchmarks were also created for robustness checks.)



**Figure A15.** Local councils marked in red denote ‘NOC’ dominated districts.

**Table A1.** Correlation between dependent variable and independent variables.

	Dwelling stock growth	Owner-occupiers households	Developable land	Planning applications relative to dwelling stock
Dwelling stock growth	1.0000			
Owner-occupier households	-0.1503 (0.0046)	1.0000		
Developable land	0.3621 (0.0000)	0.2938 (0.0000)	1.0000	
Planning applications relative to dwelling stock	0.5060 (0.0000)	0.1382 (0.0096)	0.2309 (0.0000)	1.0000



**Figure A16.** Scatterplot matrix for all major variables. Note: Tower Hamlets with a growth rate of 31.3 per cent has been excluded from above graph for presentation purposes.