UK COLLABORATIVE CENTRE FOR HOUSING EVIDENCE

Tackling the UK housing crisis: is supply the answer?

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UK COLLABORATIVE CENTRE FOR HOUSING EVIDENCE

Executive summary

UK average house prices have risen by over 160% in real terms since the middle of 1996. Home ownership remains around its lowest level for a generation. Among political leaders, policymakers and commentators there is a broad consensus that these problems are largely down to one failing: decades of undersupply of housing.

But the housing shortage story is unconvincing. Official data on housing volumes and the day-to-day cost of putting a roof over one's head suggest that supply growth has been sufficient to restrain upward pressure on house prices. However, much more powerful countervailing forces have driven them to record multiples of income. This implies that the current policy focus on boosting supply does not offer a solution to the housing crisis and a fundamental rethink is badly needed.

Housing supply has outstripped household formation for decades

It is commonly claimed that we have failed to build enough houses to meet the demand for places to live. But official data suggest this is not the case: since the 1996 nadir of house prices, the English housing stock has grown by 168,000 units per year on average, while growth in the number of households has averaged 147,000 per year. As a result, while there were 660,000 more dwellings than households in England in 1996, this surplus has since grown to over 1.1 million by 2018. Similar trends are apparent in Scotland and Wales. This story – based on the official count of dwelling stock and the Labour Force Survey – is also visible in the English Housing Survey and corroborated by alternative measures such as the growth in total residential floor space and bedrooms per head of population.

It's possible that the growing surplus of houses nationally could obscure tighter supply at regional level. But here too, the available data suggest that even in London and the South East, the number of houses has grown faster than the household count.

These figures are often obscured as commentators tend to compare house ***building*** numbers with ***projections*** of household formation. Both elements of this comparison have been misleading. First, 'net additions' to the housing stock tend to be about 30% higher than the number of new build completions each year, so reliance on the latter understates housing supply. Second, household projections have for many years significantly overestimated the rate of household formation due to questionable assumptions in the official methodology. The Office for National Statistics (ONS) has recently taken action to address these, resulting in household projections that are now much closer to past trends. Had the ONS's new methodology applied for the past decade we would be used to hearing housing need figures of around 160,000 per year, rather than the 250,000 number that appeared in the government's 2017 housing white paper.

The affordability of day-to-day housing costs

Despite the benign picture on housing volumes, it's important to consider the cost of housing since that affects the rate at which people form new households. Here it is essential to distinguish between the cost of housing ***services*** and the price of housing ***assets***. The day-to-day cost of housing services is measured by national statistical agencies around the world by the market rent on a rented house or the equivalent 'imputed rent' on an owner-occupied house. This cost can move independently of the purchase price of houses.

Any shortage of housing should therefore be reflected in rents and imputed rents rising faster than average household incomes. But ONS and Department for Work and Pensions (DWP) data show that rents have risen ***slower*** than median household incomes since 1996. Consequently, affordability constraints on households have also eased, on average. Breaking the data down to the regional level shows a similar picture since 2005 (when a reliable regional rent index became available). In London, affordability has not worsened for the average household since 2005, and in all other regions rents have lagged household income growth. This is the opposite of what we would expect to see if housing supply had been inadequate and chimes with the evidence of a growing surplus housing stock.

What ***has*** caused prices to boom?

If not a shortage of housing, what lies behind the explosion in UK house prices from around 4.5 times median household income in 1996 to a multiple of around 8 today? The established theory of house price formation tells us that changes are determined by a combination of market rents and the cost of capital. So house prices can jump or crash in response to shifts in the main components of the cost of capital: mortgage interest rates, taxes, and expectations of future price growth. Such volatility can occur even when rents are stable.

Since the late 1990s, mortgage rates have tumbled, with inflation-adjusted interest rates on five-year fixed-rate mortgages, for example, falling from 8% to around 2% today. Since mortgage interest rates tend to be the dominant element of the cost of capital for home owners, this change can be expected to precipitate a substantial increase in house prices of a similar magnitude to the 160% increase seen since 1996.

Credit availability is also a potentially important contributor to house price movements and several authors have highlighted the role of laxer credit conditions in the past, notably in the US in the run up to the financial crisis. However, in the UK most moves to deregulate the mortgage market had run their course by 1996. It is not obvious that a deterioration in lending standards is responsible for the price boom since then. Indeed the average loan-to-value (LTV) for first-time buyer (FTB) mortgages has fallen from 90% in 1996 to 83% on the eve of the financial crisis, and stood at a comparatively restrained 76% by the end of 2018. This suggests that changing economic fundamentals are the dominant part of the UK house price story since the late 1990s.

Below the national averages there has been a rapid divergence of prices among the nations and regions of the UK. London prices, in particular, have continued to grow strongly since the financial crisis and are almost 50% higher than their 2005 level in real terms. Meanwhile outside the Greater South East, prices are largely unchanged on 14 years ago. But the price boom in the Greater South East does not appear to be the result of an increase in the demand to live there: even London rents have grown by just 2% in real terms over the period, while those in the East and South East have slipped back. As a result, residential property yields have collapsed by a third in London over the past 14 years. The main driver of divergent prices around the country therefore appears to have been growing global demand for London (and potentially other major UK city) housing assets, but not growing demand from people to live there.

Nor is London's story unique. The divergence of house prices in major global cities from their hinterlands is currently playing out in many countries around the world. Various analysts, including the International Monetary Fund (IMF) have attributed this phenomenon to global investor demand that focuses on financially-integrated global cities.

How much would 300,000 net additions per year improve affordability?

The growth in house prices in the UK over the past 23 years does not appear to have been the result of inadequate supply, but could greater supply nonetheless be the solution? Hitting the government's target of 300,000 houses per year would certainly put more downward pressure on prices and rents. But the available academic evidence suggests that no plausible rate of supply would significantly reverse the price growth of the past two decades.

Multiple modelling exercises, for the UK and elsewhere, find that a 1% increase in the stock of houses tends to lead to a decline in rents and prices of between 1.5% and 2%, all else equal. This implies that even building 300,000 houses per year in England would only cut house prices by something in the order of 10% over the course of 20 years. This is an order of magnitude smaller than the price rises of recent decades. If we are to create more affordable houses to buy and rent, the solutions lie elsewhere.

Explaining the growth in 'hidden households'

Despite the encouraging data on volumes and the affordability of market housing costs on average, other trends are less benign. First, the average household size across the UK has risen slightly in recent years, despite an ageing population leading us to anticipate continued decline. Second, survey data suggest that there are now 400,000 more families or individuals sharing a house with other families or individuals – so-called 'hidden households' - than there would have been had the proportions stayed constant since the late 1990s. These developments are sometimes thought of as evidence of constrained household formation. However, both trends appear to be explained by the higher rate of migration to the UK over recent years: among UK-born households, average household size has continued to fall, and there has been no rise in the proportion of UK-born hidden households. The uptick in both trends nationally therefore appears to be driven by a bigger proportion of young, often single, migrants who survey data suggest have always had a greater tendency to share housing.

An accompanying development is that there are almost one million more 20-to-34-year olds now living with their parents than there were in 2002. This stark change seems likely to be the result of reduced affordability of housing for young people – but for reasons unrelated to general housing supply. Weak wage growth, particularly since the financial crisis, and housing benefit cuts have disproportionately affected young people, reducing rent affordability for many of them even as it improves on average. A further factor is the erosion of social housing as an option for young people, with almost 700,000 more of them now having to choose between paying market rents or living with their parents, compared to 1996. Tackling these distributional problems directly is likely to be a far more effective strategy to help young people than additional market supply.

The collapse of home ownership

High house prices are often seen as the cause of the collapse in home ownership across the UK. However a closer look at the data suggests that the mortgage market is a more important factor.

In England, home ownership peaked at 70.5% in 2003 but collapsed quickly from 69.1% in 2007 to 63.1% by 2016 – a period that saw quite sharp price falls across much of the country. The dominant cause of the collapse was the abrupt slowdown in mortgage lending to FTBs, which almost halved between 2007 and 2008, and did not recover until around 2014. This was reflected in a sudden drop in the median LTV for new FTB loans, from 90% in 2007 to 75% in 2009. Had new FTB mortgage issuance persisted at its pre-crisis rate, home ownership would not have fallen in the subsequent years.

Consequently, there is little reason to believe that supplying an additional 300,000 houses per year would raise home ownership. This is both because its impact on prices would be limited, and because ownership rates are much less sensitive to prices than they are to mortgage availability.

Policy implications

This analysis carries several important implications for the direction of housing policy in the 2020s.

- Plans to boost housing supply above their current rates will not solve problems of high house prices or low home ownership. Instead, greater supply is likely to result in further growth in the number of unoccupied houses, which may not be an efficient use of scarce investment capital.

- Growing housing affordability problems in the rented sector appears to be due to a combination of slow wage growth for young people, erosion of the social housing stock, and housing benefit cuts. Tackling these problems directly would be a far more potent (and less economically costly) way to improve affordability than boosting market supply.

- House prices are vulnerable to an end to the era of low interest rates and a reversal of overseas investment flows, with potentially serious political consequences. This should raise questions for policymakers about whether and how to insulate households from asset price volatility in future.

- If financial stability in the mortgage market is to remain a policy priority, a return to higher rates of home ownership will require more fiscal intervention either to subsidise FTBs or reduce financial incentives for landlords. Either way, recent rapid growth in the number of families in the private rented sector suggests that policy should urgently address the security it offers, and the quality of the service renters receive.

1. Introduction

There is widespread consensus among politicians, commentators, academics and public opinion that the UK has a housing crisis. There are several important aspects to our housing problems, including rising homelessness and an unusually insecure private rented sector. But the collapse in home ownership and historically high house prices are perhaps the most salient aspects of what commentators and policymakers refer to as the housing crisis.

UK average house prices rose by 161% in real terms between the middle of 1996, the nadir of the last house price cycle, and the end of 2018.[1] Over the same period they rose by a staggering 292% in London. Such high prices are, in turn, blamed for the collapse in home ownership, which fell from its peak of 70.5% in 2003 to 63.1% in 2016.[2]

When it comes to causes there is broad agreement, from the former Prime Minister, Theresa May, down, that one factor above all is to blame: decades of inadequate housing supply.[3, 4] Numerous major public reports have made the case that supply has been insufficient to meet the country's housing needs.[5]

In 2004, before the collapse in home ownership, and only part way through the huge rise in house prices seen over the past 20 years, the Barker Review concluded that there was "growing evidence of a persistent inadequate supply."[6]

More recently the attribution of blame for the housing crisis has become increasingly definitive. "For decades we have failed to build enough homes to meet demand" opens the 2014 Lyons Review, "The consequences of this are widely felt. House prices and rents are going up faster than earnings because demand massively outstrips supply."[7]

In 2016 the House of Lords Select Committee on Economic Affairs report ***Building more homes*** argued that "[Too] few homes have been built over [recent decades]. House prices and rents in some parts of England have risen sharply."[8] The government's 2017 housing white paper was even more stark: "The housing market in this country is broken, and the cause is very simple: for too long, we haven't built enough homes."[9] Then Communities Secretary, Sajid Javid, hammered the message home: "Soaring prices and rising rents caused by a shortage of the right homes in the right places has slammed the door of the housing market in the face of a whole generation."[10]

Almost without equivocation, the strong consensus, echoed among commentators and think tanks, is that the housing crisis is at root a supply crisis. On this view the policy solution is clear: a massive increase in housing supply holds the key to reducing prices and increasing home ownership.

This paper makes the case that the housing shortage hypothesis is misplaced. Drawing on empirical evidence and theory, this paper argues that a shortage of housing did not contribute to the growth in prices since 1996, and that even much higher rates of housebuilding sustained for a generation would not reduce prices to anything close to the levels prevailing 20 years ago in real terms.

This paper argues that the housing crisis is in fact several different crises, with: high prices caused by global macroeconomic conditions; low home ownership driven by the withdrawal of mortgage finance to first-time buyers (FTB) in the years after the financial crisis; and rent affordability problems for some groups caused by slow wage growth, benefit cuts and the erosion of the social housing stock. Increased supply of housing does not offer a solution to any of these crises. It is time we looked to other policies to do so.

The paper is organised as follows. Section 2 sets out the data from various sources on housing supply volumes, household numbers and their evolution over the past 23 years. Section 3 turns to housing costs and affordability as more reliable indicators of the adequacy of housing supply. Section 4 then explores what has driven house prices to their current levels, while Section 5 examines whether supply could be a solution to the housing crisis even if a lack of it was not the cause. Section 6 looks at some important challenges to the story told by the aggregate data, before Section 7 explores the drivers behind the collapse in home ownership. Section 8 concludes and draws out some policy implications.

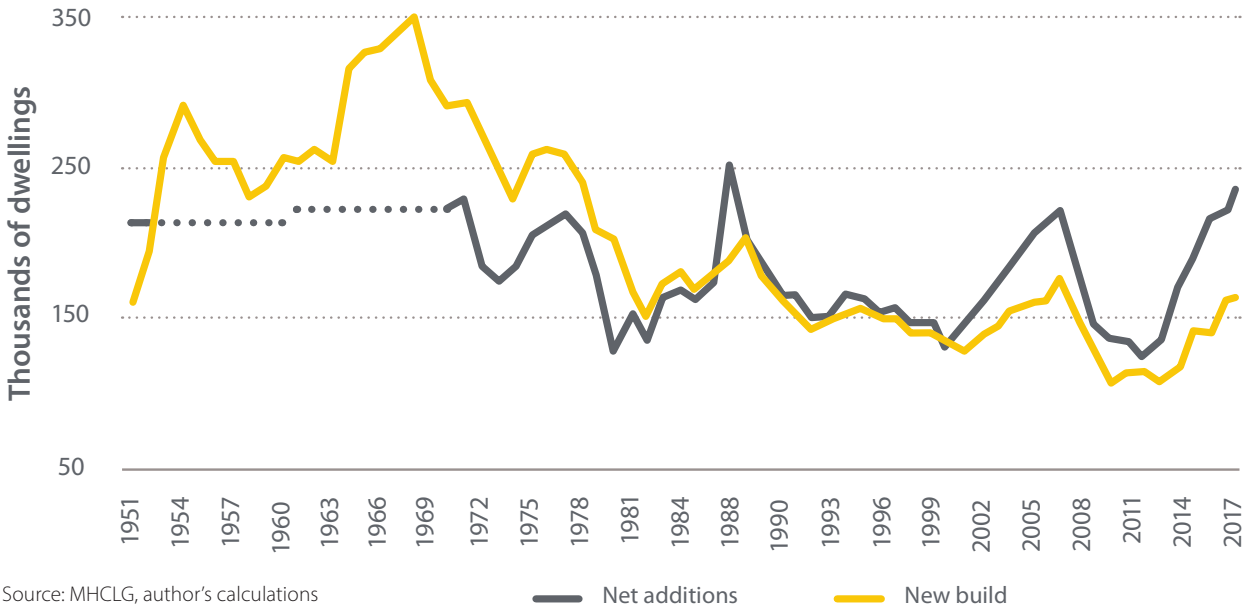
2. A strange kind of shortage

The most obvious place to start in testing the housing shortage hypothesis is to explore what has happened to the numbers of households and houses in recent decades. If housing supply has been inadequate we might expect to see household formation outstripping the rate of additions to the housing stock. This section first looks at the growth of the housing stock, before turning to the change in household numbers. For reasons of data availability and consistency, most of the data presented below relates to England, but the insights apply to the whole of Great Britain since trends in Wales and Scotland are comparable.

A growing surplus stock of housing

How many housing units have we added since the mid-1990s?[11] Data provided by the Ministry for Housing Communities and Local Government (MHCLG) show that, between 1996 and 2018, a net 3.7 million houses were added to the English housing stock. This represents an average of 168,000 net additions each year. It is commonly thought that our performance when it comes to new housing supply compares unfavourably with the past, but this view is often exaggerated by a focus on the rate of newly-built houses rather than the rate of net additions, which determines housing supply.[12] While house building in England averaged 265,000 per year between 1950 and 1980, since many of these dwellings were replacing bomb-damaged or otherwise poor-quality housing, the overall housing stock did not in fact grow nearly as fast, averaging about 211,000 per year. In fact, net additions between 1971 and 1981 averaged 190,000 per year – a similar rate to that achieved over the past 15 years (182,000). In recent years around 4% of net additions has been contributed by conversions – sometimes entailing a large house being split into smaller ones. However, this is matched by the decline in household size (see Section 6).

Fig. 1: New build completions versus net additions, England, 1971-2019 [13]

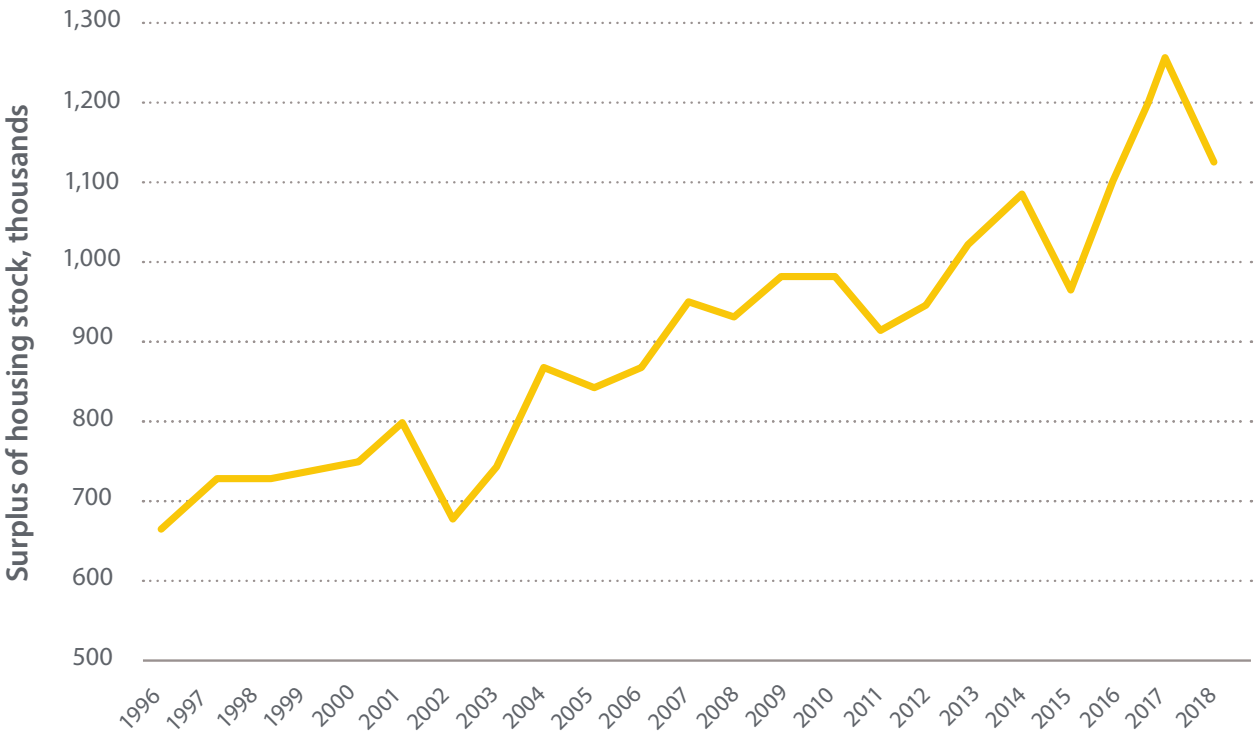


Source: MHCLG, author's calculations

We can compare the performance of supply against the rate of household formation. The census provides the only definitive count of the number of households in the country. However, in between censuses, the Labour Force Survey (LFS), which is calibrated to census data, provides the best available readout and is used by the Office for National Statistics to produce its household estimates. Being based on a survey, these estimates are subject to sampling error, and the ONS notes that the 95% confidence interval for the 2017 household estimate (for example) is plus or minus 97,000 households.[14] The LFS shows that by Q2 2018 there were 3.24 million more households in England than at the same point in 1996, a growth rate averaging 147,000 net additional households per year.

The housing stock in England has therefore grown about 14% faster than the number of households over the period of interest. As a result, the 'surplus' housing stock grew by around 70%, from 660,000 in 1996 to 1.12 million by March 2018. Similar trends are apparent in Scotland, where a surplus of 74,000 in 1996 had more than doubled to 169,000 by 2017, and in Wales, where the surplus increased from 56,000 to 92,000.[15] Box 1 explains some of the reasons why, despite these figures, the perception of persistent undersupply has taken hold.

Fig. 2: Dwellings in excess of households, England, 1996-2018



Source: MHCLG, ONS, author's calculations

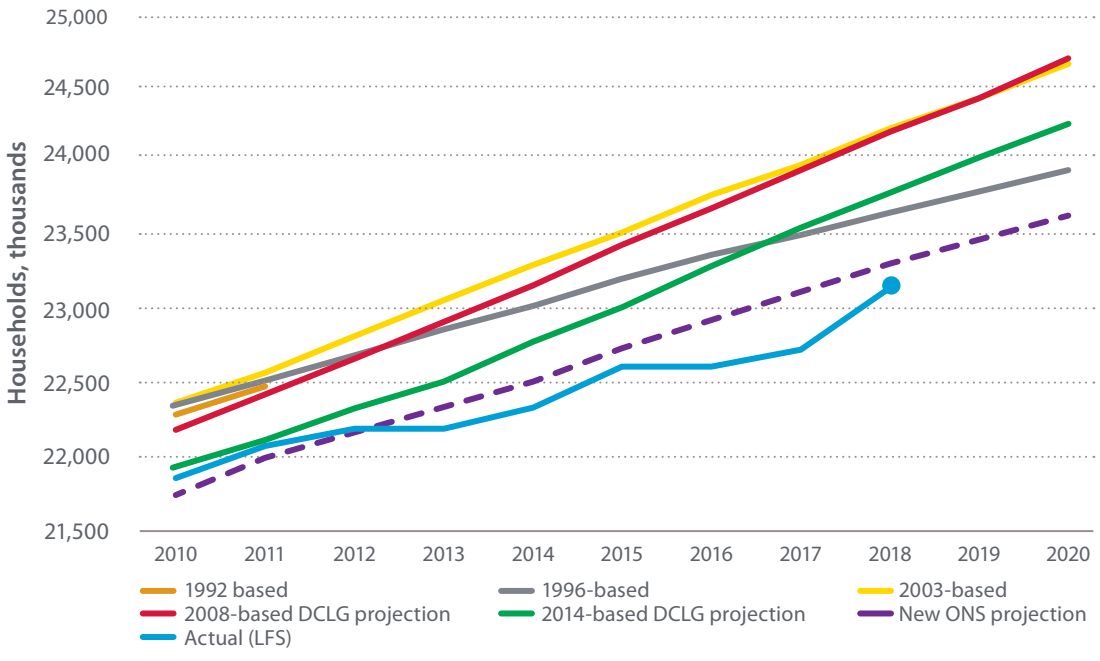
Box 1 - The origins of the shortage story

How has the idea of a shortage of housing come about? Most of the evidence adduced in support of the idea tends to point to figures comparing the rate of new homes supplied to some assessment of changing housing need. But in most cases the figures used are flawed and the appropriate data show something different.

In measuring the **housing supply** side of the story, some commentators have pointed to MHCLG's ***House Building: new build dwellings*** statistics.[16] As a guide to how many houses are being added to the stock each year, however, this data source is highly misleading. Not only does the series understate the true rate of new build - missing the output of SME builders, for example – but it also excludes other sources of change in supply such as conversions, changes of use and demolitions.[17] These limitations are acknowledged in the relevant MHCLG release, which states that the ***Housing Supply: net additional dwellings*** publication is, instead, the "most comprehensive measure of housing supply". Using net additions data instead gives the full picture on housing supply. The difference between the two series is substantial. Over the past decade, for example, the new build statistics averaged 128,000 in England, but net additional dwellings were 30% higher, averaging 166,000 per year.

When it comes to **housing need**, it's common to hear growth of housing need in England quoted at 250,000 or 300,000 per year. The most salient estimate appears in the 2017 Department for Communities and Local Government (DCLG) white paper ***Fixing our Broken Housing Market***, which suggests that 250,000 net addition per year are required.[18] This estimate – and almost all others referenced above – ultimately draws on past DCLG household formation projections.

Fig. 3: Successive household projections versus outturn, England



Source: DoE, DETR, DCLG, ONS

Yet those projections have proven consistently to be far too high. Fig. 3 shows a selection of successive household formation projections since the 1992-based numbers of the Department of the Environment, up to DCLG's 2014-based estimates, released in 2016. It shows that all of these projections anticipated there would be somewhere between 500,000 and 1.1 million more households in England by 2018 than the LFS suggests have actually appeared.

The source of these repeated overestimates lies in the way projections have been based on the trend towards shrinking average household size that prevailed between the 1971 (2.84 people per household) and 2001 censuses (2.38 people per household). Clearly, the smaller the average household size for any given population, the more houses are required. This trend stopped around the turn of the century, with average household size stabilizing. But subsequent projections continued to assume further shrinkage. The result has been that government projections made over the past 15 years foresaw a rate of annual household formation of around 220,000 per year, some 70-80,000 more each year than have actually formed.[19]

In the wake of these technical problems, the ONS consulted on and implemented a new methodology, drawing on trends from only the more recent census data.[20] The new approach, together with updated population projections that were revised down, resulted in a significantly reduced household formation projection of 159,000 per year (see the purple dashed line in Fig. 3). This is 24% less than the 2014-based projection of 210,000 per year, yet still comfortably above the household formation rate since 1996, of just 147,000 (see the blue line).

A combination of partial supply data with substantial overestimates of need has therefore fuelled the perception that housing supply has been inadequate. On the appropriate data, however, the opposite appears to be the case.

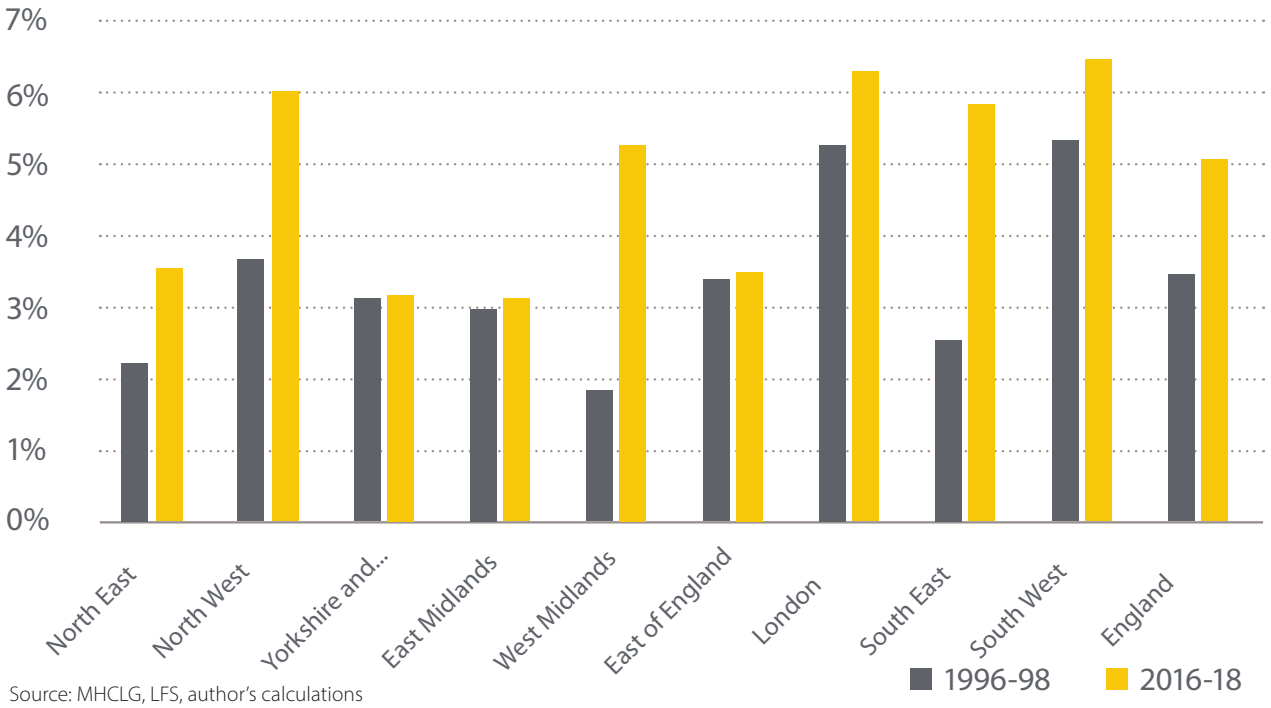
These figures represent totals for England as a whole, so could it be that that we've been building houses in all the wrong places, and this surplus has built up in places where people don't want to live? Drilling down to the regional level, that doesn't appear to be the case. Regional housing stock data for the period show that the growing surplus stock has been reasonably evenly spread. Fig. 4, below, shows the surplus count of dwellings by region for the years 1996-98 and 2016-18. A three-year average is taken owing to the volatility of LFS-based regional household estimates.

In the East Midlands, the East, and Yorkshire and the Humber, housing supply has kept pace with household formation, maintaining a surplus of dwellings over households of 3-3.5%. But in all other regions it appears to have outstripped household growth. This includes London and the South East, the regions commonly cited as suffering from the most severe shortage. Both seem to have significantly out-built household formation rates over the past 20 years and now have a surplus stock higher (6.5% and 5.9%, respectively) than the average for England (5.1%).

Using MHCLG administrative statistics, based on dwelling counts by local authorities, and the census-based LFS to capture household numbers should provide the most accurate picture of what's been happening to the surplus housing stock. But we can also use an entirely separate source, in the English Housing Survey (EHS), to get another angle on the vacancy rate in the English housing stock. The EHS attempts directly to identify vacant properties rather than comparing aggregate dwelling and household numbers. It suggests that there were 780,000 vacant properties in England in 1996, and that number had grown to 1.1 million by 2016-17, a similar story to the main data source above.

Households and dwellings can of course vary in size, and the number of households is influenced by the cost of housing (i.e. it is endogenous to housing supply), a point that we return to below. Consequently, it's helpful to look at a measure that is independent of these dynamics: changes in the total residential floor area and bedroom numbers compared to the population. The English population grew by 14.6% between 1996 and 2017. Meanwhile the total

Fig. 4: Regional distribution of surplus housing, England, 1996-98 and 2016-18 [20]



Source: MHCLG, LFS, author's calculations

residential floor area – calculated as the dwelling stock multiplied by average floor area from the EHS - increased by 25.7%, with most of that growth happening in the years up to 2008. Similarly, the average number of bedrooms per dwelling from the EHS suggests that their total number across the English housing stock grew by 19.5% over the period, well ahead of population growth. While survey-based measures of residential floor space and bedroom numbers are not perfect – there is likely to be a degree of sampling error, and we can make no adjustment for quality - nothing here suggests that the supply of housing services per head is less than it was when house prices hit the bottom in 1996.

All of these data sources therefore suggest that the quantity of housing supplied over the past 23 years has outstripped both household formation and population growth. But since housing costs are a factor that influences the rate of household formation, we need to go beyond quantities and consider what we can learn from how they have evolved in recent years. This is the task of section three.

3. One house, two prices

Changes in house prices are commonly seen as an indicator of the changing balance of supply and demand for housing. Hence rising prices must, by definition, mean that demand is outstripping supply. However, the 'demand for housing' is an ambiguous concept because housing has two distinct attributes: houses (and the land they sit on) represent valuable assets, but they also provide a flow of services to the occupier on a day-to-day basis.

These two attributes give rise to two separate but linked markets: one for housing assets where the supply of and demand for them is equilibrated by the price of houses; and a second for housing services, where supply and demand is equilibrated by rents or the rental equivalent – or imputed rent - in the case of owner-occupied houses. Thinking of housing as a flow of services from the structures and land that comprise a property is a useful analytical construct that helps to separate out different influences on the price of housing units.[22]

These two markets are connected but distinct. It is entirely possible for the supply of housing to outstrip the demand for ***places to live***, causing the unit cost of housing (rents) to fall relative to incomes, at the same time as rapidly-growing demand for housing ***assets*** causes the price of houses to balloon.

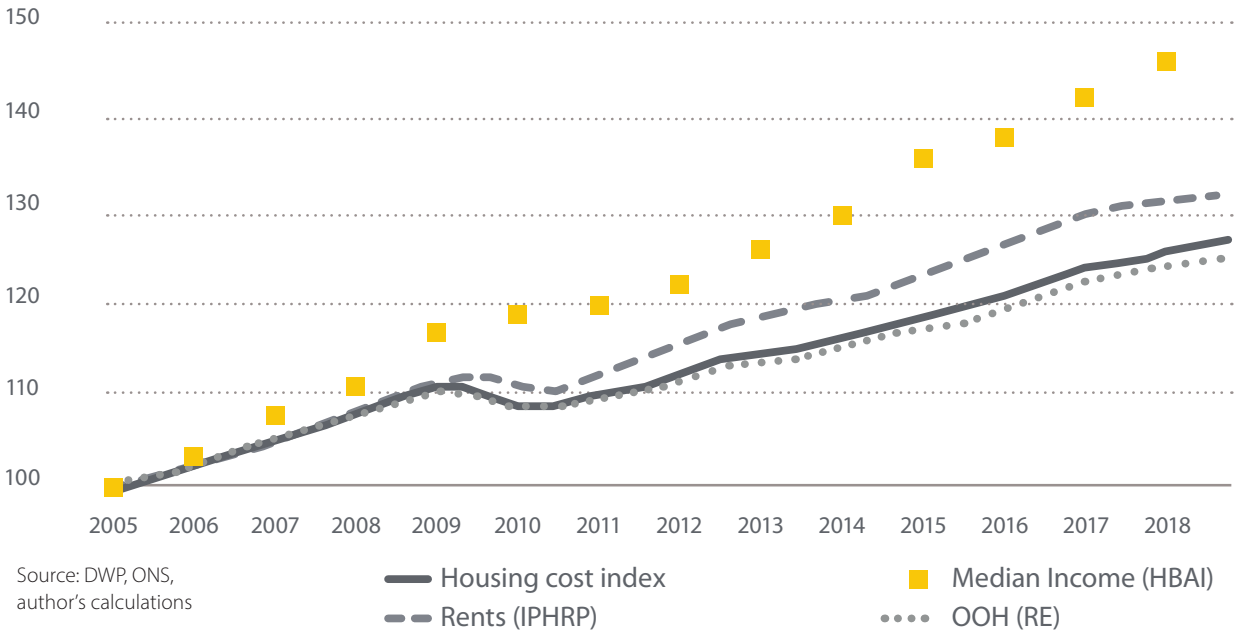
Consequently day-to-day housing ***costs***, not house prices, are the market signal that tells us about the adequacy of supply in meeting the demand for places to live.

The housing stock generates a flow of housing services, which households consume until the marginal value of the services equals their cost. That cost is represented by the rent paid by households in the private rented sector, or the 'rental equivalent' for owner occupiers.

Imputed rent is a measure of the consumption of housing services by owner occupiers and can be thought of as the rent that owner occupiers pay to themselves for the housing services they produce. Imputed rents are established by estimating the market rent that would be payable on a house if it were owned by someone other than the occupier. The market rent is therefore also the stream of rent that the owner occupier is forgoing by living in the house rather than renting it out – the opportunity cost of the owner's investment in their own house. This is why the ONS and other statistical agencies around the world use rent indices to capture the changing cost of all housing for the purposes of measuring consumer price inflation.[23] In the past, concerns have been raised about the reliability of rent data for the UK, citing the poor quality of available rent data and the small size of the private rented sector.[24] However, the recent development of the ONS's Index of Private Housing Rental Prices (IPHRP) has substantially improved the quality of the rent index that underlies the production of CPIH inflation, both because of the large sample of administrative data it is based on – some 500,000 records each year - and due to the stratification that is used to ensure imputed rents for different types of housing are determined by appropriate proxies.[25] Meanwhile substantial growth in the size of the private rented sector since 2003 has meant that any concerns about its size are reduced.

If we have been building insufficient housing to meet the needs of households over the past 20 years, this should be reflected in deteriorating affordability, in the form of an increase in the cost of housing relative to average incomes. Fig. 5 draws on the ONS IPHRP, an index that tracks the rents charged on private rented properties on a like-for-like basis back to 2005 for England.[26] Based on the same underlying data, the ONS produces an equivalent series for owner-occupied housing (OOH(RE)). These two indices are represented by the dashed grey lines in Fig. 5 and can be weighted together using ONS CPIH inflation weights to derive a 'housing cost index' for the market sector housing stock, shown by the grey line in the chart. Comparing this to the change in median equivalised disposable household income shows that housing costs grew in line with incomes until the financial crisis and have since grown significantly more slowly, by around 16% up to the start of 2017 compared to 31% for household incomes.

Fig. 5: Housing costs and household incomes, current prices, 2005-18 (2005Q1=100)

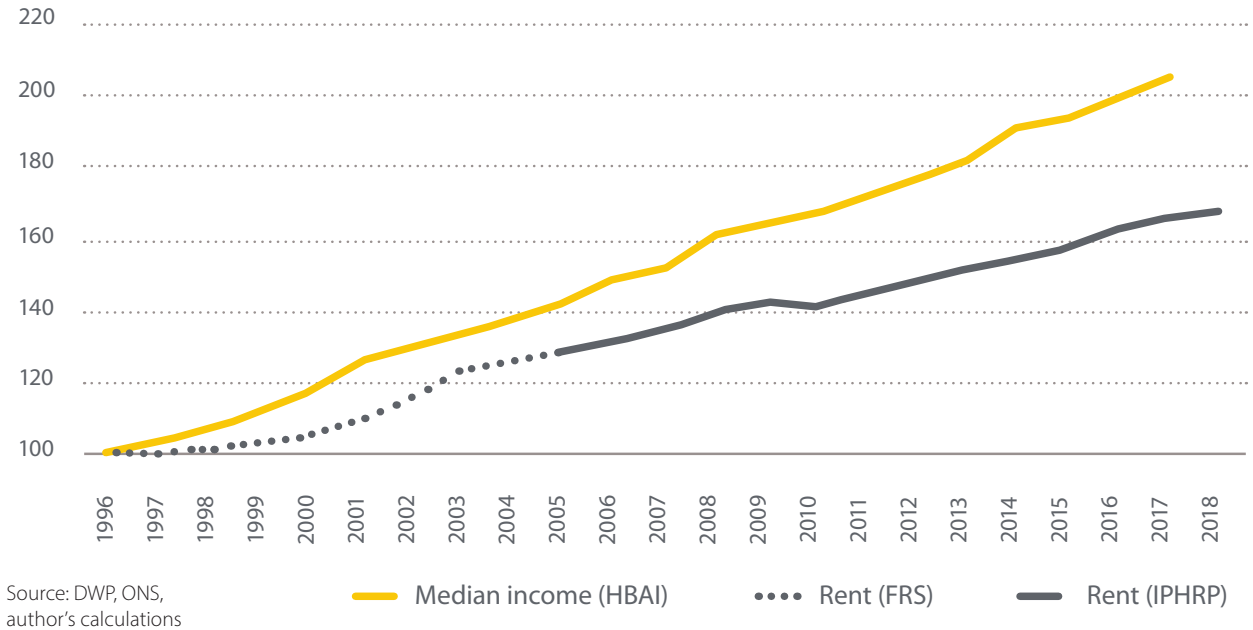


Source: DWP, ONS, author's calculations

Unfortunately, since the IPHRP series only begins in 2005, it does not cover the period of the most rapid house price increases. Is there any evidence to support the idea that explosive growth in house prices relative to incomes between 2000 and 2007 was supported by similarly rapid growth in rental prices?

One possible source of evidence is the Family Resources Survey (FRS), a survey of around 20,000 UK households that asks renters what they pay. Using FRS data in the years after 2004 is problematic because the private rented sector almost doubled in size over the subsequent twelve years. During this period the types of properties making up the private rented sector changed significantly, making average reported rents an unreliable guide to rental price changes on a like-for-like basis.[27] Box 2 contains more detail on the different data sources used to track rents and the complications introduced by compositional changes. However, in the years from 1996 up to 2004 the size of the private rented sector was small but relatively stable (growing from 10.1% to 11.9% of the stock). This suggests that FRS rent data was less affected by compositional change over this period and may at least be indicative of what was happening to rents on a mix-adjusted basis over that period. Fig. 6 shows that rents in the FRS grew relatively quickly in the early 2000s, albeit slightly slower than the acceleration of household incomes. Affordability for the median household then continued to improve despite the financial crisis and recession.

Fig. 6: Housing costs and household incomes, current prices, 1996-2018 (1996=100)



Source: DWP, ONS, author's calculations

Box 2 - Rent data

Trends in rental prices are a critical barometer of the housing market since, unlike house prices, their changing affordability indicates whether the housing stock is keeping pace with need. So it's important to track changing rents accurately. There are several data sources that can be used to do this of which the three key ones are: the FRS, the Valuation Office Agency (VOA) rent statistics, and the ONS rent index, IPHRP.

The FRS is a household survey that asks a sample of around 20,000 households a range of questions, including about the rent paid by renting families. The VOA's Rent Officers collect data on around 500,000 rented properties each year from landlords and letting agents. Both the FRS and VOA data therefore allow us to track the raw average of rent paid in the private rented sector.

The ONS, by contrast, produces IPHRP by adjusting the VOA data for the changing composition of the private rented sector, in order to create a measure that tracks what is happening to the rent on any given type of house.

Adjusting for compositional change in this way is essential to get a clear picture of what is happening to rents in any meaningful sense. In recent years, for example, average rent in London has risen rapidly, but this has largely been caused by the introduction of more expensive houses into the growing private rented sector.[29] Meanwhile the rent on any given London house has increased much more slowly.

For the purposes of monitoring the supply and demand of housing services, then, both the FRS and VOA data are of limited use and can give rise to worries about rapidly rising rents that do not reflect the average experience of renters. The differences can be substantial and raw averages highly misleading. The FRS, which has smaller sample sizes, shows that average rents grew by 7.4% in real terms between 2005 and 2016, while IPHRP shows that, on a like-for-like basis, rents actually fell 3.5% over the same period.

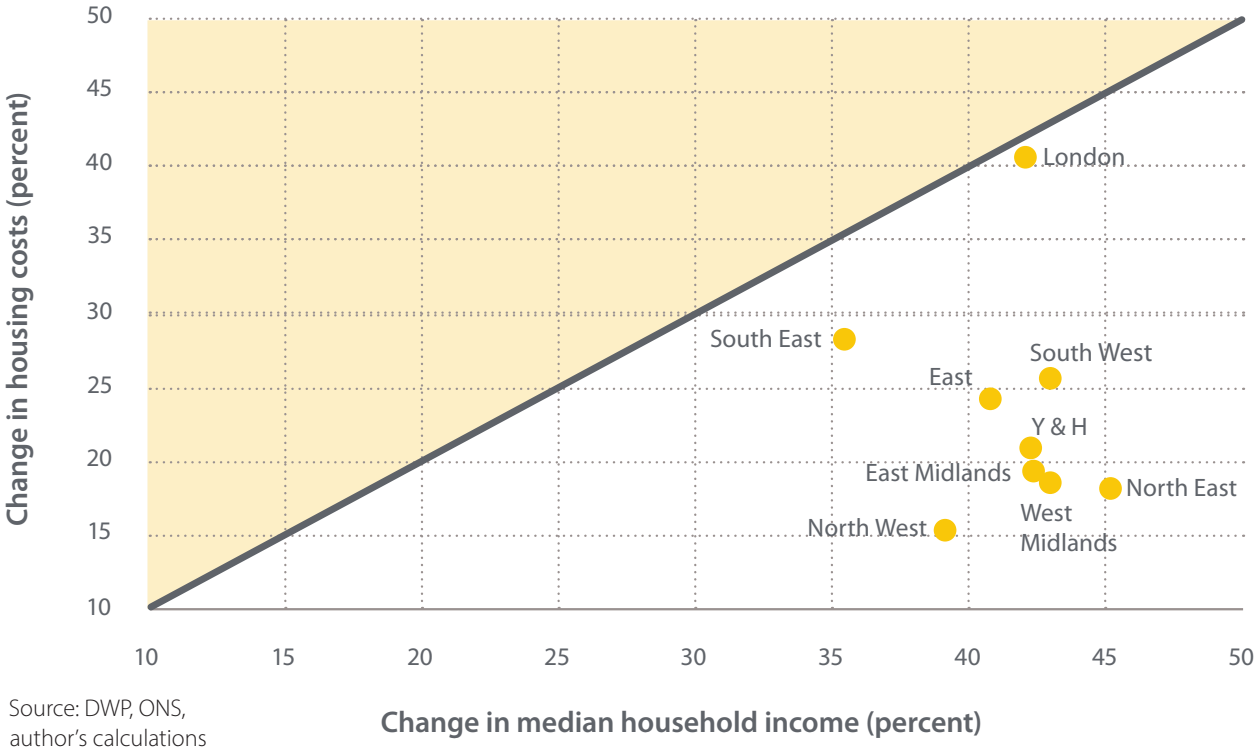
Sub-national price growth: is London an exception to the national picture?

At the national level, then, it appears that day-to-day housing costs have if anything lagged household incomes since at least the mid-1990s. But at regional level we have seen sharply divergent trends in house prices in recent years. Could it be that the national average is obscuring similarly divergent trends in costs, indicating a shortage of housing in some parts of the country?

The regional rent index from IPHRP offers some insight back to 2005. This was a period of sharply divergent house price growth across the country, with London prices up by almost 50% in real terms between January 2005 and the end of 2018, and those in the South East and East by over 20%, while prices in other regions stagnated. If a housing shortage is to blame in the high price-growth regions, we would expect to see comparable changes in their rents. In practice London rents were just 3% higher by the end of 2018 than they were in January 2005, after inflation, with rents in other regions down by between 5% and 14%.

Comparing the evolution of regional rent to local household incomes measured by regional Households Below Average Incomes (HBAI) tells us how average housing affordability has changed over the period. Fig. 7 plots the cumulative change (in nominal terms) in rent and incomes since 2005. Any regions lying in the yellow shaded zone, above the 45-degree line, would have seen deteriorating average affordability, as rents outpace incomes. Those below the line have experienced incomes growing faster than rents. The data show that in most regions median household incomes have grown a fair amount faster than rents. London is an exception, but here rent and incomes appear to have moved together. There is no apparent deterioration in the average affordability of day-to-day housing costs in any region.

Fig. 7: Changing housing affordability by English region, nominal, 2005-17 [28]



Source: DWP, ONS, author's calculations

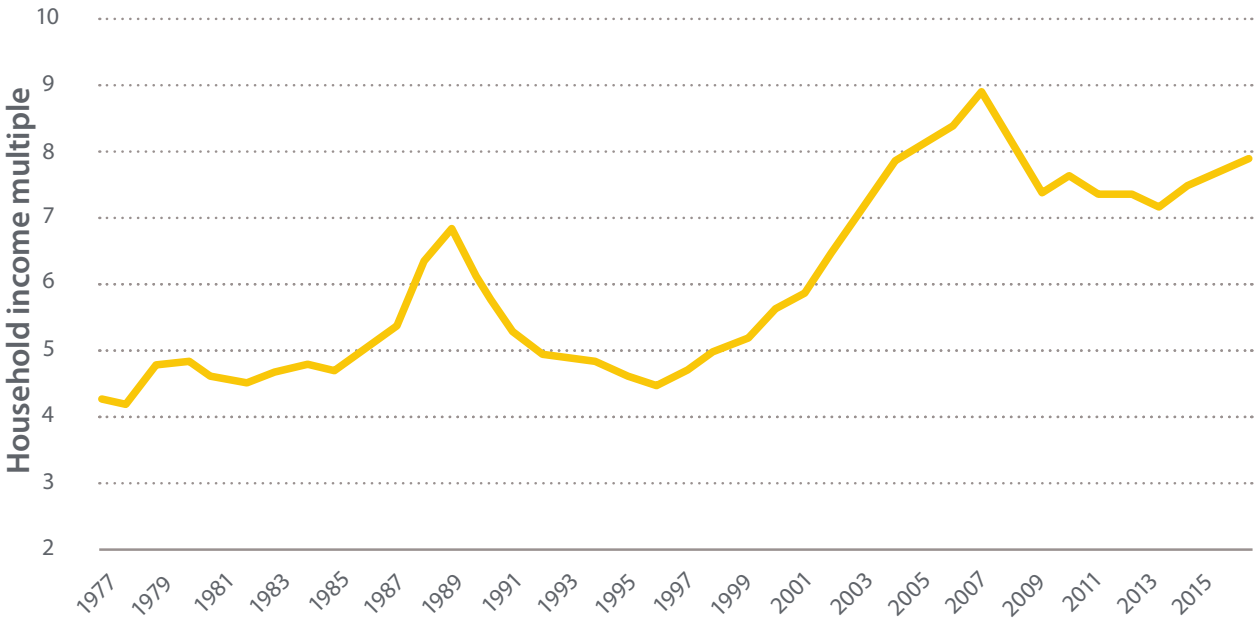
The fact that housing costs appear to have lagged household incomes over the past 23 years is consistent with the growth in the housing surplus over the period. Both trends are the opposite of what we would expect to see if the supply of housing was not keeping up with the demand for places to live. Neither changes in the price or quantity of housing services suggest that housing supply has put any upward pressure on the house price-to-income ratio.

If we have been building more than enough housing to meet the population's needs at stable rents, how can it be that house prices have exploded? This is the question we turn to in the next section.

4. What's really behind house price increases?

Since 1996 the housing stock has grown by 3.7 million while the number of households has increased, on the above estimates, by 3.2 million. Over the same period average household incomes have outstripped the day-to-day cost of housing. Both metrics suggest that supply has been sufficient to ***reduce*** prices relative to incomes, all else equal. Yet in practice house prices exploded after 1996, their ratio to median household income doubling from around 4.4 to hit a multiple of nine in 2007 (see Fig. 8). Even on the most recent data the ratio remains around eight – far above the level recorded at any time before 2004. If not a lack of supply, what can explain the jump we have seen?

Fig. 8: Ratio of UK house prices to equivalised household disposable income 1977-2016



Source: Land Registry, ONS

The basic theory of house price determination has been set out in a number of papers that build on the standard capital theory of Hall and Jorgenson (1967).[30] That paper established how the relationship between the price of a capital asset (in this case the house price) and the value of services that flow from it over time (the rent) is intermediated by the 'user cost of capital' – the annual cost of using a unit of capital assets. This approach was subsequently applied to housing by others such as Dougherty and Van Order (1982) and Poterba (1984), and the insights from that work underpin the measurement of the housing component of consumer price inflation by national statistical agencies in the UK, US and elsewhere.[31,32]

Under this framework, the housing stock provides a stream of services that households consume up to the point where the marginal value equals the marginal cost. In the private rented sector, this establishes the equilibrium level of rent. The 'user cost' approach is inevitably a simplification of how prices are set, and several other factors can also influence prices, most importantly the availability of credit via the mortgage market (see below).[33] Nevertheless, it illustrates the dominant influences on UK house prices over the period.

In the owner-occupied sector, the cost of a house of price P can be represented by $P\omega$ where:[34]

(1) $$\omega = \partial + i + \mu - \Delta P^{e} / P$$

With ∂ as the depreciation rate associated with the property and a risk premium, i as the real mortgage interest rate, μ representing taxes associated with the property, and $\Delta P^{e}/P$ representing the expected real capital gain as a proportion of the current price. In quantifying the annual cost of the house, the interest rate applies to its whole value, not just the mortgage-financed proportion, capturing the opportunity cost of the equity tied up in the house – the forgone income on a risk-equivalent asset.

If it was cheaper to own than to rent, the returns on investment in housing would exceed those on equivalent investments, making would-be owner occupiers or would-be landlords willing to pay more for a property. Hence house prices will be bid up to the point that the cost of owning a given house, $P\omega$, is equal to the annual rent. Rearranging the equation tells us that the rent, R, divided by the user cost of capital, ω, should equal the house price, P.

(2) $$P = \frac{R}{\omega}$$

As already discussed, any shortage of housing services will be reflected in rents rising relative to income, which will feed through directly to house prices via the numerator of the relationship expressed by (2). But as we have seen, rent growth has been benign, only increasing by around 20% in real terms over the past 23 years, while median household incomes rose by 42% between 1995-96 and 2017-18 after inflation. If anything, changes in the numerator appear to have put ***downward*** pressure on the price-to-income ratio.

That leaves the denominator. The user cost of capital, expressed in equation (1), is largely independent of the adequacy of the housing stock and most of its components tend to be stable over time, with the greatest volatility in recent years seen in the real interest rate. Taking each element in turn gives a sense of their importance in the determination of house prices and volatility in recent years.

∂ - The depreciation rate of the dwelling stock represents a cost borne by the owner of the property in the form of maintenance outlays. While it is not easy to measure, the ONS estimates of dwelling capital stock consumption imply that depreciation runs at around 1%.[35]

μ - Property taxes and subsidies in the UK have not changed radically as a proportion of the value of the housing stock in recent years. On the one hand, the withering of Mortgage Interest Relief at Source (MIRAS) and the rise in stamp duty receipts over the past two decades have raised the effective tax rate. On the other hand, council tax receipts have fallen as a proportion of the value of the housing stock.[36] As an indication, combined stamp duty and council tax revenues stood at around £45bn in 2017-18, approximately 0.7% of the value of the housing stock. This is slightly down on 0.8% in 1999-2000. Consequently, there has been no radical shift that would appear to justify a big change in house prices.

$\Delta P^{e} / P$ – The rate of expected real capital gain is underpinned by the expected growth in real rents, which is in turn determined by the adequacy of the supply of housing services. In the short run, other factors can and do drive house price expectations which may sometimes cause prices to rise above, or fall below, a level justified by these fundamentals, as was the case in 2006-07. Past house price movements can affect households' expectations of future trends regardless of fundamentals. Numerous studies have sought to establish empirical estimates of this effect, several of which conclude that a four-year 'memory' of past house price growth can cause prices to overshoot (or undershoot) fundamentals.[37]

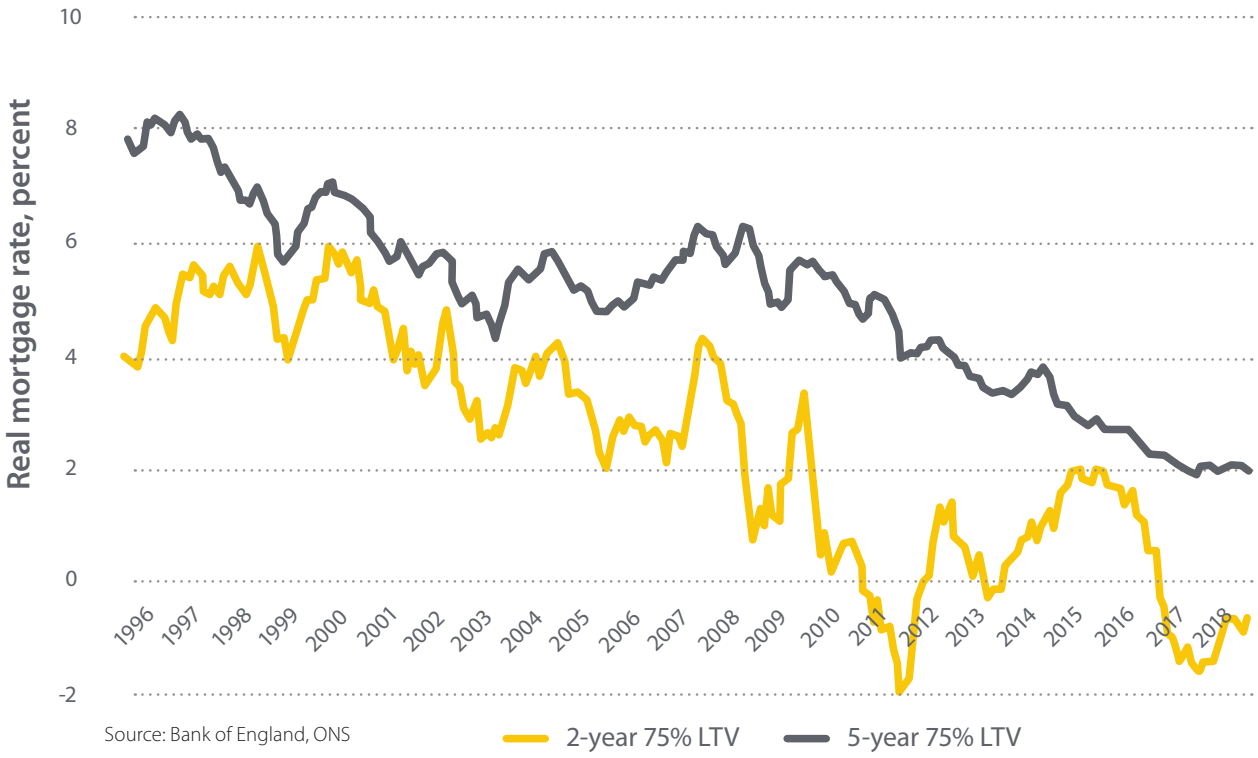
However, price growth expectations that are not justified by expected changes in stock, demographics or other components of the user cost are unlikely to be sustained for long since they would create ever larger arbitrage

opportunities. As Muellbauer and Murphy (2008) explain ***"[A] series of positive shocks to fundamentals can lead to rising prices and the expectation of further appreciation leading to greater and greater overvaluation. In due course, the increasing negative pull from fundamentals reduces the rate of appreciation."*** Consequently, the likelihood of over- or undershooting owing to extrapolative expectations at any short-term time horizon is high, but this is of much more limited concern when considering the 20-year appreciation in house prices that is the focus of this paper.

Overshooting aside, therefore, if rents are a stable proportion of earnings and additional supply is keeping pace with household formation, rational agents should expect real capital gain equal to the rate of growth of GDP per head – something around two percent a year in normal times.[38] Given the evidence on rents and supply over the past 23 years, we would expect this term to have been broadly constant over time.

i – Finally, we have the mortgage interest rate. This has plummeted over the past 20 years. Fig. 9 shows quoted bank and building society interest rates on 75 percent loan-to-value (LTV) mortgages since 1996, adjusted for consumer price inflation. Real interest rates on two-year fixed-rate products have fallen from around 5% in the late 1990s to zero today, while the rate on five-year fixed-rate products has gone from around 8% to 2%. These changes in the cost of borrowing are much larger than changes in the other elements of the user cost. Their impact has been substantially to lower the user cost, and hence the denominator in equation (2).

Fig. 9: Inflation-adjusted mortgage rates, 1996-2018



The implications for house prices of the large fall in the user cost are clear from equation (2). If the user cost has fallen as significantly over the past 20 years as mortgage rates suggest, it would have been surprising ***not*** to have seen the large and sustained increase in the house price-to-income ratio shown in Fig. 8.

What role for credit constraints?

This trend in the user cost over the past 20 years is consistent with a large increase in prices. But such a simple model ignores the role of credit constraints in their determination. Both theoretically [39] and empirically,[40] we would expect credit constraints to be an additional factor affecting prices and rental yields. Looking at the US experience in the years up to the financial crisis, Duca et al. (2011) document a precipitous deterioration in lending standards from around 2002, defined by a rise in the LTV ratio for first-time buyers (FTB) from around 88% to approximately 93% by 2007. The authors conclude that house prices are not exogenous to the prevailing ratio and that models that account for credit availability on this definition fit the house price data better.

It seems likely that similar relationships would hold for the UK housing market. However, the trends in credit constraints appear to have been rather different to those seen in the US in recent years. In the UK, deregulation of the mortgage finance largely took place over the 1970s and 1980s, and had largely run its course by the mid-1990s, culminating in 1996 with the introduction of buy-to-let mortgages.[41, 42] So there was limited change in the regulatory environment over the period of interest for this paper. Indeed, looking at the comparable measure for the UK to that used by Duca et al. for the US suggests that mean LTV for FTBs actually fell from around 90% in 1996 to 83% a decade later, and stood at 76% in early 2019.[43]

On these data it is not obvious that a rapid easing of credit availability played as big a role in the house price surge in the UK since 1996 as it clearly played in the run-up to the US sub-prime crisis. In the wake of the financial crisis, significantly higher deposit requirements for FTBs were accompanied by a substantial increase in interest rate spreads on new mortgage lending, especially for those with smaller deposits.[44] As a result, credit constraints faced by FTBs in the UK appear to have been significantly tighter over the decade since the crisis than they were in the decade before it, yet average prices remain close to pre-crisis highs in real terms.

At a regional level, the role of credit constraints may have been more significant in driving divergent trends in sub-national house prices, particularly between London and the rest of the UK since the financial crisis. UK Finance data analysed by the Centre for Cities highlights the degree to new mortgage lending was disproportionately directed towards cities in the Greater South East between 2013 and 2018.[45]

International and sub-national trends

The dramatic drop in mortgage rates has ultimately been driven by falling global interest rates, which raises the question of why some countries have seen much greater house price inflation than others in recent years. Indeed, even within the UK itself, price trends between different nations and regions have been strongly divergent. Prices in London grew by 41% in real terms between January 2010 and December 2018, while the North West, Yorkshire and the Humber, and Scotland essentially saw no real-terms change, and the North East saw a decline of 12%. If low interest rates were the primary determinant, would we not expect to have seen more uniform price movements?

Three factors seem important to consider in explaining the data at the sub-national level. First, as recent International Monetary Fund (IMF) research has demonstrated, there appears to be a strengthening correlation between house price movements in major, financially-integrated global cities.[46] This is a global manifestation of the increase in price movement correlations found in the US following mortgage market deregulation.[47] The IMF's 2019 Global Financial Stability report shows that many such cities – London, Amsterdam, Sydney, and Hong Kong, for example - have seen much faster house price growth over the past six years than the growth seen in their respective hinterlands. The IMF's view is that this uneven pattern is the result of the global 'hunt for yield', with properties in major cities offering a different investment proposition to those elsewhere. The report concludes:

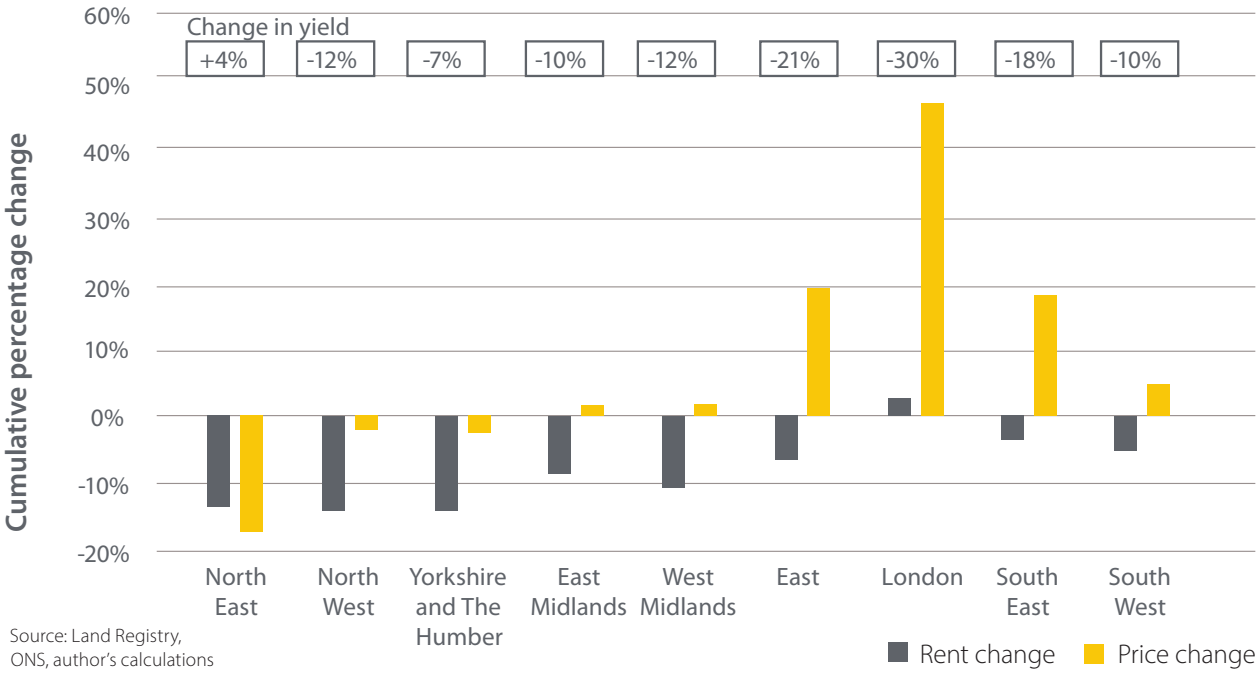
"[C]ities in advanced economies may be particularly exposed to global financial conditions, perhaps owing to their integration with global financial markets or to their attractiveness for global investors searching for yield or safe assets." A related explanation for international investors' apparent preference for cities may lie in the greater liquidity offered by their housing markets for both rent and ownership: Blackpool may offer higher yields than London, but a Chinese investor may be willing to pay a premium for exposure to London's thicker market.

A second possible contributory factor in the divergence of prices within the UK (and elsewhere), is the dynamics of the user cost when mortgage rates fall close to zero. Since depreciation is a function of the cost of the structure - land does not depreciate - the depreciation rate on a London house will tend to be lower, as a proportion of the property value, than that on an equivalent house in a more rural setting. If mortgage rates then fall uniformly across the country, by equation (2) this would lower the user cost proportionately more on the London house than on the equivalent rural house, causing the price of the London house to rise faster. The fact that council tax tends to be lower in London than elsewhere in the UK further strengthens this effect.

Finally, it is possible investors perceive that strengthening agglomeration effects are pushing up the demand for housing services in cities more than elsewhere, justifying the regional house price divergence. Such dynamics could stem from growing spillover benefits in urban economies that are increasingly dominated by intangible investments and ICT.[48,49] However, as Fig. 10 illustrates, rental yields in London have collapsed in recent years as prices have exploded while market rents – the demand for housing services - remained flat. This suggests that, while such an effect may be at play, it doesn't appear to be strong enough to explain the large price changes we have seen. It is possible that falling yields reflect investors' perceptions about future, rather than current, growth in urban rents. However, given the scale of price changes, the rate of rent growth would have to increase markedly for such expectations to be borne out on any reasonable time horizon.

The relative contribution of these and any other drivers of the regional price divergence is uncertain. But falling yields indicate that rapid price growth in some regions has not been underpinned by rising rent – i.e. growing demand for, or insufficient supply of, housing services.

Fig. 10: Cumulative change in real rents, prices and yields by English region, 2005-2018



Source: Land Registry, ONS, author's calculations

Turning to international comparison, there is a further set of reasons why price movements may diverge. One is differences in financial institutions. For example, as discussed above, the UK took various steps in the 1970s and 1980s to liberalise mortgage lending and introduced buy-to-let mortgages in 1996. Meanwhile, it is no coincidence that Germany, where house prices have been far more stable over the past 20 years, has retained tighter constraints on LTV and loan-to-income (LTI) ratios, and denied widespread access to home equity withdrawal.[50]

Secondly, it is clear that while many countries saw unsustainably rapid house price growth in the run-up to the financial crisis, in only some – Ireland, Spain and the US most obviously – did that develop bubble dynamics in which vast oversupply of new housing stoked the frenzy and resulted in a large overhang of vacant and decaying ghost estates.[51] In the cases of the US and Ireland, house prices have recovered quickly since 2013, leaving them approaching pre-crisis levels. While the timing of bursts of house price acceleration between countries are not synchronised, there are nevertheless some common trends in prices over a longer time period.

In light of the benign trends in the market for housing services, this section has sought to explain what has been driving house price growth over the past 23 years. The scale of the fall in interest rates - and investors' associated search for yield and demand for safe assets – in the context of an already liberalised mortgage market, makes the sustained jump in the price-to-income ratio unsurprising. But while a lack of supply might not have been the cause, could a big increase in the rate of house building nevertheless be a solution? The next section considers the evidence.

5. Could supply be the solution?

The last two sections have suggested that the jump in house prices since 1996 was caused by the demand for housing assets vastly outpacing their supply, owing to the plummeting cost of capital. Meanwhile supply outpaced the demand for housing ***services***, causing the day-to-day cost of housing to fall relative to income. This begs the question: if high prices were not caused by a shortage of housing, could a huge increase in supply nevertheless bring them back under control?

It is obviously the case that increased housing supply will, all else equal, reduce prices and rents. The important question for a policy of supply as the solution to high prices relates to the ***degree*** of that sensitivity. Given the huge scale of the real-terms price increase since 1996, we would need evidence that house prices are quite sensitive to additional housing stock if building more is to make a meaningful contribution to reducing them.

A number of modelling exercises have been undertaken using aggregate data for the UK in recent years.[52] They tend to take similar approaches, basing the model on an inverted demand function for housing services, which describes average house prices as a function of some measure of the housing stock, the number of households, household income, and the user cost of capital.

The results of these studies show a large degree of consensus (see Fig. 11), with the sensitivity of house prices to additional stock (the inverse of the price elasticity of demand for housing) reported as being in the range of -1.1 to -2.2. In other words, an additional 1% more housing stock would be expected to lower house prices (and by implication rents) by around 1.5% to 2%, all else equal. Similar results have been found for other countries including -1.5 for France,[53] -1.2 for Germany [54] and -1.3 to -2.1 for the US.[55] Based on its own internal model, the MHCLG takes a similar view of the impact of supply, assuming that 1% more housing units will reduce prices by 2%.[56]

Fig. 11: Selected results on the sensitivity of prices to housing supply

Study	Sensitivity
Findings for the UK:	
Oxford Economics (2016)	-1.9
OBR (2014)	-1.1
Meen (2013)	-1.7
OECD (2011)	-2.1
Meen (2009)	-1.5
Cameron, Muellbauer & Murphy (2006)	-1.6
Muellbauer & Murphy (1997)	-2.2
Findings for other countries:	
Geiger, Muellbauer & Rupprecht (2014) (Germany)	-1.4
Chauvin & Muellbauer (2013) (France)	-1.5
Duca, Muellbauer & Murphy (2012) (United States)	-2

To put these figures in context, it is worth considering the situation in England. The latest available data suggests that the first half of 2018 England had a total of just under 24.2 million dwellings, 4.9% more than the number of households. The above relationships suggest that, if households in England were to form at a rate of 200,000 per year, net additions of 300,000 per year would cut real terms house prices by 0.8% per year, all else equal. Applying the range of UK estimates above, such rate of additions might therefore be expected to reduce prices by between 7% and 13% over 20 years.

Even if such a marked increase in new supply were to be achieved and sustained across the economic cycle for two decades, the available evidence is clear that the price reduction would be modest relative to the 160% real terms growth in house prices since 1996. Within the period of a generation then, the scale of house price movements wrought by changes in interest rates and credit availability are an order of magnitude greater than anything caused by plausible changes to the housing stock or the population. Consequently, if we want to increase the affordability of housing, more effective solutions lie elsewhere.

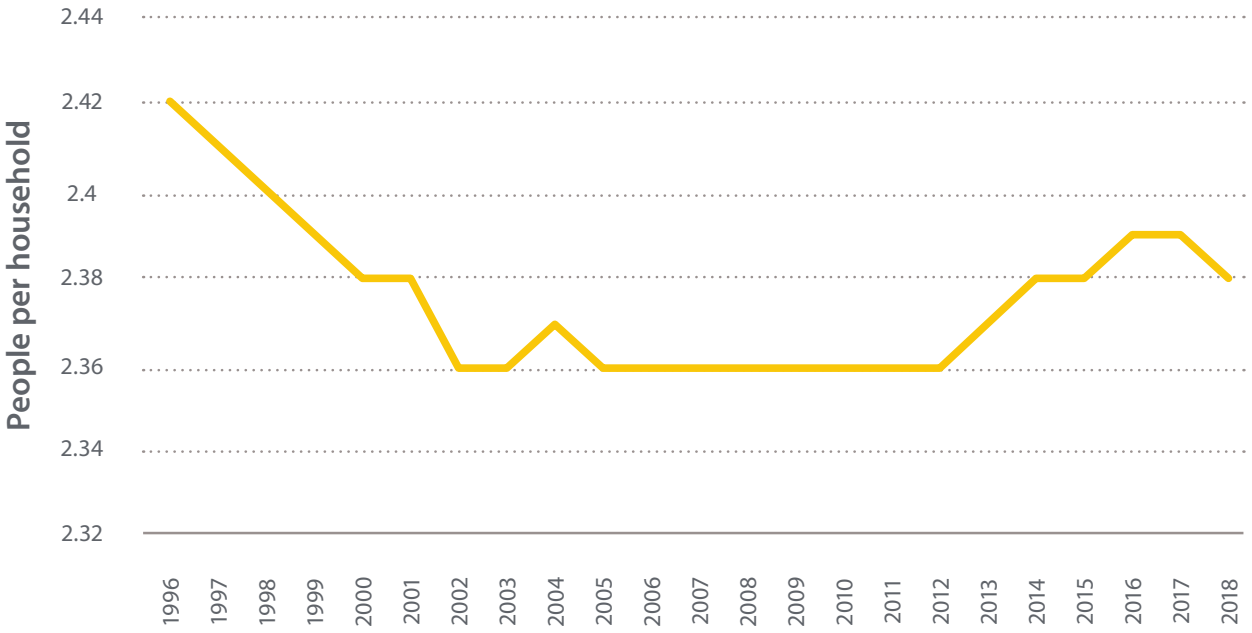
6. Constrained household formation and housing inequality

The foregoing analysis focused on the key metrics that economic theory suggests we should consider to determine what has driven house price growth over recent decades. While those trends do not indicate an undersupply of housing, there are a number of other metrics that suggest less benign housing developments. Some researchers have invoked these to argue that, despite the evidence on rent and housing stock, there nevertheless is a shortage of housing – or at least that raising the rate of supply would help. This section considers these developments and explores what might be behind them, in order to determine what they tell us about the state of housing in the UK.

Three important trends require explanation. The first is a rapid rise in the number of young people aged 20 to 34 living in their parents' homes. Second, household survey data suggests that there has been an increase in the number of families sharing a household. We explore these in more detail below.

The third potentially concerning trend is the stabilisation of, and recent rise in, average household size, which is closely related to the first two trends. ONS data suggest that average household size in the UK fell rapidly over (at least) the last three decades of the twentieth century, albeit at a declining rate towards the end of the century. From around 2003 that decline stopped, and households even started to grow a little from 2013 (see Fig. 12).

Fig. 12: Average household size, UK, 1996 to 2018



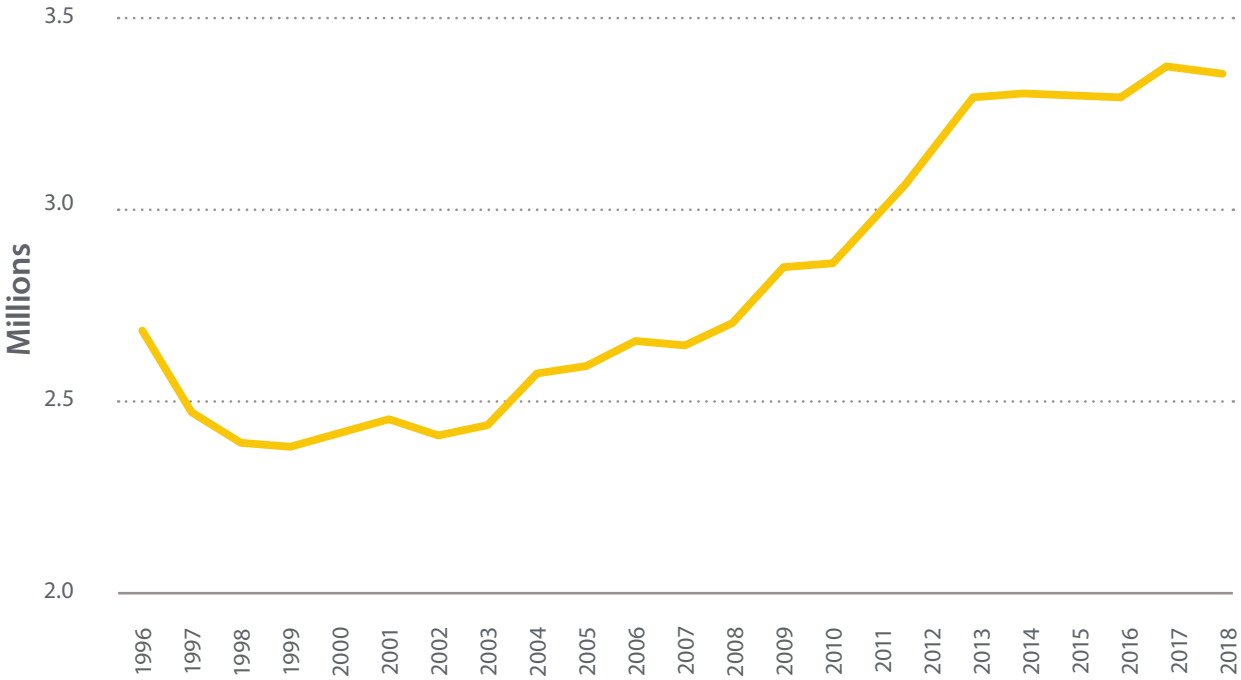
Source: ONS, author's calculations for 2018

It is not inherently surprising to see the average household size stabilising. Indeed, since nuclear families are the basic social unit, it is hard to see how average household size could fall much further, even if housing costs were to be dramatically reduced. Nevertheless, the UK's ageing population does mean that we might have expected to see a slight downward trend in average household size over the past 15 years. Certainly, the recent increase requires explanation.

More young people living in their parents' home

Young people living in their parents' home for longer is one possible contributor. A stark trend over recent years has been the substantial rise in the number of 20-to-34 years olds doing so. Around 2.5 million young people lived 'at home' between 1996 and about 2005. But in the late 2000s, and particularly from 2008, the number began to rise quickly, hitting 3.3 million in 2013 (see Fig. 13).

Fig. 13: 20-to-34 year olds living with their parents, UK, 1996-2018



Source: ONS

It seems likely that declining affordability of housing for young people is behind this trend since there is no obvious reason why this would have occurred purely out of changing preferences. But changes in housing affordability can have any of three causes which may operate in combination:

1. An undersupply of housing could raise market sector housing costs relative to average incomes, and therefore constrain household formation;

2. Changes to young people's incomes, perhaps caused by reduced housing benefit entitlement or weak earnings growth, could reduce affordability and therefore constrain household formation; and

3. The erosion of the social rented sector could leave would-be new households constrained by only having the alternative of paying higher market sector rents, where in years gone by they might have moved into social housing.

The implications for policy of more young people living with their parents depends critically on which of these possible causes lies behind the trend. A general increase in housing supply to bring down market rents and prices is only a solution if the first cause is at play. Meanwhile, policies that raise the incomes of young people by some route are the logical solution to the second, and more social housing would be the way to tackle the third.

The evidence on average rents and incomes presented in Section 3 suggests that we can rule out the first driver. What evidence is there of the other two?

The marked rise in numbers of young people living with their parents coincides with the financial crisis. There is ample evidence that the labour market outcomes of young people have been weaker than those of other groups in the labour force for some time, but particularly since 2008. The Institute for Fiscal Studies (IFS) has shown that people in their 20s bore the brunt of the financial crisis' impact on wages, with their median incomes falling by over 12% in real terms in the five years after the financial crisis struck.[57] The Resolution Foundation's analysis has shown the real incomes of people born in the 1980s slipping behind those born in the 1970s when they were the same age.[58] And the youth unemployment rate jumped in 2008 and only began to decline in 2013.[59]

Since 2010 there have also been a number of benefit cuts that will have directly reduced housing affordability for some. These include the decision to limit Local Housing Allowance (LHA) – available to private renters – to the 30th percentile of local rents (down from the 50th) and uprate the allowance only with CPI. These measures alone are estimated to be reducing the awards to private sector renters in 2018-19 by over £900m.[60] In November 2010 the government decided to raise the age up to which single people can only claim housing benefit to cover the cost of shared accommodation from 25 to 35. This measure, estimated to be saving the exchequer around £230m this year, directly discourages low-income young people from forming their own household.[61] The four-year freeze on LHA from 2016 will have further reduced affordability, so it would be unsurprising to see those most dependent on such support forming households at a lower rate.

These developments have nothing to do with changes in the cost of housing itself, but have nevertheless diminished housing affordability for younger people relative to others, perhaps causing them to delay household formation.

At the same time, the erosion of the social housing stock has been felt most keenly by young people. In 1997 some 15.3% of 20-to-34 year olds lived in the social rented sector (excluding those living in their parents' social rented home) according to the LFS. But by 2017 that proportion had fallen to 10.1%. This is equivalent to around 680,000 young people, who would have been living in their own social rented house, now facing the choice of either paying market rents or staying in their parents' house. Reduced access to the social rented sector is likely to have damaged affordability and hence constrained household formation among young people. Again this is not a trend that can easily be addressed by more housing supply at market rents.

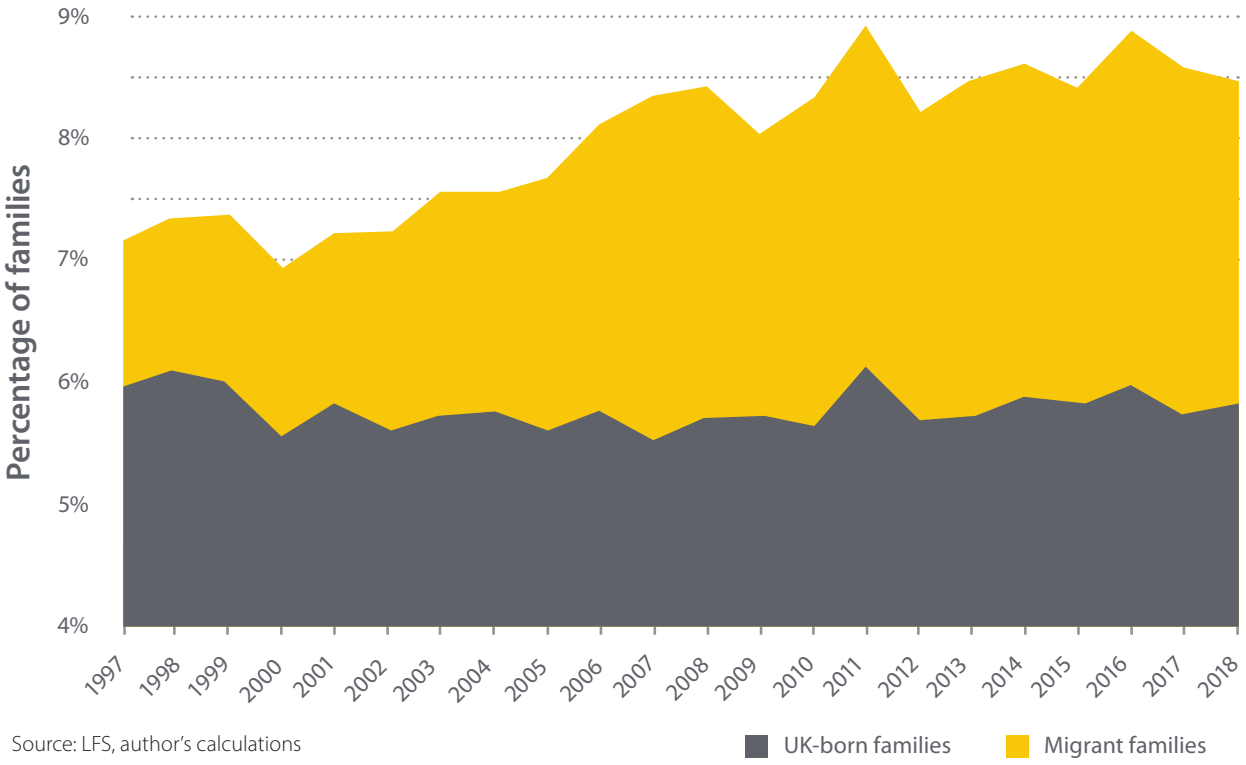
Hidden households

The second dynamic that has contributed to growing household size is an apparent increase in the number of 'hidden households'. There are several ways to define this concept, but in essence these are represented by heads of family units who share a house with one or more other family units. While some of this sharing might occur out of choice, some may also occur because the cost of housing makes sharing more economical.

According to the LFS, the number of second or subsequent family units within UK households increased from 7.2% of all family units in 1997 to 8.5% in 2018. This represents some 400,000 more hidden households in 2018 than there would have been had the rate remained unchanged.

It is reasonable to imagine that one of the causes of this change could be deteriorating affordability, for the reasons discussed above. However, over the same period the UK has experienced a significant change in the composition of the population that appears to explain the growth in hidden households. The foreign-born population of the UK increased from 5.2 to 9.3 million between 2004 and 2018.[62] If we decompose hidden households according to migration status, it is clear that the UK-born proportion has not changed over the past 20 years, and the increase has been concentrated among migrant households (see Fig. 14).

Fig. 14: Migrant and UK-born 'hidden' households, UK, 1997 to 2018 [63]



Source: LFS, author's calculations

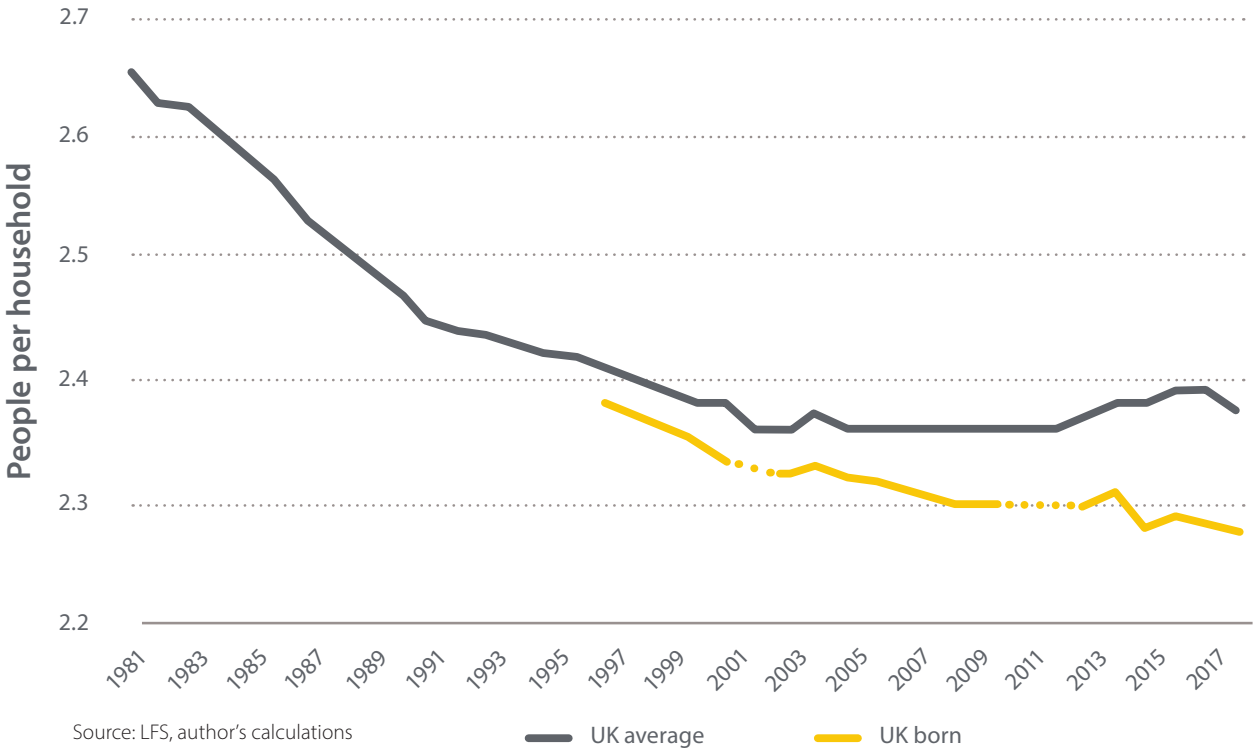
This is perhaps unsurprising when we consider that 'family' units include single adults sharing with other unrelated adults. Many of these hidden households are therefore likely to be young adult migrants who tend to share housing for a variety of reasons.

Average household size

More young people living with parents and increased numbers of hidden households have clearly contributed to ending the trend towards shrinking household size over the past 15 years. But given the importance of migration, described above, it is instructive to decompose the household size data according to place of birth. LFS data suggest that non UK-born households have long tended to live in larger households than natives, averaging 2.79 people per household since 1997. Hence the growth in their number has put upward pressure on the overall average household size. Abstracting from this compositional effect, by isolating the trends for UK-born households, takes us a step closer to seeing whether affordability problems lie behind the changes in average size.

Fig. 15 compares the trend in UK average household size to that of the UK-born population (households where the head of household is UK-born). It shows that among the native population household size has continued to decline since 2000, as we might expect it to given an aging population. It therefore suggests that the arithmetic effect of more migrant households has caused the inflection in the overall trend.

Fig. 15: Continued decline in average household size among UK-born households, UK, 1981-2018



Source: LFS, author's calculations

The evidence of this section shows that there are several factors influencing people's housing decisions. Despite ***average*** affordability improving, for some groups – including young people and anyone reliant on housing subsidies – affordability has deteriorated. Meanwhile changes to the UK population due to immigration have also played a significant part in increasing average household sizes.

To the extent that affordability has contributed to these trends, additional supply of market sector housing is unlikely to have any meaningful impact. The causes appear to be distributional in nature – lower wage growth for some groups, benefit cuts, and a shrinking social rented sector – and therefore require distributional solutions if they are to be reversed.

7. Why has home ownership collapsed?

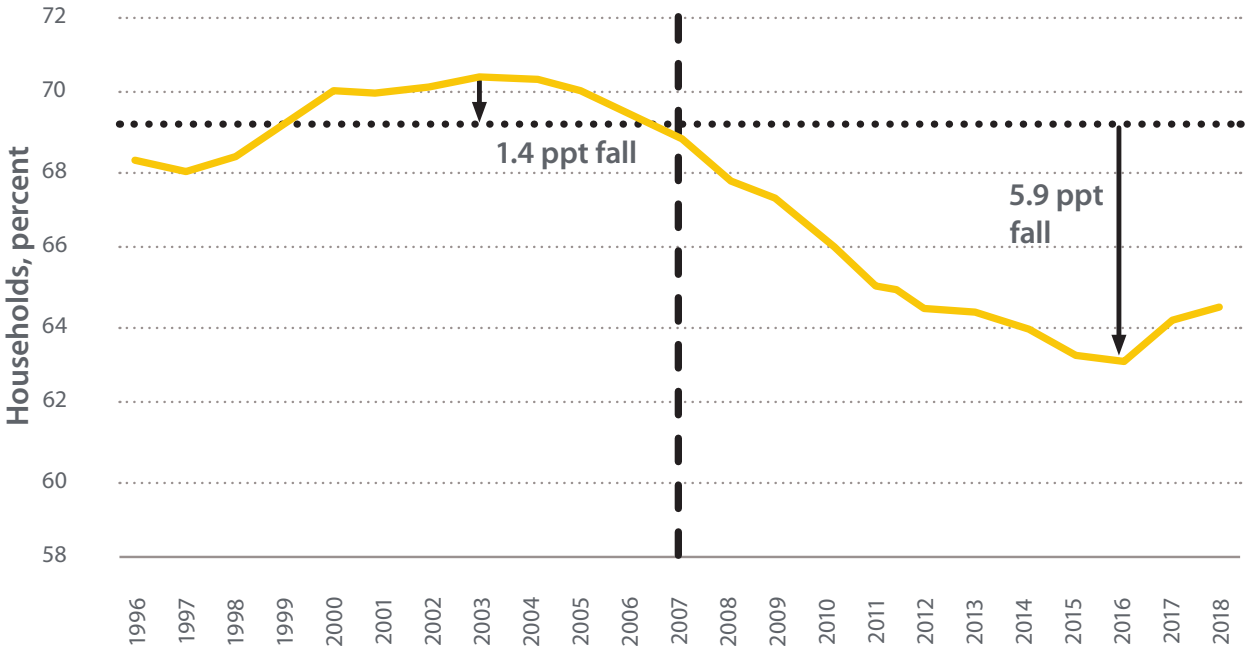
Up to this point this paper has dealt with the question of why house prices have risen so much over recent decades and the extent to which this is attributable to inadequate housing supply. But a similarly important, and closely-related aspect of the housing crisis is the precipitous decline in home ownership rates over the past 15 years. A common perception is that high house prices are the major cause of the decline. After all, having to raise a given percentage of the house price as a deposit obviously gets harder as prices rise.

This idea has given rise to a simple syllogism that apparently explains the collapse in home ownership: a housing shortage pushed up prices, and high prices inevitably exclude FTBs, therefore building more will raise home ownership. As the then Secretary of State put it in his foreword to the 2017 housing white paper*: "Soaring prices and rising rents caused by a shortage of the right homes in the right places has slammed the door of the housing market in the face of a whole generation."* [64] As this paper has argued, the first premise is faulty. This section explains why the second – that high prices have been the main cause of declining home ownership - is also flawed.

High house prices weighed on home ownership rates in the early 2000s. But the main driver of the later collapse in home ownership appears to have been the sudden change in credit conditions for FTBs in the wake of the financial crisis. This explanation points to a very different set of policy options if we want to recover the high home ownership rates of the early 2000s.

Home ownership grew rapidly in the 1980s with mortgage market liberalisation and the Right to Buy policy of the Thatcher government. After pausing during the house price falls of the early 1990s, the rate plateaued at around 70% in England from 2000 (see Fig. 16). By 2007, when house prices peaked, the homeownership rate stood at 69.1%, 1.4 percentage points lower than its 2003 record. After the financial crisis hit, the rate plummeted by a further 5.9 percentage points over the subsequent eight years, to hit a low of 63.1% in 2016.

Fig. 16: The collapse in home ownership, England, 1996-2018

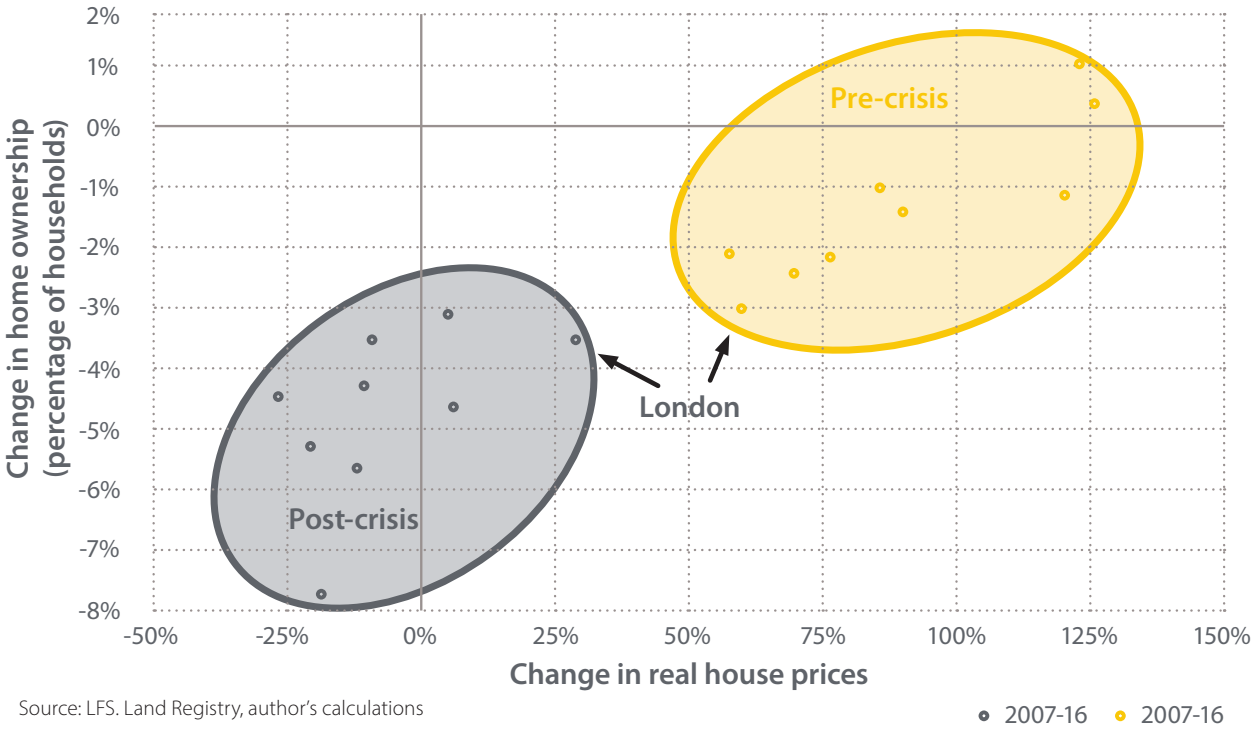


Source: LFS

It is likely that high prices had some effect in causing home ownership to come off its 2003 peak. However, the timing of the big drop in ownership does not immediately suggest that the impact from high prices was strong. From 2000 to 2007, when home ownership fell only slightly, UK house prices ***increased*** by 85% in real terms. Home ownership then fell by 4.7 percentage points from 2007 to 2013, as house prices ***fell*** 22%.[65]

Divergent regional trends in house prices also suggest that they cannot have been the major determinant. The pre-crisis period saw home ownership rising in some regions and falling in others, while prices boomed everywhere. After the crisis the performance of prices differed markedly between regions, yet home ownership fell rapidly everywhere. By 2016 prices in the three northern regions were down on 2007 by between 18% and 25%, while in London they were up by 34%, yet home ownership fell more in the North than it did in the capital or the Greater South East (see Fig. 17).

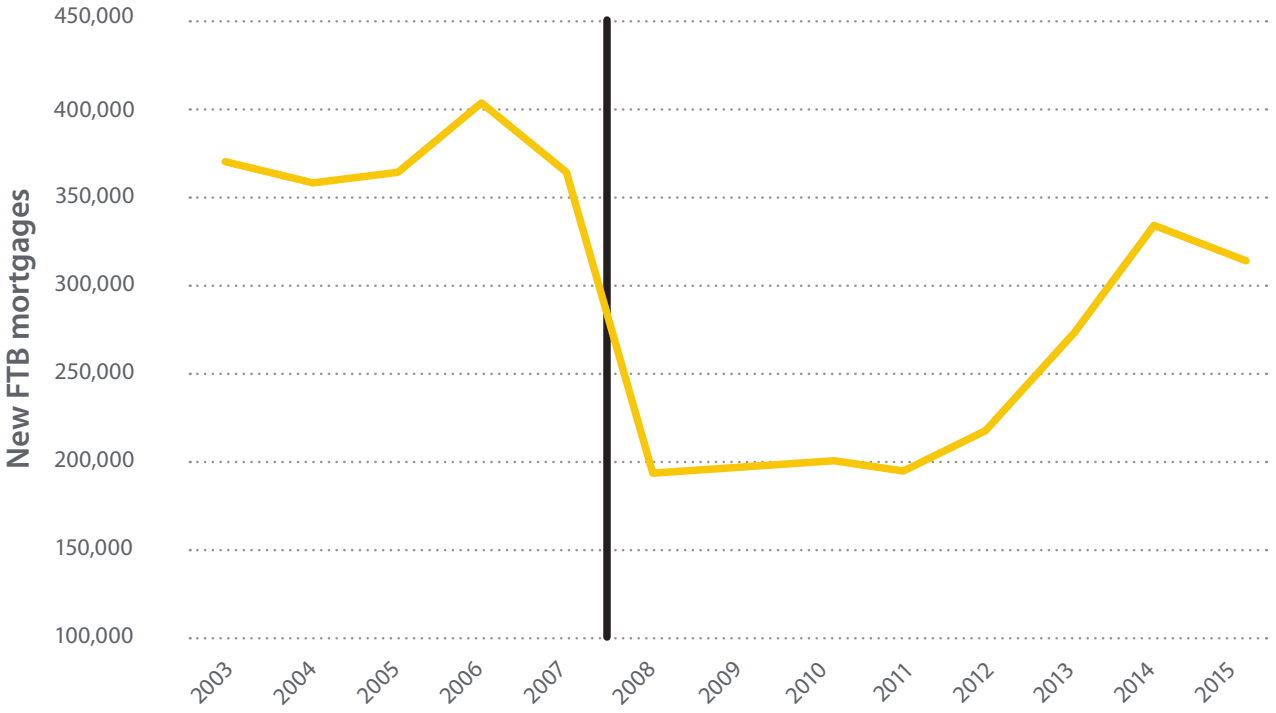
Fig. 17: Changing house prices and home ownership by English region, 2001-2016



Source: LFS. Land Registry, author's calculations

The dominant cause of the collapse in home ownership appears to lie in the mortgage market.[66] The overwhelming majority of FTBs need mortgage finance to buy a house. If high prices were weighing on their ability to access finance in the run up to the crisis, we might expect to see the number of new FTB mortgages drifting downwards in the years up to 2007. There is some evidence of this in the early 2000s, but in the five years up to 2007, UK-wide issuance of FTB mortgages was reasonably constant at around 370,000 per year.[67] In 2008 that number suddenly almost halved, to 192,000, and didn't much recover for the next five years (see Fig. 18). Only in 2017 did it regain something close to pre-crisis levels.

Fig. 18: New loans issued to FTBs, UK, 2003-2015

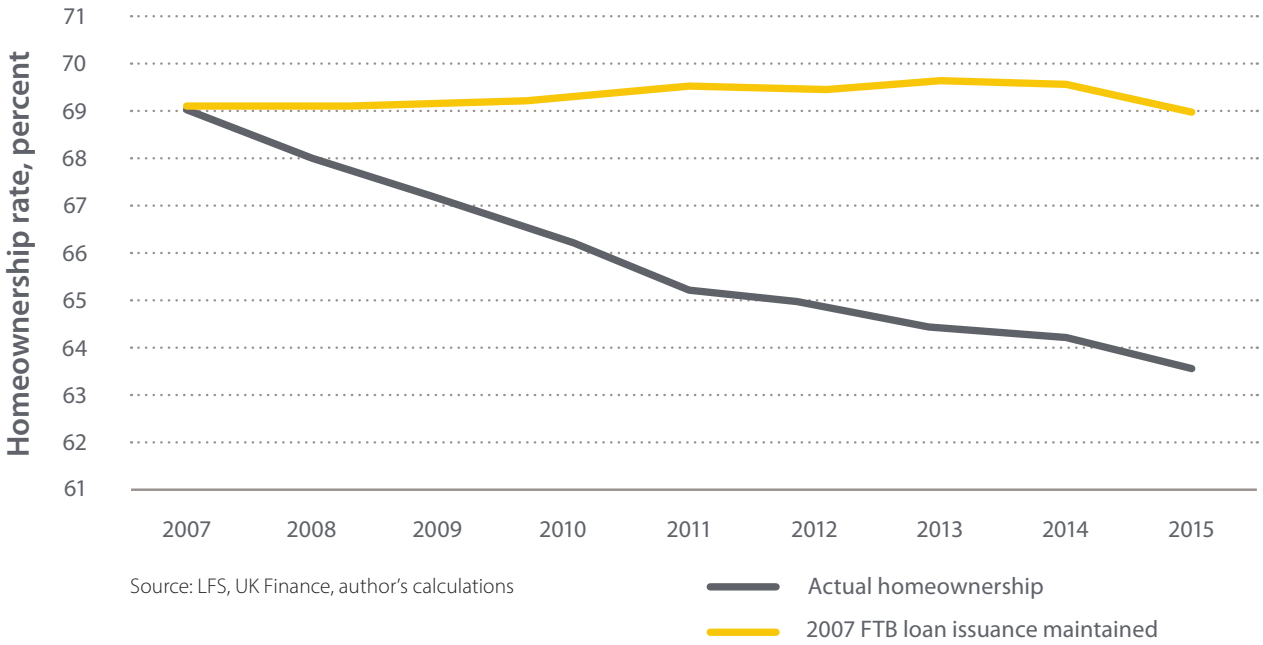


Source: UK Finance

The sharp discontinuity in lending just as the crisis struck and prices began to fall strongly suggests that access to finance played a dominant role in the collapse in home ownership, as other authors have also noted.[68] A concurrent drop in median LTV for FTBs from 90% in 2007 to 75% in 2009 confirms the supply side nature of the shift, locking out hundreds of thousands of new home owners each year until issuance began to head back towards more normal rates from 2014.[69] What's more, many FTBs faced a sudden jump in mortgage interest rates relative to homeowners with bigger deposits. Bank of England data show that the interest rate spread between 75% and 90% LTV mortgages ballooned from well under half a percent to well over 2% between 2009 and 2012.[70] To buy a house in the years after 2008, then, the median FTB had to have a much bigger deposit in cash terms than was needed before that point, despite prices in most regions being lower, and had to pay far higher interest rates than others in the market, such as would-be landlords. In this context it would have been remarkable if home ownership had ***not*** fallen steeply.

It is possible to simulate what would have happened to UK home ownership rates if FTB mortgage issuance from 2008 had continued at its 2007 rate of around 360,000 new loans per year.[71] Fig. 19 shows the results (represented by the yellow line) compared to the actual path of home ownership (grey line). This simple 'what if' projection is intended to illustrate the scale of impact on home ownership caused by the sudden drop in FTB mortgage lending.

Fig. 19: Effect on UK home ownership of maintaining the 2007 rate of FTB mortgage issuance



Source: LFS, UK Finance, author's calculations

Had the number of FTB loans originated each year stayed at or around pre-crisis levels, home ownership would have remained at around 69%, rather than falling sharply as it did. Indeed, the past two years has seen the number of new loans finally regain those levels and home ownership has begun to rise again as a result (see Fig. 16).[72]

This section has shown that, while house prices are a factor in determining home ownership rates, shifts in the FTB lending activities of banks played the dominant role in the collapse in home ownership. This insight has important implications for policy that seeks to raise home ownership rates.

Raising the rate of housing supply will therefore have a negligible impact on home ownership, both because it will only have a weak impact on prices, and bcause prices in turn only have a limited impact on home ownership. Rather, the primacy of finance in this story suggests that there may be some trade-offs to be confronted if we want to achieve and sustain high rates of home ownership. The final section sets these out.

8. Conclusions and policy implications

The analysis of this paper suggests five broad conclusions and implications for housing policy in the UK.

1. A shortage of housing did not contribute to house price increases between 1996 and 2018.

The data on private market rents, together with those on the housing stock, show that the supply of housing services has comfortably outstripped demand since 1996. Over the period, rent and imputed rent ('housing costs' in the true sense) have fallen relative to median household incomes. Consequently, housing supply does not appear to have contributed to the sharp growth in the price-to-income ratio since the late 1990s.

At regional level the available data covers only the past 14 years but tells the same story for almost every region of England. In London, housing costs have moved in line with median household incomes since 2005 hence, on average, affordability has not deteriorated. This also confirms that the capital's 47% real-terms price growth since January 2005 is not underpinned by either 'too many people' or insufficient housing stock. There is consequently little basis, even in London, to invoke undersupply as the cause of high prices or, by extension, falling home ownership.

2. Raising the rate of supply will do little to bring prices down and will result in a growing number of vacant properties.

The large body of literature on the responsiveness of house prices to supply indicates that even building 300,000 houses per year for 20 years would do little to reverse the price growth of the recent past. Such a strategy therefore does not offer an effective solution to the problem of high prices.

One perspective on this is that, while 10% lower prices and rents after 20 years may not represent a complete solution, it is an improvement and should therefore be welcomed. However we should be wary of the view that more housing investment is always better, since a high proportion of the 300,000 net additions would go unoccupied.

While household formation is influenced by housing costs at the margin, the structure of UK households suggests that it is to a large degree exogenously determined by social preferences. This is apparent from the current composition of UK households. Some 85% of adults are either the head of household or the partner of the head of household, implying that the large majority of adults would not be induced to form a new household however much cheaper housing became. A further 12% of adults are related to the head of their household – primarily adult children in their parents' home – some of whom may be there out of choice and others due to affordability constraints. Only 3% of UK adults appear to be sharing with an unrelated head of household - the group from which new households might most obviously form.

In addition, the existence of housing benefit means that those people who are most income-constrained are somewhat insulated from market rents, making them less sensitive to the benefits of increased supply. In light of these conditions, it seems unlikely that other would-be households are large enough in number or sufficiently sensitive to housing costs for a 10% reduction over 20 years to make a significant difference to household formation rates.

Consequently, as the past 23 years have shown, out-building the rate of household formation inevitably results in a growing surplus stock of housing. This has the benefit of reducing prices and rents. It may also ease labour mobility and thus improve productivity. But investment that results in vacant properties also carries an economic cost to society since it represents resources that cannot go into other potentially more valuable infrastructure or consumption. The optimal level of vacant stock is therefore ambiguous and policymakers should be wary of assuming that supplying housing services at a rate faster than the underlying growth in demand for their services is inherently welfare enhancing.

3. The distribution of housing has become more unequal. Reversing this requires distributional policies and is not amenable to general market supply.

While the aggregate signals in the housing market suggest that supply has been more than sufficient to keep up with the growing need for places to live, the rising number of young people living with their parents may be the result of declining housing affordability for them. The primary causes of this appear to have been the stagnation of young people's incomes, the erosion of the social housing stock and, more recently, policies to cut housing benefit, especially for young single adults.

None of these causes is efficiently or effectively addressed by a general increase in the supply of market sector housing for the reasons set out above. Rather they suggest the need for targeted solutions such as more social housing or more generous housing benefit, that will enable affordability-constrained young people to set up on their own. A tighter labour market and stronger economic growth might also benefit the pay of younger people relative to others and ease affordability problems.

4. House prices are vulnerable to an end to the era of low interest rates and a reversal of overseas investment.

Economic theory tells us that the user cost of capital is a key determinant of house prices. It represents the discount rate that, when applied to the stream of rental payment available on a property, gives the house price. Mortgage interest rates have fallen substantially, in line with the declining global risk-free rate, since the late 1990s. This fall offers ample explanation of the rise in house prices as the capitalised value of future rental payments, which have themselves been relatively stable since 1996.

On one hand this is a comforting insight. It tells us that price rises do not reflect an increase in the day-to-day cost of ownership. Higher prices combine with lower mortgage rates to ensure that the overall cost for an owner occupier is broadly where it was in 1996, relative to average incomes. Rents tell a similar story.

On the other hand, this is deeply concerning for several reasons. Their home is by far most homeowners' single biggest asset. Owner occupation represents an extraordinarily high degree of asset concentration that would be regarded as unwise in any other investment setting. Consequently, it concentrates a huge amount of risk on ordinary households that are not well-placed to bear it. Against a backdrop of rapid house price growth across the country since the mid-1990s, this risk has appeared very attractive as prices have grown. The trend appears to have cemented a popular perception that housing is a one-way bet. In political economy terms too it has had a powerful impact since the benefits of rising prices are obvious to owners of property, while the cost to would-be owners is muted by the prospect of further house price appreciation.

Were interest rates to begin to rise again, returning to something closer to levels seen in the past, much of this logic would go into reverse. This could have potentially serious political repercussions if highly-indebted young homeowners - having been sold the idea of home ownership as a rite of passage and ploughed hard-earned savings into their deposits - were to see the value of their assets falling.

But there is a further worrying implication. If high house prices were the result of inadequate supply, the solution would be amenable to concerted policy action to build more housing. If instead the problem is the result of global macroeconomic conditions, this raises many more difficult questions. Is it desirable to allow the wealth of households to be so exposed to the vicissitudes of the global economy? If the answer is no, what can be done?

Part of the answer appears to lie in the use of macroprudential regulation. Germany, unusually for advanced economies, avoided the rapid house price appreciation in the decade up to 2007, a fact that has been partly attributed to tighter LTV and LTI restrictions.[73] Recent IMF research on the synchronisation of house price changes between countries concludes that countries can insulate themselves from such global shocks through macroprudential regulations such as stronger counter-cyclical capital buffers and tighter restrictions on LTV ratios,

as well as through taxation measures.[74] Whether more serious consideration of these tools to insulate home owners is possible among politicians while house prices are stable or rising is unclear. In the wake of a sharp fall in prices, however, such policy options may seem more appealing.

5. The collapse in home ownership was mainly due to withdrawal of mortgage finance from FTBs, which suggests policymakers face a trade-off.

This paper has argued that, while high house prices affect home ownership, the dominant driver of its recent collapse was a sudden stop on mortgage lending to FTBs. And in keeping with that explanation, the recent return to a more normal pace of FTB lending has seen the home ownership rate stabilise and perhaps begin to recover.

This has important policy implications. The home ownership rate is in effect a direct indicator of the financial risk being borne by lenders. High rates of home ownership can be achieved – even at extremely high price-to-income levels - by allowing very high-LTV mortgages to be written. This is because small deposit requirements allow people to buy a house sooner than if big down payments are required. Indeed if 100% LTV mortgages were available then affordability barriers for FTBs would largely disappear whatever the level of house prices. Currently, the median LTV for FTBs is hovering just under 85% (the mean around 76%). But significantly higher LTVs would obviously entail greater risk for lenders.

Policymakers therefore have to trade off how much risk they are prepared to allow mortgage lenders to take onto their balance sheets, against their desire for high rates of home ownership. If the FTB lending in the pre-crisis era is now viewed as excessively risky, we may have to accept that the home ownership rate will not recover its 2003 peak.

Alternatively, if high home ownership is seen as socially desirable but privately risky, policymakers could choose to subsidise the risk of lending to FTBs in order to bolster it without allowing excessive risk-taking by banks. This could take the form of tax relief, as it did under MIRAS, an equity loan guarantee, as with the coalition government's Help to Buy scheme, or indeed the promotion of privately issued equity loans that have been proposed in the past.[75]

An equivalent fiscal intervention to assist FTBs and raise home ownership would be to raise taxes on landlords. Targeted tax measures, such as the ending of higher rate tax relief on mortgage interest payments (phased in from 2016) and the stamp duty surcharge on second homes, eat into the financial return on buy-to-let housing investment relative to comparable alternatives, since landlords have limited pricing power to pass these costs on to tenants. All else equal this should cause some landlords to exit the market (or not enter it) and sell – either directly or via a chain – to an FTB, raising the home ownership rate.

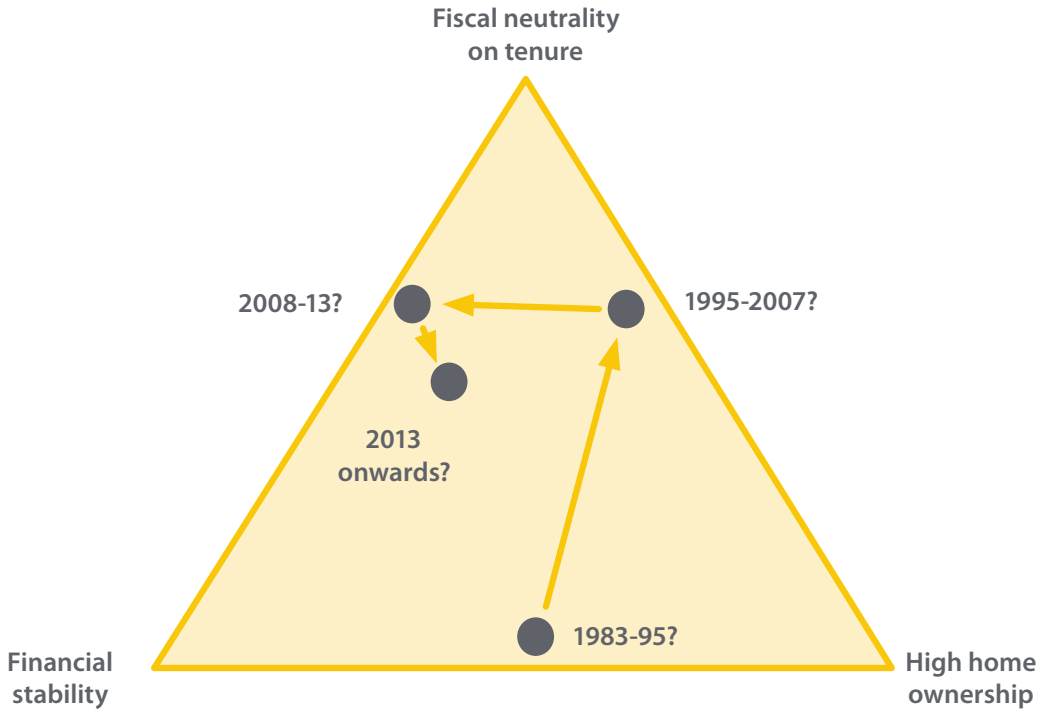
These options give rise to a home ownership policy trilemma (see Fig. 20). Policymakers can prioritise any two of: high home ownership, financial stability in the banking system, or a greater degree of fiscal neutrality with respect to tenure. History suggests that it is not possible to combine all three of these goals. This framework allows us to think about the evolution of the policy stance over the past 35 years and its impact on the home ownership rate.

- The period from 1983 to the late 1990s might be characterised as one of heavy fiscal intervention to boost home ownership through right-to-buy and MIRAS, leading to rapidly growing rates of home ownership.
- The period from the late 1990s to 2007 could be thought of as one of high ownership and relative fiscal neutrality, with MIRAS abolished and Right to Buy slowing. But it appears in retrospect to have been financially unstable with high-LTV loans issued to FTBs and very low mortgage rate spreads for low-deposit lending. This phase came to an abrupt end with the financial crisis.

- In the early years after the financial crisis the system arguably moved towards being more financially stable while the relatively low level of fiscal intervention remained unchanged. Not coincidentally, this was also the period when home ownership fell sharply.

- Finally, from 2013 onwards, the government began to introduce a range of policies directed at subsidising FTBs and raising taxes on landlords. These included the Help to Buy equity loan and (now ended) mortgage guarantee schemes that were announced in 2013. The subsequent withdrawal of higher rate tax relief on landlords' mortgage interest from 2017 and imposition of a 3% stamp duty surcharge in 2016 increased the degree of fiscal activism in favour of home ownership.[77] Partly as a result of these changes home ownership stabilised and has begun to recover.

Fig. 20: A home ownership policy trilemma?



In light of the experience of the past 35 years therefore, policymakers continue to face a trade-off on home ownership. If a more stable mortgage market remains a priority, home ownership seems unlikely to recover the highs of the early 2000s without further fiscal intervention in favour of FTBs or against landlords.

Meanwhile, millions more people are now living for longer in the private rented sector, including a large rise in families with dependent children.[78] As a result, it seems inevitable that policy attention will increasingly fall on the sector's adequacy for that expanded role, both in terms of the security it offers to tenants and the quality of the service they receive.

References

[1] All house price levels and changes quoted in this paper draw upon the UK House Price Index.

[2] See for example: ***Fixing our Broken Housing Market***, DCLG (2017), p9; ***Tackling Intergenerational Unfairness***, Select committee on Intergenerational Fairness, House of Lords (2019), p23; and ***Homes for Everyone: how to get Britain building and restore the home ownership dream***, Centre for Policy Studies (2017), p12.

[3] The Prime Minister's speech on housing, Manchester, 2 June 2019 https://www.gov.uk/government/speeches/pms-speech-on-housing-26-june-2019

[4] ***Fixing our Broken Housing Market***, DCLG (2017), p5

[5] In addition to those papers cited above, see: ***Mobilising across the nation to build the homes our children need***, The Lyons Housing Review (2014), p6; ***Building the homes we need***, Shelter and KPMG (2015) p3; and ***Tackling the under-supply of housing in England***, Briefing Paper 07671, House of Commons Library (2018), p13.

[6] ***Delivering Stability: Securing our future housing needs***, Review of Housing Supply, Barker, K. (2004), p3.

[7] ***Mobilising across the nation to build the homes our children need***, The Lyons Housing Review (2014), p6.

[8] ***Building more homes***, Select Committee on Economic Affairs, House of Lords (2016), p3.

[9] ***Fixing our Broken Housing Market***, DCLG (2017), p9.

[10] Ibid., p7.

[11] Homes' and 'houses' are used interchangeably throughout to denote dwelling units.

[12] See for example: ***Building the homes we need***, Shelter and KPMG (2015) p6.

[13] Net additions series from MHCLG Live Tables 104, 120 for 2017-18, and NB1 for 2018-19. New build from Live Table 244.

[14] Household projections for England: comparisons with other sources: 2001 to 2018, ONS (2018)

[15] Housing stock figures from MHCLG Live Tables 107 and 106, household estimates from the LFS.

[16] Philp, C., ***Homes for Everyone***, Centre for Policy Studies (2017).

[17] For a full description of the discrepancies, see Neal Hudson http://resi-analysts.com/2017/08/29/counting-houses-is-difficult/

[18] Other prominent examples include: Holmans (2013), which says 243,000 per year are needed between 2011 and 2031; Lyons (2014), which says 243,000, citing Holmans (2013); KPMG and Shelter (2015), which says 'around 250,000', also citing Holmans (2013); and House of Lords Select Committee on Economic Affairs (2016) which says 300,000.

[19] For a full discussion see Mulheirn, I., ***'Fixing our broken housing crystal ball'*** https://medium.com/@ian.mulheirn/fixing-our-broken-housing-crystal-ball-6d6405963e0

[20] ***Household Projections in England: 2016-based***, ONS (2018).

[21] Three-year averages of the regional household count from the LFS are used owing to the wider confidence intervals around point estimates at the regional level.

[22] Muth, R. ***Cities and Housing***, The University of Chicago (1968), p18.

[23] Renting and owning the same property may not, of course, offer the same quality of experience. However, such a difference in relative cost levels should not affect the validity of using rental equivalence to measure changes in the cost of owner-occupied housing over time.

[24] Cameron, G., Muellbauer, J., Murphy, A., ***Was there a British housing bubble? Evidence from a regional panel***, CEPR Discussion Paper No. 5619 (2006).

[25] ***Private rental growth measures, a UK comparison: January to March 2019***, ONS (2019).

[26] IPHRP data is for England only. CPIH weights for the private rented sector were provided by the ONS to allow combination of the private rent index with the owner-occupied housing index. Measuring rents on a like-for-like basis is critical since changing composition of the private rented sector could otherwise cause the rent index to move up or down while the rent on any given house might be unchanged. See Box 2.

[27] Lewis, R., ***Explaining private rental growth***, ONS (2016), 11.

[28] Chart shows the change in median household income in each region, as measured by HBAI, over the 12-year period 2003-6 to 2015-18, against the change in the regional private rent index, IPHRP, from January 2005 to January 2017.

[29] ***Explaining private rental growth***, ONS, p11.

[30] Hall, R. and Jorgenson, D., ***Tax Policy and Investment Behaviour,*** The American Economic Review, Vol. 57, No. 3 (1967), p391-414.

[31] Dougherty, A. and Van Order, R., ***Inflation, Housing Costs and the Consumer Price Index,*** The American Economic Review, Vol. 72, Issue 1 (1982),, p154-164.

[32] Poterba, J., ***Tax subsidies to owner-occupied housing: an asset-market approach,*** The Quarterly Journal of Economics, Vol. 99, No. 4 (1984), p729-752.

[33] Duca, J., Muellbauer, J., Murphy, A., ***House prices and credit constraints: making sense of the US experience,*** The Economic Journal, Vol. 121 (2011), p533-551.

[34] Ibid.

[35] ONS data suggest that the consumption of fixed capital for dwellings, as a proportion of the total value of the UK housing stock (UK HPI average house price multiplied by total dwelling stock from MHCLG Live Table 101), varied between 0.8% and 1.1% between 1996 and 2014.

[36] OBR Public finances databank

[37] Muellbauer, J., ***When is a housing market overheated enough to threaten stability?*** in ***Property Markets and Financial Stability,*** Reserve Bank of Australia (2012).

[38] ONS series IHXW.

[39] Kim, Y., ***Accounting for Housing Rent-Price Ratios***, 1975-2004, University of Southern California, IEPR Working Paper No.7.11 (2007).

[40] Duca, J., Muellbauer, J., Murphy, A., (2011).

[41] Muellbauer, J., Murphy, A., ***Housing markets and the economy: the assessment***, Oxford Review of Economic Policy, Vol. 24, No. 1 (2008).

[42] Ryan-Collins, J., ***Why can't you afford a home?***, Polity (2018), p46-50.

[43] ***House price data: quarterly tables***, Table 15, ONS

[44] ***Financial Stability Report***, Issue No. 44 (2018), Bank of England.

[45] Breach, A., ***Capital Cities***, Centre for Cities (2019), p.12.

[46] ***Global Financial Stability Report: Vulnerabilities in a Maturing Credit Cycle,*** IMF (2019).

[47] Landier, A., Sraer, D., Thesmar, D., ***Banking integration and house price co-movement***, Journal of Financial Economics, Vol. 125 (1) (2017), p.1-25.

[48] Haskel, J. and Westlake, S., ***Capitalism without Capital***, Princeton (2018), p139

[49] Glaeser, E., ***Triumph of the City***, Macmillan (2011).

[50] Muellbauer presentation. ECB working paper
https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1904.n.pdf?ec382c464329adb515db3fb41aa2f981

[51] In Ireland for example, the surplus housing stock jumped from 8.4% in 1996 to 15.0% by 2006. Central Statistics Office Table E1071.

[52] See, for example: Meen, G. (2013), ***Homeownership for Future Generations in the UK***, Urban Studies. Muellbauer, J. and Murphy, A. (1997), ***Booms and Busts in the UK housing market***, The Economic Journal. T. Auterson, ***Forecasting house prices***, OBR Working paper, 6 (2014).

[53] Chauvin, V. and Muellbauer, J. ***Consumption, household portfolios and the housing market: a flow of funds approach for France*** (2014).

[54] Geiger, F., Muellbauer, J. and Rupprecht, M. ***The Housing Market, Household Portfolios and the German Consumer***, ECB Working Paper no. 1904 (2016).

[55] Duca, J., Muellbauer, J. and Murphy, A. ***Shifting Credit Standards and the Boom and Bust in U.S. House Prices***, Federal Reserve Bank of Dallas, Working Paper 1104 (2011).

[56] ***Analysis of the determinants of house price changes***, MHCLG (2018).
https://www.gov.uk/government/publications/analysis-of-the-determinants-of-house-price-changes

[57] ***Living Standards, Poverty and Inequality in the UK: 2019***, Institute for Fiscal Studies (2019).
https://www.ifs.org.uk/publications/13302

[58] ***A New Generational Contract. The final report of the Intergenerational Commission***, Resolution Foundation (2018).

[59] ***Youth unemployment statistics***, House of Commons Library (2018).

[60] See OBR ***Policy Measures Database***.

[61] ***Housing Benefit Equality Impact Assessment***, Department for Work and Pensions (2011).

[62] ***Population of the UK by country of birth and nationality: 2018***, ONS (2019).

[63] Defined as second or subsequent 'heads of family unit' within households containing more than one family unit.

[64] ***'Fixing our broken housing market'*** DCLG (2017), 7.

[65] LFS, figures relate to Q2 of the relevant year.

[66] Clearly there is a relationship between house prices and access to finance such that we might have expected rising prices to choke off credit to first-time buyers. But the sudden discontinuity in the lending series over a matter of a few months during the financial crisis, and at a moment when house prices were already falling, implies that the sudden dearth of credit was not linked to price levels.

[67] UK Finance mortgage figures

[68] Carozzi, F., ***'Credit Constraints and the Composition of Housing Sales. Farewell to First-time Buyers?'***, Discussion Paper 183, SERC (2015).

[69] See UK Finance, Table ML2.

[70] See ***'Quoted household interest rates',*** Bank of England, series IUM2WTL, IUMB482, IUMBV34.

[71] Here we refer to UK rather than English home ownership since the mortgage issuance data is for the UK.

[72] 364,000 new loans were extended to FTBs in the year to September 2018, following 366,000 during 2017, according to UK Finance.

[73] Muellbauer NIESR presentation

[74] Alter, A., Dokko, J. and Seneviratne, D., ***'House price synchronicity, banking integration and global financial conditions'*** IMF working paper 18/250 (2018).

[75] Shiller, R. ***Macro Markets: creating institutions for managing society's largest economic risks***, Oxford University Press (1994).

[76] Clearly policy is not 'fiscally neutral' with respect to tenure in that the tax treatment of owner occupied housing is more preferential than for landlords. An owner occupier's imputed rent is untaxed while a landlord's rental income is, and owner occupiers are exempt from capital gains tax. Nevertheless, further raising taxes on landlords or subsidising FTBs would represent an increase in fiscal intervention.

[77] The fiscal interventions implemented by the Coalition Government, notably the Help to Buy equity loan and (now ended) mortgage guarantee schemes that were announced in 2013, represented an attempt to trade away a degree of fiscal neutrality for higher home ownership. And it is likely that the schemes helped to break the fall in home ownership. Nevertheless, the scale of these interventions was insufficient to make a material difference to the sharp decline. In 2017, equity loan scheme take-up represented around 13% of FTB purchases, and the proportion of those purchases that were additional is likely to have been small.

[78] Marsh, A. and Gibb, K., ***The private rented sector in the UK***, UK Collaborative Centre for Housing Evidence (2019).

Bibliography

- Alter, Adrian, and Jane Dokko. ***'House Price Synchronicity, Banking Integration, and Global Financial Conditions'.*** IMF Working Paper. IMF, 2018. https://www.imf.org/en/Publications/WP/Issues/2018/11/28/House-Price-Synchronicity-Banking-Integration-and-Global-Financial-Conditions-46380.

- André, Christophe. ***'Improving the Functioning of the Housing Market in the United Kingdom'***. OECD Publishing, OECD Economics Department Working Papers, no. No. 867 (2011). http://dx.doi.org/10.1787/5kgc42th5df2-en.

- Bank of England. ***'Financial Stability Report'***, no. 44 (November 2018). https://www.bankofengland.co.uk/-/media/boe/files/financial-stability-report/2018/november-2018

- Barton, Cassie. ***'Tackling the Under-Supply of Housing in England'.*** House of Commons Library Briefing No 07671, 10 December 2018. https://researchbriefings.parliament.uk/ResearchBriefing/Summary/CBP-7671.

- Bourquin, Pascale, Jonathan Cribb, Tom Waters, and Xiaowei Xu. ***'Living Standards, Poverty and Inequality in the UK: 2019'.*** Institute for Fiscal Studies, 19 June 2019. https://doi.org/10.1920/re.ifs.2019.0157.

- Breach, Anthony. ***'Capital Cities: How the Planning System Creates Housing Shortages and Drives Wealth Inequality'***. Centre for Cities, 2019. https://www.centreforcities.org/wp-content/uploads/2019/06/2019-06-10-Capital-cities-how-the-planning-system-creates-housing-shortages-and-drives-wealth-inequality.pdf.

- Cameron, Gavin, John Muellbauer, and Anthony Murphy. ***'Was There a British House Price Bubble? Evidence from a Regional Panel'.*** CEPR Discussion Paper, April 2006. https://econpapers.repec.org/paper/cprceprdp/5619.htm.

- Carozzi, Felipe. ***'Credit Constraints and the Composition of Housing Sales. Farewell to First-Time Buyers?'*** Spatial Economics Research Centre Discussion Paper 183 (July 2015).

- Chauvin, Valérie, and John Muellbauer. ***'Consumption, Household Portfolios and the Housing Market in France'.*** Economie et Statistique 500, no. 1 (2018): 157–78. https://doi.org/10.24187/ecostat.2018.500t.1950.

- Department for Work and Pensions. ***'Housing Benefit Equality Impact Assessment'***, August 2011. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/220261/eia-hb-shared-accommodation-age-threshold.pdf.

- Dougherty, Ann, and Robert Van Order. ***'Inflation, Housing Costs, and the Consumer Price Index'.*** American Economic Review 72, no. 1 (1982): 154–64.

- Duca, John V., John Muellbauer, and Anthony Murphy. ***'House Prices and Credit Constraints: Making Sense of the US Experience*'.*** The Economic Journal 121, no. 552 (2011): 533–51. https://doi.org/10.1111/j.1468-0297.2011.02424.x.

- Duca, John V., John N. Muellbauer, and Anthony Murphy. ***'Shifting Credit Standards and the Boom and Bust in U.S. House Prices'.*** Working Papers. Federal Reserve Bank of Dallas, 2011. https://ideas.repec.org/p/fip/feddwp/1104.html.

- Francis-Devine, Bridgid. ***'Youth Unemployment Statistics'.*** Briefing Paper 5871. House of Commons Library, 2018. https://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN05871.

- Geiger, Felix, John Muellbauer, and Manuel Rupprecht. ***'The Housing Market, Household Portfolios and the German Consumer'.*** Working Paper Series. European Central Bank, May 2016. https://econpapers.repec.org/paper/ecbecbwps/20161904.htm.

- Glaeser, Edward. ***'Triumph of the City: How Urban Spaces Make Us Human'***. London: Pan Macmillan, 2011.

- Hall, Robert E., and Dale W. Jorgenson. ***'Tax Policy and Investment Behavior'.*** The American Economic Review 57, no. 3 (1967): 391–414

- Haskel, Jonathan, and Stian Westlake. ***'Capitalism without Capital: The Rise of the Intangible Economy'***. Princeton, N.J.: Princeton University Press, 2018.

- Himmelberg, Charles, Christopher Mayer, and Todd Sinai. ***'Assessing High House Prices: Bubbles, Fundamentals and Misperceptions'.*** Journal of Economic Perspectives 19, no. 4 (2005): 67–92.

- HM Treasury. ***'Barker Review of Housing Supply. Delivering Stability: Securing Our Future Housing Needs. Final Report'.*** Kate Barker, London, 2004. https://webarchive.nationalarchives.gov.uk/+/http://www.hm-treasury.gov.uk/barker_review_of_housing_supply_recommendations.htm.

- Holmans, Alan. ***'New Estimates of Housing Demand and Need in England, 2011 to 2031'.*** Tomorrow Series Paper 16. Town & Country Planning, 2013.

- Hudson, Neal. ***'Counting Houses Is Difficult'.*** Residential Analysts (blog), 29 August 2017. http://resi-analysts.com/2017/08/29/counting-houses-is-difficult/.

- International Monetary Fund, Monetary and Financial Systems Dept. ***'Vulnerabilities in a Maturing Credit Cycle'***, Global Financial Stability Report, April 2019. http://dx.doi.org/10.5089/9781498302104.082.

- Kim, Yong. ***'Accounting for Housing Rent-Price Ratios, 1975-2004'.*** SSRN Scholarly Paper. Rochester, NY: Social Science Research Network, 1 August 2007. https://papers.ssrn.com/abstract=1022226.

- KPMG, and Shelter. ***'Building the Homes We Need: A Programme for the 2015 Government',*** 2014. http://www.shelter.org.uk/__data/assets/pdf_file/0019/802270/Building_the_homes_we_need_-_a_programme_for_the_2015_government.pdf

- Labour Party. ***'Mobilising across the Nation to Build the Homes Our Children Need: The Lyons Housing Review',*** 2014. https://www.policyforum.labour.org.uk/uploads/editor/files/The_Lyons_Housing_Review_2.pdf.

- Landier, Augustin, David Sraer, and David Thesmar. ***'Banking Integration and House Price Co-Movement'.*** Journal of Financial Economics 125, no. 1 (2017): 1–25.

- Marsh, Alex, and Ken Gibb. ***'The Private Rented Sector in the UK'.*** UK Collaborative Centre for Housing Evidence, July 2019, 35.
- May, Theresa. ***'PM's Speech on Housing'*** Manchester, 26 June 2019. https://www.gov.uk/government/speeches/pms-speech-on-housing-26-june-2019.
- Meen, Geoffrey. ***'A Simple Model of Housing and the Credit Crunch'.*** University of Reading, Department of Economics Mimeo., 2009.
- ———. ***'Homeownership for Future Generations in the UK'.*** Urban Studies 50, no. 4 (2013): 637–56.
- ———. ***'Modelling Local Spatial Poverty Traps in England'.*** Housing Studies 24, no. 1 (2009): 127–147.
- Ministry of Housing, Communities & Local Government. ***'Analysis of the Determinants of House Price Changes'***, 2018. https://www.gov.uk/government/publications/analysis-of-the-determinants-of-house-price-changes.
- ———. ***'Fixing Our Broken Housing Market'***. White Paper, 2017. https://www.gov.uk/government/publications/fixing-our-broken-housing-market.
- Muellbauer, John. ***'What Germany Can Teach Us about Repairing Our Broken Housing Market'***. National Institute of Economic and Social Research, 2018. https://www.niesr.ac.uk/broken-housing-market-conference-highlights-event-1st-june-2018.
- ———. ***'When Is a Housing Market Overheated Enough to Threaten Stability?'*** In Property Markets and Financial Stability, edited by Alexandra Heath, Frank Packer, and Callan Windsor. Reserve Bank of Australia, 2012. https://econpapers.repec.org/bookchap/rbarbaacv/acv2012-07.htm.
- Muellbauer, John, and Anthony Murphy. ***'Booms and Busts in the Uk Housing Market*'.*** The Economic Journal 107, no. 445 (1997): 1701–27. https://doi.org/10.1111/j.1468-0297.1997.tb00076.x.
- ———. ***'Housing Markets and the Economy: The Assessment'.*** Oxford Review of Economic Policy 24, no. 1 (1 March 2008): 1–33. https://doi.org/10.1093/oxrep/grn011.
- Mulheirn, Ian. ***'Fixing Our Broken Housing Crystal Ball'***. Medium. Accessed 9 August 2019. https://medium.com/@ian.mulheirn/fixing-our-broken-housing-crystal-ball-6d6405963e0.
- Mulheirn, Ian, and Nishaal Gooroochurn. ***'Forecasting UK House Prices and Home Ownership'.*** London: Oxford Economics, 2016. https://www.oxfordeconomics.com/recent-releases/forecasting-uk-house-prices-and-home-ownership.
- Muth, R.F. ***'Cities and Housing: The Spatial Pattern of Urban Residential Land Use'.*** Chicago and London: The University of Chicago Press, 1969.
- Office for Budget Responsibility. ***'Forecasting House Prices'***. Toby Auterson, 2014. https://obr.uk/docs/dlm_uploads/WP06-final-v2.pdf.
- Office for National Statistics. ***'Household Projections for England, Comparisons with Other Sources',*** 2018. https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/articles/householdprojectionsforenglandcomparisonswithothersources/2001to2018.

- ———. *'Private Rental Growth Measures, a UK Comparison: January to March 2019'*, n.d. https://www.ons.gov.uk/releases/privaterentalgrowthmeasuresaukcomparisonjanuarytomarch2019.
- ———. ***'Explaining Private Rental Growth'.*** Rhys Lewis. ONS, 2016.
- ———. *'Population of the UK by Country of Birth and Nationality: 2018',* 2019. https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/internationalmigration/datasets/populationoftheunitedkingdombycountryofbirthandnationality.
- Philp, Chris. ***'Homes for Everyone : How to Get Britain Building and Restore the Home Ownership Dream'.*** Centre for Policy Studies, 2017. https://www.cps.org.uk/research/homes-for-everyone/.
- Poterba, James M. ***'Tax Subsidies to Owner-Occupied Housing: An Asset-Market Approach'.*** The Quarterly Journal of Economics 99, no. 4 (1984): 729–52.
- Resolution Foundation. ***'A New Generational Contract: The Final Report of the Intergenerational Commission'.*** Resolution Foundation London, 2018. https://www.resolutionfoundation.org/app/uploads/2018/05/A-New-Generational-Contract-Full-PDF.pdf
- Ryan-Collins, Josh. ***'Why Can't You Afford a Home?'*** Cambridge, UK ; Medford, MA: Polity, 2018.
- Ryan-Collins, Josh, Toby Lloyd and Laurie Macfarlane. ***'Rethinking the Economics of Land and Housing'***. London: Zed Books, 2017.
- Select Committee on Economic Affairs. ***'Building More Homes'.*** HL Paper 20, 2016. https://publications.parliament.uk/pa/ld201617/ldselect/ldeconaf/20/20.pdf
- Select Committee on Intergenerational Fairness and Provision. ***'Tackling Intergenerational Unfairness'.*** HL Paper 329, 2019. https://publications.parliament.uk/pa/ld201719/ldselect/ldintfair/329/329.pdf.
- Shiller, Robert J. ***'Macro Markets: Creating Institutions for Managing Society's Largest Economic Risks'.*** Clarendon Lectures in Economics. Oxford, New York: Oxford University Press, 1998.

Data

- Bank of England Database. ***"Interest & Exchange Rates Data: Quoted household interest rates"*** IUM2WTL, IUMB482, IUMBV34.
  https://www.bankofengland.co.uk/boeapps/database/index.asp?

- Central Statistics Office. ***"Housing stock in Ireland Table".*** Table E1071.
  https://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=E1071&PLanguage=0

- Department for Work and Pensions. ***"Households below average income: 1994/95 to 2017/18"***, March 2019
  https://www.gov.uk/government/statistics/households-below-average-income-199495-to-201718

- Ministry of Housing, Communities and Local Goverment.***"Domestic Energy Performance Certificates for new dwellings by energy efficiency rating"*** ,Table NB1 in Statistical Data Set: Live tables on Energy Performance of Buildings Certificates, 2014-2019
  https://www.gov.uk/government/statistical-data-sets/live-tables-on-energy-performance-of-buildings-certificates

- ———. English Housing Survey, various years: ***"Housing Stock Data"***. [data collection]. UK Data Service. SN: 8350, 2018, http://doi.org/10.5255/UKDA-SN-8350-1

- ———. ***"Live tables on dwelling stock (including vacants)"***, Live Tables 100 -125, 2012-2019.
  https://www.gov.uk/government/statistical-data-sets/live-tables-on-dwelling-stock-including-vacants -

- ———. ***"Table 244: Permanent dwellings started and completed, by tenure, England, historical calendar year series"*** in Statistical Data Set: Live tables on house building: new build dwellings, 2012-2019
  https://www.gov.uk/government/statistical-data-sets/live-tables-on-house-building

- Office for Budget Responsibility. ***"Public finances databank"***
  https://obr.uk/download/public-finances-databank/

- ———. ***"Policy Measures Database"***
  https://obr.uk/download/policy-measures-Database

- Office for National Statistics. ***"Gross domestic product (Average) per head, CVM market prices: SA"***, Series IHXW
  https://www.ons.gov.uk/economy/grossdomesticproductgdp/timeseries/ihxw/pn2

- ———. ***"Index of Private Housing Rental Prices"***, Series IPHRP
  https://www.ons.gov.uk/economy/inflationandpriceindices/datasets/indexofprivatehousingrentalpricesreferencetables

- ———. ***"House price data: quarterly tables"***, Table 15,
  https://www.ons.gov.uk/economy/inflationandpriceindices/datasets/housepriceindexmonthlyquarterlytables1to19

- ———. Quarterly Labour Force Survey Household Dataset, various years. UK Data Service SN:8389, http://doi.org/10.5255/UKDA-SN-8389-1

- ———. Quarterly Labour Force Survey, April - June, various years. 3rd Edition. UK Data Service. SN: 8381, http://doi.org/10.5255/UKDA-SN-8381-3

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