3. UK housing market outlook[1]

Key points

- House price growth across the UK has been softening since the middle of 2016. However, the regional picture is mixed. Prices in London have been falling since the middle of last year, while prices in Scotland, Wales and Northern Ireland are showing some resilience.
- In our main scenario, we project that house prices in the UK will grow at an average of only around 1% this year, implying a 1% decline in real terms. Beyond 2019, we expect house price growth to recover slightly in 2020 and then continue to accelerate slowly in the medium term. This assumes that a disruptive 'no deal' Brexit can be avoided, earnings continue to grow in real terms and unemployment remains low.
- Over five million households live in privately rented accommodation. We have looked in detail at the affordability of private rents in different regions and for different occupations. Based on a standard benchmark that affordable rents should be no more than 30% of incomes, we find that, on average across the UK, private rents are currently slightly above this affordability threshold.
- Rental affordability varies significantly across regions, however, with median private rents well above 30% of income in London and Southern England, but still some way below this threshold in Northern England and Wales.
- The rental affordability challenge is even more pronounced for young people and we estimate that 22-29 year olds on average now have to spend over half (53%) of their income on private rent in London.
- Among the key worker occupations that we have studied, prison officers had the worst rental affordability ratios, reaching 45% in London in 2017/18, while primary school teachers and nurses in the capital also face very high ratios of around 40%.
- The high cost of rental housing may therefore prevent people who work in key professions from living in or moving to London and the South East, leading to shortages of nurses, teachers and other key workers in these regions, as well as limiting economic and social mobility across the country.

Introduction

In this section, we explore how the UK housing market has performed (Section 3.1). We then present our latest projections for national house prices to 2025 and regional house prices to 2022 (Section 3.2). To assess the impact of the housing market on social mobility, we compare the affordability of private rents for different key professions and by region (Section 3.3). Finally, in Section 3.4, we discuss the implications of our analysis for government policy and business. Technical details of our house price modelling methodology are presented in the annex.

> "Rents are unaffordable for many key workers in London and the South, limiting social mobility.
>
> **Jamie Durham**
> Economist, PwC

1 This article was written by Jamie Durham and Tilly Thomas with additional inputs from Mike Jakeman and John Hawksworth.

3.1 – Recent trends in household disposable income

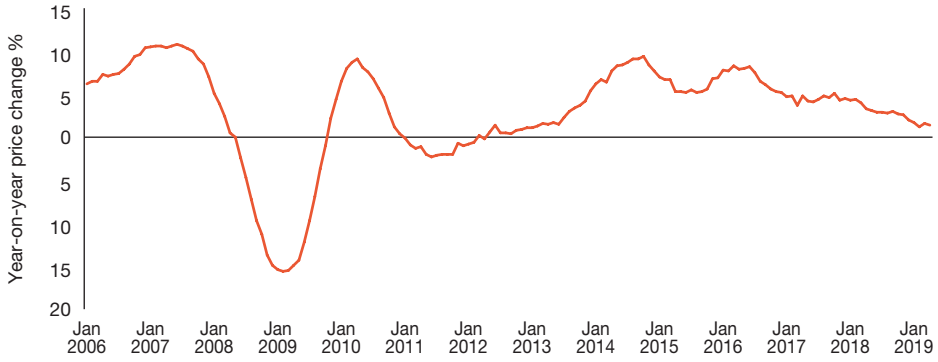
UK house price inflation has been weakening steadily since mid-2016. Annual house price inflation was 1.4% in the year to April 2019, compared with 7.9% three years ago[2]. The average house price stood at £229,000 in April 2019, down from an all-time peak of £232,000 in August 2018.

The recent weakening in house price growth is in line with broader market data on transactions. Across the UK, the most recent data shows that sales volumes declined by 12% in the year to January 2019, from 71,900 to 63,400.

Two main factors are exerting downward pressure on the housing market: continued uncertainty following the EU referendum in 2016 and the introduction of the Stamp Duty surcharge on second homes earlier that year, which is equivalent to an additional 3% tax on the purchase price.

In the remainder of 2019, we expect these trends to continue, partially offsetting strong fundamentals such as low unemployment, low interest rates and increasing real earnings growth, resulting in sluggish average UK house price growth for the year as a whole, of around 1%.

Figure 3.1 – UK house price inflation since 2006



Source: ONS, Land Registry

The regional picture is mixed, with London showing the largest downturn in prices

Weak house price growth in England has been driven by falling prices in London and surrounding areas. Annual house price inflation in the capital turned negative in July 2018 and has remained so in every month since then. This weaker performance is driven by similar factors as the national picture, but to a greater extent. For example, the uncertainty associated with Brexit is amplified in London due to its close integration with Europe, while the increase in stamp duty on high value and buy-to-let properties in 2016 disproportionately affects London owing to higher prices and its larger rental sector. Other areas of the UK have fared better. House price growth was strongest in Wales in the year to April 2019, at 6.7%, while the Midlands and North West have regularly been the strongest performers in England, although growth has started to weaken in these regions too in recent months.

Our regional house price projections for 2019 to 2022 are set out in detail in Section 3.2 below, while Box 3.1 considers how rents have evolved recently.

Table 3.1: Annual house price growth by region, April 2019

	April 2019 (12 month % change)
Wales	6.7
East Midlands	2.9
North West	2.6
Yorkshire and The Humber	2.5
West Midlands	2.2
Northern Ireland	2.1
North East	2.0
Scotland	1.6
United Kingdom	**1.4**
South West	1.3
East	0.6
South East	-0.8
London	-1.2

Source: ONS, Land Registry

2 April 2019 is the most recent data point available at the time of publication.

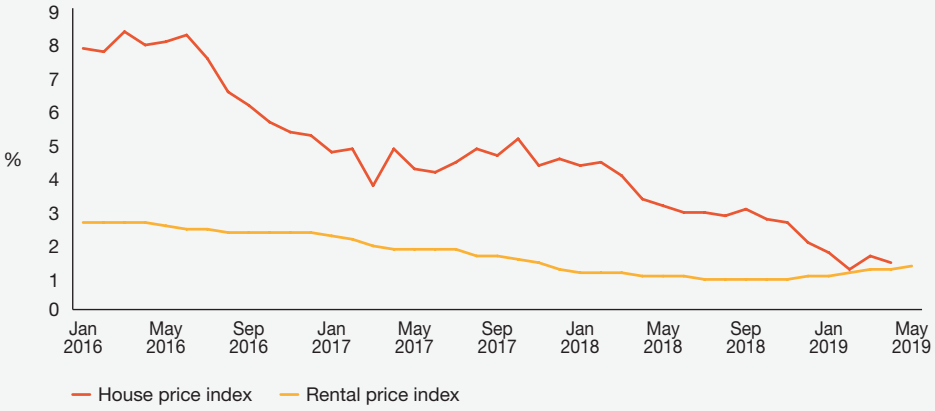
Box 3.1 – Rental price growth has also slowed since 2016

The Office for National Statistics (ONS) now publishes an experimental index of private rental prices[3]. The index captures the change in price for average properties across the UK and breaks out these changes by region. As with house price growth, rental price growth has softened since 2016, but not to the same extent.

In 2016 house price growth exceeded rental price growth significantly. House prices grew on an annual basis by 7% in 2016, while rental prices grew by 2.4%[4]. However, annual house price growth and rental price growth are now broadly equal, averaging 1.5% and 1.1% in the first four months of 2019, respectively.

Rental price growth has been particularly weak in London, with average annual rental prices in 2018 falling by 0.1%. Price growth in the capital has picked up slightly in the first few months of 2019 to average 0.4% year on year.

Figure 3.1.1 – Comparison of UK house price growth and rental price growth since 2016



Source: ONS, Land Registry

Rental price growth is subject to many of the same pressures as house price inflation. From a demand perspective, continued uncertainty in the market may dampen demand to move. From a supply perspective, increased stamp duty on second properties, greater restrictions on buy-to-let properties and increases in alternative renting models via online platforms mean that the availability of homes to rent may be constrained.

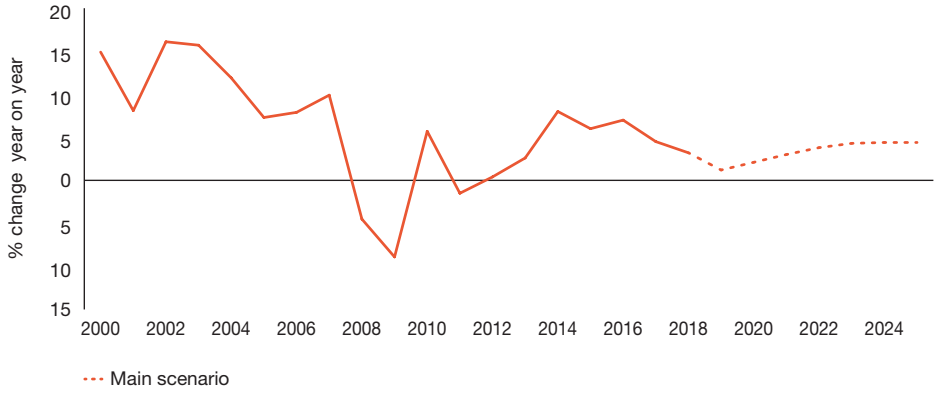
3 The Index of Private House Prices can be found here: https://www.ons.gov.uk/economy/inflationandpriceindices/bulletins/indexofprivatehousingrentalprices/april2019
4 April 2019 is the most recent data point available at the time of publication.

3.2 – UK and regional house price projections

In this section, we present our projections for house price inflation in the UK and regional markets. We use econometric time-series models to make our projections, as descr bed in more detail in the technical annex. These models link house prices to underlying drivers of the housing market and the economy more generally, such as earnings growth, housing supply and credit conditions. We then use these relationships to project how prices may evolve going forward.

Where possible, we base our assumptions for the model on forecasts from official and reputable sources. In our main scenario we assume that real earnings growth is sustained out to 2025, in line with Office for Budget Responsibility (OBR) forecasts. We assume that mortgage lending drops in 2019, before returning to steady growth from 2020 onwards as uncertainty in the market subsides, and in line with forecasts by the Council of Mortgage Lenders. The population is assumed to grow in line with ONS projections, while housing stock growth is assumed to grow by 250,000 homes a year over the period. This is slightly below the government's official target of 300,000 a year, but is aligned to the OBR's forecasts.

Figure 3.2 – UK house price projection in main scenario, 2020-25



Source: ONS, PwC analysis

UK house prices are projected to grow slowly this year

In our main scenario, we project that house prices in the UK will grow at an average of around 1% this year, representing a small decline in real terms. This would be much slower than the 3.2% increase in house prices last year and an annual average rate of increase of around 4% since the financial crisis, but would be in line with the data for the first few months of the year.

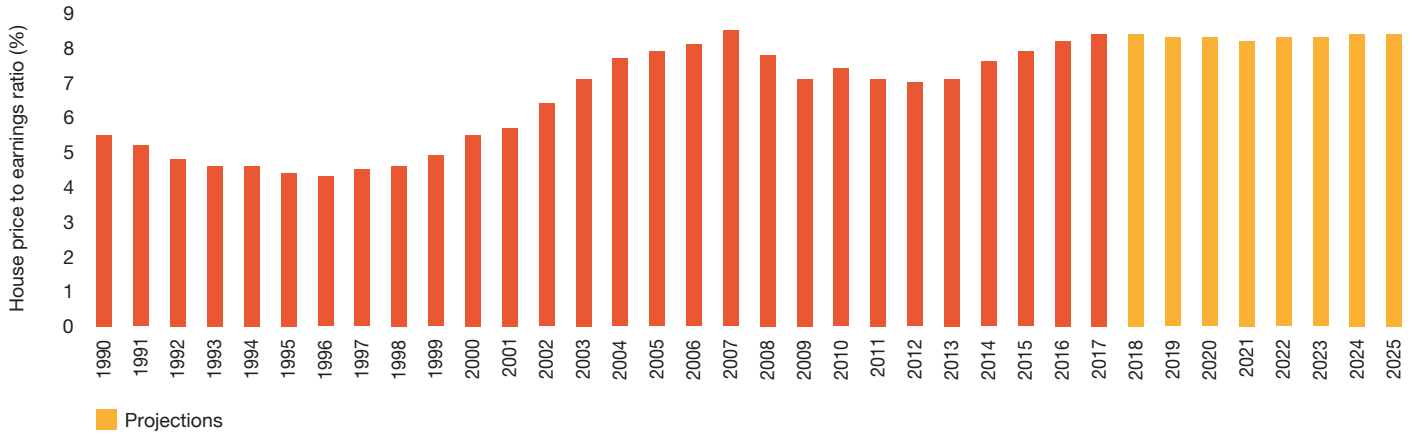
Beyond 2019, we project in our main scenario that house price growth will recover slightly in 2020 and then continue to accelerate slowly, as shown in Figure 3.2. This trajectory assumes that uncertainty in the market continues for much of 2019, before subsiding during 2020 based on our main scenario assumption of an orderly Brexit (as discussed further in Section 2 above). As uncertainty subsides, consumer and lender confidence should pick up, contributing to a gradual increase in housing demand and transactions, which would then push real house price growth back up towards its long term average rate.

In practice, house price growth rates are likely to be volatile, and there are many uncertainties around our main scenario relating to Brexit and other factors, so we also present alternative higher and lower house price inflation scenarios later in this article.

Our main scenario projection implies that the average UK house price to earnings ratio will remain high, but relatively stable over the next few years. Figure 3.3 shows the ratio in 2018 was 8.4, and that this is projected to remain relatively flat until 2025 in our main scenario[5]. This relatively stable ratio implies that house price growth is likely to keep up with earnings growth over the period as Brexit uncertainty is assumed to subside in our main scenario and the economy as a whole also remains relatively stable.

5 The ratio we show in Figure 3.3 is based on average annualised earnings for an individual in the economy – meaning that average earnings reflect a mix of full-time and part-time work. Earnings would be higher if presented at the household level, rather than the individual level, or if they were just for full-time workers.

Figure 3.3 – House price-to-earnings ratio, 1990-2025



Source: ONS, PwC analysis

Note: Earnings are annualised average weekly earnings for the whole UK economy

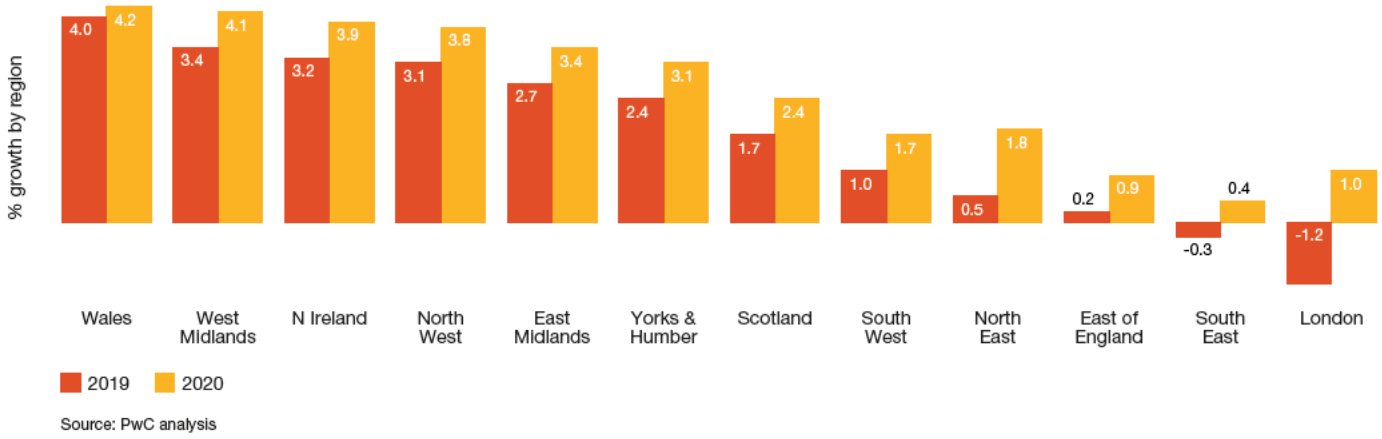
In our main scenario, the average price of a UK house in 2019 is around £231,000. This represents a slight increase of around 1% over the average 2018 price. Thereafter, our main scenario projection is for the average UK house price to rise to around £287,000 in 2025. As shown in Table 3.2, even after adjusting house prices for projected consumer price inflation, prices continue to rise in real terms in the medium term after a 1% decline in 2019. We project that house prices could be just over 9% more expensive in 2025 than in 2018. We expect that the house price to earnings ratio will be broadly flat, owing both to slower growth in the housing market and consistent real wage growth.

Table 3.2: UK house prices – main scenario projections

Year	Main scenario (% growth)	Main scenario (in cash terms)	Main scenario (real terms at 2018 prices)	House price-to-earnings ratio
2018 (actual)	3.2	£229,000	£229,000	8.4
2019	1.2	£231,000	£226,000	8.3
2020	2.1	£236,000	£227,000	8.3
2021-2025	4.0 (average growth)	£286,000 (in 2025)	£249,000 (in 2025)	8.4 (in 2025)

Source: PwC analysis based on ONS house price index

Figure 3.4 – Projected house price inflation by UK region in 2019-20



Source: PwC analysis

We project that London and surrounding areas will see house prices fall this year, before rebounding next year

Regionally, the average house price differs significantly, ranging from £478,000 in London to just £128,000 in the North East in 2018. The price-to-earnings ratio also differs between regions, making some areas significantly more affordable than others. For example, in the first quarter of 2019, the price-to-earnings ratio in London was 11.8, but 4.3 in the North East.

In our main scenario we project that most regions will see moderate growth in house prices in 2019 (see Figure 3.4), but that this growth will be slower for every region relative to 2018. We project that the strongest house price growth will be found in Wales, while prices will fall in the South East, North East and London.

Our regional projections are set out in more detail in Table 3.3. However, it should be noted that even greater uncertainty exists at the regional level than the national level. Long-term projections should be treated with caution, which is why our regional analysis ends in 2022[6].

Table 3.3: Projected regional house price growth and house price values in our main scenario

	Average house price growth (%)			Average house price values (£'000s in cash terms)	
Region	2019	2020	2021-2022 (average)	2018	2022
Wales	4.0	4.2	4.0	157	184
West Midlands	3.4	4.1	3.2	194	223
Northern Ireland	3.2	3.9	5.2	133	158
North West	3.1	3.8	4.2	160	186
East Midlands	2.7	3.4	3.2	190	214
Yorkshire and The Humber	2.4	3.1	3.7	160	181
Scotland	1.7	2.4	4.7	149	170
South West	1.0	1.7	3.1	255	278
North East	0.5	1.8	3.0	128	139
East of England	0.2	0.9	2.4	291	308
South East	-0.3	0.4	3.1	323	344
London	-1.2	1.0	3.2	478	508
UK	**1.2**	**2.1**	**3.0**	**228**	**252**

Source: ONS, PwC analysis

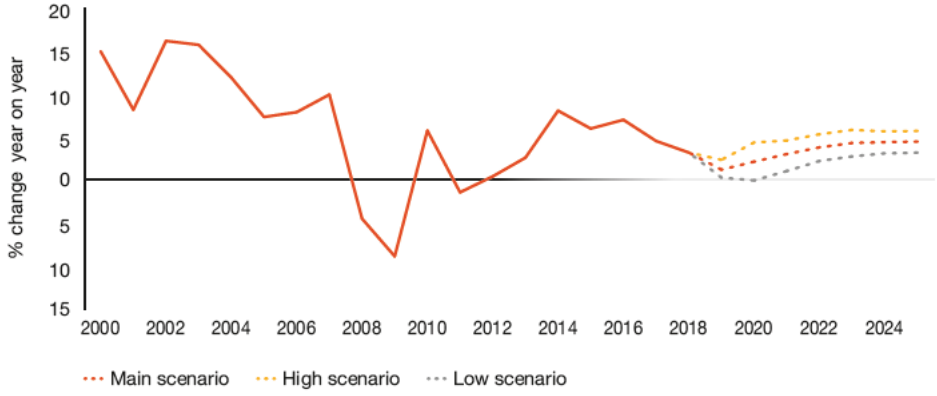
6 This is because some unpredictable factors causing regional house price projection errors will be area-specific factors that are not correlated across regions, and so will tend to cancel out when looking at aggregate national house prices. The latter will therefore tend to have lower forecasting errors on average than projections for individual regions (whether for house prices or other economic variables).

Alternative UK house price scenarios

Projecting house prices involves balancing views on economic fundamentals such as earnings, inflation, and interest rates, with intangible factors like buyers' and lenders' confidence. To reflect these uncertainties, we develop two alternative house price inflation scenarios based on different inputs for the model drivers (see Figure 3.5).

Our high house price scenario assumes real earnings growth picks up more quickly and employment grows slightly faster than in the main scenario, which provides a boost to housing demand. We also assume that credit conditions are more favourable, with a smaller drop in gross mortgage lending in 2019 than in the main scenario, and continued strong mortgage lending growth to 2025. On the supply side, we assume the housing stock grows more slowly than the OBR forecasts. Under these assumptions, we project annual house price will average 2.3% in 2019, before rising to 4.3% in 2020 and then averaging over 5% until 2025. This would result in a further deterioration in affordability and the average house price would rise to nearly £315,000 in 2025.

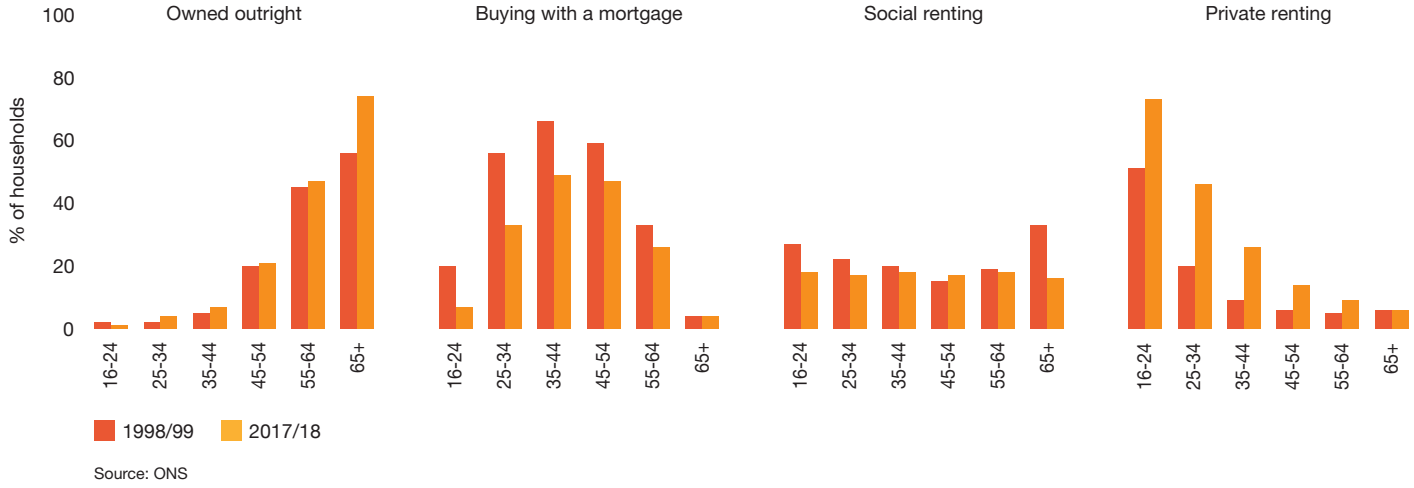
Figure 3.5 – Alternative UK house price inflation scenarios, 2020-25



Source: ONS, PwC analysis

In our low house price scenario we assume that real wages continue to grow but at a slower rate, while employment growth is also more moderate. We also assume that mortgage lending drops by more than in the main scenario in 2019, and credit conditions worsen over the next couple of years. Housing stock is assumed to grow in line with government targets. Under this scenario, UK house price growth weakens substantially this year to around zero, becomes slightly negative in 2020, and then returns to very modest growth from 2021. In this case, the average house prices would reach £258,000 in 2025, which would represent only a slight increase in real terms over prices in 2018. It should be noted, however, that this is not intended to be a 'worst case' scenario involving a highly disruptive 'no deal' Brexit, which represents an additional downside risk over and above that captured in our low scenario, but one that is hard to quantify with any precision.

Figure 3.6 – UK tenure type by age of head of household, 1998/99 and 2017/18



Source: ONS

3.3 – Assessing the affordability of renting

Compared to the late 1990s, 25-34 year-olds are now disproportionately less likely to purchase a property with a mortgage, and more than twice as likely to rent privately. This has opened up an age gap in home ownership between the young and old: home ownership rates among young people have fallen significantly, while the proportion of households aged 65+ owning their homes outright has risen significantly since 1998/99 as shown in Figure 3.6.

Young buyers face a range of hurdles when trying to get onto the property ladder, including a shortage of affordable housing and high deposit requirements. Government initiatives to address this, such as Help to Buy equity loans and ISAs, have primarily boosted demand rather than expanded supply[7].

A recent report by the National Audit Office found that more than 60% of those who have used the Help to Buy scheme could have bought a property regardless, and half of this group could have bought their desired property without support of the scheme, suggesting that current policy is not being targeted as effectively as it might be.

Locked out of purchasing a home, many young people – commonly referred to as "generation rent" – have turned to renting. The proportion of 16-24 year-olds renting privately has risen from 51% in 1998/99 to 73% in 2017/18 and from 20% to 46% for 25-34 year-olds.

The shift to renting among young people is not necessarily a problem. It offers flexibility, such as the ability to move to take up new job opportunities. Other major economies, such as Germany and France, have much higher levels of renting than the UK. However, in these countries, rents are typically lower relative to incomes and there are greater protections for tenants.

In the UK, rental payments tend to be larger than mortgage repayments in the most expensive regions. This may keep people off the housing ladder for longer: if a large proportion of income is spent on rent, then it cannot be saved towards a future deposit. In 2016, for example, we estimated that potential buyers without any support from family might have to save for 19 years to buy their first home[8], up from just 3 years in the early 1990s.

If people are locked out of purchasing a house and rents are too expensive to be able to move to more prosperous areas of the country such as London and the South East, then there are implications for social mobility and productivity.
In the remainder of this article we provide a detailed comparison of private rent levels with earnings for different occupations and by region to understand the scale of this problem.

7 See the July 2018 edition of UK Economic Outlook for full details.
8 Assuming the deposit has to be raised entirely from their own savings without family assistance. See the July 2016 edition of UK Economic Outlook for full details of this analysis.

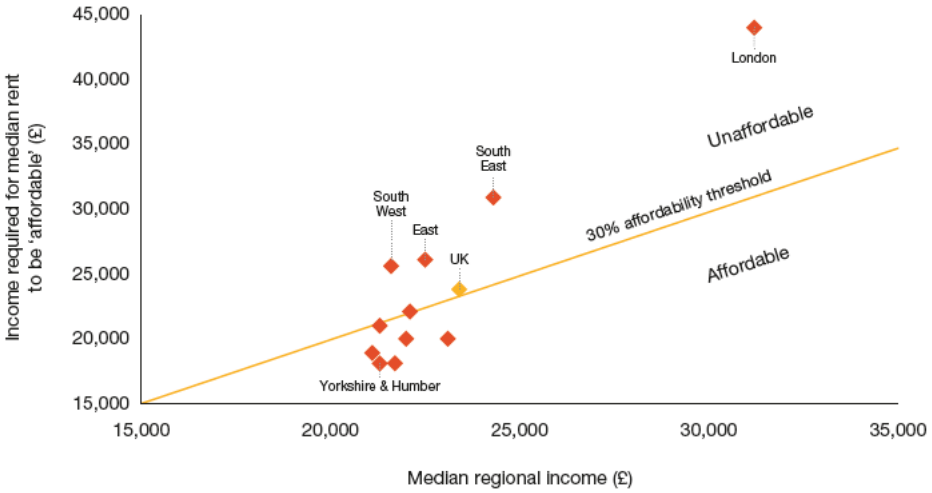
Rent represents a major share of income, and is unaffordable in much of the south of England

A conventional assumption used in previous studies is that, for housing to be considered affordable, it must cost less than 30% of gross annual income[9]. Using this benchmark, an employee would need an annual salary of £23,800 to afford the median private rent in the UK. Currently, the median wage across the UK is £23,400, which means that the country's median rent has just crossed over the 30% rental affordability threshold.

Just as rents vary between regions, the amount that someone needs to earn for renting to be affordable is also different, as shown in Figure 3.7[10]. Our analysis suggests that four regions in the UK are considered unaffordable, while a further two regions are at the limit of affordability. The most affordable region is Yorkshire and the Humber, where a salary of £18,100 is required. At the other end of the scale, a worker in London would need to earn a minimum of £44,000 for the median private rent to be considered affordable.

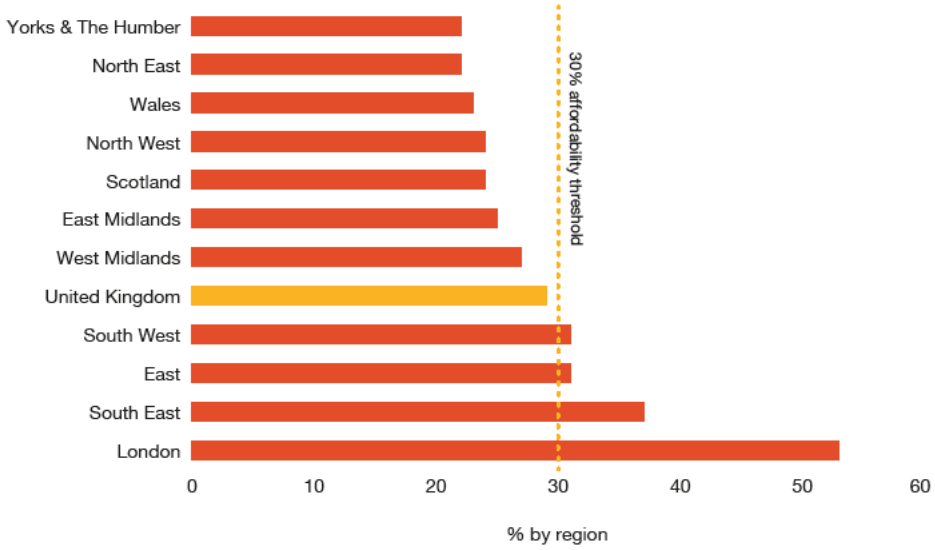
This affordability challenge is even more pronounced for young people in the capital. As shown in Figure 3.8 for 22-29 year olds, we estimate that members of "generation rent" in London had to spend over half (53%) of their income on private rent[11], while those in Yorkshire spent just 22% of their income on rent (based in each case on median values of income and rent).

Figure 3.7 – Affordable income by region, 2017/18



Source: ONS, PwC analysis

Figure 3.8 – Rental affordability ratio by region for 22-29 year olds, 2018



Source: ONS, PwC analysis

9 See, for example, Shelter, 2016, Making renting more affordable for more Londoners.
10 We have chosen to look at rental affordability at a region-level, rather than more granularly. This is because people are more likely to commute across local authority borders for work, which makes the analysis less robust.
11 We calculate the affordability ratio by dividing median rents by median earnings. We use the median in order to exclude extreme values at either end of the scale.

Table 3.4: Rental affordability ratio by region and key worker profession, 2018

Indicator (%)	Police officers	Secondary school teachers	Social workers	Fire service officers	Primary & nursery teachers	Nurses & midwives	Prison service officers
Wales	15	15	18	N/A	16	19	N/A
North East	14	15	20	18	18	18	19
Scotland	15	17	17	20	18	22	15
Yorkshire and The Humber	14	18	19	17	17	19	24
North West	15	17	18	19	19	21	25
West Midlands	17	18	20	20	22	25	24
East Midlands	17	18	21	N/A	24	23	26
South West	19	21	28	25	27	29	N/A
East	20	22	26	26	26	32	30
South East	23	27	30	27	33	34	33
London	29	33	34	36	40	39	45

Source: ONS, PwC analysis based on ratio of median private rents to median income. Note that comparable data are not available for Northern Ireland.

High rental affordability ratios could lead to problems for society

This analysis suggests that many jobs do not offer the wages necessary for rents to be considered affordable in London and other parts of Southern England. To explore this further, we have estimated the affordability of private rents in different regions for a range of key occupations. We do this by dividing median private rents by median incomes to calculate a ratio of rent-to-income, which we refer to as the rental affordability ratio. Importantly, we have assessed affordability using figures for the amount of rent paid per person, rather than average rents[12].

A high rental affordability ratio has two important implications. It may prevent people seeking out better opportunities and greater prosperity by moving to more productive areas of the country, which affects social mobility and the country's productivity growth. But it may also prevent people who work in key professions from living in certain areas of the country, which could lead to shortages of these workers in those regions.

We have focused our analysis on what are commonly referred to as 'key workers'. These are public sector employees considered vital to the infrastructure of the community, including NHS workers, teachers, and police and fire service officers. Most key workers need to be able to afford to live close to the areas that they work, as commuting long distances to work (or working remotely using computers and mobile technology) is neither desirable nor practical.

Although there are a variety of shared or low-cost home ownership and rent schemes with social landlords for which key workers are given priority, the stock of affordable homes in the UK has shrunk across the country[13]. As shown in Figure 3.6, the proportion of people who rent in the social sector fell between 1998/1999 and 2017/18, particularly for younger and older people. Those who previously lived in social housing are being pushed into the private sector. Over five million households are now privately renting and our analysis shows that, for many occupations, this is unaffordable.

We present our results for the levels of private rental affordability for selected key worker occupations by region in Table 3.4.

12 This is a key difference. With a rising share of people in shared accommodation, taking the average rent paid is a better indicator of affordability of housing than the average cost of a flat or house, though it does potentially mask any declines in the quality of accommodation.
13 Ministry of Housing, Communities & Local Government, Dwelling Stock Estimates: 31 March 2018, England.

Our analysis shows that:

- The affordability challenge for key workers is particularly pronounced in London and the South East. Across all of the key worker professions we have looked at, rents are at the limit of affordability or unaffordable in London. Rents are also unaffordable for many professions in the rest of the South East, potentially ruling out commuting in to the capital from further afield (which would also involve additional transport costs as well as longer commuting times).

- Among the group of key workers that we have looked at, prison services officers had the worst rental affordability ratios in London in 2018, at 45%. Rental affordability ratios were also particularly high for primary school and nursery teachers at 40%, while the rental affordability ratio for nurses and midwives was 39%. For the latter, median wages would need to increase by roughly £10,500 a year for current median rents to be considered affordable.

- High rental affordability ratios are not exclusively found in the South East. The East and South West were both also unaffordable for some of the occupations we looked at, including nurses and midwives and prison officers.

- Private rents are generally considered affordable across professions in Scotland and Wales, with the rental affordability ratio ranging between 15% and 22% for the professions we studied[14].

These high rental affordability ratios are before considering additional costs associated with renting (for example, moving house or paying for utilities). For some, cutting the amount spent on rent through relocating may not be realistic, given existing family commitments and the upheaval associated with moving.

It is also important to note that we look at median incomes for occupations that cover a range of grades. Many workers fall into the junior end of these grades. As a result, it may be even more difficult for junior key workers in the low affordability areas, and they may be forced to live in lower quality accommodation or commute from further afield.

Rental affordability ratios have worsened for key professions over the last 5 years

For many of the professions that we have looked at, rental affordability ratios have deteriorated over the last 5 years. The change in the rental affordability ratio is affected by movements in rent and incomes. Our analysis suggests that in the UK as a whole, the amount spent on rent over this period has grown by 8%. At the same time, earnings growth remains relatively weak and below levels seen before the financial crisis.

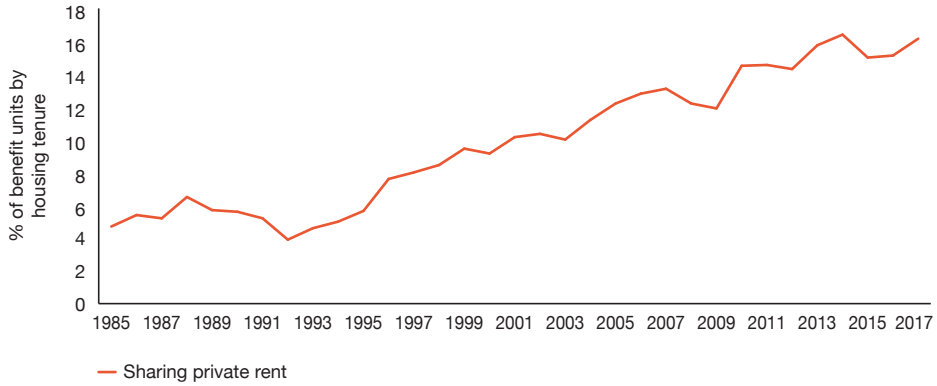
In London, the South East and the East Midlands, increases in rents have outpaced earnings growth, weakening (i.e. raising) rental affordability ratios over time. This has contributed towards a greater divide in the rates of affordability between these regions and the rest of the country. As the capital and its surrounding areas are generally the most productive areas of the country (based on standard measures such as GVA per worker), the worsening rates of affordability have made it more difficult for people to move to these areas to seek out greater prosperity. If current trends continue, we project that the average affordability ratio in London could reach 47% by 2022/23, from 42% in 2017/18. For young people, who already face median rents that are more than half of median incomes as noted above, the additional squeeze on disposable income could be even greater.

As noted previously, these figures show how the amount of rent paid per person has changed over the last five years, rather than how average rents have changed. This difference is important as it accounts for the increasing trend of multiple 'benefit units' (defined as a single adult or a married and cohabiting couple and any dependent children) living in one household, and splitting the average rent between themselves.

Data from the Resolution Foundation, as presented in Figure 3.9, suggests that people have chosen the way they live over the past 20 years, with an increasing proportion of people living in shared accommodation. This may imply that a lack of affordable housing may be pushing people into living in shared or lower quality accommodation, which could be putting downward pressure on the amount of rent paid. If this is correct, the underlying trend in rental affordability could be even worse than our estimates suggest.

14 These are averages across Scotland, however, and rents are likely to be less affordable relative to incomes in major cities like Edinburgh and Glasgow. But this kind of city-level analysis was beyond the scope of the present study (aside from London given this is a region in its own right).

Figure 3.9 – Shared housing in London, 1985-2017



Source: Resolution Foundation

3.4 – Implications for government policy and business

Faced with a shortage of affordable housing, higher deposit requirements and increased demand for housing, young people are increasingly turning to private renting. Our analysis shows that, in London, tenants aged 22-29 now have to spend over half (53%) of their income on private rent, far in excess of the 30% threshold that is generally considered affordable. On an occupational basis, many key workers such as nurses and teachers cannot afford the rents charged in areas such as London and the South East.

Looking ahead, reducing the cost of housing – both renting and purchasing a house - should be a priority. The high cost of housing has implications for key workers as well as those in other professions. For example, it may prevent people who work in key professions from living in certain areas of the country, which could lead to shortages of workers. Without the support of family or others, high rental affordability ratios may also prevent people from seeking out better opportunities and greater prosperity by moving to more productive areas of the country, which affects their prospects as well as national productivity growth.

Both the government and business can improve housing affordability

There are a number of levers that the government could pull to make housing, and particularly rents, more affordable. Most of these involve increasing the supply of properties to put downward pressure on property price inflation. One such lever would involve working with housebuilders to ensure that the government's target for 300,000 new homes a year in England is met. The government will need to continue to implement supporting policy to do this, for example by further relaxing planning rules and facilitating more strategic thinking, with local authorities (and other local stakeholders such as LEPs) coming together to create joint spatial plans that expand housing stock where there is most need. The government could also use its 2019 spending review to offer additional support for developing new affordable homes for both sale and rent. This will be important to ensure that key workers can still afford to live in higher cost regions like London and the South East.

The government could also consider possible policy ideas from other major cities around the world. For example, Berlin has recently introduced rent controls, which means that landlords are blocked from putting up rent on residential properties for five years.

Although the attractions of this need to be balanced against possible disincentives to landlords. Many cities around the world have also regulated short-term letting platforms, which could have the effect of reducing the supply of properties for longer term tenancies.

A recent report by PwC and the World Economic Forum also highlighted a number of other policies implemented in major cities around the world that could help to alleviate the affordability challenges. Examples include defining specific social housing eligibility criteria, repurposing vacant properties, and developing multiple tenures of housing on the same site[15]. Looking specifically at the UK, there is also a case for looking again at how the taxation of residential property can be simplified, as the system's complexity could itself be a deterrent to new investment in the sector.

Employers can also take action to help alleviate high housing costs and the affordability problem. Some have chosen to move jobs around the country to gain better access to employees who cannot afford to live in or commute to more expensive regions and cities. This is not an option for those employing key workers, but there are still ways that they can help. For example, some employers have arranged preferential negotiating terms with selected letting agents, which helps their employees rent at a lower cost.

If some or all of these policies can be implemented – and particularly if the government and business can work together – it is likely to make renting more affordable. This is, in turn, likely to improve social mobility and boost national productivity growth in the longer term by allowing people to move to places in the UK where they can be most productive.

15 See the following link for the associated blog, which lists ten examples: https://www.weforum.org/agenda/2019/06/10-ways-cities-are-tackling-the-global-affordable-housing-crisis/

Technical annex: modelling methodologies

UK house price projections

Our analysis focuses on the new ONS and Land Registry house price indices. Data from the ONS vary from those provided by Nationwide and Halifax, though broad trends tend to be similar over time. We focus on the ONS data as they cover a larger sample size, given that Nationwide and Halifax base their indices only on their own mortgage approvals.

The PwC house price model consists of two parts: a long-run equilibrium equation and a short-run error correction model that indicates how house prices adjust back towards this equilibrium level.

In the long run, we found that real house prices were driven by three key variables: real annual earnings, the ratio of the housing stock to the population ('supply') and a variable which reflects general credit conditions. Monetary values are deflated into real (inflation adjusted) terms using CPI.

In the short run, we found that changes in real house prices were driven by: deviations from the long-run equilibrium; changes in real annual earnings; changes in credit conditions; and the previous period's mortgage interest rate (cost of borrowing). The coefficients for these model variables and other summary statistics for both models are shown in the tables below.

The parameters of the model were estimated using the standard ordinary least squares (OLS) econometric technique based on annual data for 1975-2018.

Regional house price projections

The regional house price projections relate to the main scenario only, but it should be borne in mind that uncertainties are even greater at the regional than the national level, so these projections can only be considered illustrative.

Our regional projections are based on a regression between house price to earnings ratios and mortgage rates. The results are then adjusted so as to aggregate to the UK average estimates.

Technical annex table 3.1: Long run model (Cointegrating equation)

R-squared = 0.99

Dependent variable: Real house prices **No. of observations=44**

	Coefficient	t-statistics
Earnings	8.0	6.5
Credit	23073.5	4.6
Supply	-749.4	-3.8
Dummy: financial crisis	0.2	5.7
Dummy: post-financial crisis	32514.6	5.5
Constant	39764.0	9.8

Technical annex table 3.2: Short run model)

R-squared = 0.75

Dependent variable: Change in Real house prices **No. of observations=43**

	Coefficient	t-statistics
L. co-integrating equation residual	-0.3	-2.3
D.Earnings	7.4	4.7
L.Mortgage rate	-468.9	-2.2
D.Lending	0.2	4.4
D.Credit	12088.7	2.6
Constant	4333.2	2.2

Note: 'D' refers to the first difference of a variable (i.e. change on previous year). 'L' refers to the lagged value of a variable in the previous year.

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