INTERNATIONAL MONETARY FUND

IMF Country Report No. 16/157

# UNITED KINGDOM

## FINANCIAL SECTOR ASSESSMENT PROGRAM

June 2016

## PROPERTY MARKETS AND FINANCIAL STABILITY—TECHNICAL NOTE

This Technical Note on Property Markets and Financial Stability on the United Kingdom was prepared by a staff team of the International Monetary Fund. It is based on the information available at the time it was completed in March 2016.

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## FINANCIAL SECTOR ASSESSMENT PROGRAM

March 2016

# TECHNICAL NOTE

## PROPERTY MARKETS AND FINANCIAL STABILITY

Prepared By
**Monetary and Capital Markets Department**

This Technical Note was prepared in the context of an IMF Financial Sector Assessment Program (FSAP) in the United Kingdom in November 2015 and February 2016 led by Dimitri Demekas. It contains technical analysis and detailed information underpinning the FSAP findings and recommendations. Further information on the FSAP program can be found at http://www.imf.org/external/np/fsap/fssa.aspx

# CONTENTS

# Glossary

| | |
|---|---|
| BoE | Bank of England |
| BTL | Buy-to-Let |
| CRE | Commercial real estate |
| DSR | Debt Service Ratio |
| DTI | Debt-to-Income |
| FCA | Financial Conduct Authority |
| FPC | Financial Policy Committee |
| HMLR | Her Majesty's Land Registry |
| HMT | Her Majesty's Treasury |
| HPI | House Price Index |
| LTI | Loan-to-Income Ratio |
| LTV | Loan-to-Value Ratio |
| MMR | Mortgage Market Review |
| NMG | U.K. House Price Index |
| ONS | Office of National Statistics |
| PRA | Prudential Regulation Authority |
| SDLT | Stamp Duty Land Tax |

# INTRODUCTION AND OVERVIEW[1]

**1. The interaction of property markets with financial markets has important implications for financial stability.** Cycles in the prices of housing and commercial property affect the balance sheets of households, banks, and other financial institutions. Excessive lending and price swings in property markets can cause significant distress to both borrowers and lenders. In addition to direct balance sheet effects, real property affects the economy through the financial accelerator. Since many firms rely on real estate as collateral to secure their borrowings, they are very sensitive to changes in the valuation of their pledged assets. A drop in prices of real property weights on firms' access to finance, which can reduce economic activity, leading to further declines in asset prices and potential financial stability risks. Finally, increasing debt associated with property purchases increases the vulnerability of indebted property owners to economic shocks, with potential knock-on effects on the rest of the economy.[2] The purpose of this note is to assess the risks to the financial sector that currently emanate from United Kingdom (U.K.) property markets.

**2. Recent developments in property markets.** House price growth has accelerated over the last 10 months. After slowing to below 6 percent per annum during the first half of 2015, the growth rate of house prices increased to 8 percent in early 2016.[3] Mortgage lending growth has not returned to its pre-crisis levels. However, buy-to-let (BTL) lending has grown faster than the overall residential property lending. The reduction in the share of new high loan-to-income ratio (LTI) mortgages has recently reversed.[4] Commercial real estate (CRE) has been buoyant: annual price growth peaked in early 2015 at above 10 percent per annum. This rapid growth has since eased, possibly due in part to the uncertainty related to the Brexit referendum. After the recession, domestic banks have reduced their CRE exposures, but international investors have picked up the slack and now account for more than one half of CRE financing flows.

**3. Supply constraints are a perennial concern in the housing sector.** The existing tight supply conditions in the housing sector tightened further after the recession. Tight supply and growing demand are the main drivers of the current house price growth in an environment with otherwise moderate mortgage lending growth.

**4. The authorities have adopted several housing-related macroprudential measures.** The Financial Policy Committee (FPC) was given powers of direction over the buy-to-own market in April 2015. The powers allow the FPC to limit mortgage lending by restricting the debt-to-income (DTI) and loan-to-value ratio (LTV) ratios. Before that, mortgage market review (MMR), a microprudential

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[1] This technical note was prepared by Mico Mrkaic, European Department, IMF.

[2] In many past crises, the main effect of such shocks has been not widespread mortgage defaults, but rather households cutting back on consumption in order to maintain debt service. Lower consumption then contributes to recessionary forces that often adversely affect bank balance sheets through other channels, such as defaults on CRE loans. In this way, elevated household debt and house prices can pose indirect—but nonetheless important—risks for financial stability. Such risks are a key motivation for restraining excessive household debt.

[3] According to the ONS house price index for the United Kingdom.

[4] Mortgages with LTI above 4.5.

measure brought into force by the Financial Conduct Authority (FCA) in April 2014, made lenders more accountable to ensure that borrowers have the ability to repay their obligations. Finally, the FPC recommended limiting the proportion of new high LTI mortgages (with LTI above 4.5) to 15 percent and that the ability of new borrowers to repay their mortgages is scrutinized against a 3 percent increase in mortgage rates.

**5. Key policy recommendations include:**

- **Macroprudential policies will need to tighten later this year if the recent re-acceleration of housing and mortgage markets persists.** Such tightening could take the form of tighter LTI and/or LTV limits on new mortgages.

- **Removing the asymmetry between buy-to-own and BTL markets in terms of FPC's regulatory powers should be an important policy priority.** In March 2016, the authorities concluded the consultation regarding FPC's powers of direction over the BTL market. The asymmetry should be removed by granting to the FPC powers of direction that are in essence equal to the powers it already has over the buy-to-own market.

- **CRE, with its rapidly growing prices, warrants close monitoring.** The CRE market has been buoyant, with annual price growth exceeding 10 percent as of mid-2015. Domestic banks have reduced their CRE exposure, but international investors have picked up the slack. CRE is particularly sensitive to swings in sentiment about economic prospects. Since many firms rely on CRE as collateral to support their borrowing, a fall in prices could tighten corporate credit constraints, reducing business investment and economic activity.

- **Continued efforts to address supply constraints are important.** The government has undertaken a number of welcome initiatives to boost housing supply in recent years, such as improving incentives for local governments to approve new construction. Efforts to increase housing supply need to continue, since increased housing supply will support near-term growth, reduce the need for excessive household leverage, and promote social cohesion by lessening wealth inequality, as rising house prices have been a key contributor to the latter in the United Kingdom. Furthermore, increases in housing supply would lower the volatility of prices during upswings, which would assist in solidifying financial stability.

**6. Dissemination of official data on rental prices and CRE price indices would be welcome.** The CRE and BTL property market segments have been growing rapidly. Despite this rapid growth, there are no official indices of prices for the sectors. Analysts of the U.K. property markets and those concerned with financial stability would benefit from officially-disseminated data on rental prices and CRE price indices. Specifically, the authorities should disseminate regional data on rental prices in pounds, disaggregated by property type. This would help estimate the degree of overvaluation of house prices.

# DEVELOPMENTS IN PROPERTY MARKETS

## A. Mortgage Rates and Prices

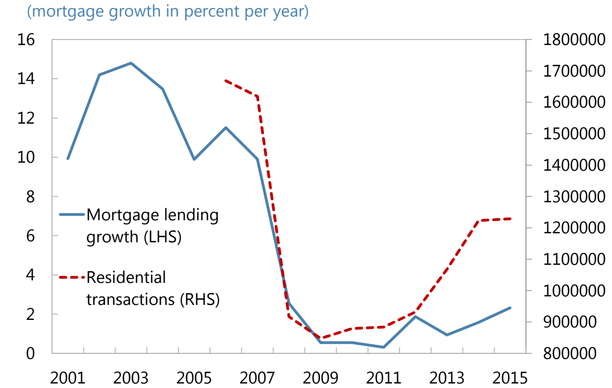
**7. Mortgage rates have continued to fall and will likely remain low over the medium term.** Mortgage rates have continued to fall across all maturities (Figure 1). The low official Bank of England (BoE) rate and the global environment of low interest rates assisted in this trend. Higher LTV mortgage rates have also recently declined as well, likely as a result of increasing competition in this lending segment. Financial markets expect the Bank rate to remain near the effective lower bound for awhile. These factors suggest that U.K. property markets will likely operate in a low interest rate environment, which exerts upward pressures on property prices, for the foreseeable future, but could face risks once interest rates start increasing.

**8. House price growth has accelerated over the last 10 months.** After decelerating to about 5 percent per annum during the first half of 2015, the growth rate of house prices steadily accelerated to 8 percent in early 2016, possibly in part due to the urgency to purchase dwellings before the April 1, 2016 implementation of the 3 percent stamp duty surcharge on properties that are not primary residences.[5] In addition, the reduction of mortgages with high LTI ratios has recently reversed (Figure 1).

## B. Demand and Supply Developments

**9. The levels of housing transactions and the growth of mortgage lending remain well below their pre-crisis levels.** The persistent upward pressure on house prices partly reflects supply constraints due to restrictive planning regulations and the post-recession capacity reduction in the construction industry. Consequently, although house prices have surged past pre-crisis levels, the gap between supply, measured by housing completions, and new household formation widened further after 2008. In addition, the growth of mortgage lending and the number of housing transactions remain well below their pre-crisis levels, indicating that the growth in housing prices is due in large part to the realignment of relative prices of housing in light of tight supply and growing demand.

**Mortgage Lending Growth and Residential Transactions**
(mortgage growth in percent per year)



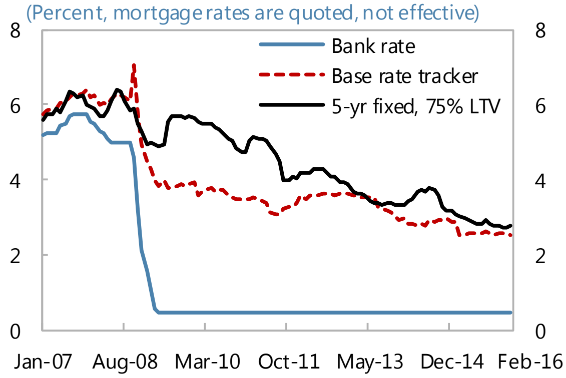

Sources: Bank of England and HM Revenue and Customs

5 See Box 1 on house price indices.

## Figure 1. United Kingdom: Housing Market Developments

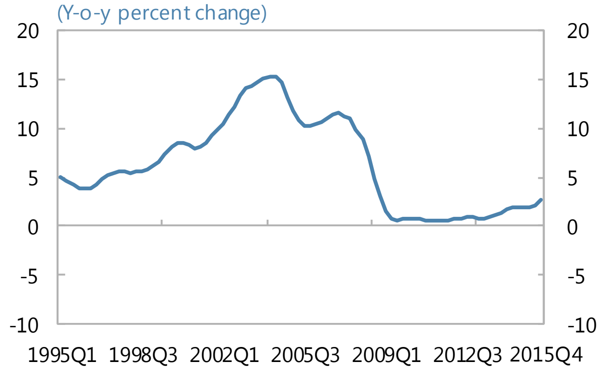
*Mortgage rates continue to fall...*

**Interest Rates**
(Percent, mortgage rates are quoted, not effective)



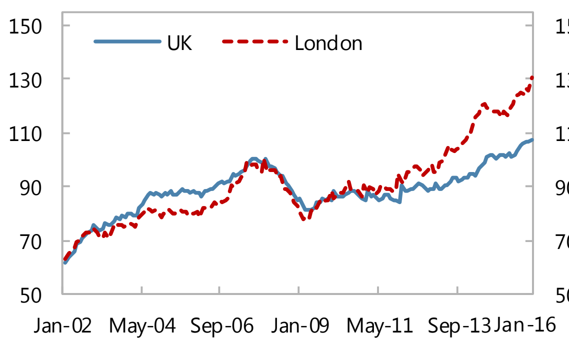

*...but despite a recent acceleration, net mortgage growth remains well below pre-crisis levels.*

**Mortgage Lending**
(Y-o-y percent change)



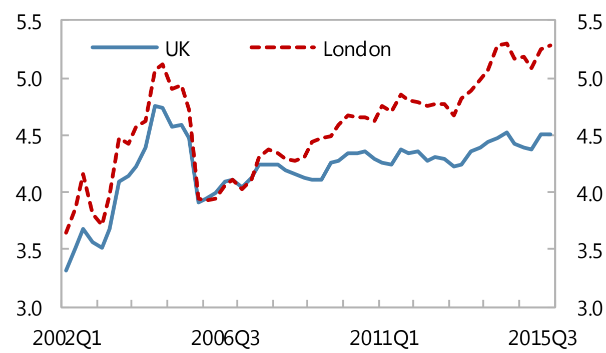

*House prices accelerated in the second half of 2015...*

**Real House Prices**
(2008:1=100)



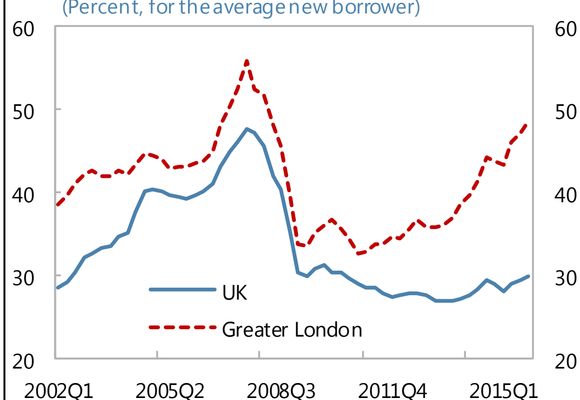

*...outpacing income growth, raising affordability concerns...*

**Price-to-Income Ratios**



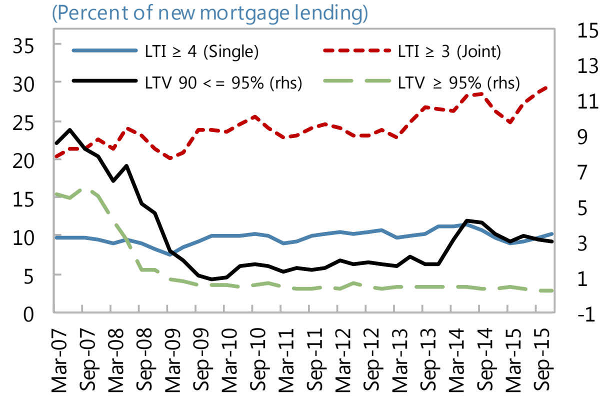

*...which are partly mitigated by low interest rates.*

**Mortgage Payment/Earnings**
(Percent, for the average new borrower)



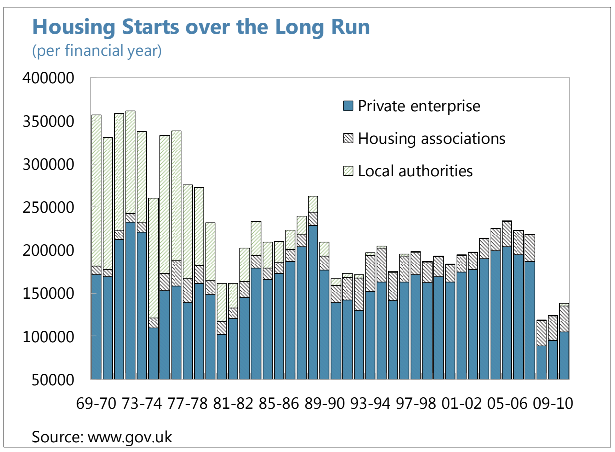

*The percentage of new lending at high LTIs has started to tick back upwards.*

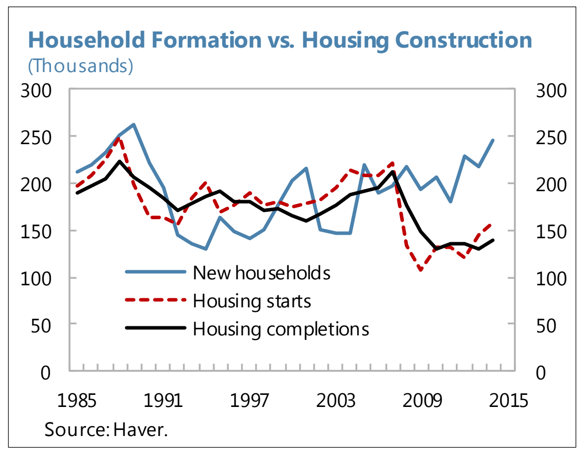
**Loan-to-Income Ratios**
(Percent of new mortgage lending)

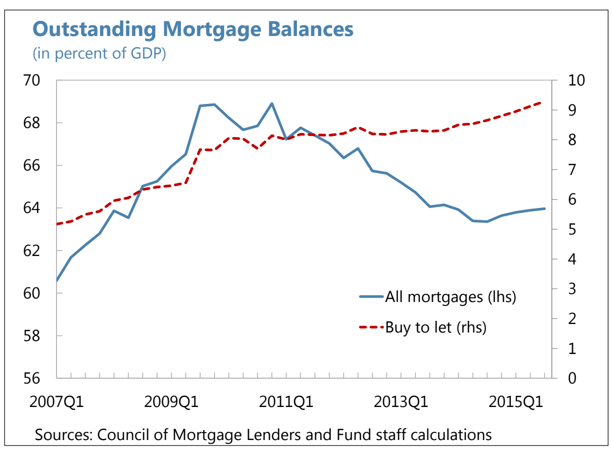



Sources: Haver Analytics and Fund staff calculations.

**10. The supply capacity of the construction sector declined further after the recession and is recovering slowly.** Housing supply in the U.K. has declined steadily for the last four decades due to restrictive planning constraints and a diminished role of local authorities in the provision of housing. The already-tight supply was further constrained in the wake of the great recession. Large builders consolidated and eliminated positions across the board. Several smaller builders exited the market entirely, and the remainder have seen their financing conditions worsen. Due to these capacity constraints, house price recovery after the great recession has not been accompanied by accelerated building activity. In fact, housing completions have not even kept pace with new household formation since 2008. The rapid rise in house prices in recent years without an accompanying surge in net mortgage lending (Figure 1) points to supply constraints as being an important cause of higher prices.



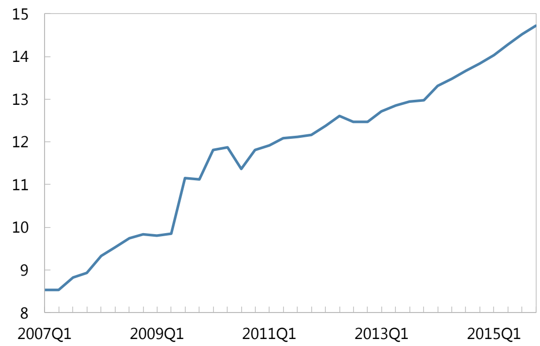



## C. Rental and Commercial Properties

**11. The BTL sector has expanded rapidly.** The U.K. BTL sector contains mostly of small-scale investors, who have only a few properties and rent them to augment their income or pensions. The BTL sector lending has grown rapidly, from 4 percent of mortgage stock in 2002 to 16 percent of the stock in mid-2015. In order to contain possible credit risks to the financial system and to mitigate the amplification of potential housing cycles due to the reliance of the real economy on housing as collateral, the FPC requested powers of direction over the sector. The FPC already has powers of direction over the owner-occupied market; therefore, obtaining similar powers over the BTL market would level the regulatory playing field in residential property markets. Specifically, the FPC requested powers of direction over LTV ratios and interest coverage ratios in the BTL sector. The consultation of the proposal closed in March 2016 and the government is expected to announce its final decision in 2016. In March 2016, the PRA published a consultation paper on underwriting standards for BTL mortgage contracts. Some of the proposals in the consultation paper mirror the macroprudential policies for the owner occupied market. For example, the paper proposes to implement affordability tests and interest rate stress tests for BTL mortgage borrowers.

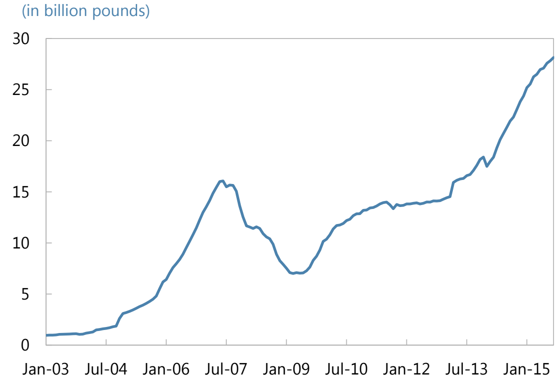
**Outstanding Balances of Buy-to-Let Mortgages**
(as percent of all mortgages)




Sources: Council of Mortgage Lenders and Fund staff calculations

**12. The CRE market has been buoyant, with annual price growth around 10 percent as of mid-2015.** The prices of prime U.K.—and especially prime London—CRE properties grew rapidly during 2014–15. While the market has slowed in the first quarter of 2016, this likely reflects the elevated uncertainty due to the Brexit referendum. Despite this rapid growth, the immediate risks of price reversals appear to be are small—for instance, an analysis by the BoE shows that the overvaluation of CRE properties is limited to certain prime locations, while on average CRE properties do not appear to be overvalued.[6] However, continued rapid price growth could further reduce rental yields and increase the probability of price reversals. These risks could be amplified due to the global nature of financing sources in the U.K. CRE sector. While domestic banks have reduced their CRE exposure after the crisis, international investors have picked up the slack and now account for more than one half of CRE financing flows. With reduced CRE exposures and stronger capitalization, credit risks to domestic banks from a CRE price reversal are reduced in

**CRE Open Ended Funds-Assets Under Management**
(in billion pounds)




Sources: Bank of England

[6] Financial Stability Report (FSR), December 2015.

comparison to the run-up to the 2008 crisis. But the sector can pose a macroeconomic risk—since the majority of small and medium firms rely on CRE as collateral to support their borrowing, a fall in CRE prices could tighten their credit constraints, reduce their investment and ultimately weigh on economic activity.

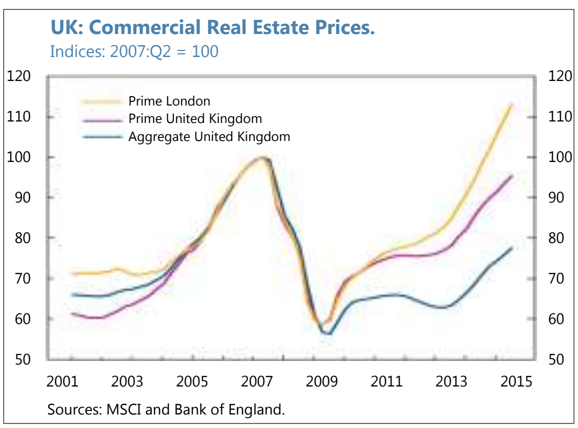
## D. Recent Policy Developments

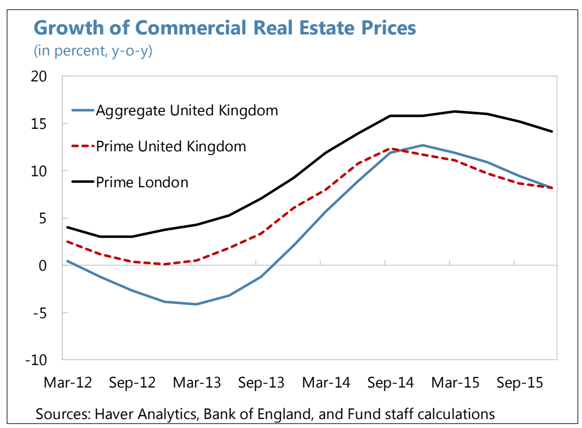
**13. To reduce risks to financial stability, the authorities recently adopted several macroprudential measures.**

- The FCA instituted the MMR with the majority of recommendations enacted in April 2014. The MMR made lenders fully responsible for repayment assessments of all borrowers. In addition, the FPC recommended strengthening of affordability assessments to prevent borrowers from assuming liabilities that they could not repay if Bank rate were to be 3 percentage points higher than the prevailing rate at origination.

- The FPC recommended a limitation on the output of new high LTI mortgages to 15 percent of lending for each lender. For the purposes of this recommendation, high LTI mortgages are defined as those whose LTI ratio exceeds 4.5.

- In April 2015, the FPC was given powers to direct the Prudential Regulation Authority (PRA) and the FCA to limit LTV and DTI ratios in the owner-occupied segment of the housing market.




**14. In addition to the macroprudential measures, the authorities introduced two changes to the taxation of BTL properties.** While these are primarily fiscal measures, they are likely to have some effect on the investment in and the valuation of BTL properties.

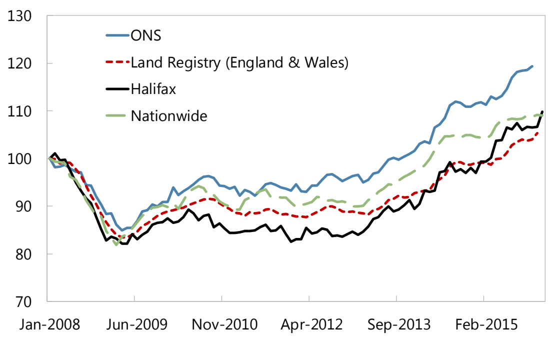
- Her Majesty's Treasury (HMT) reduced the highest rate at which BTL investors can deduct mortgage interest from their income. The measure will come into force in April 2017.

- HMT introduced higher rates of stamp duty land tax (SDLT) for purchases of additional residential properties. The higher rates, coming into force on April 1, 2016, are 3 percentage points above the existing residential SDLT rates for relevant purchases. This regulation, *inter alia*, increased the SDLT on BTL properties.

## Box 1. House Price Indices

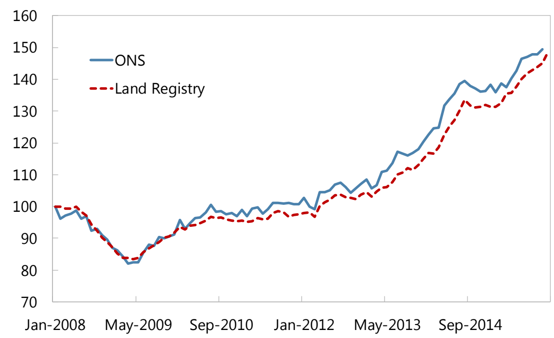
**Several private and official institutions U.K. compile and disseminate house price data in the U.K.** The U.K. housing market analysts can use a number of house price indices (HPI) in their work. However, the diversity of house price indices, which is in principle welcome, might also complicate the assessment of the "true" state of house price developments. Since indices differ in coverage, timeliness, data sources, and statistical methodology, they will also give rise to differing estimates of house price levels and growth rates. These differences are particularly troublesome in short-term analyses of price growth and reversals in price trends. In addition, official HPI's could usefully be expanded by covering the CRE and BTL markets and by providing average rental prices in pounds.

**Comparing House Price Indices**
(January 2008=100)



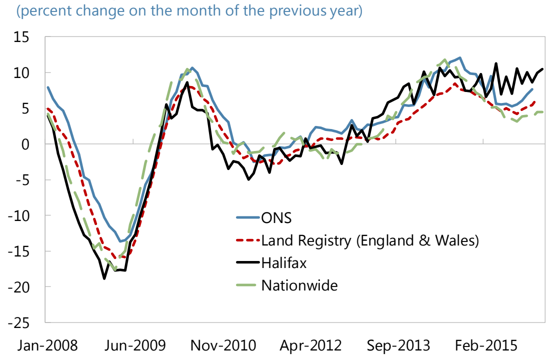

Sources: ONS, Land Registry, Halifax, Nationwide, and Fund staff calculations

**Comparing House Price Indices (London)**
(January 2008=100)



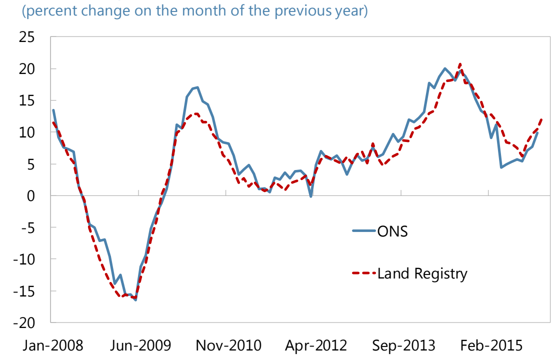

Sources: ONS, Land Registry, and Fund staff calculations

**Comparing Price Growth**
(percent change on the month of the previous year)




Sources: ONS, Land Registry, Halifax, Nationwide, and Fund staff calculations

**Comparing House Price Growth (London)**
(percent change on the month of the previous year)




Sources: ONS, Land Registry, and Fund staff calculations

## Box 1. House Price Indices (continued)

**The two official HPIs lag in timeliness relative to the private ones that are compiled by Nationwide and Halifax.** Halifax and Nationwide HPI's are typically released one week after the reference period, while the Office of National Statistics (ONS) and the Her Majesty's Land Registry (HMLR) HPI's are published six and four weeks after the end of the reference period, respectively.

**The ONS has published experimental indices of private housing rental prices (IPHRP), but does not disseminate pound values of private housing rental prices.** The ONS has published an experimental index of private rental prices. The index is constructed using administrative data. The data are collected by the Valuation Office Agency (VOA) and by Scottish and Welsh Governments. The fact that rental prices in pounds are not disseminated complicates the analysis of overvaluation in property markets.

**Currently, there exist no official indices of CRE and BTL prices.** The CRE and BTL property market segments have been growing rapidly. Despite this rapid growth, there are no official indices of prices for the sectors.

**The ONS is developing a new comprehensive HPI.** The ONS is developing an updated HPI, which will replace both the current ONH index, as well as the HMLR index. The index will include both mortgage and cash transactions. The ONS will also produce and disseminate a time series of past values of the new index to facilitate an easier transition to the new index.

**Table A. Overview of Some U.K. House Price Indices**

| Index | Timeliness | Data source | Quality adjustment |
|---|---|---|---|
| Nationwide 1/ | 1 week | Mortgage approvals by Nationwide | Hedonic regression |
| Halifax 1/ | 1 week | Mortgage approvals by Halifax | Hedonic regression |
| ONS 1/ 2/ | 6 weeks | Council of Mortgage Lenders (CML) | Hedonic regression |
| HMLR 3/ | 4 weeks | HMLR | Repeated sales |

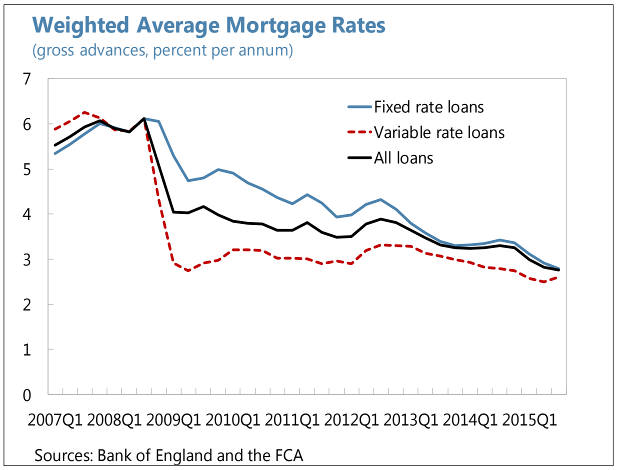
1/ No cash transactions included.

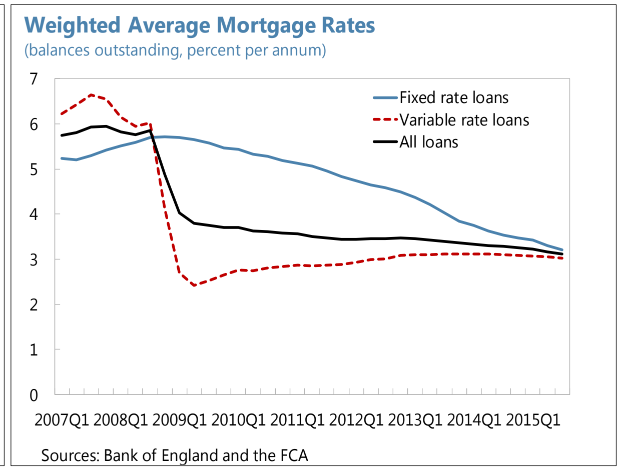
2/ Larger sample of mortgage approvals than Nationwide or Halifax.

3/ Common backward revisions. Includes cash transactions. Excludes new builds, Scotland and Northern Ireland.

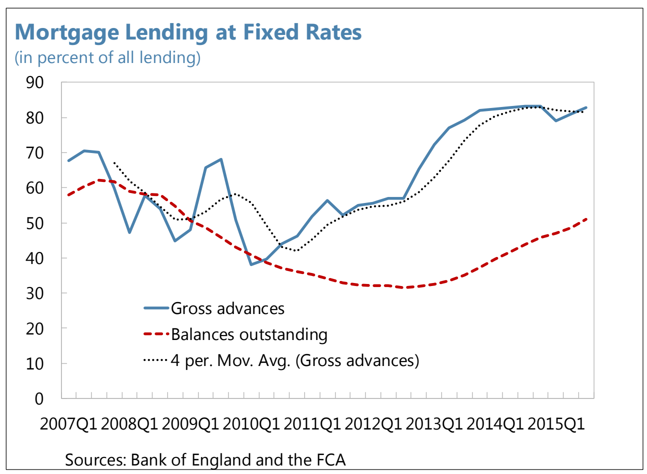
# AN OVERVIEW OF MORTGAGE LENDING TRENDS

**15. Mortgage rates have declined to historic lows.** Mortgage rates have continued to decline over recent years. Both fixed and variable mortgage rates have declined and are at their historic lows. This observation holds for gross advances, as well as for the outstanding balances. While low mortgage rates have helped reduce debt service ratios, the growth of mortgage lending has remained subdued.

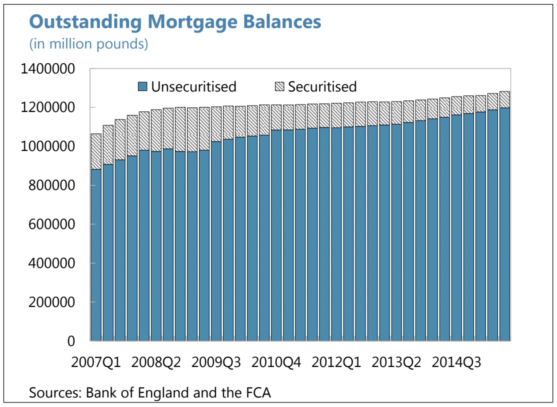


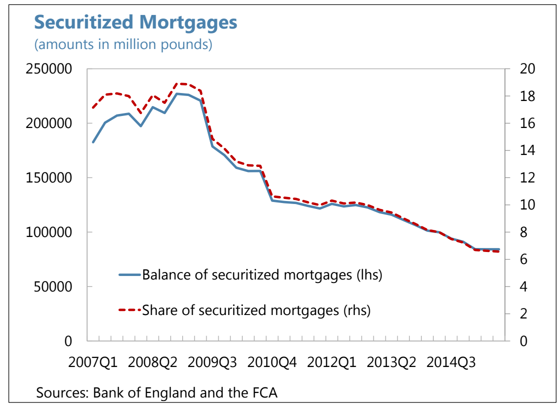




**16. Mortgage lending at fixed rates has increased.** The share of new mortgages that are issued at fixed rates now exceeds 80 percent. In addition, the share of outstanding balances of fixed rate mortgages has climbed to over 50 percent in late 2015. The increasing shares of fixed rate mortgages protect borrowers against interest rate increases that will follow the eventual liftoff of the official Bank rate. However, the majority of fixed rate mortgages in the United Kingdom are short-term fixed mortgages, with rates fixed for a period between two and five years. Therefore, the increased share of fixed rate mortgages provides the borrowers with limited protection against interest rate increases beyond the medium-term horizon.

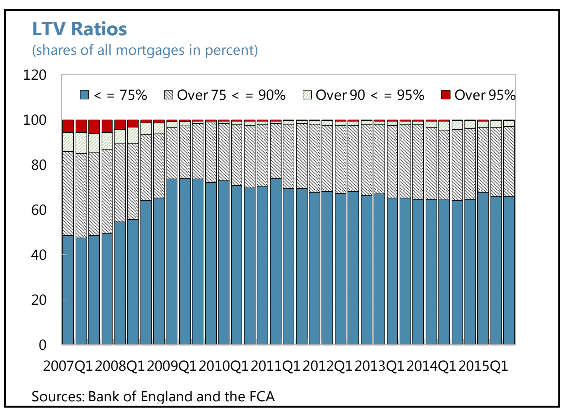


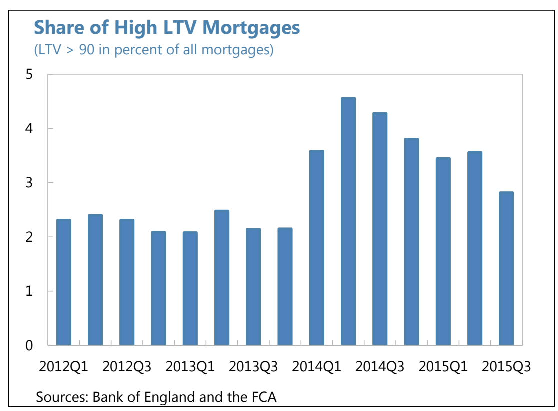

**17. Securitization of mortgages has declined.** The total amount of securitized outstanding mortgage balances has decreased from its peak of nearly 230 billion pounds in late 2008 to approximately 80 billion pounds in 2015. The share of securitized mortgages has declined as well—it peaked in late 2008 at nearly 19 percent of all mortgages, but has since declined to less than 7 percent. These trends imply that lenders have increased their direct exposures to mortgage lending. Everything else being equal, this increased exposure to mortgages that are not securitized, could increase the risks of mortgage lending to the lenders.




**18. The share of high LTV mortgages has declined.** After the recession, lenders started reduced their high LTV lending. The share of mortgages with LTV above 95 percent has fallen to well below one percent. However, the reduction in the share of mortgages with LTV above 90 percent was uneven—the share, which increased rapidly in 2014, has since declined, likely in part due to the macroprudential measures introduced by the authorities.[7]

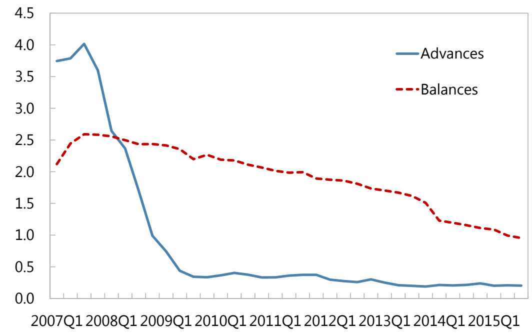



[7] The additional lending at LTV>90 percent from 2014 was almost entirely due to lending under the help-to-buy: Mortgage Guarantee Scheme, so lenders are largely protected from any associated credit losses. Lending volumes at LTV>90 percent have remained relatively steady as a proportion of all mortgage lending throughout 2015, both inside and outside the scheme. The Help-to-Buy: mortgage guarantee scheme is due to end at the close of 2016 at which point these trends are expected to continue.

**19. Lending to individuals with impaired credit history has declined.** The fraction of mortgage loans that are extended to individuals with impaired credit history dropped dramatically after 2008 and has declined steadily since then. Presently, around 0.2 percent of new mortgage loans are given to borrowers with impaired credit histories, a nearly twenty-fold reduction in comparison with the rapidly expanding lending that preceded the great recession. As a result of more careful lending to the individuals with impaired credit history, the balance of mortgages that have been extended to individuals with impaired credit histories has declined as well and amounts to less than one percent of current mortgage stock.

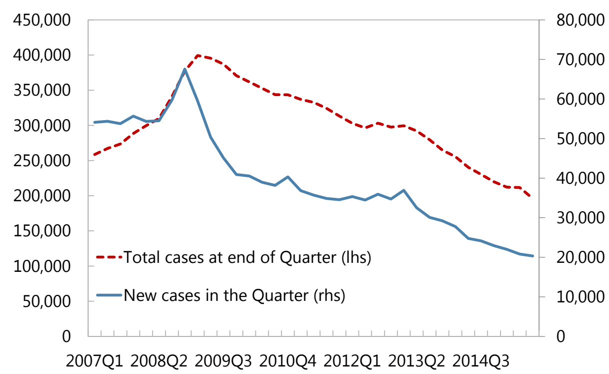
**Loans to Individuals with Impaired Credit History**
(in percent of all loans)




Sources: Bank of England and the FCA

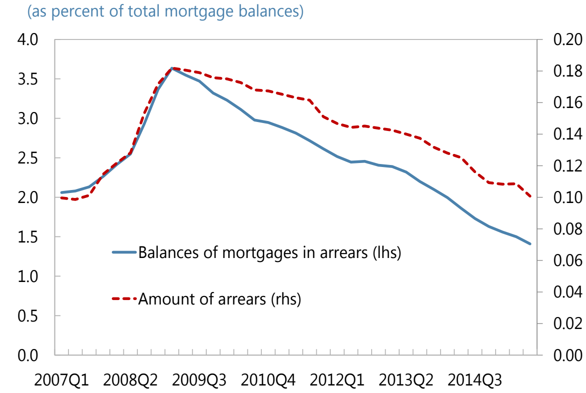
**20. Mortgage arrears have declined.** A lower mortgage rate (and likely more cautious mortgage lending) has resulted in the reduction of the flow of new arrears, as well as, in the reduction of the stock of arrears. The latter has recently declined below one percent of all loans.

**Number of Mortgages in Arrears**
(number of loan accounts)




Sources: Bank of England and the FCA

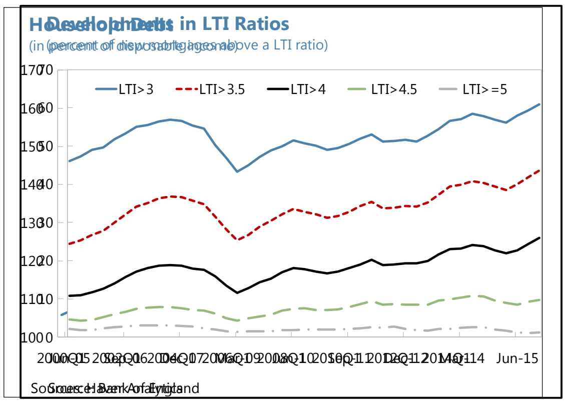
**Amounts of Mortgages in Arrears**
(as percent of total mortgage balances)




Sources: Bank of England and the FCA

# HOUSEHOLD BALANCE SHEET VULNERABILITIES

**21. The high leverage of some households could pose financial stability risks.** The percentage of new mortgages at high LTI ratios above 4.5 remains well above pre-boom levels (i.e., circa 2000), as does the aggregate household DTI ratio, which has temporarily stopped declining and is higher than in most other G7 countries.[8] High leverage significantly exposes banks and households to interest-rate, income, and house-price shocks and could lead to increased risks for the mortgage lenders. In addition to the direct financial risks, highly leveraged individuals are likely to reduce their consumption more than those with less leverage in the case of an economic slowdown. High leverage would amplify an economic slowdown, weigh on aggregate consumption, employment and could indirectly impinge upon financial stability.




**22. Micro-level data can add important insights into household balance sheet vulnerabilities.** The distributions of LTI and DSR can provide information about the characteristics of most financially vulnerable households that cannot be extracted from aggregate numbers. The U.K. House Price Index (NMG) housing survey, which has been conducted annually since 2004, contains a considerable amount of information about households borrowing and income.[9] In addition, it includes some important pieces of demographic information, which help in determining the distribution of balance sheet vulnerabilities. This section focuses on the distributional analysis of LTI and debt service ratios.[10]

**23. The average LTI ratio has remained stable over 2014–15, but the upper tail of the LTI distribution of the stock of mortgages has shrunk.** The average LTI during 2014–15 was stable at just above two. However, the upper tail of the LTI distribution (measured as its 95th percentile) has shrunk. This movement indicates a reduction in the risk of the LTI distribution and is likely at least in part a consequence of the macruprudential measures adopted in 2014. This result is shown in the plot of LTI distributions for both years—there is a noticeable reduction in the frequency of mortgages with the LTI ratio above 5.

[8] The chart on the left shows the fractions of new mortgages.

[9] Although some limitations of the survey preclude a more detailed long-term analysis.

[10] The NMG survey data can be found at http://www.bankofengland.co.uk/research/Pages/onebank/datasets.aspx.

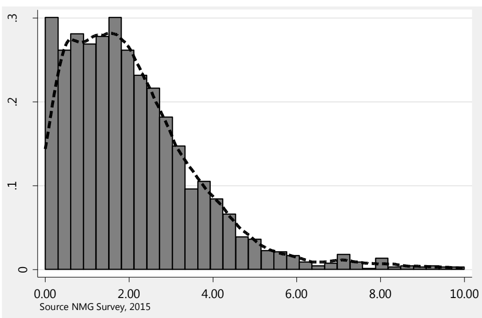
**Table 1. United Kingdom: LTI Summary Statistics for 2014–15**

| Year | mean | se(mean) | p50 | p5 | p95 |
|---|---|---|---|---|---|
| 2014 | 2.07 | 0.03 | 1.77 | 0.17 | 5.00 |
| 2015 | 2.03 | 0.04 | 1.83 | 0.20 | 4.58 |

Source: NMG Housing Survey 2015.

**24. The regional distribution of LTI ratios is broadly uniform, with thicker tails in London and the South East.** The average LTI ratio is broadly uniform across regions, with an average about two. There are large variations in the 5 percent upper tails, with London being at the extreme of the distribution.

**Distribution of LTI Ratios in 2014**




**Distribution of LTI Ratios in 2015**

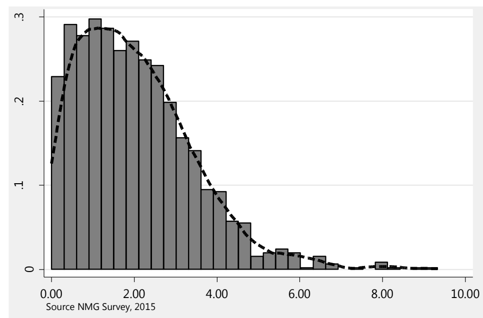



**Table 2. United Kingdom: LTI Summary Statistics by Regions**

| Region | mean | se(mean) | p50 | p5 | p95 |
|---|---|---|---|---|---|
| East Anglia | 2.02 | 0.11 | 1.93 | 0.12 | 4.17 |
| East Midlands | 1.81 | 0.10 | 1.71 | 0.26 | 3.48 |
| Greater London | 2.20 | 0.12 | 1.86 | 0.17 | 5.52 |
| North | 1.76 | 0.15 | 1.62 | 0.26 | 4.40 |
| North West | 1.91 | 0.10 | 1.67 | 0.24 | 4.33 |
| Scotland | 1.84 | 0.11 | 1.83 | 0.17 | 4.00 |
| South East | 2.41 | 0.11 | 2.30 | 0.16 | 5.00 |
| South West | 2.24 | 0.13 | 2.10 | 0.33 | 4.61 |
| Wales | 1.92 | 0.17 | 1.71 | 0.20 | 4.06 |
| West Midlands | 1.83 | 0.12 | 1.53 | 0.29 | 4.71 |
| Yorkshire and the Humber | 1.93 | 0.11 | 1.72 | 0.20 | 4.70 |
| Total | 2.03 | 0.04 | 1.83 | 0.20 | 4.58 |

Source: NMG Housing Survey, statistics for 2015.

**25. There are significant differences in LTI ratios among age groups.** The differences in LTI across age groups are sizeable and statistically significant. The largest LTI ratio can be found among 25–34 borrower aged—the majority of whom are first time buyers at the beginning of their employment careers. In addition, the upper tail of the LTI distribution is thick among the aged population, 65+.

**Table 3. United Kingdom: LTI Summary Statistics by Age Groups**

| Age group | mean | se(mean) | p50 | p5 | p95 |
|---|---|---|---|---|---|
| 18-24 | 1.99 | 0.15 | 1.69 | 0.11 | 4.65 |
| 25-34 | 2.61 | 0.07 | 2.50 | 0.64 | 4.73 |
| 35-44 | 2.18 | 0.06 | 2.08 | 0.43 | 4.41 |
| 45-54 | 1.65 | 0.07 | 1.32 | 0.14 | 4.38 |
| 55-64 | 1.38 | 0.10 | 1.01 | 0.09 | 3.94 |
| 65+ | 1.73 | 0.14 | 1.35 | 0.15 | 5.00 |
| Total | 2.03 | 0.04 | 1.83 | 0.20 | 4.58 |

Source: NMG Housing Survey 2015.

**26. The debt service ratio (DSR) has decreased somewhat during 2014–15.** The average DSR declined from 17.1 percent to 16.3 percent. The decline in the top 5 percentile of the distribution was even more pronounced, likely reflecting a general decline in mortgage rates as well as income growth.

**Table 4. United Kingdom: DSR Summary Statistics by Regions**

| Region | mean | se(mean) | p05 | p50 | p95 |
|---|---|---|---|---|---|
| East Anglia | 15.61 | 0.83 | 2.40 | 14.46 | 30.43 |
| East Midlands | 16.14 | 0.85 | 4.80 | 15.11 | 29.84 |
| Greater London | 18.43 | 1.18 | 3.90 | 15.10 | 44.44 |
| North | 15.86 | 1.13 | 4.94 | 14.59 | 31.76 |
| North West | 15.22 | 0.68 | 2.65 | 14.02 | 30.27 |
| Scotland | 14.51 | 0.87 | 3.07 | 13.66 | 30.00 |
| South East | 17.51 | 0.75 | 2.82 | 16.00 | 37.50 |
| South West | 17.68 | 0.91 | 4.00 | 17.03 | 36.00 |
| Wales | 17.28 | 1.42 | 2.67 | 14.62 | 38.00 |
| West Midlands | 15.24 | 0.76 | 3.79 | 13.85 | 27.50 |
| Yorkshire and the Humber | 15.19 | 0.76 | 3.38 | 13.75 | 31.44 |
| Total | 16.32 | 0.28 | 3.21 | 14.70 | 33.50 |

Source: NMG Housing Survey 2015.

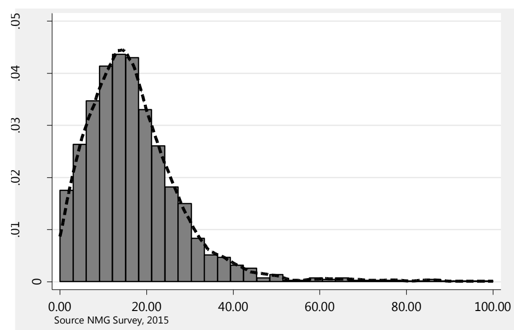
**While average debt service ratios are similar across regions, the upper tail of the distribution is much thicker in London.** The regional averages of debt service ratios are broadly similar, with the mean around 16 percent. However, the upper 5 percent of the distribution is quite high in London, exceeding 40 percent.

**Table 5. United Kingdom: DSR Summary Statistics by Years**

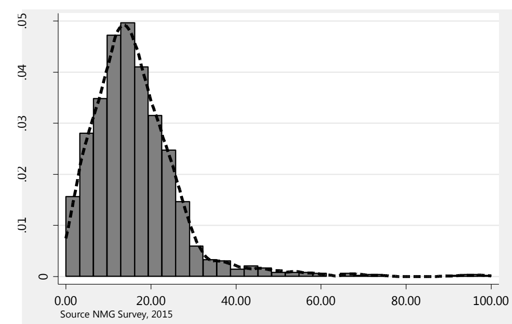
| Year | mean | se(mean) | p05 | p50 | p95 |
|---|---|---|---|---|---|
| 2014 | 17.13 | 0.25 | 2.94 | 15.26 | 37.02 |
| 2015 | 16.32 | 0.28 | 3.21 | 14.70 | 33.50 |
| Total | 16.80 | 0.19 | 3.03 | 15.00 | 36.00 |

Source: NMG Housing Survey 2015.

**Distribution of DSR in 2014**




**Distribution of DSR in 2015**




**27. The average debt service ratios are broadly stable across age groups.** The average DSRs is broadly stable across age groups, but the upper tails of the distribution decline significantly with age.

**Table 6. United Kingdom: DSR Summary Statistics by Age Groups**

| **Age group** | **mean** | **se(mean)** | **p05** | **p50** | **p95** |
|---|---|---|---|---|---|
| 18 - 24 | 16.63 | 1.07 | 4.43 | 14.26 | 40.00 |
| 25 - 34 | 17.61 | 0.50 | 6.99 | 16.00 | 30.00 |
| 35 - 44 | 17.33 | 0.55 | 4.35 | 15.64 | 36.00 |
| 45 – 54 | 15.93 | 0.59 | 2.70 | 14.05 | 34.00 |
| 55 – 64 | 14.26 | 0.86 | 1.18 | 11.48 | 36.36 |
| 65+ | 12.24 | 0.94 | 0.63 | 9.93 | 28.42 |
| Total | 16.32 | 0.28 | 3.21 | 14.70 | 33.50 |

Source: NMG Housing Survey 2015.

**28. Logistic and probit regressions show that DSR and employment status significantly influence difficulties in repaying loans.** The NMG database includes information on borrowers with payment difficulties. We ran two sets of limited dependent models (logit and probit) to analyze the determinants of loan repayment difficulties. Both sets of regressions show that the DSR and employment/self-employment status are robust and statistically significant predictors of payment difficulties with the expected signs. In addition, and somewhat surprisingly, residing in London has a significant and negative effect on the probability of payment problems, while age of the borrowers turns out not to be a significant predictor of repayment problems.[11]

**Table 7. United Kingdom: Logistic Regression of Difficulties with Repayment**

| | | | | | | |
|---|---|---|---|---|---|---|
| LTI | 0.0723 | | | | | |
| | (0.0478) | | | | | |
| DSR | 0.0198*** | 0.0237*** | 0.0192 | 0.0247*** | 0.0235*** | 0.0239*** |
| | (0.00616) | (0.00536) | (0.0121) | (0.00535) | (0.00538) | (0.00539) |
| Employed or self employed | | -0.384** | | | -0.473** | -0.471** |
| | | (0.175) | | | (0.194) | (0.195) |
| Interest rate | | | -0.0171 | | | |
| | | | (0.112) | | | |
| Age | | | | -9.63e-05 | -0.00669 | -0.00747 |
| | | | | (0.00591) | (0.00642) | (0.00644) |
| London dummy | | | | | | -0.590** |
| | | | | | | (0.285) |
| Constant | -2.403*** | -2.000*** | -2.403*** | -2.315*** | -1.634*** | -1.555*** |
| | (0.154) | (0.196) | (0.414) | (0.292) | (0.400) | (0.402) |

Standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1.

[11] The dependent variable has the NMG code whycondebt1.

**Table 8. United Kingdom: Probit Regression of Difficulties with Repayment**

| | | | | | | |
|---|---|---|---|---|---|---|
| LTI | 0.0402 | | | | | |
| | (0.0265) | | | | | |
| DSR | 0.0110*** | 0.0133*** | 0.0105 | 0.0138*** | 0.0131*** | 0.0133*** |
| | (0.00352) | (0.00309) | (0.00676) | (0.00308) | (0.00310) | (0.00310) |
| Employed or self employed | | -0.211** | | | -0.258** | -0.258** |
| | | (0.0972) | | | (0.108) | (0.108) |
| Interest rate | | | -0.0119 | | | |
| | | | (0.0579) | | | |
| Age | | | | 9.63e-05 | -0.00348 | -0.00394 |
| | | | | (0.00319) | (0.00351) | (0.00352) |
| London dummy | | | | | | -0.318** |
| | | | | | | (0.146) |
| Constant | -1.404*** | -1.182*** | -1.389*** | -1.362*** | -0.990*** | -0.944*** |
| | (0.0835) | (0.110) | (0.212) | (0.159) | (0.222) | (0.223) |

Standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

**29. Employment status and debt service ratios are the main variables determining mortgage payment difficulties.** An analysis of micro-level data of household indebtedness reveals generational and regional differences in LTI and DSR ratios. The joint analysis shows that the probability of payment difficulties is significantly affected DSRs and the employment status of the borrower. However, since LTI ratios are correlated with DSR, it follows that limiting high leverage loans could have beneficial effects on financial stability through the ability of borrowers to repay their loans in an orderly fashion.

# POLICY ISSUES

## A. Macroprudential Policies

**30. Macroprudential policies will need to tighten later this year if the recent reacceleration of housing and mortgage markets persists.**

- If needed, such tightening could take the form of tighter LTI and/or LTV limits on new mortgages.
- Priority should also be given to the consolidation of household-level credit data so as to allow a shift from LTI limits to DTI limits, which cannot be evaded by taking out multiple loans.
- The authorities should continue to monitor the help-to-buy program and consider if it needs to be adjusted to avoid adding further to demand for existing houses.[12]

**31. The authorities should extend the FPC's powers of direction to the BTL market**. The BTL market has accounted for about one-third of gross mortgage growth since 2012 and is dominated by small-scale landlords (those owning three properties or less). To avoid biasing the market toward this segment and to enable quicker policy responses, the authorities should extend the FPC's powers of direction to the BTL market.[13] The powers of direction should mirror those the FPC currently has over the owner-occupied market. Somewhat looser restrictions could be considered for borrowing for new construction to avoid unintentionally restricting supply.

**32. CRE, with its rapidly growing prices, warrants close monitoring.** The CRE market has been buoyant, with annual price growth exceeding 10 percent as of mid-2015. Domestic banks have reduced their CRE exposure, but international investors have picked up the slack. CRE is particularly sensitive to swings in sentiment about economic prospects. Since many firms rely on CRE as collateral to support their borrowing, a fall in prices could tighten corporate credit constraints, reducing business investment and economic activity.

## B. Addressing Supply Issues

**33. Continued efforts to address supply constraints are equally important.** Increased housing supply will support near-term growth, reduce the need for excessive household leverage, and promote social cohesion by lessening wealth inequality, as rising house prices have been a key contributor to the latter in the U.K. Furthermore, increases in housing supply would lower the volatility of prices during upswings, which would assist in solidifying financial stability.[14] The

[12] The most significant element of the program (The Mortgage Guarantee Scheme) is scheduled to end at end-2016.

[13] It should be noted that giving powers of direction to the FPC does not imply that the FPC will or should use the powers immediately.

[14] See for example the 2014 study *The Impact of Supply Constraints on House Prices In England* by Christian Hilber and Wouter Vermuelen.

government has undertaken a number of welcome initiatives to boost housing supply in recent years, such as improving incentives for local governments to approve new construction. The authorities should remain vigilant against local-level resistance to effective implementation of these initiatives—otherwise the risks associated with an approval process perceived by many to be slow and unpredictable will remain. The authorities should also continue efforts to mobilize unused publicly-owned lands for construction.

## C. Data Provision

**34. Dissemination of official data on rental prices and CRE price indices would be welcome.** The CRE and BTL property market segments have been growing rapidly. Despite this rapid growth, there are no official indices of prices for the sectors. Analysts of the U.K. property markets and those concerned with financial stability would likely benefit from officially disseminated data on rental prices and CRE price indices. Specifically, the authorities should disseminate regional data on rental prices in pounds, disaggregated by property type. This would help estimate the degree of overvaluation of house prices.