



BANK OF ENGLAND

# Speech

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## Debt dynamics

Speech given by

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I've received many helpful comments from colleagues at the Bank of England. I'd particularly like to thank David Seaward, Danny Walker and Mette Nielsen for their invaluable help with what has proved a data-heavy bit of work. The views expressed are my own and do not necessarily reflect those of the Bank of England or other members of the Financial Policy Committee or the Monetary Policy Committee.

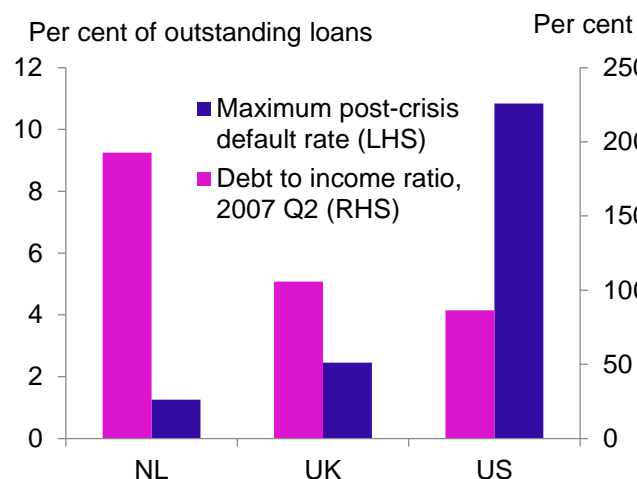
## Introduction and summary

In mid-2007, as the first cracks in the financial system began to appear, some of the most indebted households in the developed world were not in the US or the UK but in the Netherlands. Average mortgage debt was almost twice average annual income. Yet over the following few years, there were almost no defaults on Dutch mortgages and associated losses for the lending banks were minimal (Chart1).

In the UK, where households were less heavily indebted, mortgage losses were somewhat higher though still comparatively low.<sup>1</sup> It was in the US – of the three, the country with the least mortgage debt – where rates of negative equity and ultimate default were by far the most severe. So at least among this mini-sample of three, prior levels of debt were not a good guide to the scale of the subsequent distress in the mortgage market (Chart 1).

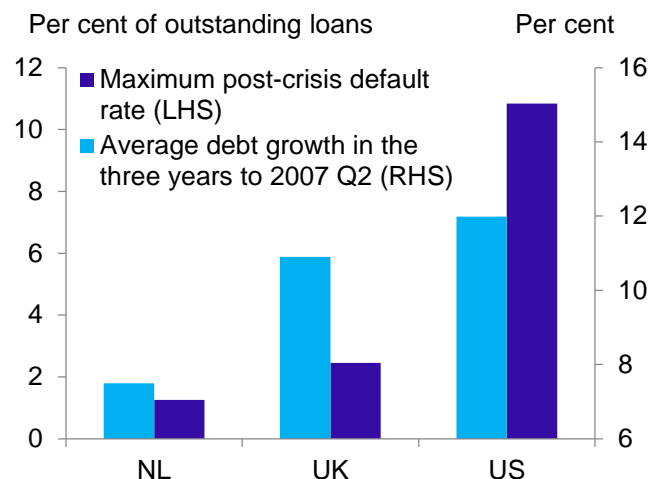
What did a little better as an advance warning signal was the prior *growth* rate of mortgage debt (Chart 2). The ordering, at least, is in line with post-crisis defaults in the three countries.

**Chart 1: Level of mortgage debt a poor guide to subsequent distress**



Sources: Bank stats, Office for National Statistics (ONS), DataStream from Refinitiv, Stanga et al. (2017), CBS Netherlands, US Flow of Funds and Bank calculations. Figures are for mortgage loans; default rate defined as non-performing exposures over three months in arrears.

**Chart 2: Pre-crisis growth rate does better**



Sources: Bank stats, ONS, DataStream from Refinitiv, Stanga et al. (2017), CBS Netherlands, US Flow of Funds and Bank calculations. Figures are for mortgage loans; default rate defined as non-performing exposures over three months in arrears.

This is obviously a very limited comparison. There are also particular reasons why, in this case, levels of debt may have been poor indicators of cross-country risk. In the United States, for example, many mortgages were “non-recourse” – it was lenders, not borrowers, who were liable for any negative equity in the event of default. This increased both the borrower’s incentive to walk away from the loan and the

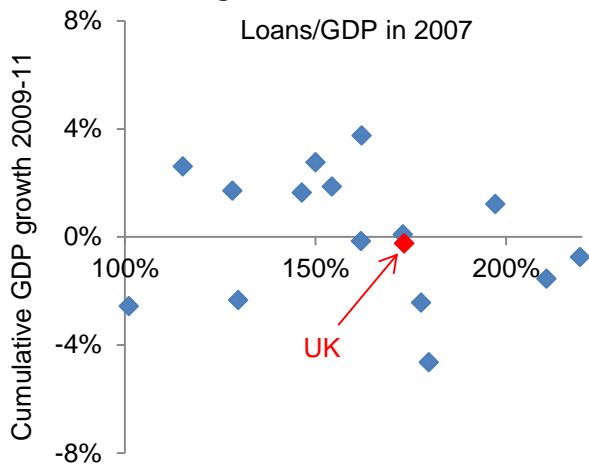
<sup>1</sup> British banks certainly lost much less on domestic mortgage lending during the last financial crisis than they had in the early 1990s – when, as it happens, the level of debt was lower than in 2007. Most losses during the financial crisis were on banks’ overseas assets.

lender's subsequent loss. All else equal, this would mean the same level of debt was riskier in the US than in the other two countries.

Thanks to the tax regime the opposite was true in the Netherlands. Mortgage interest was fully deductible from taxable income and interest receipts were only lightly taxed. This encouraged so-called "round-tripping". By ramping up both sides of their financial balance sheet – funding extra deposits with higher mortgage debt – the more highly taxed households could reduce their overall tax bill without adding to financial risk, either individually or collectively.

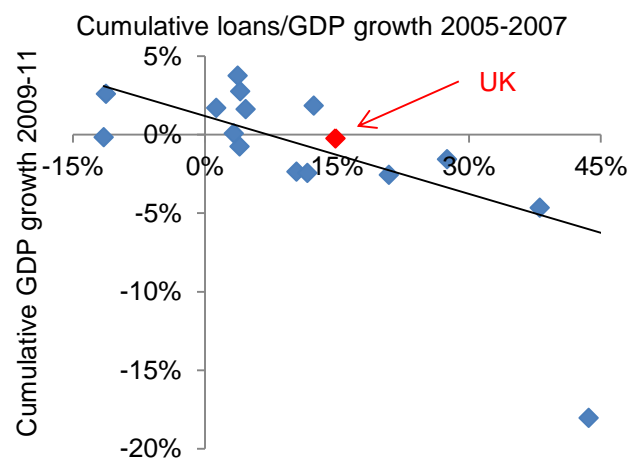
Yet it turns out that the superior predictive power of growth rates of debt, over levels, is a more general phenomenon. In cross-country data the scale of the economic downturn after the crisis was positively correlated with prior growth rates of debt but uncorrelated with its level (Charts 3 and 4 cover 15 European countries, the US and Japan). In longer-term data, growth rates of debt are better predictors of financial crises. Even across individual households, the rate at which debt had accumulated in the run-up to the crisis seemed to tell you more about a borrower's subsequent difficulties than the level of gearing. I want to say a little more about this today, using various examples from the UK.

**Chart 3: Levels of gearing ahead of the crisis unrelated to GDP growth after it**



Sources: BIS total credit statistics, Datastream from Refinitiv and Bank calculations. Sample includes 15 European countries, Japan and the US.

**Chart 4: Growth of debt does better**



Sources: BIS total credit statistics, Datastream from Refinitiv and Bank calculations. Sample includes 15 European countries, Japan and the US.

I should say at the outset that I'm certainly not claiming that levels of debt are irrelevant. It must surely be the case that, all else equal, more debt means more financial risk. It's possible there are lots of particular, country-specific factors – things like the non-recourse status of mortgages in the US or the tax regime in the Netherlands – that make a given quantity of debt more risky in some places than in others. If so, one wouldn't expect to pick up any levels effects, even when they genuinely exist, in simple cross-country comparisons like that in Chart 3. Those might simply be telling you that, for various structural reasons, a

pound of debt is not quite the same thing, or equally risky, from one country to the next.<sup>2</sup> Besides, the distinction between levels and growth rates is in any case a bit fuzzy. If one country has a higher debt burden than another it's probably gone through a period of faster growth as well. That's got to be the case if one's comparing levels of debt in the same country but at different points in time.

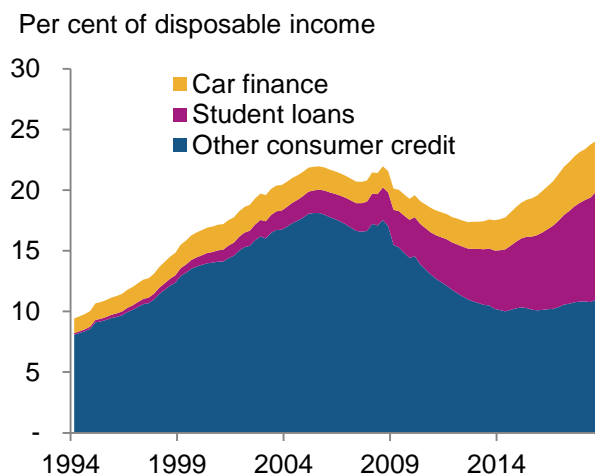
Nevertheless, the comparatively poor predictive power of the level of debt is quite striking and I think there may be a few lessons one can draw from this.

First, if there are structural differences in the nature or terms of debt, whether across countries or over time, it is important to try and take account of them. One example in the UK is within unsecured household debt. This is now a pretty broad category. It includes two things – PCP (“personal contract purchase”) contracts for car purchases and student loans – both of which are relatively new and neither of which, arguably, is really unsecured debt in the conventional sense or at least carries the same risks for borrowers. PCP contracts are more like rental agreements. They are now used by most car buyers, including (one presumes) those who are overall savers. According to the government the majority of student loans will not be fully repaid (the ONS has recently decided that most of it should therefore be re-allocated to the government, an accounting change planned for later this year.) Taken together, car finance and student loans account for almost all the rise in households' unsecured gearing in recent years, as currently measured. The remainder – comprising the more conventional credit card balances, consumer loans and overdrafts – is plotted in blue in Chart 5. It hasn't grown much and is pretty much the same as it was, relative to income, in the mid-1990s.

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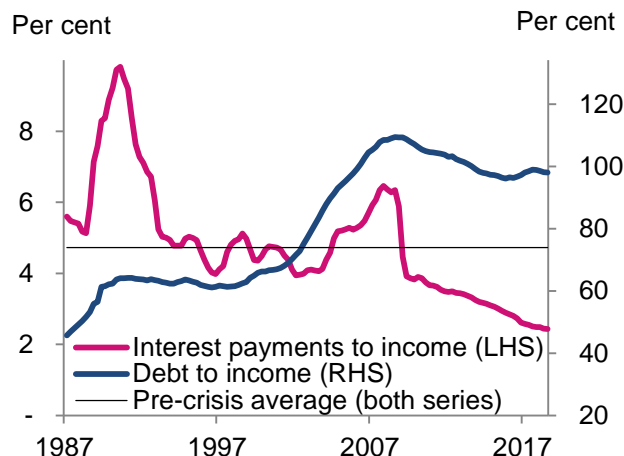
<sup>2</sup> You might, however, expect to see them in first differences (i.e. in the growth rate of debt), as these could help cleanse the data of enduring country-specific differences in the sustainable level of debt.

**Chart 5: Growth in unsecured lending accounted for by car finance and student loans**



Sources: Bank of England, ONS, FLA and Bank calculations. The stock of student loans has been projected to 2018 Q3. FLA data for car finance interpolated and used up to 2012. 'Other consumer credit' is predominantly personal loans, credit cards and overdrafts.

**Chart 6: Stock of mortgages still higher than pre-crisis average, interest cost well below average**



Sources: ONS, Thomas and Dimsdale (2017) sheet M12, Bank of England, and Bank calculations. Pre-crisis averages calculated over the period 1993-2007 Q2.

Second, even when there aren't structural changes in the nature of debt, other things can affect its affordability over time. The most important is the neutral or equilibrium rate of interest. Unlike consumer loans and credit card debt, the stock of mortgages is still significantly higher than it was 25 years ago (Chart 6). But the rate of interest required to stabilise the economy was extremely high at that time, much higher than it is today. So despite the higher stock, interest payments on mortgages are well below the pre-crisis average. Looking ahead, from these very low levels, the neutral rate of interest is more likely to rise than fall over the future. But it would have to rise a long way – and certainly by a lot more than is currently priced into government bond markets – even for household interest payments to return to that average. The fact that mortgage debt is higher than it was a generation ago doesn't make it "unsustainable".

Third, the fact that growth rates are better indicators than levels may be telling us something more fundamental, not just that there are structural differences in affordability. In particular, it could be that the things that drive speculative, riskier lending tend to develop faster than the fundamentals that determine more sustainable levels of debt. Those fundamentals can vary (the decline in the neutral rate of interest is an example), the sustainable level of debt along with them. But perhaps they usually do so only gradually. If so, very rapid growth of debt would often be a sign of something else – of looser credit supply and a rise in the proportion of lending that's riskier, less sustainable and more prone to default. It is these episodes of looser supply that most concern policy makers, including the Bank's Financial Policy Committee, and they do seem more prevalent at times of rapid growth in credit. The mortgage boom of the late 1980s in the UK was accompanied by much higher loan-to-values and other signs of easier credit supply than anything in the past 20 years. There is evidence more generally that rapid growth in corporate debt tends to coincide with deteriorations in the quality of credit. The recent surge in leveraged lending to companies, including those in the UK, may be one such episode.

In what follows I'll go through these points in a little more detail. I'll make some remarks about the particular characteristics of student and car loans. I'll explain how aggregate mortgage debt evolves over time and why the most reasonable forecast over the next few years is for relatively subdued rates of growth. (That's why, barring a rise in interest rates well beyond what's priced in the yield curve, interest payments on mortgages are likely to remain below the pre-crisis average). There's then some stuff on the recent surge in leveraged lending to companies. The silver lining here is that UK banks look to be relatively uninvolved in this activity. Most of the investors seem to be non-UK institutions and the channels that so disastrously amplified defaults on US mortgages, during the financial crisis, are now much reduced. Nevertheless, this does look to be a case where rapid growth has gone hand-in-hand with loosening supply and rising risk.

In the concluding section I'll make some brief points about policy.

### **The superior predictive power of debt growth**

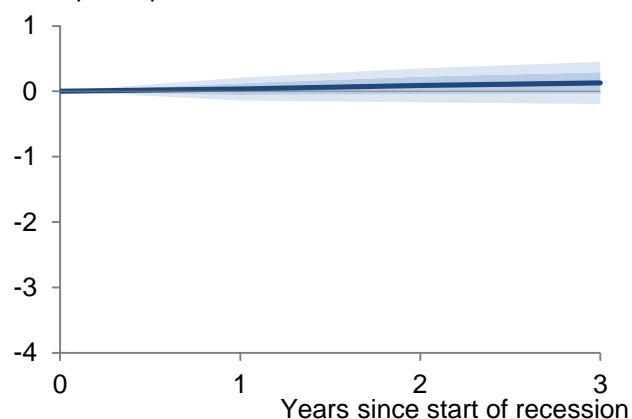
What we saw in Charts 3 and 4 was that, at least in that 17-country sample, prior growth rates of debt were better predictors than levels of a country's economic performance after the last financial crisis. Even if they went into the crisis with relatively high levels of gearing, countries with below average growth rates of debt had a less severe experience after the event. A much more complete study by economists at the Bank, based on the experience of 26 advanced economies over many economic cycles, dating back 50 years, found very similar results.<sup>3</sup> Charts 7 and 8 are one way of expressing those. They show what you might expect of a country's relative economic performance during a recession if, based on these results, you knew only that aggregate debt: income ratios beforehand were 10% points higher than the average and then if the *growth* in that ratio was 10% points higher. The second has proved much more informative than the first.

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<sup>3</sup> Bridges et al. (2017).

**Chart 7: Marginal impact on predicted GDP growth of an extra 10% of GDP of aggregate debt**

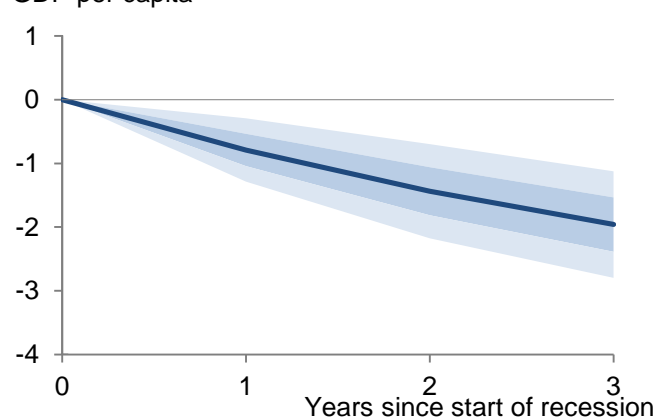
Per cent change in real GDP per capita



Source: Bridges et al. (2017). The shaded areas represent the coefficient on credit +/- one and two standard deviations.

**Chart 8: Higher debt growth (by 10% points) more significant**

Per cent change in real GDP per capita



Source: Bridges et al. (2017). The shaded areas represent the coefficient on credit +/- one and two standard deviations.

It turns out there are similar patterns in several other settings. Jordà et al. (2012) also find that financial crises themselves are preceded not so much by high levels of debt but by rapid expansions in the level. Note that there are several repeat offenders in their sample. This suggests that, even for the same country, rapid growth is of more concern than the level of debt.

You can see this more directly in a recent study focused on individual borrowers. Andersen et al. (2016) looked at the experience during the last financial crisis of half a million households in Denmark. There is a correlation, it turns out, between the level of household gearing prior to the crisis and the drop in its consumption spending afterwards. But this goes away once you also take into account the prior growth rate of debt. Once you know the change in a household's indebtedness ahead of the crisis, knowing the level tells you nothing more about its subsequent spending.

Anyway, I think we can take a couple of things from all this. First, there may be country-specific factors that make the same quantity of debt more affordable and less risky in some places than in others, or even at different points in time. If so, then one should at least try to take these into account. Second, however, this probably isn't the only thing going on, since the superior predictive power of growth rates is apparent even over single episodes in the same country.

### **Structural changes in unsecured household debt**

One example of structural effects – things that affect measured debt but probably have less significance for households' financial risk – is the series for unsecured household debt in the UK. In aggregate, this has risen quite a bit in recent years, much faster than household income (Chart 5). But if you look under the surface, there's less to this than meets the eye. It's true in general that unsecured debt carries more risk for

the lender than the borrower, at least when compared with mortgage debt. Default on a mortgage carries much more risk for households – the potential loss of a home – than non-payment of unsecured debt. It's just that this has become more the case in recent years. As outlined in the introduction, almost all the growth in unsecured household debt, relative to income, involves two relatively new developments that involve less pound-for-pound risk, at least for borrowers, than other forms of debt. Nor do they tell you anything about whether households are "living beyond their means".

One involves a change in the way people pay for cars. Conventional loans for car purchase have been around for a while. But over the last decade or so these have been overtaken by so-called "personal contract purchases" (PCPs) in which buyers make lower monthly payments but don't own the car outright (there's usually an option to buy at the end of the term, but the car is otherwise returned to the dealer). This is a highly contingent contract and, as far as households are concerned, it's one that looks more like a rental arrangement than normal debt. The payments are mostly for depreciation, not pure interest. (They're, in any case, set in advance and are therefore insensitive to subsequent changes in short-term interest rates.) The car owner can choose costlessly to walk away from the contract, at least once half the original price has been repaid. And if the value of the collateral should fall below that of the outstanding debt – say because of weakness in the second-hand car market – it's the lender not the borrower that bears the resulting "negative equity" (the loans are "non-recourse").

One shouldn't underplay the risks involved in PCPs. Even if they belong primarily to lenders, and even if they're no greater than more traditional car loans, pound for pound, those risks still exist. But the lenders may have deeper pockets than the borrowers, or at least greater scope for diversification. And as evidenced by their dominance of the market these contracts clearly represent a convenient method of paying for a car, even for households who are otherwise adding to savings. Their growth is not evidence that people are outspending their income in aggregate.

The more significant contributor to the rise in unsecured debt comes from student loans. At face value, these are currently worth almost 9% of annual household income, up from 2½% in 2007. However, it's far from clear this is really debt in the conventional sense. There's nothing to pay on it, either interest or principal, unless and until annual income exceeds a threshold, one that's currently set above the median for new graduates. So it's as if, rather than taking on a conventional loan, students are selling to the taxpayer a "call option", payable only beyond some trigger point. Another way to think about it is as a tax on graduates' income with a significant up-front allowance.

Anyhow, the Department for Education has estimated that only around a third of outstanding student loans will be fully repaid. In response, the ONS has now decided that a good part of the stock should be recorded as government debt. When that change in accounting treatment is made (it's planned for later this year) we can expect an equivalent reduction in the recorded stock of household debt.



As we saw in Chart 5, the remaining part of unsecured debt – including more conventional borrowing on credit cards, consumer loans and overdrafts – has been broadly stable in recent years, relative to household income, at levels well below the mid-2000s peak and similar to those in the mid-1990s.<sup>4</sup>

Now it's true that, if you look at a still finer level of detail, concentrating on flows of new lending and on an even shorter period of time than the decade since the crisis, there was a pick-up in the issuance of unsecured consumer credit in 2016 and 2017. At the time the FPC also saw independent signs of easing supply and was concerned that lenders may have been placing too much weight on a continuation of relatively benign economic conditions. The Committee responded by increasing the losses on consumer credit in its annual "stress test", with implications for the capital banks had to hold against their lending.

I'll come back to general lessons for policy at the end of this talk. But I'll point out a couple of things about the November 2017 measures here. First, they occurred despite the fact that the stock of unsecured lending (conventionally defined) is significantly lower than in the mid-2000s, relative to income. What mattered more were incipient signs of faster growth. Second, what also mattered were signs that the supply of credit, and the associated under-writing standards were loosening.

### **Mortgage debt costs likely to remain below average**

The consequences of default for households are much greater in the case of mortgage debt. Rates of default are much lower, partly for this reason.<sup>5</sup> On the other hand the stock of mortgages is much bigger. And unlike conventional unsecured debt – the blue bit of Chart 5 – mortgage gearing is also significantly higher than it was a generation ago, in the mid-1990s (Chart 6). However, that doesn't mean it's unaffordable. You would have to see a marked rise in ratios of mortgage debt to income, and/or in the level of interest rates, even for interest payments on those mortgages to return to their pre-crisis average. The second is not what the bond market predicts. I want to explain here why the first is unlikely and, in doing so, to describe briefly the links between these things.<sup>6</sup>

The main point to understand is that aggregate mortgage debt is largely a consequence, not a cause, of the level of house prices. That's certainly true in the data: statistically, mortgage growth follows rather than precedes changes in house prices. It's also easy to understand why. On the whole the mortgage stock grows not because the same people, living in the same property, progressively take out bigger mortgages over time. It does so because, if house prices go up, new entrants and those trading up the market have to

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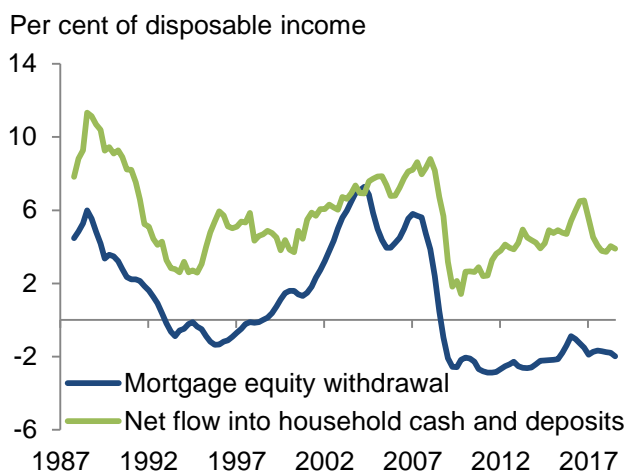
<sup>4</sup> Even some of this is not debt as commonly understood. For example, if you use your credit card for retail spending but pay it off every month, never incurring any interest, the rolling balance counts as debt in these statistics. Partly for this reason, and probably because there has also been a rise in "zero-interest" offers on new cards, the share of credit card debt currently paying no interest at all seems to have risen. A simple comparison of actual interest payments on credit cards to quoted interest rates suggests it's currently around one half, twice what it was a decade ago.

<sup>5</sup> Over the past five years, and for every £100,000 of debt, write-downs on mortgages have averaged just under £30 per year. The comparable figure for credit cards and consumer loans is over £2,000. This gap is not untypical.

<sup>6</sup> This is a repeat of some of the points in Broadbent (2012).

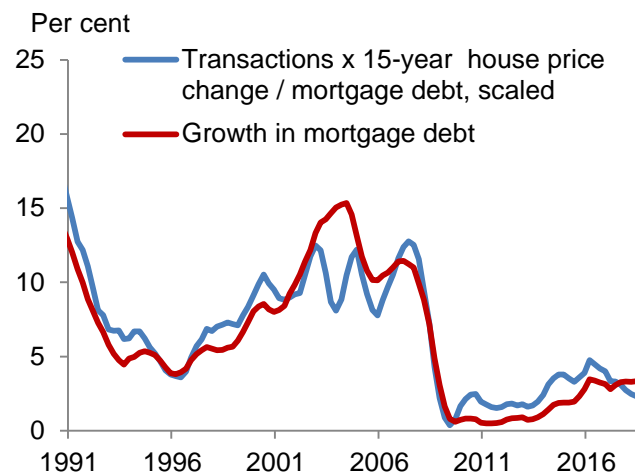
borrow more than their predecessors did – those now moving down the market – to buy the same properties. Even if there's no change in loan-to-value ratios for new lending, rising house prices mean that, as and when people move house, new and higher mortgages replace older, small loans. The counterpart is a largely matching flow into deposits as those trading down the market turn their capital gain into financial assets (Chart 9).

**Chart 9: Mortgage equity withdrawal got transferred across households, not spent**



Sources: Bank of England, ONS, and Bank calculations.

**Chart 10: Mortgage growth determined mainly by prior growth in house prices**

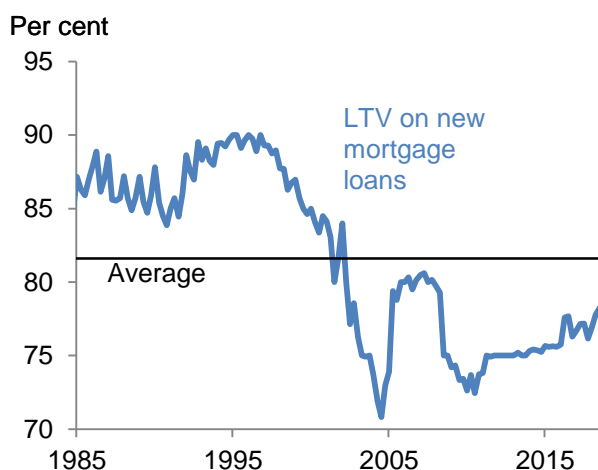


Sources: HM Revenue and Customs (HMRC) Transactions, ONS, Land Registry, Bank of England, and Bank calculations.

The blue line in Chart 10 plots a very crude proxy for this automatic, pre-determined part of mortgage growth. It's just the change in the average house price over the previous fifteen years (a period designed broadly to match the average tenure of owner-occupiers) multiplied by the number of housing transactions and then divided by the existing stock of mortgage debt. This is a pretty good match for the real thing (the red line). It explains the strength of mortgage growth after the jump in house prices in the years around the millennium. It accounts for the drop in mortgage growth almost to zero after the crisis, largely as the result of a sharp fall in the flow of transactions. It also suggests that, after a long period of relatively subdued growth in the purchase price of housing – since 2004 the average rate of increase has been 3% a year – we can expect the same for mortgage debt over the next few years.

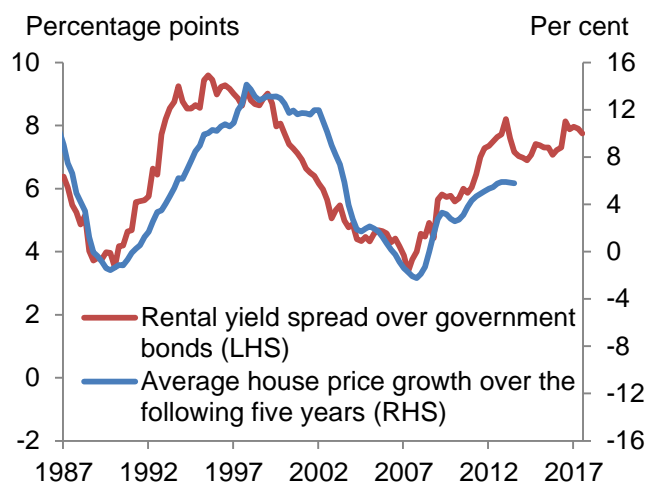
I say “pre-determined” but there are obviously risks to any such forecast. One is higher loan-to-value ratios on new mortgages (LTVs), a sign of looser supply. In the late 1980s boom the median LTV averaged over 85%, even as prices rose very rapidly (Chart 11). LTVs have been much lower since the early 2000s and, as far as the future is concerned, I'd note that, in 2014, the FPC put in place restrictions on the share of new mortgage lending banks could make at high loan-to-income (LTI) ratios. Against this backdrop, the chances of any material rise in the average LTV on new mortgages are low.

**Chart 11: LTVs high in late 1980s, lower today**



Sources: UK Finance Regulated Mortgage Survey and Bank of England.

**Chart 12: The rental/gilt yield spread has been a good predictor of house price inflation**



Sources: ONS, Zoopla/Whenfresh, Land Registry, Bank of England, and Bank calculations.

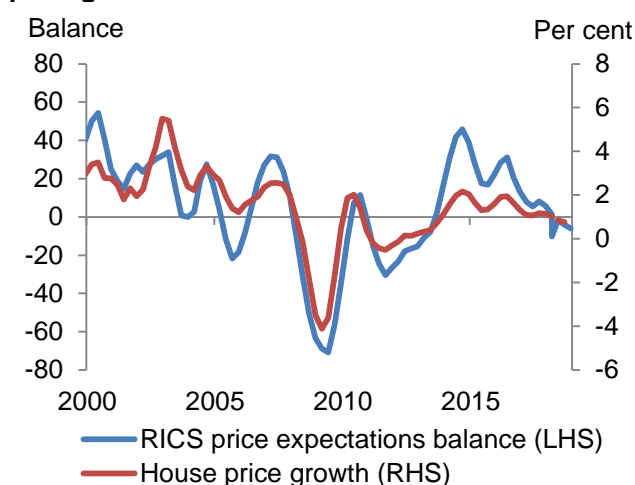
Another upside risk is a re-acceleration of house prices. I'm not so daring as to offer you a precise forecast. Let me just point to a couple of pieces of evidence about the housing market and let you draw your own conclusions. One is that housing is currently "cheaper" than government debt, at least on a very crude comparison of their yields. The red line in Chart 12 is the difference between the estimated rental yield on housing and the yield on 10-year indexed government debt, an indicator of the "neutral" real rate of interest. When this spread is high, it's telling you that, unless you think rental prices are going to weaken, it's prospectively cheaper to buy a house than rent one. You might in that environment expect the purchase price of housing to grow faster than usual.

The blue line, which is average growth in house prices over the *following* five years, shows that this is what has tended to happen. For example, the house price boom in the early years of the millennium was preceded by a steep fall in longer-term real interest rates (driven, I would suggest, by a decline in the neutral rate of interest), through the second half of the 90s. That raised significantly the spread between rental yields and those on indexed government debt – when the spread was at its widest, in 1995, the gap between the two was 10% points. But that boom in house prices, in its turn, depressed rental yields significantly – to such an extent the spread over gilt yields fell to less than 4% points. Relative to gilts, houses were as expensive as they had been in the late 1980s. Even without the intervention of the financial crisis you might have expected much weaker growth of purchase prices over the following few years, and that's what happened.

However, we should be careful not to extend this pattern too unthinkingly. The spread is currently relatively high – on this measure housing is unusually "cheap" compared with government bonds – and, taken at face value, would point to somewhat faster growth of house prices over the future. But perhaps this is justifiable. If you thought relatively weak economic growth was likely to persist over the next few years – and that's

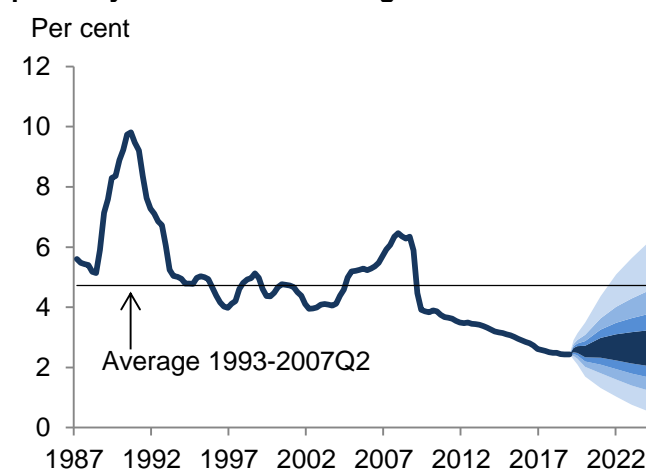
certainly the consensus view – you might reasonably expect the same for rental prices. Amidst higher uncertainty, prospective homebuyers might need an additional discount, relative to rents, to buy a house (the warranted “risk premium” on housing might be above average). Recent house price growth is already quite a bit lower than the rate crudely suggested by Chart 12. Near-term survey indicators – Chart 13 plots the RICS balance – offer little prospect of an acceleration any time soon, let alone the kind of pick-up you’d need to make much of a dent in the longer-term, 15-year average used in Chart 10. All this is why it seems to me improbable that aggregate mortgage debt will grow that rapidly over the next few years. People coming into the housing market, and trading up it, are unlikely to have to pay (or therefore borrow) much more than their predecessors did, several years earlier.

**Chart 13: The near-term indicators of house price growth have weakened**



Sources: Royal Institution of Chartered Surveyors (RICS) Residential Market Survey, ONS, Land Registry and Bank calculations. RICS price expectations are three month ahead net balances.

**Chart 14: Interest cost of mortgages will probably remain below average for a while**



Sources: ONS, Thomas and Dimsdale (2017) sheet M12, Bank of England, Barclays Live and Bank calculations. The fan is calculated using probability distributions implied by options on sterling interest rate swaps. For further information on how option-implied distributions are derived, see Clews, Panigirtzoglou and Proudman (2000).

I can now (finally) get to the point I wanted to make about interest payments. Even if low bond yields don’t presage rapid growth of house prices, one thing they do suggest is that interest payments on mortgage debt will also remain relatively low. Chart 14 plots those payments over the past, as a share of household income. It also includes a range for the future. This assumes that mortgage debt continues to grow in line with household income (whatever that turns out to be). It then uses the probabilities of various paths for short-term interest rates, taken from financial markets, to produce a “fan” of outcomes over the next five years. At least if you believe what’s priced into financial markets there is only a one-in-seven chance that mortgage interest payments will return to the pre-crisis (post-inflation-targeting) average by the end of that period.<sup>7</sup>

<sup>7</sup> The equivalent calculation for households’ aggregate interest payments, including on their non-mortgage debt, implies that the odds of getting back to the pre-crisis average are if anything marginally longer than this. This might seem puzzling, given the rise in unsecured debt in Chart 5, to levels well above the pre-crisis average. But what that Chart reveals is that the part of this aggregate whose payments are sensitive to interest rates – the more conventional liabilities in blue – has not risen above the pre-crisis average. Indeed it’s slightly below it.

This makes it slightly puzzling to read (as one often does) that household debt is “unsustainably” high. This view is ubiquitous. My suspicion is that, at least in some cases, people come to it because they have in the back of their minds an alternative and rather attractive world in which we all have fewer debts but the same assets. In this imagined and happy place we’d all have lower mortgages but own the same houses. Firms too would have fewer liabilities but possess the same productive capital. In other words, people might implicitly be assuming that less debt would necessarily mean greater net wealth. If that’s really what’s being asked – would we be better off if we were all better off? – then the answer’s obvious.

But most debt, including the significant majority of household debt, is used to buy or finance assets. It’s true that, in principle, easier credit conditions could result in higher consumer spending, a lower rate of saving and therefore a slower rate of accumulation of net wealth. “Debt-fuelled consumption” is certainly possible. It’s just that, taken in isolation, the numbers on household debt don’t really tell you that much about that process. At least excluding car and student loans, unsecured household debt is no higher than it was 25 years ago, relative to income. Mortgage debt is still well above those levels. This is the inevitable result of the boom in house prices in the early years in the last decade, itself caused by the preceding decline in the neutral rate of interest. The counterpart to the faster mortgage growth wasn’t higher consumption but a transfer of financial wealth to those trading down the housing market (largely from younger to older people). And, to complete the circle, the decline in the neutral rate of interest, from extremely high levels in the early 1990s, makes a given quantity of debt more affordable.

I’m not claiming that higher debt involves no extra risk at all. One could also conceive, in principle, of a housing market that involved much less of it. Suppose that, instead of putting deposits in mortgage-issuing banks, we all had equity investments in companies that owned residential housing – and that, instead of owning the houses ourselves, we were simply tenants of these corporate landlords. That would be a “model” with no mortgage debt at all. But it’s not immediately clear it would make net wealth any higher, housing any cheaper or, for that matter, the macro-economy more stable.<sup>8</sup>

Returning to the real world, regulators would rightly be concerned if mortgage debt started growing rapidly again, especially if it was accompanied by other signs of loosening credit supply and greater risk-taking. It was in response to early signs of this sort that the FPC decided in 2014 to cap the share of new mortgages banks were allowed to issue at high multiples of a borrower’s income.

However, the fact that the level of UK mortgage gearing is higher than it was a generation ago, or that it’s lower than in the Netherlands, is of less significance. And the aim of the 2014 measures was not to reduce

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<sup>8</sup> In fact we know that under certain conditions, originally set out by Modigliani and Miller (1958), it would make no difference to anything – this is just an extension of their famous result concerning corporate finance (which I also mention below). As it happens the UK has moved slightly in this direction of this “model” (if that’s not too grand a word) over the past few years. One of the reasons mortgage debt is lower than a decade ago, relative to income, is that the share of owner-occupiers has fallen and more people rent (it’s also true that the share of equity in the housing market has risen a little). But that hasn’t made for cheaper housing overall. While the share of income going on mortgage interest has declined, the share going on rents has risen. Overall, in the data, the combined spending on rents and mortgage interest is more stable than either on its own.

that level but to insure against the risk of faster growth and the deterioration in credit quality that would probably have accompanied it.

### **Corporate debt: risks from the surge in leveraged loans**

Most corporate debt too is used to finance productive capital, not to pay day-to-day bills. The main alternative is equity, and the main question in the field of corporate finance is why some firms might choose one form of funding over another.

Economists now have a reasonably well developed understanding of this. The starting point for the literature – which is vast – is the celebrated result of Modigliani and Miller (1958). This says that, under perfect market conditions (defined in a particular way), the choice is irrelevant. The respective shares of debt and equity on a firm's balance sheet don't matter for anything. What economists have done since is to understand how certain market imperfections – particular departures from MM (as it's often called) – affect this choice.

Some focus on the difficulty in monitoring managers who might have different incentives from the owners of a company. Managers might be tempted to do all sorts of things (spending more on nice offices, building empires) that aren't in owners' best interests. Higher debt levels can provide something of a discipline in this respect. They limit managers' room for manoeuvre. Debt instruments often come with explicit restrictions – so-called “covenants” – on what can be done with the money. They can also deliver control rights to creditors – a say in the decisions of the firm – in the event that something goes wrong. On the other hand, too much debt might itself distort managers' incentives. For example, excessive leverage can encourage managers to pursue high-risk projects that benefit everybody when they go well but whose costs are borne disproportionately by the debt holders if they go wrong.

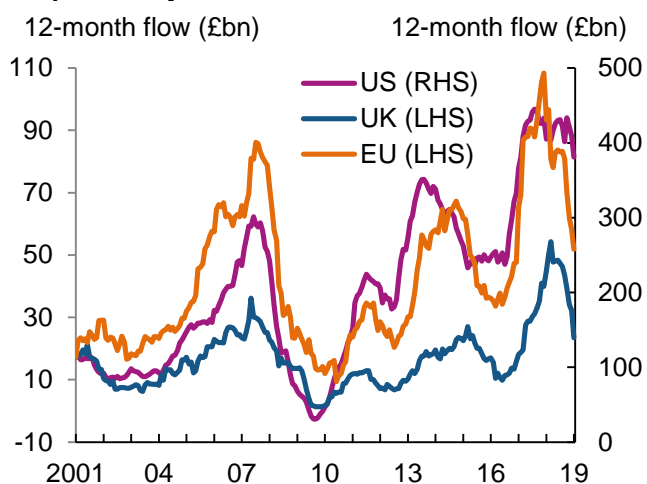
As I say, there is a huge area in economics and I'm not really going to go into it here. The one point I want to make is that, while these theories have been reasonably successful in explaining the cross-sectional variation in leverage – which types of firms issue debt and which use more equity – they have a harder time accounting for changes over time.

For example, if one of the costs of debt is that it encourages the pursuit of risky ventures by managers, you'd expect to find less of it in fast growing firms and more in mature companies where the opportunities for further growth are more limited. This is what you do find: high-leverage companies tend to be larger, older and have less volatile earnings. They also tend to have more tangible assets, on which debt can be secured, and are less R&D intensive. All this is in line with theory.

But theory does much less well explaining why debt grows or falls within particular firms, or indeed across the whole economy, over time.<sup>9</sup> One possible reason why the economic fundamentals can't explain these swings is they they're often less justified by those fundamentals, and instead driven by swings in sentiment among the suppliers of finance. Empirically, periods of rapid growth in corporate debt in the US have tended to coincide with deteriorations in credit quality and other signs of easing supply.<sup>10</sup> Protections for lenders tend to decline, debt issuance skews towards riskier borrowers and, despite this, lending spreads often contract.

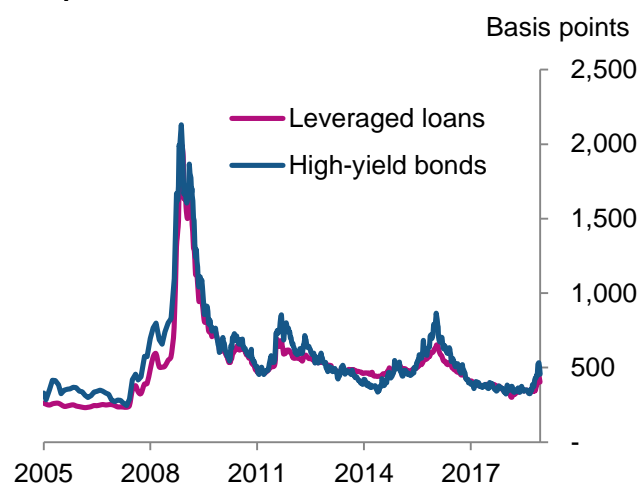
It's clear that we've seen many of the same things in the recent growth of "leveraged loans". These are loans issued to already-indebted companies, which are often then packaged up and sold (as "Collateralised Loan Obligations" (CLOs)) to institutional investors. The issuance of loans has grown very rapidly, especially in the United States but also in the U.K. and other European countries (Chart 15), and now accounts for close to a tenth of aggregate corporate debt in the advanced economies. At the same time, the terms on which they've been issued have become looser: the share of "covenant-lite" loans, imposing fewer restrictions on borrowers, has risen significantly.<sup>11</sup> And at least until recently, the spreads on these loans – the extra margin on the interest rate, relative to safer government debt, demanded by lenders – had been falling (Chart 16).

**Chart 15: Large flows of leveraged loans over the past two years**



Sources: LCD, an offering of S&P Global Market Intelligence and Bank calculations.

**Chart 16: Spreads tightened through much of that period**



Sources: LCD, an offering of S&P Global Market Intelligence, ICE/BofAML, Board of Governors of the Federal Reserve System (US) and Bank calculations.

Option-adjusted spread on index of high-yield bonds issued in the US and spread to maturity on index of leveraged loans issued in the US measured relative to the spot Treasury curve.

<sup>9</sup> Graham and Leary (2011), Harris and Raviv (1991).

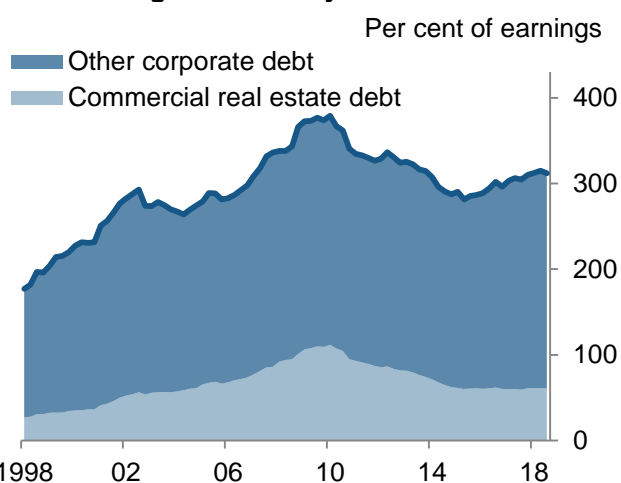
<sup>10</sup> Atkinson (1967), Bernanke et al. (1996), Greenwood and Hanson (2013).

<sup>11</sup> The characteristic feature of cov-lite loans is not that they have fewer covenants, but that the requirements bind less often, and in particular only in response to particular events (such as additional financing). More traditional, "cov-heavy" contracts require firms to meet such requirements continually (Becker and Ivashina (2016)).

If you think there are parallels here with the subprime mortgage boom in the U.S., ahead of the last crisis, then you'd be right. Those too were grouped together and sold to investors as packages of loans, diluting the ability and incentive to monitor individual risks; they grew extremely rapidly, particularly in the last year or two of the boom – and, as it happens, they accounted at the peak for a similar share of their underlying market (13% of total U.S mortgage debt).

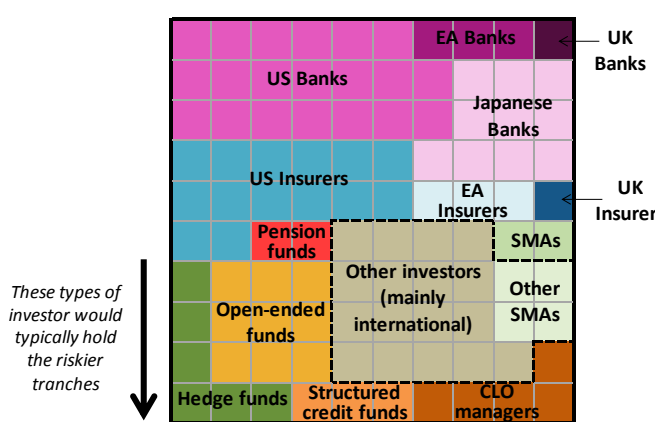
We should recognise that, in aggregate, corporate leverage in the UK has fallen since the crisis (Chart 17, which includes bonds as well as bank loans).<sup>12</sup> As with mortgages, interest payments on those debts remain well below average and, if bond markets are anything to go by, will remain so for quite a while yet.

**Chart 17: Corporate gearing still well below peak but has grown recently**



Sources: Association of British Insurers, Bank of England, Cass Commercial Real Estate Lending survey, Deloitte, LCD, an offering of S&P Global Market Intelligence, London Stock Exchange, ONS, Prequin, Deals Business Intelligence from Refinitiv and Bank calculations. Indicative Bank staff estimate. For further detail, please see Chart F.5 in the November 2018 *Financial Stability Report*.

**Chart 18: UK banks hold only a small fraction of CLOs**



Sources: BarclayHedge, Bloomberg Finance L.P., FCA Alternative Investment Fund Managers Directive (AIFMD), Firm public disclosures, LCD, an offering of S&P Global Market Intelligence, Morningstar, National Association of Insurance Commissioners, Securities Industry and Financial Markets Association, Solvency II submissions, and Bank calculations. Indicative estimated holdings of CLOs by global investors. 1 square = 1% of ~US\$750 billion global CLO market. For further detail, see footnotes to Chart F. 8 in the November 2018 *Financial Stability Report*.

Much more importantly, and after a lot of detailed work across the Bank, the FPC has identified some big differences with the subprime boom. Post-crisis reforms mean there's less opacity in the associated securities – investors know much more about what they're buying in a CLO than was apparent, ahead of the crisis, in most Mortgage Backed Securities. The rates of securitisation are in any case much lower (30% versus 80%). Most critically, the banks – and particularly UK banks – have significantly less exposure. Subprime mortgages were often held in special purpose vehicles that were not formally on banks' balance sheets but heavily financed by them. They still owned the risk. During the crisis UK-owned banks lost huge sums of money – far more than on comparable domestic lending – from their exposure to US mortgages,

<sup>12</sup> A large proportion of leveraged loans have been used for M&A and leveraged buyouts, which effectively replaces equity with debt for the corporate sector as a whole.



some of it directly, much of it via these constructed securities.<sup>13</sup> Their exposure to CLOs is materially lower. Chart 18, reproduced from the most recent *Financial Stability Report*, shows that UK banks own only a small fraction – around 1% - of the overall stock.

All this is important and reassuring. It means that the mechanisms that so amplified the impact of US mortgage defaults are much diminished, particularly for the UK. However, the underlying point – that rapid growth is often a sign of loosening supply and rising default risk – remains.

## Conclusion

Financial distress is often preceded by rapid debt growth. By contrast, comparative levels of debt – at very different points of time, across countries and even for individual households in the same country – are much less informative.

That doesn't mean the level of debt doesn't matter. But it may matter only relative to some sustainable threshold, one that's not directly observable and that can vary. The precise terms, and therefore the riskiness of a given quantity of debt, are not exactly the same in every country. Over long periods of time there may be other changes in fundamentals – what is defined as debt or, more profoundly, changes in the neutral long-term interest rate – that make the measured total more or less affordable.

Another possible explanation for these findings is that the forces that drive riskier and less sustainable debt tend to develop relatively rapidly. Certainly economic theory is less good at explaining variations in corporate lending over short periods of time than across different sorts of companies. That may be because the time series is dominated by swings in the supply of credit that are often less justified by the economic fundamentals. Periods of rapid growth are often accompanied by independent signs of loosening supply.

There may be some lessons in this. One is to exercise care with comparisons in levels terms. If you're interested in risk in the financial system it isn't enough simply to look at levels of debt and compare them with those in other countries or long-distant periods of time. For the most part those variations seem to be explained by differences in sustainable levels of debt, not differences in riskiness.

Another possible lesson involves the speed of any policy response. The Bank's Financial Policy Committee, which is responsible for monitoring and stabilising risk in the financial system as a whole, has many tools at its disposal. One of the main instruments is the so-called "Counter-Cyclical Capital Buffer" (CCyB). This is an extra margin the FPC can add to banks' capital requirements when risks are rising. The aim is to ensure that, in the event of a downturn and losses on their books, banks don't make it worse by actively cutting back on lending.

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<sup>13</sup> See Chart 18 in Broadbent (2012).

However, it takes time to implement changes in the CCyB (we have to give banks advance notice). So if it's true that swings in credit supply develop relatively rapidly, it may be necessary to supplement the CCyB with other safeguards. I would put the 2014 housing measures, which placed limits on high-LTI lending, into this category. This was done not so much because the level of mortgage debt is higher than in the past but as a prudent protection – a guardrail, if you will – against the risk of a deterioration in credit quality and excessively rapid growth in the stock of debt.

Thank you.

## References

- Andersen, A. L., Duus, C., and Lærkholm Jensen, T.** 2016. "Household debt and spending during the financial crisis: Evidence from Danish micro data". *European Economic Review*, Vol. 89, pp. 96-115.
- Atkinson, T. R.** 1967. "Trends in corporate bond quality". New York, NY: *Columbia University Press*.
- Becker, B. and Ivashina, V.** 2016. "Covenant-light contracts and creditor coordination". *Swedish House of Finance Research Paper No. 16-09*.
- Bernanke, B., Gertler, M. and Gilchrist, S.** 1996. "The financial accelerator and the flight to quality". *Review of Economics and Statistics* 78:1-15.
- Bridges, J., Jackson, C., and McGregor, D.** 2017. "Down in the slumps: the role of credit in five decades of recessions". Bank of England *Staff Working Paper* No. 659, available at <https://www.bankofengland.co.uk/working-paper/2017/down-in-the-slumps-the-role-of-credit-in-five-decades-of-recessions>.
- Broadbent, B.** 2012. "Deleveraging". Speech at Market News International, London. Available at: <https://www.bankofengland.co.uk/speech/2012/deleveraging>.
- Clews, R., Panigirtzoglou, N., and Proudman, J.** 2000. "Recent developments in extracting information from options markets", *Bank of England Quarterly Bulletin*, Vol. 40, No.1, pp. 50-60, available at: <https://www.bankofengland.co.uk/-/media/boe/files/quarterly-bulletin/2000/recent-developments-in-extracting-information-from-options-markets.pdf>
- Graham, J. R. and Leary, M. T.** 2011. "A review of empirical capital structure research and directions for the future". *Annual Review of Financial Economics*. Vol. 3, pp. 309-345.
- Greenwood, R. and Hansen, S. G.** 2013. "Issuer quality and corporate bond returns". *Review of Financial Studies*, Vol. 26, No. 6, pp. 1483-1525.
- Harris, M. and Raviv, A.** 1991. "The theory of capital structure". *The Journal of Finance*, Vol. XLVI, No 1.
- Jordà, Ò., Schularick, M., and Taylor, A. M.** 2012. "When credit bites back: Leverage, business cycles, and crises". *NBER Working Paper* No. 17621.

**Modigliani, F. and Miller, M. H.** 1958. “The cost of capital, corporate finance and the theory of investment”. *The American Economic Review*, Vol. 48, pp. 261-297.

**Stanga, I., Vlahu, R., and de Haan, J.** 2017. “Mortgage arrears, regulation and institutions: Cross-country evidence”. *DNB Working Paper* No. 580. Available at [https://www.dnb.nl/en/binaries/Working%20Paper%20No.%20580\\_tcm47-370366.pdf](https://www.dnb.nl/en/binaries/Working%20Paper%20No.%20580_tcm47-370366.pdf).

**Thomas, R. and Dimsdale, N.** 2017. “A millennium of macroeconomic data”. Bank of England OBRA dataset. Available at: <https://www.bankofengland.co.uk/-/media/boe/files/statistics/research-datasets/a-millennium-of-macroeconomic-data-for-the-uk.xlsx>.