

# Household debt and spending

By Philip Bunn of the Bank's Structural Economic Analysis Division and May Rostom of the Bank's Banking System Division.<sup>(1)</sup>

- This article is the first study to use microdata to assess the role of debt levels in determining UK households' spending patterns over the course of the recent recession.
- There is evidence that high levels of household debt have been associated with deeper downturns and more protracted recoveries in the United Kingdom.
- Cuts in spending associated with debt are estimated to have reduced the level of aggregate private consumption by around 2% after 2007, unwinding the faster growth in spending by highly indebted households, relative to other households, before the financial crisis.

## Overview

This article investigates the relationship between household debt and consumption in the United Kingdom with a focus on whether increases in mortgage debt before 2007 helped to finance household spending, and whether high debt levels led to a deeper recession in 2008/09. There is no previous work for the United Kingdom that looks at this issue in detail. Knowing how households with debt respond in the face of shocks has important implications for both financial stability and monetary policy.

Analysis of microdata shows that UK households with high levels of debt cut their spending by more — relative to income — than households, on average, following the financial crisis. Cuts in spending associated with debt are estimated to have reduced aggregate private consumption by around 2% after 2007 (**summary chart**), which increased the depth of the recession and contributed to the protracted nature of the recovery.

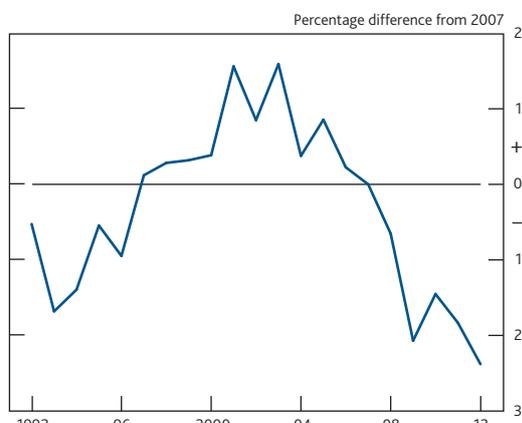
Survey evidence suggests that large cuts in spending by highly indebted households after 2007 reflect a combination of tighter credit conditions and increased concerns about ability to make future debt repayments.

There is also wider evidence that high levels of household debt can increase the depth of recessions. Debt is likely to have restrained UK aggregate spending during the early 1990s, albeit by less than in the 2008/09 recession, and there is a body of international evidence that is also

consistent with a role for debt following the recent financial crisis.

The potential for household indebtedness to lead to large adverse impacts on aggregate demand was an important reason why the Financial Policy Committee took policy action at its June 2014 meeting to insure against the risks from a further significant increase in the number of highly indebted households. This is an area that both the Financial and Monetary Policy Committees will continue to monitor closely.

**Summary chart** Estimated impact of debt on the level of total private consumption, relative to 2007<sup>(a)</sup>



Sources: DCLG, LCF Survey, ONS and Bank calculations.

(a) See footnote to **Chart 8** for more details on how this chart is constructed.

(1) The authors would like to thank Lizzie Drapper for her help in producing this article.

A major development in UK household balance sheets in the decade before the financial crisis was the build-up of household debt. This article assesses the extent to which household debt has played a role in affecting consumption. It discusses whether the build-up of debt is likely to have helped to finance household spending before the crisis, and to what extent the subsequent recession was deeper, and recovery slower, as a result of indebted households reducing their spending by more than others. There is no previous work for the United Kingdom that looks at this issue in detail.<sup>(1)</sup>

Understanding how households with debt respond to shocks has important implications for both financial stability and monetary policy. At higher levels of indebtedness, households are more likely to encounter payment difficulties following negative shocks to income or interest rates. Concern about the possibility of financial distress may also lead to sharp falls in spending, even if that distress does not eventually materialise. Increases in realised financial difficulties and in the risk of distress could pose direct risks to the resilience of the UK banking system and indirect risks via the impact on wider economic stability. The extent to which associated cuts in spending weigh on aggregate household consumption (which accounts for around two thirds of GDP) is also highly relevant for monetary policy decisions.

The potential for household indebtedness to have a large adverse impact on aggregate demand and on the banking system was a key reason why the Financial Policy Committee (FPC) took policy actions in June 2014 to insure against the risks from a further significant increase in the number of highly indebted households.<sup>(2)</sup> The Committee recommended that:

- When assessing affordability, mortgage lenders should apply an interest rate stress test that assesses whether borrowers could still afford their mortgages if, at any point over the first five years of the loan, Bank Rate were to be 3 percentage points higher than the prevailing rate at origination.
- The Prudential Regulation Authority and the Financial Conduct Authority should ensure that mortgage lenders limit the proportion of mortgages at loan to income multiples of 4.5 and above to no more than 15% of their new mortgages.

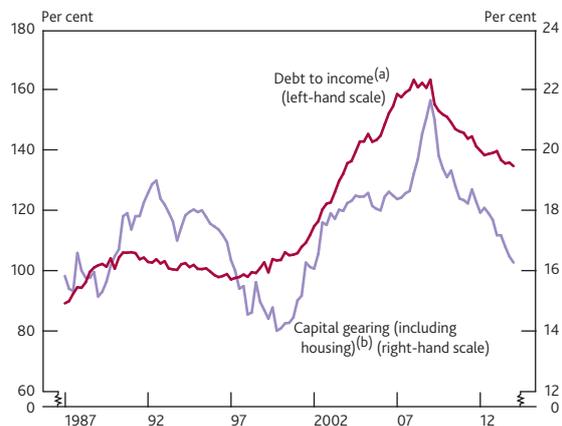
It is difficult to assess how debt has affected UK consumption using only aggregate data. To help better understand the role of debt, this article summarises microdata evidence on differences in spending patterns across households with different levels of debt. The article starts by providing an overview of trends in household balance sheets, before going on to explain why debt might affect spending in principle. It then reviews the evidence on the relationship between household debt and spending, primarily focusing on the

United Kingdom in the recent recession, and uses survey evidence to look in more detail at the reasons why highly indebted UK households made large cuts in spending after 2007. The final section concludes.

## Trends in UK household balance sheets

Across the United Kingdom as a whole, the household debt to income ratio rose from around 100% in 1999 to a peak of 160% in 2008 (**Chart 1**). Mortgage debt accounts for around 80% of total household debt, and explains most of the increase in the aggregate debt to income ratio since the late 1990s. Since 2008, the stock of household debt has stabilised, with the fall in the debt to income ratio from its peak reflecting growth (albeit modest growth) in nominal incomes.

**Chart 1** Household debt to income ratio and capital gearing



Sources: ONS and Bank calculations.

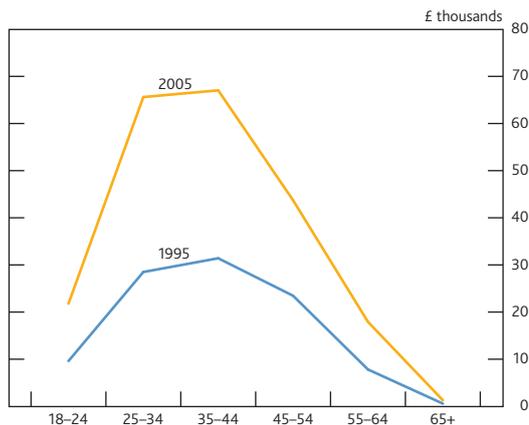
- (a) Total financial liabilities as a percentage of annualised total household resources.  
 (b) Total financial liabilities as a percentage of households' total financial assets and residential building assets.

Estimates of capital gearing — which measure the stock of debt in relation to the value of assets — summarise the overall balance sheet position of the household sector. Aggregate gearing rose in the decade before the financial crisis (**Chart 1**), but more modestly than the debt to income ratio, given that house prices increased faster than income. Capital gearing in 2007 was similar to the levels recorded in 1992 although it fell and then rose during the intervening period. While it spiked up to exceed that previous peak during the financial crisis — as asset prices fell sharply — gearing is now somewhat below where it was in 1992 and 2007.

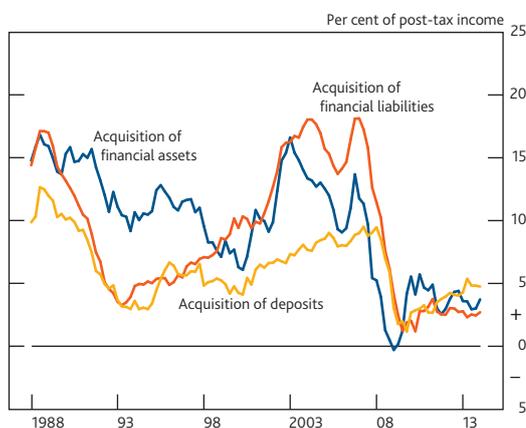
In aggregate, the build-up in household debt over the decade before 2007 was largely matched by a build-up of assets.

(1) A box on pages 22–23 of the May 2013 *Inflation Report* contains a summary of the preliminary results from the work presented in this article, available at [www.bankofengland.co.uk/publications/Documents/inflationreport/2013/ir13may.pdf](http://www.bankofengland.co.uk/publications/Documents/inflationreport/2013/ir13may.pdf).

(2) See the June 2014 *Financial Stability Report* for more details on these measures, available at [www.bankofengland.co.uk/publications/Documents/fsr/2014/fsrfull1406.pdf](http://www.bankofengland.co.uk/publications/Documents/fsr/2014/fsrfull1406.pdf).

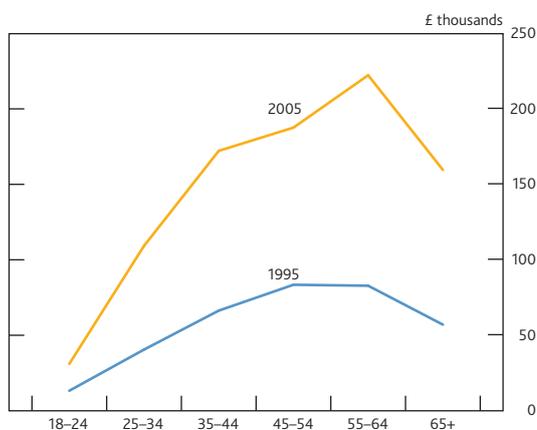
**Chart 2** Average household debt by age

Sources: British Household Panel Survey (BHPS) and Bank calculations.

**Chart 3** Households' net acquisition of financial assets and liabilities<sup>(a)</sup>

Sources: ONS and Bank calculations.

(a) Four-quarter moving averages.

**Chart 4** Average household gross wealth (including housing assets) by age

Sources: BHPS and Bank calculations.

When banks lend money to households they create matching deposits, which are initially held by the borrower. In the case of mortgages, those deposits are then transferred to the home seller when the mortgagor purchases a property and that money subsequently circulates around the economy. It can

either be retained within the household sector if households want to hold more deposits in their portfolio, or if it leads to additional housing market transactions. Alternatively, the money may flow to another sector in the economy or to overseas residents if it is used to purchase goods and services or other financial assets.<sup>(1)</sup>

As house prices increased from the mid-1990s onwards, households entering the housing market or moving into bigger homes, who tended to be younger households, took out larger mortgages to be able to purchase a house (**Chart 2**). But, in aggregate, as borrowing rose, financial assets were acquired at a broadly similar rate to liabilities, with a large proportion of these assets being bank deposits (**Chart 3**), so there was little change in the net financial wealth of the household sector as a whole (Benito *et al* (2007)). Those additional assets were primarily acquired by older households, who tended to be those trading down in the housing market and who also saw the largest increases in the value of their existing houses (given that they tend to own larger houses). These two factors meant that older households saw significant increases in their wealth between 1995 and 2005 (**Chart 4**).

### Why might debt affect spending?

Despite the large increase in UK household debt, it is not immediately obvious from standard economic theory that the existing stock of debt should affect households' (non-housing) spending decisions. Debt plays no causal role in determining the amount of spending in conventional consumption theory, which centres around the 'permanent income' (or 'life-cycle') model (Modigliani and Brumberg (1979)). In that model, consumption depends only on expected lifetime income and wealth, with households smoothing spending over their lifetimes. Typically, households should borrow to help finance their consumption when they are young and their incomes are relatively low. They then repay that debt later in life as their incomes rise and they build up savings ahead of retirement, when income falls back again.

The basic life-cycle model includes a number of simplifying assumptions, and relaxing some of those assumptions may imply a more active role for debt in explaining spending patterns. For instance, households are assumed to be able to borrow as much as they choose; the cost of borrowing is held constant; households can accurately predict their lifetime income; and more generally, these models assume that there is no uncertainty around the future path of economic variables. In practice, of course, households are not certain about their future income and they do face (time-varying) constraints on their ability to borrow. Theoretical models in the literature can therefore find a direct role for debt in

(1) See McLeay, Radia and Thomas (2014) for more details on the role of money in a modern economy.

affecting spending by allowing changes in income expectations or credit conditions to interact with debt.

The literature on how debt might affect spending dates back to Fisher's (1933) debt deflation theory. Fisher argued that in the US Great Depression, debt helped to amplify the initial shock as it propagated through the economy. King (1994) discusses how Fisher's work might have been relevant in explaining the weakness of UK consumption during the 1990s recession. King puts forward a model in which indebted households, who had borrowed on the expectation of higher future income, suffer adverse shocks to their future income expectations that lead them to consume less and repay debt. Even if other households experience offsetting positive shocks, they do not increase consumption by enough to fully offset the effect on aggregate spending.

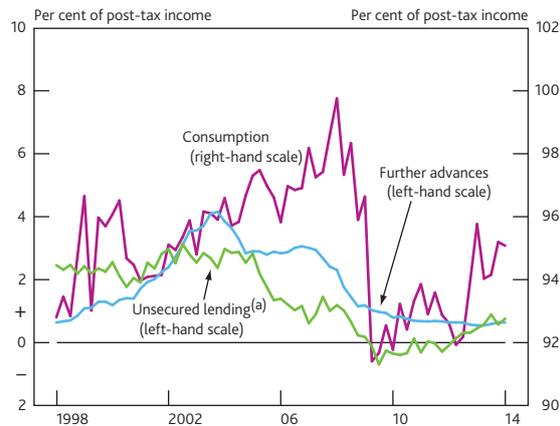
More recent theoretical research has shown how a tightening in credit conditions can interact with debt and reduce aggregate spending. For example, Eggertsson and Krugman (2012) assume that there is a limit on how much debt households can hold, and if that limit is revised down (for example because of a sudden realisation that collateral constraints were too lax), highly indebted households are forced to reduce spending sharply with no offsetting response from non-debtors.

## Evidence on the link between debt and spending

It is difficult to evaluate whether debt has had any impact on UK household spending using aggregate data alone. Indeed, UK consumption grew at roughly the same rate between 1999 and 2007, when debt was rising rapidly, as it did between 1992 and 1998, when debt did not increase relative to income. This, together with the fact that increases in household debt were largely matched by a build-up in assets, is consistent with the suggestion that increases in debt did not provide significant support to consumption. And post-2008, there are a number of factors other than debt which might explain why spending fell sharply.<sup>(1)</sup> Nevertheless, it is also possible to make the case that debt played at least some role. Further advances on mortgages (additional borrowing secured against a house but not used to buy the property) and unsecured lending (such as personal loans or credit card debt) are forms of borrowing that are more likely to be used to finance consumption than new mortgage lending. Over the past fifteen years consumption has shown some correlation with further advances, although the relationship with unsecured lending is less clear (Chart 5).<sup>(2)</sup>

There are two main strands of literature that investigate the link between household debt and spending: analysis of how consumer spending varies with debt levels across (i) countries or (ii) households within a given country.

**Chart 5** Consumption and borrowing available for consumption



Sources: Bank of England, ONS and Bank calculations.

(a) Excludes student loans.

The box on pages 308–09 discusses the international evidence on the relationship between household debt and spending. The main results are that, across countries, recessions preceded by large increases in household debt tend to be more severe and protracted, but there is less evidence that the level of pre-crisis debt is a good predictor of the subsequent adjustment in spending. Outside the United Kingdom, there are a number of household-level studies that find a link between high pre-crisis debt and weak consumption during the period that followed. The analysis in the remainder of this article focuses on household-level evidence for the United Kingdom.

### UK household-level evidence: the recent recession

This section assesses the extent to which UK households with high levels of debt made large cuts in spending following the financial crisis. It makes use of microdata from the Living Costs and Food (LCF) Survey, which are described in more detail in the box on page 310. The first part of the section provides a descriptive analysis of differences in spending patterns across households with different levels of mortgage debt. Those differences may not necessarily just reflect debt; they could also be related to other characteristics. The second part therefore uses regression analysis to try to control for spending differences associated with other factors and to identify better how much of any difference is related to debt.

**Overall, a key finding is that UK households with high levels of mortgage debt made larger adjustments in spending after 2007.** In the second half of the 1990s, households with mortgage debt to income ratios greater than 2 appear to have increased the share of their income spent on non-housing consumption by more than mortgagors with lower debt to income ratios (Chart 6). But these higher debt mortgagors

(1) See, for example, Hackworth, Radia and Roberts (2013).

(2) Over the period from 1998 to 2013, the correlation coefficient between consumption as a percentage of disposable income and further advances is 0.6. The corresponding correlation coefficient with unsecured lending is 0.4.

## International evidence on the link between debt and spending

As discussed in the main article, there are two main strands of literature that investigate the link between household debt and spending: analysis of how consumer spending varies with debt levels across (i) countries or (ii) households within a given country. This box provides an overview of international evidence using both approaches.

Cross-country analysis has the advantage that it offers lots of variation in debt levels to test whether there is a link to spending, but institutional differences can be large and it is hard to control for all other factors to be able to infer causality from the observed correlations. Household studies can test whether it is the highly indebted households that account for swings in aggregate spending. This can help infer causality relative to cross-country analysis, although it remains difficult to prove definitively. The biggest drawback of the microdata approach, and where cross-country analysis is more helpful, is that it is difficult to take account of possible offsetting responses elsewhere in the economy.

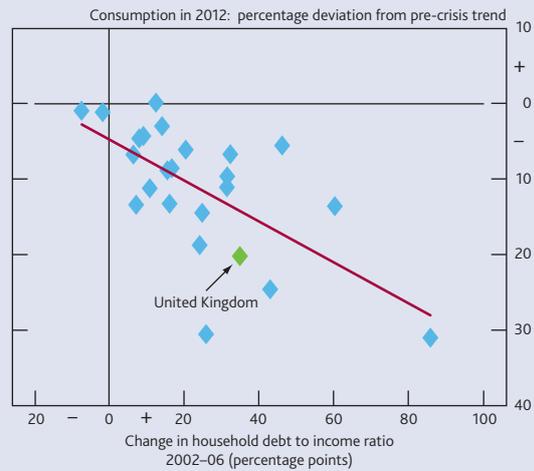
### Cross-country comparisons

A number of studies have used cross-country data to document the fact that **recessions preceded by large increases in household debt tend to be more severe and protracted.**<sup>(1)</sup> Chart A illustrates how, in the recent recession, falls in the level of consumption relative to estimates of pre-crisis trends were greatest in countries that experienced the largest increases in aggregate household debt before the crisis. In the United Kingdom (shown by the green diamond on Chart A), the fall in spending was slightly larger than implied by the average cross-country relationship with debt growth.

Evidence that recessions preceded by large *increases* in household debt tend to be more severe and protracted is not restricted to recent experience. King (1994) shows that the same was true in the early 1990s and, going all the way back to the 1870s, Jorda, Schularick and Taylor (2013) show how excess credit growth is correlated with stronger booms and subsequently deeper recessions and slower recoveries. Even though this relationship is strongest when the recession coincides with a systemic financial crisis, it can also be detected in 'normal' business cycles where a financial crisis is absent.

There is less evidence, however, that the aggregate level of pre-crisis household debt is a good predictor of the size of the subsequent adjustment in spending. Chart B shows that there was little cross-country correlation between the level of household debt in 2006 and the amount that consumption

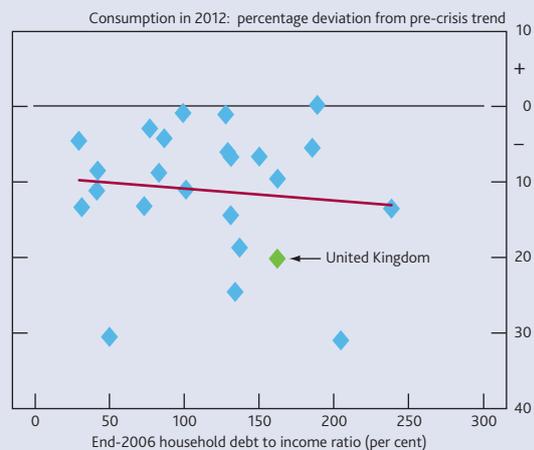
**Chart A** Cross-country falls in consumption and pre-crisis household debt growth<sup>(a)</sup>



Sources: OECD National Accounts and Bank calculations.

(a) Includes data for Australia, Austria, Belgium, Canada, Czech Republic, Finland, France, Germany, Hungary, Ireland, Italy, Japan, Korea, Netherlands, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom and United States. Pre-crisis trends for each country are estimated as the average growth rate between 1997 and 2006. Debt to income ratio is debt as a percentage of gross annual disposable income.

**Chart B** Cross-country falls in consumption and pre-crisis household debt level<sup>(a)</sup>



Sources: OECD National Accounts and Bank calculations.

(a) Includes data for Australia, Austria, Belgium, Canada, Czech Republic, Finland, France, Germany, Hungary, Ireland, Italy, Japan, Korea, Netherlands, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom and United States. Pre-crisis trends for each country are estimated as the average growth rate between 1997 and 2006. Debt to income ratio is debt as a percentage of gross annual disposable income.

was cut back following the crisis. Consistent with that, Cecchetti, Mohanty and Zampolli (2011) find that the level of household debt does not have a statistically significant effect on future growth in a cross-country data set going back to 1980 (although they do find a significant role for public debt, and in some instances corporate debt). However, Flodén (2014) argues that there is a clearer relationship between the level of debt and changes in consumption after 2007 once the level of consumption is adjusted for prior growth in debt, past consumption and the current account balance.

### Non-UK household studies

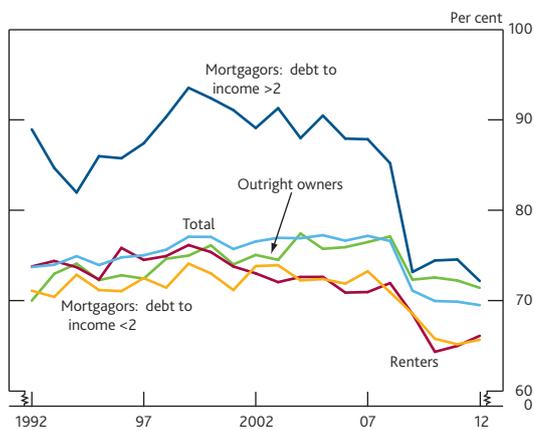
A number of non-UK household-level studies have found a link between high pre-crisis debt and weak consumption after the recent financial crisis. Dynan (2012) shows that US mortgagors with high loan to value (LTV) ratios pre-crisis subsequently experienced larger declines in spending (between 2007 and 2009), after controlling for other factors such as income and wealth. Baker (2013) finds that spending by highly indebted US households was more sensitive to income fluctuations than was the case for other households, although these effects become smaller and sometimes statistically insignificant once credit and liquidity constraints are controlled for.

Mian, Rao and Sufi (2013) analyse evidence across regions in the United States. They show that the decline in consumption following the crisis was greater in areas that had higher outstanding LTV ratios prior to the crisis.

In Denmark, Andersen, Duus and Jensen (2014) find similar evidence of a negative correlation between pre-crisis LTV ratios and consumption during the crisis. They also find that the highly indebted households who made larger adjustments in spending during the crisis had been consuming a greater share of their income before the crisis.

(1) See, for example, IMF (2012) and Jorda, Schularick and Taylor (2013).

**Chart 6** UK non-housing consumption as a share of income<sup>(a)</sup>



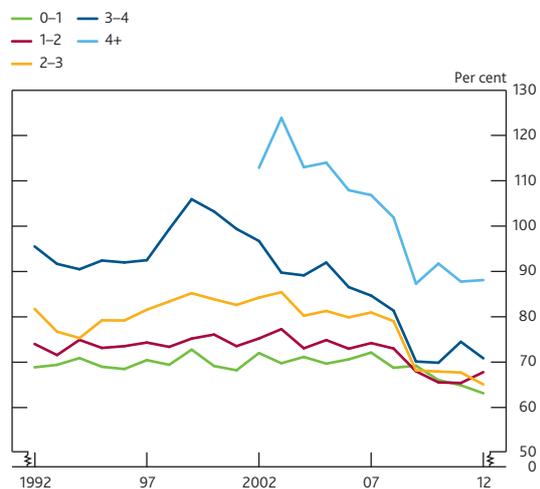
Sources: Living Costs and Food (LCF) Survey, ONS and Bank calculations.

(a) Non-housing consumption as a share of income net of mortgage interest payments. Data are scaled so that the total matches the National Accounts. Debt to income ratio is calculated using secured debt only.

subsequently made larger-than-average reductions in spending relative to income after the financial crisis. This analysis focuses on secured debt only, since only limited data on unsecured debt are available in the LCF Survey. Disaggregating the data for mortgagors further, the largest adjustment in spending relative to income after 2007 came among households with a mortgage debt to income ratio above 4 (Chart 7). Cuts in spending were more modest for those with debt to income ratios below 2.<sup>(1)</sup>

Regression analysis confirms that households with higher debt levels made larger adjustments in spending after 2007, even after controlling for other factors. An econometric model in which households' consumption is determined — in part — by their mortgage debt to income ratio,<sup>(2)</sup> can be used to estimate the impact of cuts in spending associated with debt on aggregate consumption since 2007. This estimate is constructed by taking the model's prediction, for each household, for spending in a given year, and then subtracting what the model predicts they would have spent if debt had

**Chart 7** UK mortgagors non-housing consumption as a share of income by debt to income ratio group<sup>(a)</sup>



Sources: Department for Communities and Local Government (DCLG), LCF Survey, ONS and Bank calculations.

(a) Data for 4+ not shown before 2002 as they are erratic and are based on a small sample. Non-housing consumption as a share of income net of mortgage interest payments. Data are scaled so that the total matches the National Accounts. Debt to income ratio is calculated using secured debt only.

had the same estimated influence on spending patterns in each year as it did in 2007, keeping all other characteristics unchanged. Differences are then summed across households. This approach suggests that cuts in spending associated with debt can explain around 2 percentage points of the almost 5% fall in aggregate private consumption after 2007;<sup>(3)</sup> and, at least up until the latest available data in 2012, these effects had not unwound (Chart 8).

(1) The proportion of households with mortgage debt to income ratios above 4 was relatively small at around 6% in 2012, although it has risen from around 2% in the late 1990s. The group with debt to income ratios above 2 covered just under 20% of all households (and accounted for a quarter of total income).  
 (2) The econometric model is a household-level consumption equation (with real non-housing consumption as the dependent variable) that incorporates a mortgage debt to income variable and where the coefficient on that debt to income variable is allowed to be different in each year. The coefficients on the debt variable are statistically significantly smaller after 2007 than in 2007. Other controls in the model include income (net of interest payments), date of birth cohort, age, household composition, education, employment status, region and house prices.  
 (3) This refers to the fall in calendar-year consumption.

## Living Costs and Food Survey microdata

The Living Costs and Food (LCF) Survey of households is conducted by the ONS in order to collect information on household spending patterns. The survey has been carried out in some form since 1957, having been previously known as the Family Expenditure Survey and subsequently the Expenditure and Food Survey.

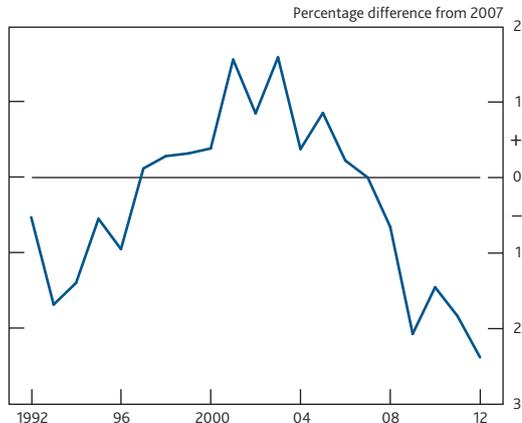
The LCF Survey is used by the ONS to define the basket of goods used in the retail prices index and the consumer prices index and is an important source for estimates of household expenditure in the National Accounts. However, the microdata behind the survey are also an important source of data for research and analysis of household spending patterns. The survey contains a number of detailed questions about households' expenditure, complemented by a two-week expenditure diary, and therefore provides the best-quality source of consumption data at the household level in the United Kingdom. There is also detailed information on income and other household-level information such as mortgage debt

that can be used to assess variation in spending patterns between different groups of households.

The LCF Survey is a repeated cross-section survey, which means that a different set of households are included in the survey each year. It covers around 6,000 households per year and is conducted continually throughout the year.

Consumption data from the survey do not directly correspond to the National Accounts measure. In part, that reflects differences in the way some components are measured. In particular, the housing consumption of owner-occupiers in the National Accounts is a measure of imputed rents, whereas in the LCF Survey it covers mainly mortgage interest payments. But aside from that, non-housing consumption implied by the survey data has tended to grow more slowly than the National Accounts measure. The LCF Survey non-housing consumption (and income) data reported in this article are adjusted so that aggregate measures from the survey correspond to the National Accounts. This implicitly assumes that any underreporting in the survey is common across all households.

**Chart 8** Estimated impact of debt on the level of total private consumption, relative to 2007<sup>(a)</sup>



Sources: DCLG, LCF Survey, ONS and Bank calculations.

(a) The impact on non-housing consumption is constructed by taking predicted spending for each household from the model described in footnote (2) on page 309, and then subtracting what the model predicts they would have spent if debt had had the same estimated influence on spending patterns in each year as it did in 2007, keeping all other characteristics unchanged. Differences are then summed across households. To get to a total impact on aggregate private consumption there is assumed to be no effect on housing consumption or the consumption of non-profit institutions serving households.

A larger adjustment in spending by indebted households after 2007 reflects an unwinding of faster growth in spending by this group before the crisis. The econometric estimates suggest that indebted households added around 2.5% to the level of aggregate private consumption between 1996 and 2003. This can be seen on **Chart 8** by the estimated impact of debt rising from -0.9% to 1.6% over this period (relative to 2007 levels). On average, that equates to a 0.35 percentage point a year contribution to annual consumption growth, which averaged approximately 4.5% over that period. However, the estimated effect of debt on the level of

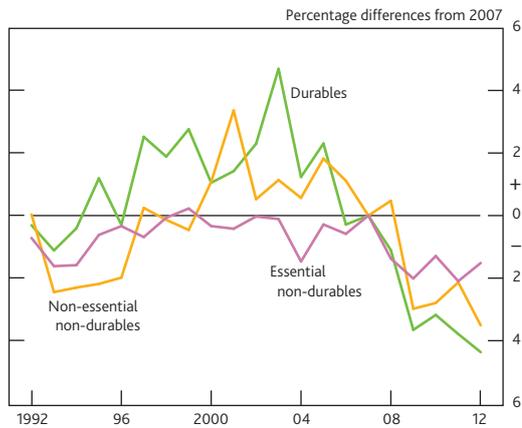
consumption falls back between 2003 and 2007, implying that it weighed modestly on growth, despite debt continuing to rise rapidly.

Much of the strength in spending by highly indebted households before the financial crisis and the larger adjustment afterwards was in durables and non-essential categories of spending (**Chart 9**).<sup>(1)</sup> While there was still some fluctuation in spending on essential non-durable items, the estimated impact was smaller — consistent with the intuition that households cut back on non-essential spending first when they face financial pressure.<sup>(2)</sup>

While the focus of this article is on the most recent recession, there is also evidence that households with high levels of debt also made large cuts in spending in the early 1990s recession. Those results are explained in more detail in the box on page 312. But the impact on aggregate consumption of cuts in spending associated with debt in the early 1990s is likely to have been lower than in the recent recession because there were fewer households with high levels of debt in that earlier period.

- (1) Durables are defined as vehicles, household goods, recreational goods, and clothing and footwear. Non-essential non-durables are recreational services, household services, personal goods and services, alcohol and tobacco. Essential non-durables are defined as food and beverages, transport fares and other transport costs. The definitions of essential and non-essential spending are only based on high-level categories and in practice there will be some elements of essential and non-essential spending within each category. For example, spending on food will include spending on luxury food items, which could be substituted for cheaper alternatives and therefore might be considered as non-essential.
- (2) A weighted average of the estimated impacts of debt on the three components of consumption shown in **Chart 9** is greater than the impact on total private consumption shown in **Chart 8**. That is because the estimates in **Chart 8** also include housing consumption and the consumption of non-profit institutions serving households, on which debt is assumed to have no influence.

**Chart 9** Estimated impact of debt on the level of different components of consumption, relative to 2007<sup>(a)</sup>



Sources: DCLG, LCF Survey, ONS and Bank calculations.

(a) Durables, non-essential non-durables and essential non-durables are defined as in footnote (1) on page 310. Estimates for each category of spending are constructed using the methodology explained in the footnote to Chart 8 (apart from there is no adjustment for housing consumption or the consumption of non-profit institutions serving households). Separate equations are estimated for each spending category.

The finding that highly indebted UK households' spending appears to be more sensitive to economic shocks over more than one recessionary period is consistent with evidence from Cloyne and Surico (2014). They show how between 1978 and 2009, the consumption response of mortgagors to income tax shocks that were not associated with the state of the economy was significantly larger than the response of outright owners, although they do not differentiate between households with different levels of debt. But not all work suggests a role for debt in explaining volatility in UK household spending. Using data between 1997 and 2004, Benito *et al* (2007) find little difference in the amount by which the spending of high and low-debt households responded to changes in their financial position, although this was a period where the macroeconomic environment was benign and the nature of the shocks is likely to have been different to those experienced after 2007.

There are a number of caveats to the analysis presented in this section which need to be taken into account when interpreting the results. First, we are not able to observe the same households over time — only ones with similar characteristics — because the LCF Survey covers different households from year to year. This means that we cannot observe what the pre-crisis debt of individuals surveyed after the crisis was; and equally, we cannot observe how the debt of individuals surveyed before the crisis has evolved since then. Second, the measure of income used is net of mortgage interest payments, which means that reductions in mortgage rates after 2009 that lowered interest payments will have helped to cushion the squeeze in incomes for mortgagors.<sup>(1)</sup> Alternative econometric estimates that include a measure of income that is not measured net of interest would imply a smaller (although not zero) impact on spending from debt than that described above. Third, this analysis focuses only on mortgage

debt because there is limited information available on unsecured debt in the LCF Survey and therefore we could be underestimating the true impact of total debt. However, mortgage debt accounts for 80% of all debt. And, as there are fewer consequences of walking away from unsecured debt, households with unsecured debt might be less concerned about having to default and therefore be less willing than mortgagors to reduce spending sharply rather than risk default.

The microdata analysis also implicitly assumes that most aspects of the economy were not affected by developments in household debt. Growth in debt could have had macroeconomic effects that may have fed back into consumption, for example, through its effects on employment, the public finances and asset prices. And, as explained in the first section, for some households to hold debt, others have to hold assets, and that could affect their behaviour. But attempting to evaluate either of these effects is beyond the scope of this article.

The analysis presented in this section illustrates how high levels of household indebtedness have led to a material adverse impact on aggregate household spending and overall demand over the recent past. A clear policy implication of these results is that limiting any further increase in the number of households with high levels of debt will limit the extent to which there is potential for large adverse impacts on aggregate demand following future negative shocks.

## Why might highly indebted households have made large cuts in spending?

While there is evidence that the more indebted UK households made larger cuts in spending after 2007, this does not prove that debt was the cause of lower spending — there could also have been other factors, that are correlated with debt, that led to lower spending. Below are three possible explanations for why highly indebted households made larger cuts in spending. The first two imply that debt caused the larger spending adjustment in some way, but in the third the link to debt is coincidental rather than causal.

- (1) **Highly indebted households were disproportionately affected by tighter credit conditions.** In this case, high existing debt levels caused lower spending by restricting borrowers' ability to renew, or increase, existing debt, and by lowering expectations of future access to credit.
- (2) **Highly indebted households became more concerned about their ability to make future repayments.** Downward revisions to expected future income and/or

(1) This is also how income is measured in the National Accounts, although that measure of income is net of all interest payments not just mortgage interest payments.

## UK household-level evidence — the early 1990s recession

It is more difficult to analyse the role of debt in earlier UK recessions because debt data from the LCF Survey are only available from 1992. It is possible, however, to infer an estimate of the outstanding stock of mortgage debt for each household before 1992 using data on mortgage interest payments and by assuming that all households paid the same mortgage interest rate as implied by aggregate data. While these data are less reliable than if households actually report debt itself, they provide an indication of how spending is likely to have varied by debt level in previous recessions. Over the period where actual debt data are available to cross-check against, the imputed data provide a reasonable approximation (shown by comparing the dashed and solid lines in **Chart A**).

There also appears to have been a large swing in spending by households with a debt to income ratio above 2 in the late 1980s/early 1990s (**Chart A**). While the precise estimates are highly uncertain, they suggest that the fall in non-housing consumption as a share of disposable income may have been even larger than following the recent recession. But an important difference between the two recessions is the fact that interest rates rose very sharply in the late 1980s, which would typically reduce the spending of highly indebted households. In the most recent recession, cuts in spending by indebted households were larger than average despite interest rates being reduced to historically low levels.

The impact on aggregate consumption from cuts in spending associated with debt is likely to have been smaller in the early

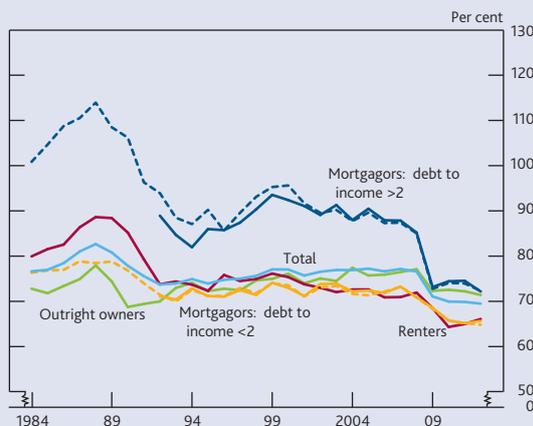
uncertainty about future income may have made highly indebted households more concerned about their ability to repay debt in the future. This group may therefore have made larger adjustments to spending than other households, even if high and low-debt households suffered the same-sized shock to expected future income.

**(3) Highly indebted households may have made larger adjustments to future income expectations.** This may be because they were too optimistic before 2007, and overly optimistic income expectations may have been what led these households to take on high debt in the first place. Here, debt has no causal link to the larger adjustment in spending by highly indebted households — households with high debt just happen to have experienced larger shocks to expected future income.

### Evidence for the hypotheses

This section draws on evidence from the annual Bank of England/NMG Consulting survey — which includes questions

**Chart A** UK non-housing consumption as a share of income<sup>(a)</sup>



Sources: DCLG, LCF Survey, ONS and Bank calculations.

(a) Non-housing consumption as a share of income net of mortgage interest payments. Dashed lines are based on imputed mortgage debt data, which is calculated from data on mortgage interest payments by assuming that all households pay the same mortgage interest rate as implied by aggregate data. Data are scaled so that the total matches the National Accounts. Debt to income ratio is calculated using secured debt only.

1990s because there were fewer households with high debt. The imputed debt data suggest that the number of households with a debt to income ratio above 2 in the late 1980s/early 1990s may have only been between a third and a half of the number in 2007, depending on the exact year chosen. Together with the fact that some of the reduction in spending by indebted households is likely to reflect the normal transmission of monetary policy, it is likely that cuts in spending associated with debt reduced the level of aggregate private consumption by less than 1% between 1989 and 1992.

on households' attitudes to spending — to investigate the reasons why households with high debt levels made larger reductions in spending after 2007.<sup>(1)</sup> The survey includes questions that relate to each of the above hypotheses: households were asked whether they had cut spending because of concerns about credit availability (hypothesis 1), whether they had cut spending because of concerns about debt (hypothesis 2) and whether they were worse off in 2013 than they had expected in 2006 (hypothesis 3 — being worse off than expected over the past might be correlated with downward revisions to future income expectations).<sup>(2)</sup>

Mortgagors who reported that they had cut spending due to concerns about credit availability had higher-than-average mortgage debt to income ratios (**Chart 10**). Debt to income ratios were also higher for households who had cut spending

(1) See Bunn *et al* (2013) for more details on the 2013 NMG Consulting survey.

(2) The question about cutting spending due to debt concerns has only been asked since 2010 (and was not included in 2011). The question about being worse off relative to expectations was asked for the first time in 2013.



particularly in the wake of the Great Recession. The microdata analysis presented in this article shows that highly indebted UK households made larger-than-average cuts in spending, relative to income, after 2007. This represents an unwinding of faster-than-average spending growth by this group before the crisis. Cuts in spending associated with debt are estimated to have reduced the level of aggregate private consumption by around 2% after 2007 (out of a total fall of around 5%).

It is difficult to prove that those more highly indebted households who made large cuts in spending after 2007 did so specifically because of their debts. However, survey evidence suggests that those spending cuts were driven by a combination of tighter credit conditions and increased concerns about ability to make future debt repayments, which is consistent with high indebtedness being the cause of those spending patterns.

The empirical evidence that debt can affect household spending is not just limited to the most recent UK business cycle. Debt is also likely to have had a more modest effect on aggregate UK spending during the early 1990s recession (given that there were fewer households with high debt then), and there is a body of international evidence that is consistent with a role for debt following the recent financial crisis.

The potential for household indebtedness to have a large adverse impact on aggregate demand was a key reason why the Financial Policy Committee took policy action at its June 2014 meeting. Those measures are designed to insure against a further significant increase in the number of highly indebted households. They should also therefore help to insure against the effects of debt on aggregate spending being any larger than over the recent past following any future shocks of a similar magnitude.

---

## References

- Andersen, A L, Duus, C and Jensen, T L (2014), 'Household debt and consumption during the financial crisis: evidence from Danish micro data', *Danmarks NationalBank Working Paper No. 89*.
- Baker, S (2013), 'Debt and the consumption response to household income shocks', Stanford University, *mimeo*.
- Benito, A, Waldron, M, Young, G and Zampolli, F (2007), 'The role of household debt and balance sheets in the monetary transmission mechanism', *Bank of England Quarterly Bulletin*, Vol. 47, No. 1, pages 70–78, available at [www.bankofengland.co.uk/publications/Documents/quarterlybulletin/qb070105.pdf](http://www.bankofengland.co.uk/publications/Documents/quarterlybulletin/qb070105.pdf).
- Bunn, P, Domit, S, Piscitelli, L, Rostom, M and Worrow, N (2013), 'The financial position of British households: evidence from the 2013 NMG Consulting survey', *Bank of England Quarterly Bulletin*, Vol. 53, No. 4, pages 351–60, available at [www.bankofengland.co.uk/publications/Documents/quarterlybulletin/2013/qb130406.pdf](http://www.bankofengland.co.uk/publications/Documents/quarterlybulletin/2013/qb130406.pdf).
- Cecchetti, S, Mohanty, M and Zampolli, F (2011), 'The real effects of debt', *BIS Working Paper No. 352*.
- Cloyne, J and Surico, P (2014), 'Household debt and the dynamic effects of income tax changes', *Bank of England Working Paper No. 491*, available at [www.bankofengland.co.uk/research/Documents/workingpapers/2014/wp491.pdf](http://www.bankofengland.co.uk/research/Documents/workingpapers/2014/wp491.pdf).
- Dynan, K (2012), 'Is a household debt overhang holding back consumption?', *Brookings Papers on Economic Activity*, Spring.
- Eggertsson, G and Krugman, P (2012), 'Debt, deleveraging, and the liquidity trap: a Fisher-Minsky-Koo approach', *Quarterly Journal of Economics*, Vol. 127, No. 3, pages 1,469–513.
- Fisher, I (1933), 'The debt-deflation theory of great depressions', *Econometrica*, Vol. 1, No. 4, pages 337–57.
- Flodén, M (2014), 'Did household debt matter in the Great Recession?', available at [http://martinfloden.net/files/hhdebt\\_supplement\\_2014.pdf](http://martinfloden.net/files/hhdebt_supplement_2014.pdf).
- Hackworth, C, Radia, A and Roberts, N (2013), 'Understanding the MPC's forecast performance since mid-2010', *Bank of England Quarterly Bulletin*, Vol. 53, No. 4, pages 336–50, available at [www.bankofengland.co.uk/publications/Documents/quarterlybulletin/2013/qb130405.pdf](http://www.bankofengland.co.uk/publications/Documents/quarterlybulletin/2013/qb130405.pdf).
- International Monetary Fund (2012), 'Dealing with household debt', *World Economic Outlook*, April, Chapter 3.
- Jorda, O, Schularick, M and Taylor, A (2013), 'When credit bites back', *Journal of Money, Credit and Banking*, Vol. 45, No. 2, pages 3–28.
- King, M (1994), 'Debt deflation: theory and evidence', *European Economic Review*, Vol. 38, No. 3–4, pages 419–55.
- McLeay, M, Radia, A and Thomas, R (2014), 'Money in the modern economy: an introduction', *Bank of England Quarterly Bulletin*, Vol. 54, No. 1, pages 4–13, available at [www.bankofengland.co.uk/publications/Documents/quarterlybulletin/2014/qb14q101.pdf](http://www.bankofengland.co.uk/publications/Documents/quarterlybulletin/2014/qb14q101.pdf).
- Mian, A, Rao, K and Sufi, A (2013), 'Household balance sheets, consumption, and the economic slump', *Quarterly Journal of Economics*, Vol. 128, pages 1,687–726.
- Modigliani, F and Brumberg, R (1979), 'Utility analysis and the consumption function: an attempt at integration', in Abel, A (ed), *The collected papers of Franco Modigliani*, Vol. 2, MIT Press, Cambridge, Massachusetts, pages 128–97.