Household secured debt

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Deteriorating household sector balance sheets were widely thought to have exacerbated the recession in the early 1990s. In recent years households have once more significantly increased their indebtedness; this has been matched in aggregate by an accumulation of financial assets. This article analyses homeowners' financial positions since the late 1980s using disaggregated data, to assess the extent to which debt may exert an important influence on the macroeconomy in the current conjuncture.

Introduction

The level of UK household debt has risen substantially over the past five years, from 95% to 125% of households' post-tax income (see Chart 1). Often a higher level of debt relative to income signals an improvement in household welfare. It suggests more consumers have had the opportunity to smooth through short-term falls in income, or to raise consumption to match expectations of higher or more certain future income. But a higher level of debt can cause significant difficulties for some households, such as those that have borrowed more than they can pay off. The level of debt may also influence the way in which shocks are transmitted through the economy by affecting households' responses to them, and so have implications for the future path of consumption and inflation.[1]

This article analyses the implications of the recent rise in the level of debt, and compares households' current debt positions with the late 1980s. High indebtedness may have contributed to the recession in the early 1990s by exacerbating the reduction in borrowers' consumption following the increases in interest rates and unemployment.[2] So it is useful to consider how households' current balance sheets—in particular their collateral and cash-flow positions—compare with that period. We examine data on debt, collateral and debt-servicing costs, and focus on disaggregated data

because the implications of the level of debt depend on its distribution across households.

Chart 1
Debt to income ratio(a)
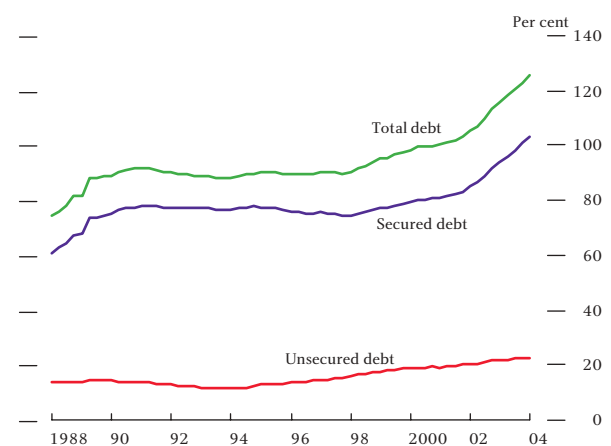
Sources: Bank of England and ONS.

(a) Secured and unsecured lending to individuals and housing associations as a proportion of total available households' resources.

We examine the secured debt position of new mortgagors using the Survey of Mortgage Lenders (SML), which records information on the flow of new mortgages each month. These data are timely, run from 1974, and cover lending by almost all mortgage lenders.[3] The position of new borrowers is important because households tend to be most vulnerable immediately after taking out a new mortgage, before house price inflation and principal repayments have increased their net

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(1) Debt levels may have implications for financial stability, which are discussed in the *Financial Stability Review* (see June 2004, pages 17–22) and previous *Quarterly Bulletin* articles (see Cox *et al* (2002) and Tudela and Young (2003)).
(2) For instance, King (1994) presents a number of stylised facts, some from disaggregated data, which give a 'prima facie case for thinking that high debt burdens, especially the increase during the 1980s, led to a deeper and longer recession than might otherwise have occurred' (page 426). Also see Smith, Sterne and Devereux (1994).
(3) The data set is compiled from a 5% sample of new mortgages advanced each month by some members of the Council of Mortgage Lenders (CML), who collectively undertake around 95% of UK residential mortgage lending.

wealth, and nominal income growth has reduced their debt-servicing burden. But these data do not cover all mortgagors, so we also use the British Household Panel Survey (BHPS),[1] an annual survey representative of the population, to provide information on the stock of loans. That survey is only available for 1991–2002, so is not as useful as the SML for assessing recent changes, and cannot be used for making comparisons with the late 1980s.

Why might debt have implications for the macroeconomy?

Debt and consumption growth

The saving ratio has been broadly stable since 1998, as consumption has grown roughly in line with income. So rather than funding consumption, the rise in debt has, in aggregate, been matched by a rise in financial assets (see Chart 2). But those accumulating debt and those accumulating assets have not necessarily been the same people. For example, some households may have taken out new mortgages to buy houses from those trading down. The net proceeds of those sales may then have been used to purchase financial assets, so debt and assets both rise.

Chart 2
Aggregate household financial positions
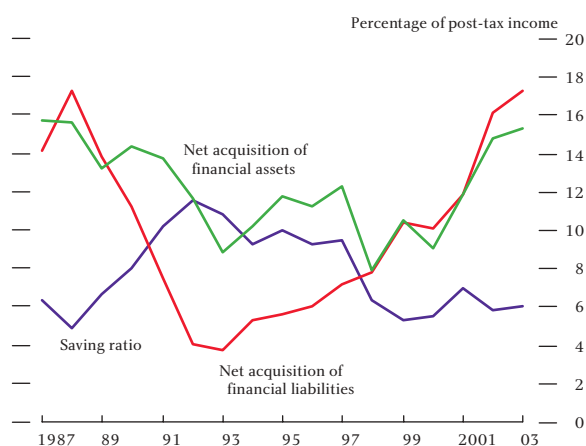
Source: ONS.

The evidence in Chart 2 undermines the argument that rising debt levels have fuelled a consumption boom. In any event, movements in aggregate debt are the result rather than the cause of households' consumption decisions, which are based on their past consumption decisions, their expected lifetime income and the financial constraints they face.[2] However, the rise in the level of debt in recent years may have implications for consumption and inflation because collateral and cash-flow effects, discussed below, may amplify the impact of shocks to the economy—although it is difficult to quantify the size of those effects precisely.

Collateral effects

Households with a stronger collateral position—with a large value of assets available to pledge against borrowing—tend to be able to borrow more and at lower interest rates. Net housing assets will form the majority of available collateral because financial assets cannot generally be used by individuals as collateral for borrowing. For most homeowners, this housing collateral is also likely to form a substantial proportion of their net wealth and the majority of their precautionary savings balances[3]—assets that provide households with insurance against future falls in income—because in practice most homeowners do not have access to significant, or any, financial assets.[4]

A change in asset prices will affect homeowners' available collateral and their saving behaviour. For example, a fall is likely to lead to lower consumption by homeowners as they save more to rebuild their savings balances. Also, homeowners' consumption will become less responsive to changes in expectations about future income because the fall in collateral means that they are less able to borrow, or have to borrow at a higher interest rate, to react to changes (King (1990) and Pagano (1990)).[5] But their consumption may become more sensitive to other temporary shocks because they are less able to use borrowing to smooth through their impact.

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(1) The BHPS data used in this article were made available through the UK Data Archive. The data were originally collected by the ESRC Research Centre on Micro-social Change at the University of Essex, now incorporated within the Institute for Social and Economic Research. Neither the original collectors of the data nor the Archive bear any responsibility for the analyses or interpretations presented here.

(2) If households' expected lifetime income increases they may borrow to consume more now and *vice versa*. In both cases expected income and consumption would drive debt.

(3) Carroll *et al* (1999) finds evidence that consumers hold precautionary wealth in housing, even though it is often less liquid than some financial assets. This may be sensible if their chief concern is a high cost but low probability event, such as job loss, or if they want to force themselves to save. More recently, flexible mortgage products may have made it easier to access housing wealth.

(4) Excluding households' private pension funds, life insurance and housing, around one third of the population had no interest-bearing financial assets in the United Kingdom in 1997–98, and the median homeowner with pension entitlements had £2,100 (Banks and Tanner (1999)).

(5) Also see Bayoumi (1993) who finds that financial liberalisation, by improving consumers' access to credit, increases their responsiveness to changes in future income.

The opposite effects are likely to follow a rise in asset prices.

These effects will increase with the absolute size of the balance sheet—the level of debt and assets—and as the level of net wealth falls (assets minus debt). That is because bigger balance sheets or lower net wealth will increase the chance of households experiencing a significant change to their level of net assets relative to their income. They also increase the number of households likely to face negative equity (and its extent), which may have effects on consumption for four reasons. First, the precautionary savings motive will be much stronger at low or negative collateral levels (Kimball (1990), Disney *et al* (2002)). Second, the supply of credit is likely to be tighter, so borrowing to smooth through an income shock would be more difficult. Third, household mobility is likely to be significantly impaired if households have negative equity, because lenders may not allow them to transfer it from one house to another (Gentle *et al* (1994), Henley (1998)). This makes it harder for people to move to find a new job, and so may increase unemployment. And fourth, some durable goods purchases are made when moving home, so a decrease in housing market transactions implies lower consumption of those goods.

Cash-flow effects

A change in interest rates will have an effect on current consumption that does not depend on the level of debt, because it alters the return to saving. A rise in interest rates encourages a reduction in current spending by increasing the amount of future consumption that can be achieved by sacrificing a given amount of current consumption, and *vice versa*. But a change in interest rates may have an effect that does depend on the level of debt. Debtor households are committed to making regular payments of the interest on, and repayments of, debt. Changes in these payments affect the level of income available for consumption. Those households that cannot borrow further and lack sufficient liquid savings, or did not expect the change, will respond by altering their consumption or falling into arrears and in the extreme perhaps having to sell their house.[1] In contrast, savers—whose interest income rises with

interest rates—tend to change their consumption less in response to a change in interest rates because they do not need to borrow to smooth through the shock.[2]

Throughout this article we measure borrowers' obligatory payments by the proportion of post-tax income required to pay interest and meet regular repayments on debt, which we term income gearing. Income gearing becomes more sensitive to changes in interest rates and income when debt rises and the proportion of borrowers with variable-rate loans is higher. So the likely impact of debt on the response of consumption to a change in interest rates or unemployment will increase with the level of debt.

Higher indebtedness may have further effects to the extent that the amount and terms at which households are able to borrow are determined by their income gearing;[3] for instance, if households find it more difficult or expensive to increase their borrowing when they are unemployed. In this case, a worsening of a household's cash-flow position would worsen that household's ability to borrow to smooth through the impact of the shock, making its consumption behaviour more sensitive to it.

## Coincidence of collateral and cash-flow effects

Some households may have enough available collateral and savings to allow them to smooth through a temporary cash-flow shock. Similarly, for those households that do not need to borrow more, a decline in the value of available collateral may have only precautionary savings effects. But if the value of available collateral declines at the same time as a household's cash-flow position deteriorates then there may be a more significant impact on consumption, particularly if both changes are unexpected and lead to a rise in the interest rate at which they can borrow on further loans. Chart 3 suggests that the rate paid by mortgagors with both a weak collateral and cash-flow position tends to be higher. These effects could be reinforced by a change in lenders' behaviour, if a combination of lower collateral values and weaker cash-flow positions reduced lenders' appetite for risk.

(1) Miles (2004) presents evidence that a large proportion of households expect the variable rate of interest to remain constant over the whole life of their mortgages, so any change in interest rates would be unexpected. In contrast, 69% of respondents and more than 80% of mortgagors in the February 2004 Bank of England/NOP survey of inflation attitudes expected interest rates to rise over the next twelve months (Janssen (2004)). The impact of an unexpected change may be smaller if borrowers could borrow or had liquid savings because the reduction in lifetime income could be spread over all future consumption.
(2) In addition, savers may consume less of any additional income because they tend to be wealthier than borrowers (Carroll (1997, 2001)).
(3) There is evidence from the Bank's conversations with lenders that they are increasingly basing their lending decisions on measures of affordability such as gearing rather than loan to income ratios.

Chart 3
Spread of median mortgage over official interest rate(a)(b)
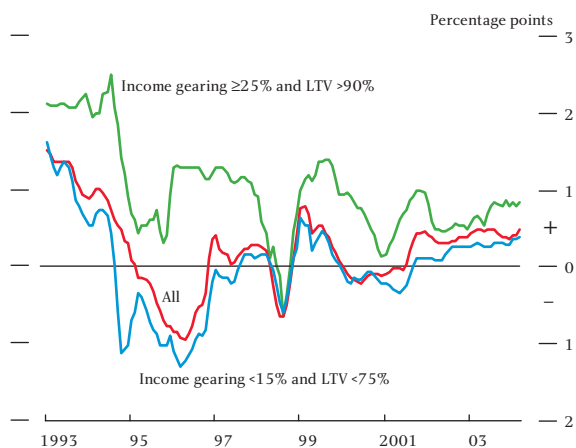
Sources: Bank of England and SML.

(a) Three-month moving average.
(b) New mortgages for house purchase and remortgage.

There may be additional feedback effects because households could be forced to sell their houses if their income gearing were to rise to a temporarily unmanageable level while a fall in the value of collateral prevented them from borrowing further.[1] House prices would be depressed by more if there were many forced sales, which would lead to further deterioration in the value of collateral and perhaps cash-flow positions via the effect of house prices on consumption, GDP and employment (Breedon and Joyce (1992)).

Comparison with the late 1980s
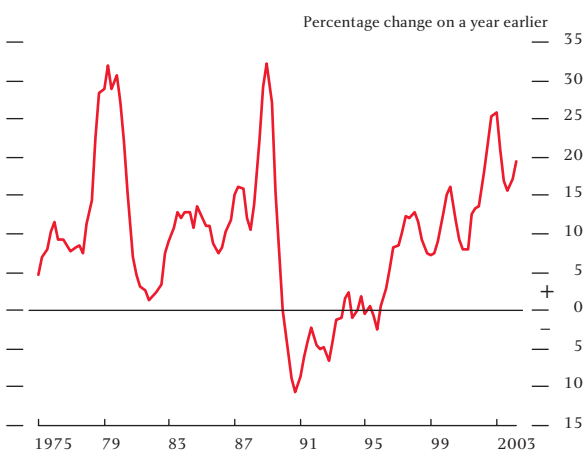
Macroeconomic background

Charts 4–7 show that, in the late 1980s and early 1990s, when debt was high relative to income and nominal house prices, real GDP and consumption fell, there were
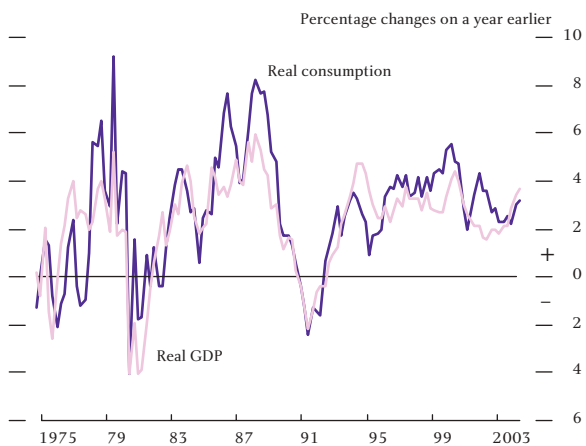
Chart 4
Unemployment rate
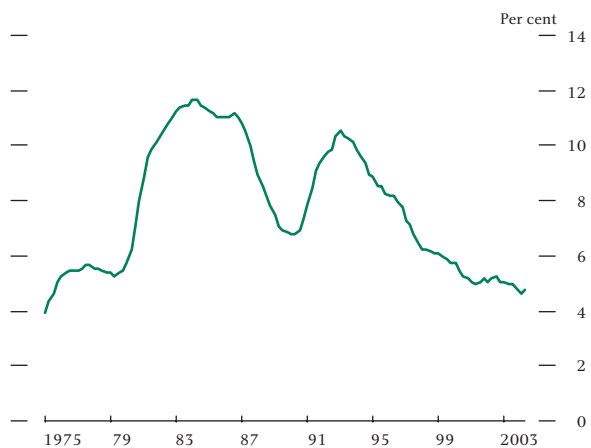
Source: LFS (data before May 1992 are currently published on an experimental basis).
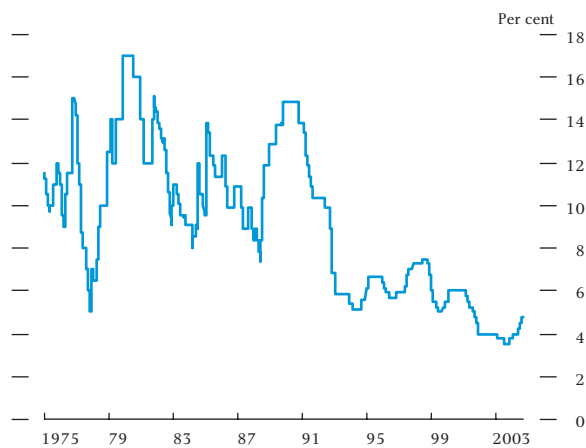
Chart 5
House price inflation

Source: Nationwide.

Chart 6
Real consumption and GDP at market prices

Source: ONS.

Chart 7
Official interest rates

Source: Bank of England official interest rates at the end of the month.

(1) Households might find it difficult to decide whether a rise in their gearing was temporary and whether or not they should sell the house, and so might fall into arrears. This might slow the transmission of the shock.

also large increases in unemployment and official interest rates rose to a peak of 15%. The collateral and cash-flow effects would be expected to be particularly strong in those circumstances. At the same time the increases in unemployment and interest rates and the slowing of GDP growth may also have contributed to the fall in consumption by causing borrowers to revise their expectations of future income, and therefore their desired level of debt.

Although some characteristics of the macroeconomy look similar to the late 1980s—house price inflation has been rapid and household debt has been rising strongly—others look rather different. The unemployment rate is lower than in the late 1980s, and interest rates are low relative to the levels of the past 30 years and are expected to remain so by market participants.

Collateral position

The aggregate debt to housing wealth ratio and the BHPS series for all mortgagors in Chart 8, and the net housing equity series in Chart 9 suggest that households' current collateral position in aggregate is similar to that in the 1980s. But the SML series indicates that new mortgagors now have significantly more collateral. Nevertheless, the implications of these summary measures are difficult to interpret because the collateral may not be evenly distributed. So we must examine the disaggregated picture.

Significantly fewer new loans now have an initial loan to value (LTV) ratio greater than 100% (where the loan is greater than the value of the collateral), and the proportion of loans at greater than 90% or 80% has also fallen sharply (see the solid lines in Chart 10). The BHPS confirms the same pattern for the stock of loans as of 2002 (dashed lines in Chart 10), although the absolute percentages of homeowners within each group are much smaller, and the rates of decline in their LTV ratios much higher, because the households have experienced significant rises in house prices since taking out their loan.

The distribution of debt across new borrowers suggests that, if there were a given fall in house prices, fewer households than in the 1980s would be likely to face problems borrowing, and the number of households experiencing negative equity would be lower. Because LTV ratios tend to be highest at the start of a mortgage, lower LTV ratios for new borrowers mean that fewer
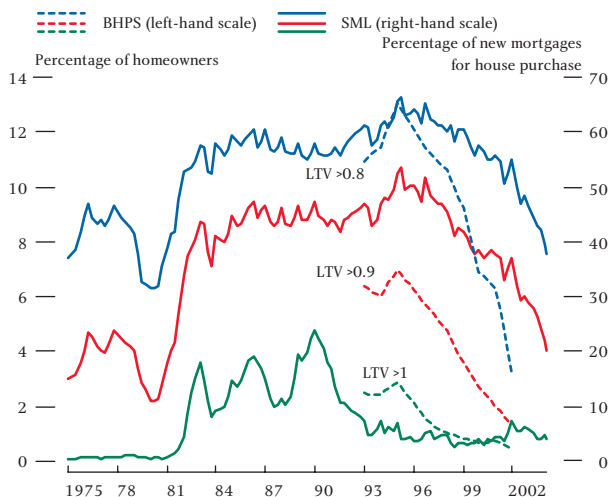
Chart 8
Debt to housing wealth
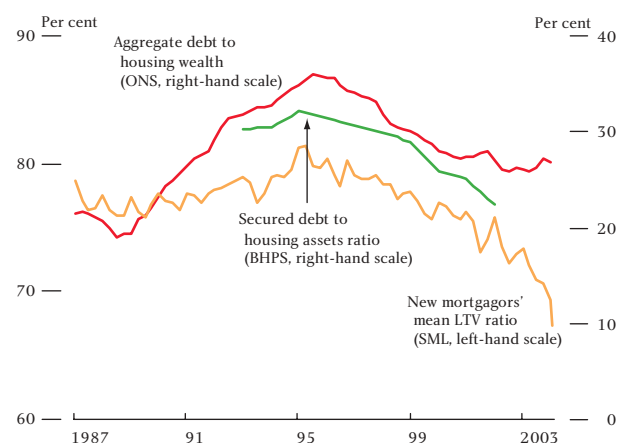
Sources: BHPS, ONS and SML.

Chart 9
Net housing equity as a proportion of annual post-tax income


Source: ONS.

Chart 10
New and all mortgagors' LTV ratios

Sources: BHPS and SML.

borrowers would be at risk of falling into negative equity following a given house price fall. Similarly, because there have been fewer transactions in recent years compared with the late 1980s, there are likely to be fewer borrowers than there were in 1990 who could be at risk of falling into negative equity following a given house price fall (see Chart 11).[1]

Chart 11
Housing market transactions(a)
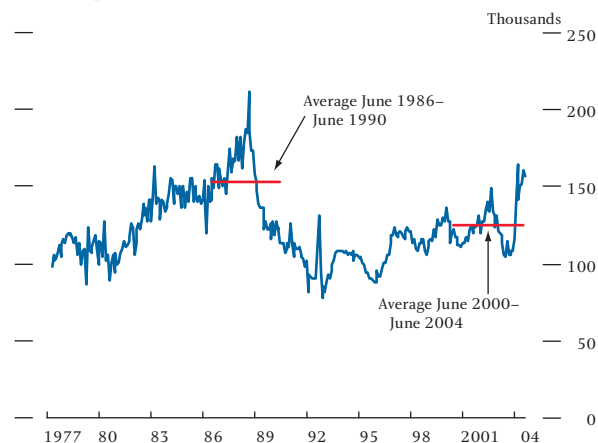
Source: Inland Revenue.

(a) From December 2003 the data were collected from Land Transaction Returns (LTRs), rather than Particulars Delivered forms. LTRs cover more transactions and are processed quicker. This may have contributed to a sharp rise in transactions in early 2004, and may mean the level of transactions in 2004 is not comparable with the pre-December 2003 data.

Although higher levels of debt than in the past mean that both sides of households' balance sheets relative to income are large compared with historical averages, these data suggest that the risks from collateral effects are smaller than in the early 1990s.

Cash-flow position

The three summary measures of income gearing in Chart 12 show that constraints on households' cash flow due to debt-servicing payments are close to their lowest levels since 1990. The position of new mortgagors in particular has improved substantially since the 1990 peak. The distribution of gearing within each cohort of new mortgages is also narrower than in 1990 (see Charts 13 and 14), although the distribution would necessarily widen if interest rates rose.

Mortgage contracts typically require (for given interest rates) constant nominal payments over the life of the loan. So the burden of repayment relative to income is 'front-end loaded'. When inflation and hence nominal
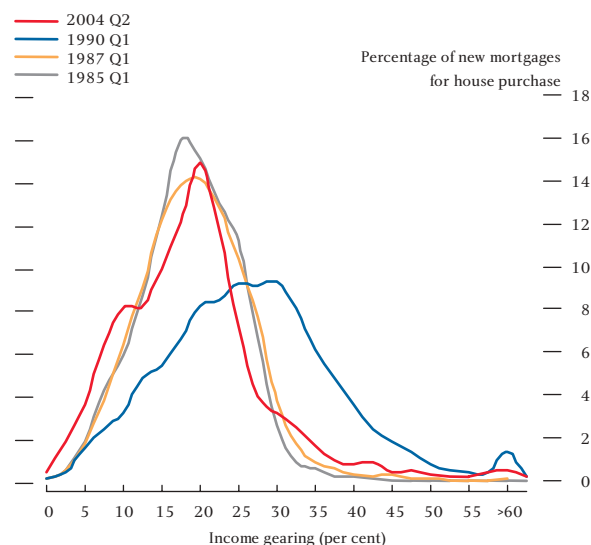
Chart 12
Income gearing
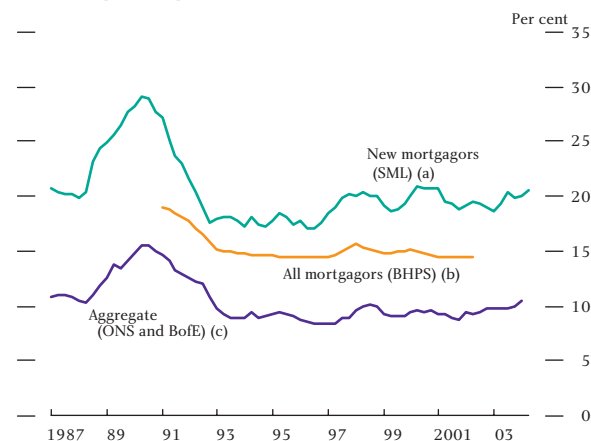
Sources: Bank of England, BHPS, ONS and SML.

(a) Mortgage instalments as a percentage of borrowers' pre-tax household income. The mortgage instalment includes interest and principal repayments or endowment premia. It is estimated from the reported level of secured debt, the interest rate and the term of the mortgage and is adjusted for Mortgage Interest Relief at Source (MIRAS) (all borrowers are assumed to have received relief at the basic rate of income tax).
(b) Households' latest total monthly mortgage instalment as a percentage of total pre-tax household income. Monthly instalments include interest, principal repayments/endowment premia, and insurance payments that are bundled with regular mortgage payments eg Mortgage Payment Protection Insurance. They are net of MIRAS subsidies.
(c) Total interest payments plus regular mortgage principal repayments as a percentage of annual post-tax household income. This measure is not adjusted for the effect of MIRAS or endowment mortgages.

Chart 13
Distribution of income gearing for new mortgagors
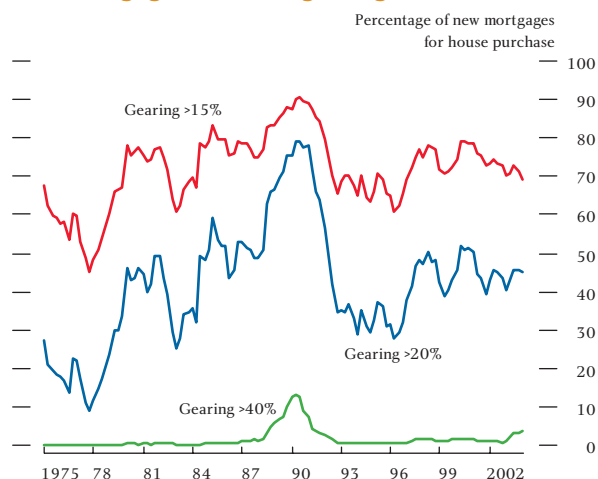

Source: SML.

interest rates and income growth are high, new borrowers' gearing is much higher than existing borrowers' gearing, and is eroded more quickly over time. This effect is shown by the red line in Chart 15. A fall in inflation and nominal interest rates lowers the gearing of new borrowers relative to borrowers with more mature loans (red to green line).[2] Chart 16 shows mean

(1) Vass and Pannell (2004) explain how new borrowers' LTV ratios can be used to estimate the incidence of negative equity.
(2) Standard mortgages specify constant nominal payments over time, so real payments fall over time if inflation is positive. The real cost of a mortgage, however, is determined by real interest rates and the maturity of the mortgage, not inflation. See Kearl (1979), Nickell (2002) and the August 2002 *Inflation Report* (pages 8–9) for further explanation of front-end loading.
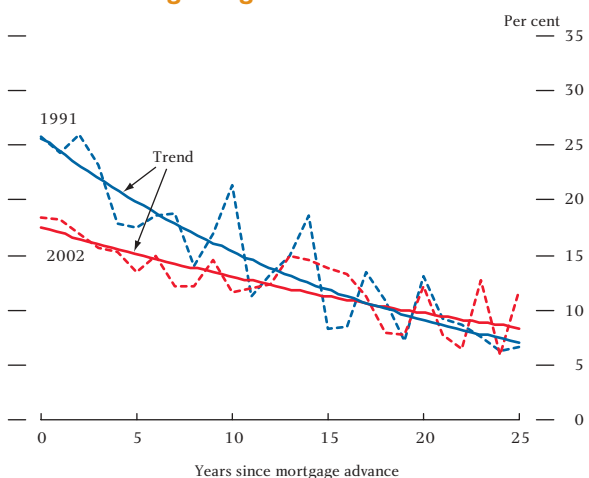
Chart 14
New mortgagors' income gearing

Percentage of new mortgages
for house purchase

Chart 15
Income gearing under different inflation rates(a)

Percentage of income
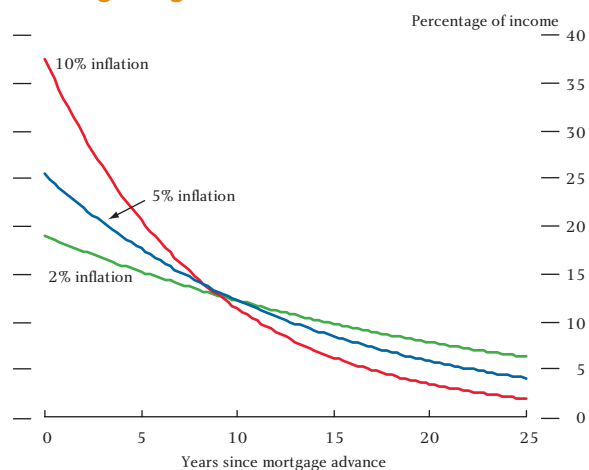
(a) Real income growth is equal to 2.5% in each case.

Chart 16
BHPS income gearing

Per cent

household income gearing by the number of years since the mortgage was taken out from the 1991 and 2002 BHPS surveys, which confirms that the distribution of
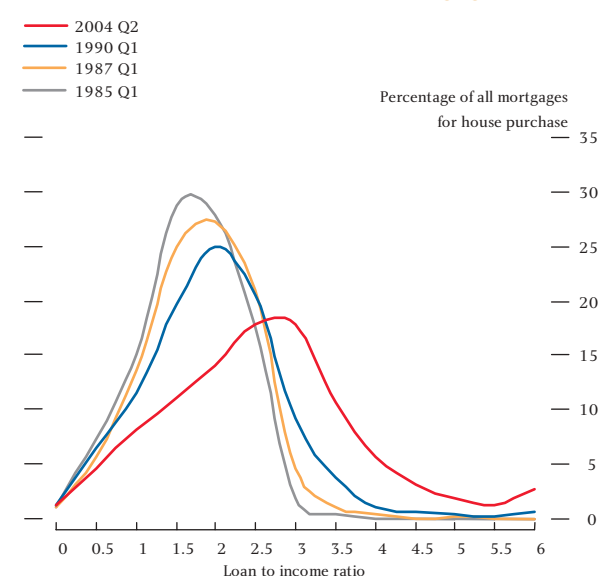
income gearing across mortgages of different maturities was flatter in 2002 than it was when inflation was higher. So the SML series in Chart 12 is higher, and has fallen by more, than the BHPS series because of the changes in inflation and the front-end loading effect.

This discussion also illustrates why historical comparisons of average gearing may not be useful for assessing the impact of changes in gearing on consumption. New mortgagors are one of the groups most vulnerable to changes in their cash-flow position, as first-time buyers (who have typically accounted for between a third and half of new mortgagors) are unlikely to have significant financial assets, and income gearing is highest at the start of a mortgage. But the higher gearing of new borrowers is concealed in the aggregate measure. High inflation in the early 1990s meant that new borrowers' income gearing was particularly high relative to the average, whereas low inflation over the past twelve years means that new borrowers' income gearing is now much lower relative to the average.
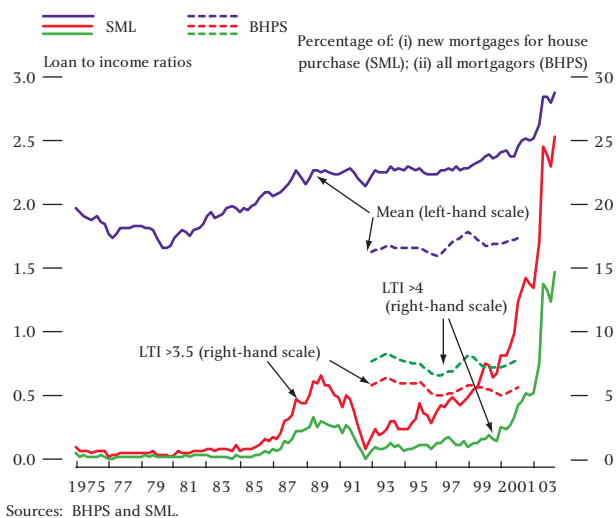
Nevertheless, loan to income (LTI) ratios have risen, particularly for new borrowers (see Charts 17 and 18); it appears that lower initial payments due to reduced front-end loading have led to an offsetting increase in the level of borrowing.[1] Income gearing is therefore more sensitive to changes in interest rates now than in the past, and more so for new borrowers. In fact, the distribution of income gearing within recent cohorts of new borrowers would be wider, and the mean would be

Chart 17
Distribution of LTI ratios for new mortgagors

2004 Q2
1990 Q1
1987 Q1
1985 Q1

Percentage of all mortgages
for house purchase

(1) Vigdor (2004) shows that easier access to borrowing tends to increase asset prices.

Chart 18
New (SML) and all (BHPS) mortgagors' LTI ratios

Sources: BHPS and SML.

1987 (the local trough in official interest rates), 22% of new borrowers had both income gearing higher than 25% and an LTV ratio greater than 90%, compared with 14% in 2004 Q2 (the volume under the orange area is smaller in 2004 Q2). This implies that, for a given fall in house prices or unexpected rise in interest rates or unemployment, new mortgagors are a little less vulnerable now than they were in the late 1980s.

Data considerations

There are a number of caveats to the data used in this analysis. The SML and BHPS include self-certified and fast-track mortgages, where declared income is not verified, which may introduce some errors into the income data (Fitch Ratings (2004) and CML (2004)). The impact of that is difficult to estimate. Moreover, it is not possible to take account of further advances secured on property in the analysis of the SML data. But the BHPS and aggregate ONS National Accounts data suggest similar trends in gearing so this does not appear to have serious implications for our analysis.
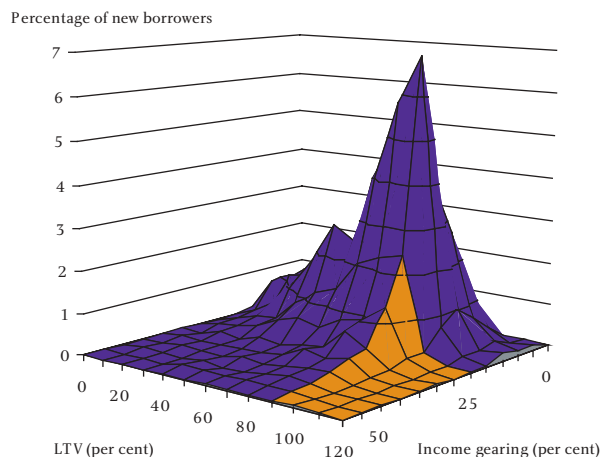
higher, than in 1990 if nominal interest rates rose to the same level as then because the distribution of LTI ratios has widened and the mean has risen. But market expectations at the time of the August *Inflation Report* were for official interest rates to rise to a peak of around 5.2% in 2007 compared with the peak level of 15% reached in late 1989, which would leave average income gearing of new borrowers, and the proportion of new borrowers with very high gearing levels, well below that in 1990.

Collateral and cash-flow position

A smaller proportion of new borrowers than prior to the sharp rises in interest rates in the late 1980s now have both high income gearing and high LTV ratios (indicated by the orange shaded areas in Charts 19 and 20). In

Finally, unsecured debt cannot be taken into account in the analysis of new mortgage borrowers using the SML data set. But unsecured debt seems unlikely to have a significant impact on our conclusions for three reasons. First, the proportion of total debt that is unsecured is similar to that prevailing at the previous peak in debt (see Chart 1), so unless the distribution of unsecured debt across households has changed substantially, the impact on households' total income gearing is also likely to be similar. Second, payments on unsecured debt are

Chart 19
Distribution of LTV ratios and income gearing for new mortgagors: 1987[a]

Source: SML.

Chart 20
Distribution of LTV ratios and income gearing for new mortgagors: 2004 Q2[a]
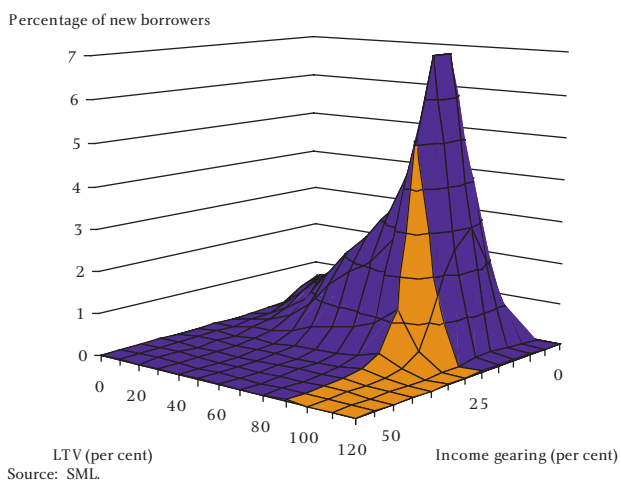
(a) The squares in the charts depict the percentage of new borrowers in each quarter who have income gearing within a particular 5 percentage point range and an LTV ratio within a particular 10 percentage point range. For instance, the right corner square shows the percentage of borrowers with income gearing between 0% and 5%, and an LTV ratio of between 110% and 120%. The squares for those borrowers who have income gearing greater than 25% and an LTV ratio greater than 90% are shaded orange.

less responsive to the official interest rate than are payments on secured debt. Third, Tudela and Young (2003) find that 77% of those people who find unsecured debt to be a significant burden do not have a mortgage, so while unsecured debt may have implications for consumption, it may not for this analysis of mortgagors.

Conclusion

Evidence from the Survey of Mortgage Lenders and the British Household Panel Survey shows that households currently tend to borrow a lower proportion of the value of their property than in the past. So households' consumption would probably be less affected by a given fall in house prices. The decline in inflation and nominal interest rates since 1990 means that income gearing has remained at a low level despite the rise in debt relative to income. But higher loan to income ratios, particularly for new borrowers, mean that income gearing is more sensitive than in the past to changes in interest rates.

Finally, fewer households than prior to the increase in interest rates in the late 1980s now combine low levels of collateral with high debt repayment commitments. So unless households face an unexpected large negative shock—for example should unemployment or interest rates rise substantially more than they expect—the risks from a coincidence of collateral and cash-flow effects are lower than in the past.

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