



BANK OF ENGLAND

# Speech

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## Consumption and Interest Rates

Speech given by

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Ladies and Gentleman, thank you for coming. I would like to begin by thanking my host today -- the Centre for Economic Policy Research (CEPR). The CEPR is the premier network of academic economists in Europe, serving as an interface between academia and the policy community. Straddling these two worlds as I do now, I can think of no better organization to host an event like this and I am grateful for the efforts of CEPR staff in making this happen. I would also like to take this opportunity to acknowledge the contribution of Richard Portes – founder and President of CEPR – who has kindly agreed to chair this meeting. Richard deserves immense credit for his commitment to building up CEPR which has strengthened the economics profession in Europe enormously.

The topic of my speech today is a key part of the transmission mechanism of monetary policy in the U.K. – how changes in Bank Rate affect consumption. Having raised Bank Rate by 125bps since last August, a key judgment that I make as an MPC member is how consumers will respond to monetary tightening. Consumption comprises 64 percent of GDP and the health of consumption is generally a good indicator of the strength of the economy. Strong consumption relative to potential supply is also a factor in determining inflationary pressure in the economy. In this speech, I plan to spell out how I have been thinking about the link between consumption and interest rates. I will also give an indication of some of the factors that I believe will shape how consumption evolves in the medium term.

In thinking about any economic issue, I am a firm believer in beginning from economic first principles. My relatively brief experience on the MPC has only served to reinforce this. The MPC is updated daily on a myriad of surveys and data sources. But the trick is to find ways of joining up the facts revealed this way and to find a coherent and consistent view of what is going on behind the data. Basic principles of economics are the glue that we need for this exercise to hold together.

When it comes to consumption, the path-breaking work by the late Milton Friedman more than fifty years ago encouraged us to believe that consumption decisions would reflect some element of forward-looking behaviour. Friedman's key insight was that we should expect an individual's consumption to depend upon some measure of what he called 'permanent income' as opposed to tracking current disposable income. To

the extent that this is true, we should expect consumption to respond to current developments in the economy only in so far as these have a bearing on the longer-term prospects for those individuals. This is relevant at present when consumers (like monetary policy makers) are trying to gauge how the economy is evolving. In principle, permanent income consumers ought to ride out short-term ‘shocks’ and to respond mainly to longer-term developments in their circumstances.

In its purest version, this view would lead us to expect *real* interest rates, i.e. the nominal interest rate less *expected* inflation, to affect the path of consumption. This is because the real interest rate determines the relative price of consumption today compared to some future date. Thus a higher interest rate will tend to encourage more future consumption and hence a higher growth rate of consumption.<sup>1</sup> Quite a bit of research has gone into trying to investigate how far this is true, with somewhat mixed success. Chart 1 uses some of this research to give a ‘back of the envelope’ sense of how well such a theory calibrates to the data on aggregate consumption in the U.K. for the period between 1993 and today.<sup>2</sup> While the fit is far from perfect, the Chart suggests that there are episodes where movements in the real interest rate do seem to explain movements in consumption growth. But it is evident that we need to incorporate a broader range of factors to explain consumption over the past.

There are good theoretical reasons to doubt the *in extremis* version of the permanent income view and empirical evidence abounds to support this.<sup>3</sup> The main unsurprising fact which motivates modifications of the basic permanent income theory is that short-term disposable income changes do appear to explain changes in consumption. But there are a number of possible reasons for this. Here, I will focus mainly on the role of access to credit as a factor.

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<sup>1</sup> The correlation between real interest rates and consumption growth depends upon the relative weight of income and substitution effects. We assume that the substitution effect is dominant.

<sup>2</sup> Consumption is the annual growth rate of private consumption. The real interest rate is measured as the difference between the 3month Treasury Bill rate and the Consensus inflation expectation two years ahead. The parameter on the real rate is set to 0.67, which roughly falls in the middle of the range of estimates from microeconomic studies on the behaviour of UK consumers. The discount factor corresponds to an equilibrium value of 3% for the annual real interest rate.

<sup>3</sup> See Browning, M., and A. Lusardi, 1996, “Household Saving: Micro Theories and Micro Facts.”, *Journal of Economic Literature* 34, pp. 1797- 1855, for an overview of the literature.

Individuals who lack the ability or willingness to borrow will be less able to smooth through short-term fluctuations in their economic circumstances. This will tend to accentuate the effect of short-term factors in consumer behaviour. This implies that fluctuations in disposable income will have a pronounced effect on consumption. It also focuses attention on credit conditions in mediating the effect of shocks into consumption.

Before discussing this in more detail, it is useful to get a ‘back-of-the-envelope’ feel for how far allowing for sensitivity of consumption to disposable income can help us to explain the pattern of consumption growth in the U.K. over the past. To this end, Chart 2 adds to our calibration an estimate of the sensitivity of consumption growth to the growth in disposable incomes which is typical of what the literature has found.<sup>4,5</sup> Allowing for this has the predictable consequence that we now do a lot better in explaining consumption in the U.K. as a whole. Even so, some puzzling episodes remain. But, while acknowledging that trying to assess the success of a theory by staring at charts like this is rather subjective, I would say that the simple ‘two variable’ model – the real interest rate and disposable income changes - accounts remarkably well for the variation of aggregate consumption growth in the U.K. between 1993 and the first quarter of 2007. So when we look forward at the prospects for consumption, we should certainly be looking at factors that will affect these.

Friedman’s theory also gives a role for household wealth to affect consumption. This might lead us to expect that increases in asset prices will feed through to consumption, and therefore provide a link between consumption growth and house price inflation. Chart 3 illustrates the positive association between house prices inflation and consumption growth that we have observed between 1971 and the first quarter of 2007. Casual reasoning about the direction of causation between house price growth and consumption growth is seductive. But there are good reasons to be cautious in interpreting this relationship.

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<sup>4</sup> See for instance Campbell, J. and G. Mankiw, 1989, Consumption, Income, and Interest Rates: Reinterpreting the Time Series Evidence, *NBER Macroeconomics Annual* 4, pp. 185-216..

<sup>5</sup> Real household disposable income is defined as the sum of gross balance of primary income, net social transfers and contributions, net of taxes and deflated by the consumption expenditure deflator (see <http://www.statistics.gov.uk/pdftdir/qna0607.pdf>, table J2).

For many individuals, owning a house is an important source of wealth. But equally, it is the main source of indebtedness, accounting for the lion's share of the increase in personal debt over the last fifteen years. To be precise, 84% of the increase in outstanding household debt between January 1993 and May 2007 is attributable to the rise in secured mortgage debt. However, increases in house prices over this period mean that household capital gearing (the ratio of household debt to household wealth) has risen only modestly.

In moving to an economy-wide picture, it is also important to acknowledge that there is no such thing as a typical household. In general, housing activity transfers wealth from young (indebted) households to older cohorts (trading down the property ladder). While households as a whole do not gain in wealth, there may be some impact upon consumption given that the younger cohorts may have a higher propensity to consume.<sup>6</sup> Furthermore, the Council of Mortgage Lenders (CML) indicates that the median percentage of income required by first time buyers, typically the most indebted and highly geared, to cover mortgage interest payments is around twice as large as aggregate household income gearing. Thus we do not expect interest rates to impact all households in the same way and we need to aggregate across differing households to get a joined-up picture.

When considering the link between housing and consumption, allowing causation to run from house prices to consumption makes little economic sense. House prices depend on the forces of supply and demand and to understand the housing market it is essential to analyse these. Households ought to base their housing demand on their longer-term income prospects (their permanent income) and their demand will also be affected by their access to opportunities to finance their housing purchases. But these are exactly the same economic forces that I have argued should drive consumption. So it is not surprising that consumption growth and house price inflation move together to some extent. But the relationship is not causal.

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<sup>6</sup> Younger consumers are also more likely to be credit constrained.

To illustrate this, Chart 4 looks at the relationship between house prices and consumption for two groups of consumers – owners and renters.<sup>7</sup> This shows that the consumption growth of renters is associated with house price growth just as strongly as the consumption growth of owners. If the main effect of housing on consumption is through its effect on household wealth, we should not expect to see this.

But even if the wealth channel of housing is not hugely important, there may be a role for housing collateral in affecting credit conditions available to households allowing them greater flexibility to smooth through fluctuations in their disposable incomes to the extent that they are not borrowing to the limit. Housing wealth may therefore affect how individuals can smooth out shocks and hence how far they consume on the basis of long or short-term economic factors.

We should expect more generally for credit conditions to play an important role in affecting consumption. The Bank of England puts a large amount of effort into monitoring credit conditions in its new quarterly credit conditions survey.<sup>8</sup> Since 1994, we have seen fairly relaxed credit conditions in the U.K. economy with strong growth in household indebtedness.<sup>9</sup> Over this period, household income gearing has increased significantly although it remains well below the levels of the late 1980s. However, if we look at the amount borrowed as a multiple of income when a household buys a house, we do find a steady drift upwards over time from a multiple below 2 to above 3. Moreover, this drift up has accelerated somewhat since the early part of this decade. This is illustrated in Chart 5. That said, the percentage of the purchase price advanced has not increased markedly suggesting that, at current housing values, collateral exposure is not greater than it was previously.

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<sup>7</sup> If a common factor, such as income expectations, is driving house prices and consumer spending then we might expect the spending of renters as well as homeowners to move with house prices (see Attanasio, O. L. Blow, R. Hamilton, and A. Leicester, 2005, “Booms and busts: consumption, house prices and expectations”, Bank of England Working Paper no. 271, and Benito, A., J. Thompson, M. Waldron, and R. Wood, 2006, “House Prices and Consumer Spending”, *Bank of England Quarterly Bulletin*, Summer, 142-154). Evidence from the ONS Family Expenditure Survey appears to support this assertion.

<sup>8</sup> Recently the Bank of England has moved from a bi-annual to a quarterly survey of credit conditions covering all lenders with an estimated share of more than 1% of gross lending flows over a twelve-month period (see <http://www.bankofengland.co.uk/publications/other/monetary/credit-conditions-survey.pdf>).

<sup>9</sup> See Fernandez-Corugedo, E. and J. Muellbauer, 2006, “Consumer credit conditions in the United Kingdom”, Bank of England wp No. 314, and Aron, J. and J. Muellbauer, 2006, “Housing wealth, credit conditions and consumption”, mimeographed, University of Oxford.

In a wider sense, the availability of credit does appear to be linked to the strong asset price inflation that we have witnessed, particularly in the past three years when we have also seen strong growth in monetary aggregates. I do not think that we can ignore these developments as indicators of the general state of liquidity which may influence the future path of demand in general and among consumers in particular.

Looking at household balance sheets does lead us to expect a link between *nominal* interest rates and consumption. To get a feel for this, Chart 6 looks at household income gearing, which has drifted up in recent years to around 9% of personal disposable income.<sup>10</sup> Given the sensitivity of consumption to personal income, we should expect the 125bps increase that we have seen since last August to have some impact on consumption through this channel. But how much this will be true and over what period depends crucially on what future path of interest rates is expected by consumers and how far they can smooth their adjustment over time.<sup>11</sup>

In formulating a view on this, we have to track a moving target. There have been marked structural changes in the UK mortgage market making past relationships between interest rates and consumption a possibly poor guide to the future. So we need to go back to first principles and try to assess what is relevant at the current time.

Until the late 1980s, the vast majority of mortgage loans were taken out on the standard variable rate (SVR). As the mortgage market became more competitive, we saw an increase in (typically time-bound) discounting where consumers could benefit by shopping around. But more recently still, the mortgage market has come to be dominated by two main products – tracker mortgages and fixed-rate deals. We have also seen a growth in offset mortgages which provide a flexible basis for ‘saving’ against mortgage balances. We know very little about the choice between mortgage

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<sup>10</sup> Note that this measure of gearing only includes interest payments, i.e. no repayment of principal. There is also no attempt to make adjustments for MIRAS in the earlier periods of the data.

<sup>11</sup> See Cromb and Fernandez-Corugedo, 2004, “Long-term interest rates, wealth and consumption”, Bank of England wp No. 243.

products from an economic point of view and more research is needed for the United Kingdom.<sup>12</sup>

Data from the CML indicate that in May 2007, 78% of new loans for house purchase and remortgaging were fixed rates, 5% discounted, 15% tracker, 1% capped, 2% SVR. The pattern over time for fixed-rate mortgages is illustrated in Chart 7.

In making any assessment of the impact of interest rates going forward, we need to understand how consumers with mortgages will respond as fixed rate deals unwind. With rising house prices, they may choose to borrow further to smooth their consumption or they may react abruptly to changes in their disposable income. There is a great deal of uncertainty about how this will play out. Equally, we need to understand what consumers believe about the future path of interest rates since this will also affect their behaviour.

I have been working with my staff in the External MPC unit to make an assessment of the range of plausible estimates of the effect of interest rate changes on disposable income going forward. As with the well-trodden path of producing fan charts in the Bank's assessment of inflation and growth prospects, it is important also to think of a range rather than a central projection when assessing the impact of rates on consumer behaviour. In this case, we generate the range from different scenarios reflecting different possible assumptions about behaviour. A feeling for the kind of estimates that we have found is given in Chart 8.

This Chart shows that we anticipate households' income gearing to increase somewhat over the near term. This increase is due to a number of factors including increased interest rates faced by individuals rolling off of existing fixed rate mortgages onto new mortgage deals. However, the largest driver of any increase in income gearing is likely to be the rate at which households continue to accumulate liabilities (debt) and the results turn out to be quite sensitive to the assumptions that are made about this. Chart 8 reflects a broad range of uncertainty over the continued

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<sup>12</sup> Vickery (2006) finds that US consumers' choice between fixed and variable rate deals is quite price sensitive with a 10 basis point increase in fixed-rate mortgage interest rates reducing the fixed-rate product market share by about 10% ("Interest Rates and Consumer Choice in the Residential Mortgage Market", mimeographed, Federal Reserve bank of New York).



build-up of household debt and the future path of effective interest rates on this debt faced by households. Other uncertainties, not reflected in the Chart, include the evolution of household interest income, which will offset some of the negative cash flow impacts noted above. It is also necessary to form of a view of whether some mortgage holders will choose to extend the terms of their mortgages.

Thinking hard about this type of calculation makes one suspicious of efforts to present a single scenario which does not acknowledge the range of plausible assumptions that could be made. There are a number of key uncertainties that lie behind Chart 8 and which I will be monitoring over the coming months. These fall into two broad categories:

1. The evolution of the ratio of household debt to income which will be influenced by:
  - changes in household incomes
  - developments in the housing market
  - credit conditions and credit availability
  
2. Changes in effective interest rates which are affected by:
  - the mortgage rates which mortgage holders roll onto following the end of existing fixed rate mortgage deals
  - the proportion of new and existing mortgages on fixed versus variable rates
  - the evolution of quoted mortgage and unsecured lending rates.

As we learn more about these things, we will be able to gain a better understanding of how consumers are responding to monetary tightening.

But based on Chart 8 and plausible assumptions about the relationship between disposable income growth and consumption growth of the kind discussed above, we might reasonably expect that the recent rise in Bank Rate will have a dampening effect on consumption growth of around 1 percentage point by the third quarter of 2008. But there are risks in both directions.

However, this number should be taken in context as I have quantified only one among many influences on the evolution in disposable incomes over this period and other factors may work in the opposite direction. For example, there will be countervailing effects due to increases in the disposable incomes of net savers and the increase in disposable incomes due to cuts in utility prices. Similar calculations suggest that the disposable incomes of savers will increase by around 0.5 percentage points by the third quarter of 2008.

As we monitor this picture, we need to be cautious in reading too much into volatile monthly retail sales data. Today's Office of National Statistics (ONS) release suggested a 0.2 percentage point increase in retail sales in the month of June. However, I do not put much weight on the month-on-month variation. This is too easily influenced by weather and other idiosyncratic events. The official data are also prone to revisions. The average absolute revision to 3-month-on-3month growth rates between the first and latest release of data for those three months (over the period Jan 1993 to December 2006) is 0.26 percentage points.

We also need to be wary of looking solely at headline retail sales since retail goods consumption comprises only 40% of total consumption. Since 1997, the correlation coefficient between annual retail sales volumes growth (end quarter observations) and real consumption growth has been just 0.32 percentage points.

The reason why retail sales gets so much attention is that data on overall consumption are generally available with a much greater lag and are equally prone to significant revisions. The average absolute revision to quarterly growth between quarterly national accounts and the latest published data covering the period 1992-2004 (so all data that have passed through at least two Blue Book rebalancing exercises) is 0.4 percentage points. Such uncertainty in the data is something that the MPC is acutely aware of and there is important work going at the Bank that helps the work on the MPC is seeing how the data will likely evolve. To get a feel for the quantitative significance of this, I refer you to Chart 9 which gives you a sense of the observed range of estimates for the growth rate of annual consumer spending between first releases and the latest vintages of the data.

Overall, it should be clear that reading the trends in consumption in recent months and trying to form a judgement about where things are going is fraught with difficulty. It is an area where it is necessary to form a judgement and I hope that this speech has given you a clue as to how I am thinking about this.

Since joining the MPC, I have been pushing for higher rates. I have justified this decision by referring to evidence of a strong global economy, low levels of spare capacity in firms, strong growth of money and credit and elevated pricing intentions of firms which together have created a balance of medium term risks to the upside of the inflation target. My apparent desire to raise rates, perhaps more quickly than some of my colleagues on the MPC, has been fuelled by a belief that we would be better placed to bring inflation to target in the medium term by doing more sooner. Moreover, the peak of rates may eventually be lower by moving earlier.

I have emphasised in this speech that it is logical to expect some weakening of consumption growth to reflect the monetary tightening that has taken place. But there is considerable uncertainty about the speed at which this will happen and it could be some time before the data give us a clear picture of the trend. In broad terms, the pace and extent of the adjustments made by consumers depend upon how they use their available opportunities for smoothing their response. The sooner households begin to acknowledge the consequences of higher rates, the greater is the chance of a smooth adjustment towards a level of consumption consistent with maintaining the inflation target in the medium term.

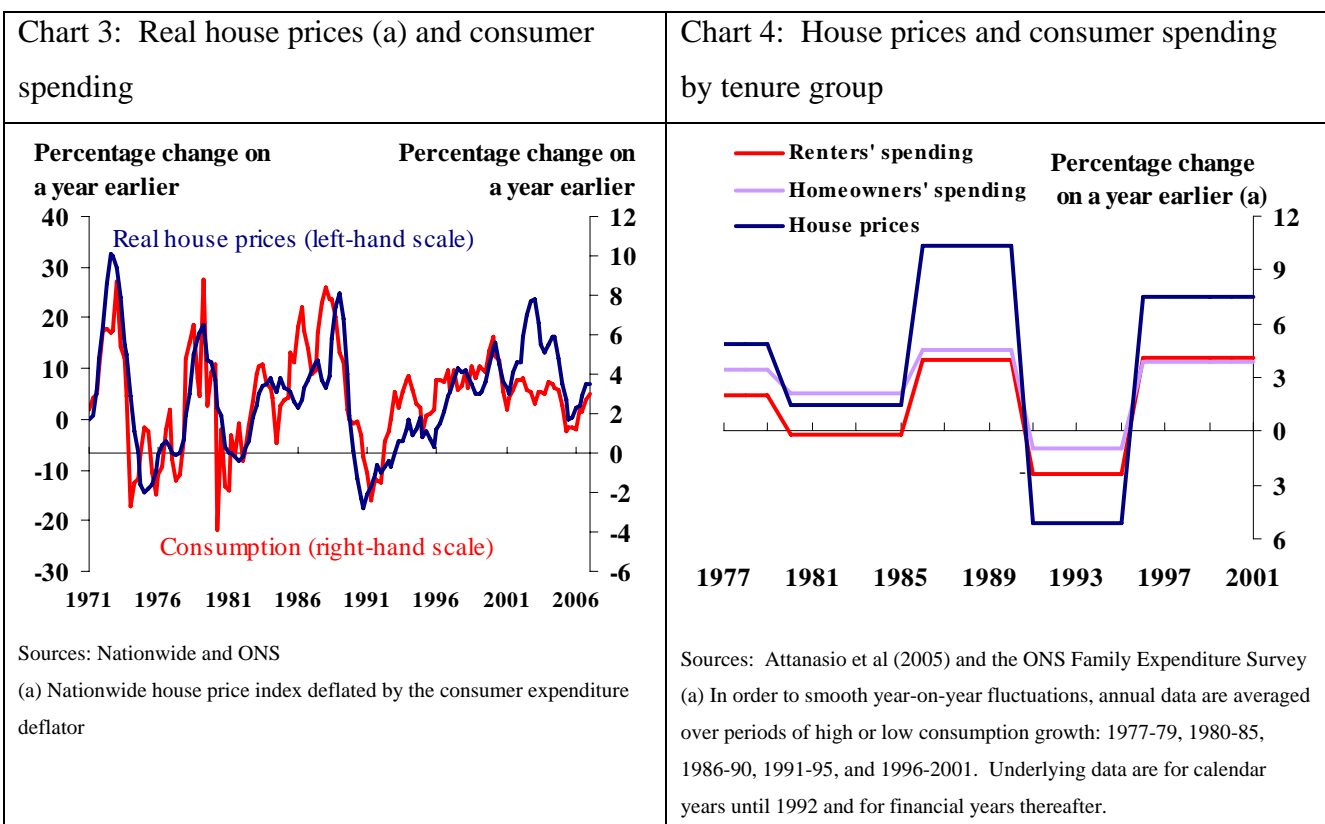
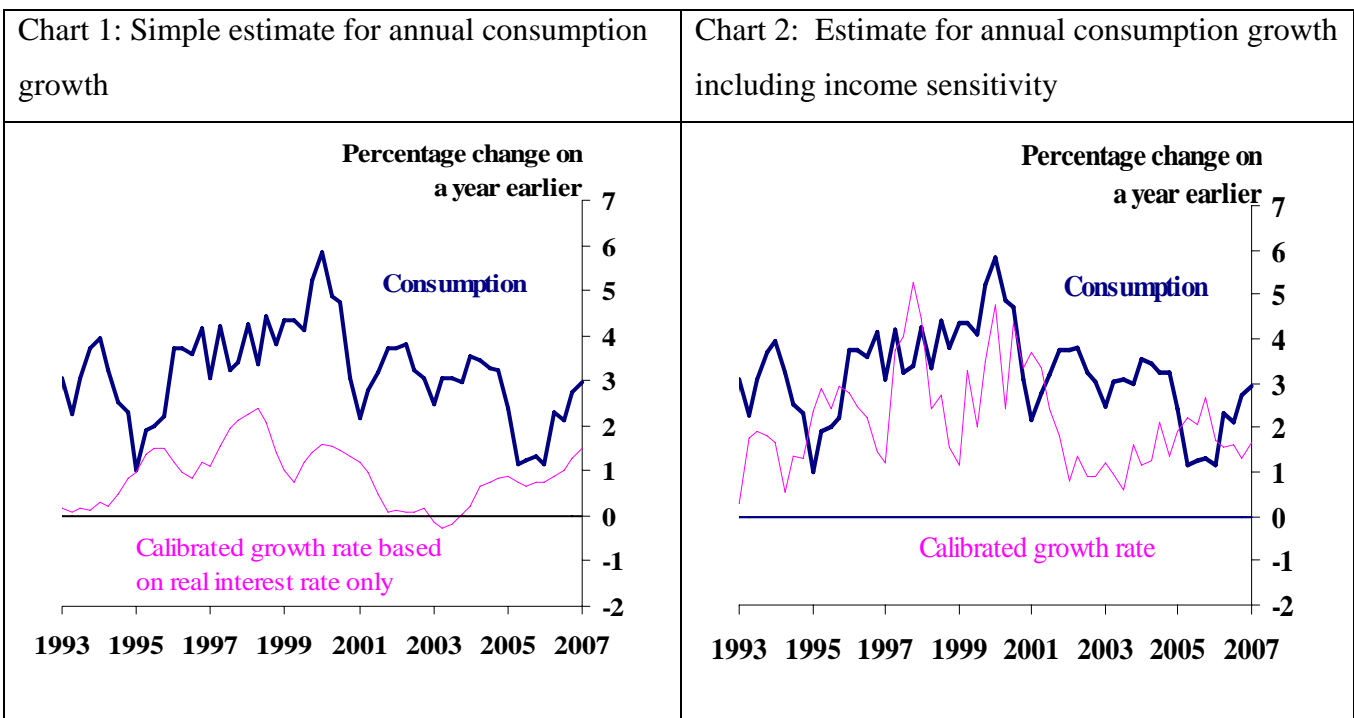
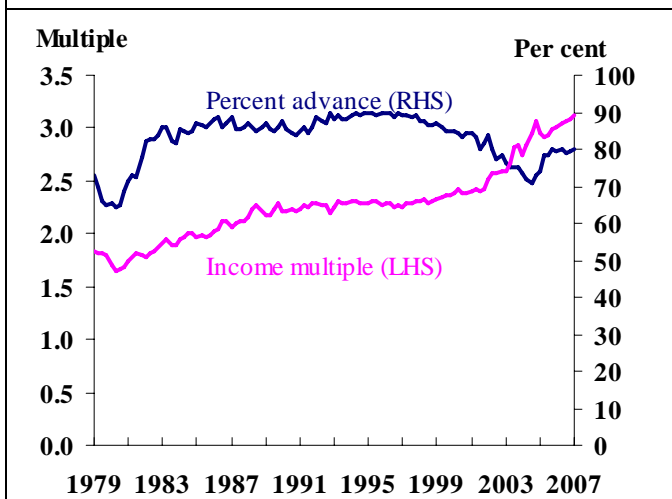
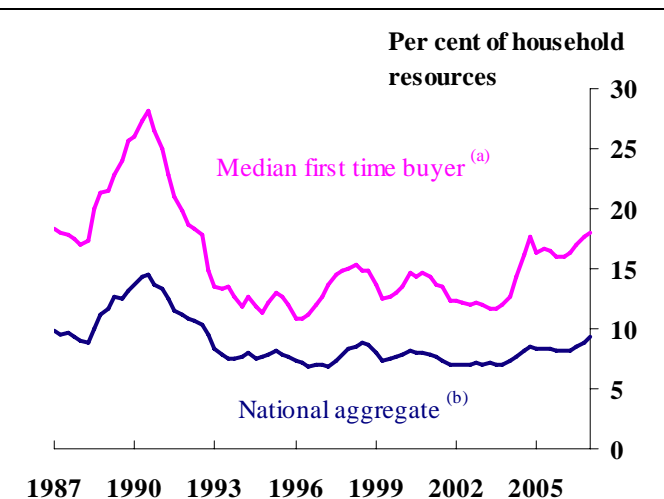


Chart 5: Loan to Income multiples for house purchase



Source: Council of Mortgage Lenders

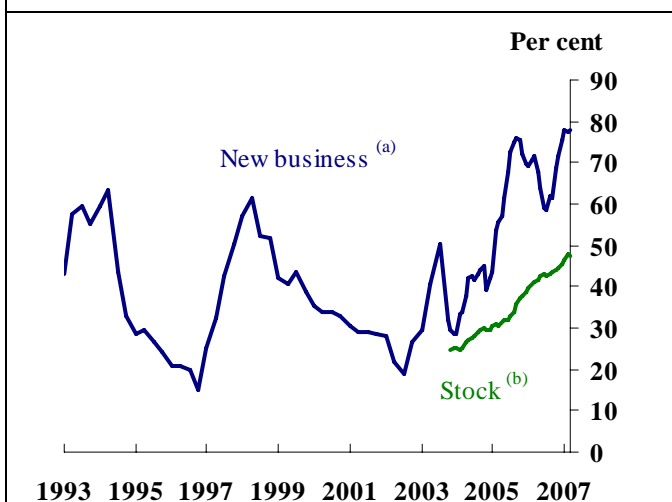
Chart 6: Household income gearing



(a) Mortgage interest payments only

Sources: Council of Mortgage Lenders and ONS

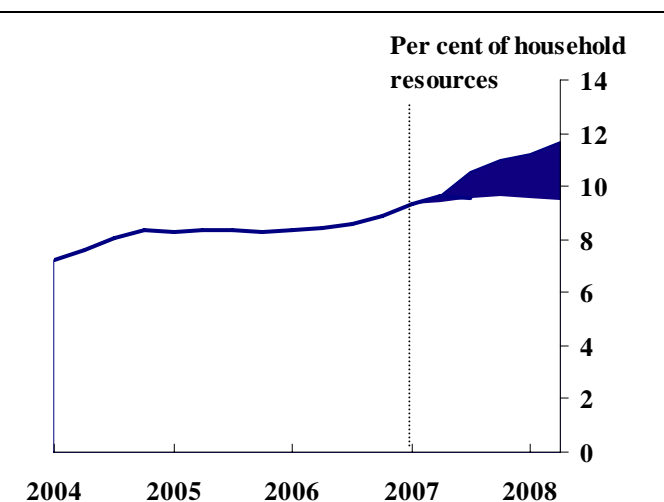
Chart 7: Proportion of fixed rate mortgages



(a) Council of Mortgage Lenders

(b) Bank Effective Rates

Chart 8: Range of estimates for future path of household income gearing <sup>(a)</sup>



Source: Bank calculations

(a) Based upon a range of assumptions for the future development of household debt against recent observed outturns, and observed relationships between Bank Rate movements and effective household interest rates.

Chart 9: Range of published estimates for annual consumer spending growth

