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# Speech

## Household Debt, House Prices and Consumption Growth

Speech given by

Stephen Nickell, Bank of England Monetary Policy Committee and Professor at the London School of Economics

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**Summary**

1.   Two questions are considered.  First, what, if any, are the connections between household debt accumulation and consumption growth in the UK?  Second, given that the ratio of house prices to earnings is at a record level in the UK, what can we say about the equilibrium level of this ratio today and what are the implications for prospects in the housing market?

2.   With regard to the first question, two facts are worth noting.  Since 1998, the proportion of their post-tax income consumed by households has remained stable.  This despite the fact that mortgage equity withdrawal plus unsecured credit growth has risen over the same period from 2% of post-tax income to nearly 10% of post-tax income.  These apparently inconsistent facts may be reconciled by the fact that since 1998, the increasing rate of debt accumulation by households has been closely matched by their increasing rate of financial asset accumulation.  As a consequence, there is no significant relationship between aggregate consumption growth and aggregate debt accumulation.

3.   For a variety of reasons, in particular the sharp fall in long-term real interest rates since the mid to late 1990s, the equilibrium ratio of house prices to earnings is well above the average level of this ratio over the last 20 years.

4.   However, the precise level of this equilibrium ratio is highly uncertain, as is the speed with which house prices will return to this equilibrium level.  This uncertainty explains why commentators and analysts produce such a wide variety of forecasts for house price inflation.

5.   The analysis indicates that there is a significant probability that house prices will fall at some stage, though we cannot of course know by how much.  Equally, it is also quite possible that house prices will not fall at all.  This is simply a reflection of the uncertainty noted above.

6.   The evidence suggests that house price inflation is significantly related to household consumption growth and hence to aggregate demand growth and future consumer price inflation in the economy.  As a consequence, prospects for house price inflation will play a significant direct role in monetary policy aimed at general inflation in the economy despite the fact that house prices are not included in the Consumer Price Index.  By contrast, the fact that household debt accumulation appears not to be closely related to household consumption growth indicates that it will not have a direct impact on monetary policy.  However, it may have some small indirect impact if, for example, high levels of debt make the response of the economy to interest rate changes more uncertain.

**Introduction**

For some years now, UK house prices and household debt have been making not just the front pages of business sections but the front pages of the main papers. Since these topics remain of some potential significance in the conduct of monetary policy, they are worth returning to despite my having already discussed them at some length (for example, in Nickell, 2003 a, b). Here, I look at two particular questions, first, what, if any, are the connections between household debt accumulation and consumption growth? Second, given that the ratio of house prices to earnings is at a record level in the UK, what can we say about the equilibrium level of this ratio and thus about future prospects for house prices? Basically, with regard to the first question, I argue that there is not much of a connection between the rate of accumulation of household debt and household consumption growth. Concerning the second question, I find there are very good reasons why the equilibrium level of house prices to earnings has risen significantly since the early and middle 1990s. However, the precise equilibrium level is highly uncertain as is the prospective speed at which house prices will return to this equilibrium.

Since the evidence suggests that house price inflation has an impact on consumption growth, aggregate demand growth and future general inflation, levels of house price inflation have a direct impact on monetary policy. By contrast, the fact that there appears to be little or no connection between household debt accumulation and consumption growth indicates that the rate of household debt accumulation may be expected to have little direct impact on monetary policy (see ft.8 below, however).

**Household Debt Accumulation and Consumption Growth**

It is often suggested that we are in the middle of a long-lived consumption boom in the UK funded by a tidal wave of debt. As a matter of fact, this statement is more or less completely incorrect[1]. Starting with the notion of a consumption boom, as we can see from Figure 1, real quarterly consumption growth since 2000 was significantly below the rate in the late 1990s. Interestingly enough, the average quarterly growth rate of real household consumption since 2000 has been around 0.7%, almost exactly the same as the average quarterly growth rate of consumption in the UK since 1975. And there has been

no acceleration of consumption over the last couple of years. Thus we are not in the midst of a consumption boom. So what about the tidal wave of debt?

UK households are indeed increasing their debt at a very rapid rate, in the form of both mortgage equity withdrawal (MEW) and unsecured debt. Yet as we can see from Figure 2, the proportion of post-tax income which is consumed has been flat since 1998. And this while mortgage equity withdrawal plus unsecured credit growth was rising from around 2% of post-tax household income in 1998 to nearly 10% in the latest data.[2] So what is going on?

First, let us look at the mechanical relationship between the consumption, post-tax income and debt of households. The basic identity is [3]

$$\text{Consumption} \equiv \text{Post Tax Income} - \text{Net Acquisition of Financial Assets}$$
$$- \text{Net Acquisition of Housing Assets}$$
$$+ \text{Net Acquisition of Financial Liabilities}$$

This simply says that in aggregate, post-tax income plus new debt can be spent either on consumption or on houses or on financial assets. So where does MEW come into the story? First, financial liabilities can be divided into secured and unsecured. Then MEW is defined by

$$\text{MEW} = \text{Net Acquisition of Secured Financial Liabilities}$$
$$- \text{Net Acquisition of Housing Assets}$$

So if we add the net increase in unsecured debt to MEW, we get the net acquisition of financial liabilities less the net acquisition of housing assets. This is sometimes known as lending "available" for consumption. But as Figure 2 has shown, while it may be available for consumption, it is not necessarily used for this purpose because some of it goes towards an increase in the rate of acquisition of financial assets.

Let us look at the facts. First, rewrite the basic identity as

$$\frac{\text{Consumption}}{\text{PT Income}} = 1 - \frac{\text{NA Financial Assets}}{\text{PT Income}} - \frac{\text{NA Housing Assets}}{\text{PT Income}} + \frac{\text{NA Financial Liabilities}}{\text{PT Income}}$$

(NA = Net Acquisition, PT = Post-Tax)

So to understand how consumption changes relative to post-tax income, we need to look at the net acquisition of financial assets, housing assets and financial liabilities, all relative to post-tax income. In Table 1, we see that the net acquisition of housing assets has risen gradually relative to post-tax income since the early 1990s. This term consists basically of the purchase of newly built houses and the money spent on home improvements. Houses purchased by one household from another household cancel out and so make no contribution. The net acquisition of financial liabilities, which simply refers to the accumulation of household debt, increased gradually during the mid-1990s but more than doubled from 1998 to 2003. Interestingly enough, the rate at which households accumulated financial assets increased rapidly from exactly the same date, nearly doubling from 1998 to 2003. In a mechanical sense, this is why consumption has not risen as a share of household post-tax income over the last six years. During this period when the rate of household debt accumulation has been rising rapidly, the rate of household financial asset accumulation has also been rising rapidly. So is this just a happy accident, or are there reasons why the accumulation of debt and assets might be related? The first point to note is that it seems unlikely that the households which are accumulating this extra debt are the same households which are accumulating the extra financial assets. Indeed, we know that most of the new debt is secured on houses (see the last two columns in Table 1) so a good part of it will be associated with the accumulation of housing assets by individual households. In aggregate, on the other hand, this is not the case because most house purchases simply involve one household buying a house from another household, with little net accumulation of housing assets in aggregate.

So any possible systematic connection between debt accumulation and financial asset accumulation will typically involve more than one household. An obvious example is when a household takes out a substantial mortgage to purchase a house from a last-time seller who has no mortgage and is either moving into rented accommodation (e.g. an old peoples' home) or has received the property as an inheritance. In either case it is entirely plausible that the seller will invest the money from the sale of the property in financial assets and we see a direct correspondence between the increase in household debt generated by the buyer and the accumulation of financial assets by the seller. Furthermore, as house prices rise, we can expect both debt accumulation and financial asset accumulation to be bigger in each transaction of this type.

So it is clear from this example that some housing transactions will generate both net increases in debt and net increases in asset accumulation. Interestingly enough this example involves mortgage equity withdrawal because there has been an increase in aggregate secured debt and no aggregate housing investment. So here we have an example of mortgage equity withdrawal which does not involve additional consumption. Of course, there are other housing transactions which lead directly to both mortgage equity withdrawal and increased consumption. The obvious example is where households simply borrow more by raising the mortgage on their existing property. But it is important to recognise that a substantial proportion of mortgage equity withdrawal is not of this type and leads not to increased consumption but to increased financial asset accumulation. That is why both the rate of accumulation of financial liabilities and of financial assets have risen together, leaving the proportion of post-tax household income which is consumed remarkably stable over the last six years.

So to summarise, what we have seen is first, the average quarterly growth rate of real consumption since 2000 has been almost exactly equal to the average growth rate over the last thirty years, so there is no consumption boom. Second, since 1998 the proportion of their post-tax income which has been consumed by households has been stable, despite the fact that mortgage equity withdrawal plus unsecured credit has grown from 2 per cent of post-tax income to nearly 10 per cent of post-tax income over the same period. Third, these two apparently inconsistent facts are reconciled by the fact that since 1998, the increasing rate of accumulation of debt by households has been closely matched by the increasing rate of accumulation of financial assets. Furthermore, this is not an accident. There are good reasons why aggregate secured debt accumulation and aggregate financial asset accumulation might be related, particularly in a period of rapidly rising house prices. Finally, therefore, there is no strong relationship between aggregate consumption growth and aggregate debt accumulation.[4]

**Prospects for House Prices**

Historically, there is an empirical relationship between household consumption and house prices. This relationship is the result of various mechanisms. First, houses are a significant part of household wealth and this higher wealth is typically associated with higher consumption, at least among those who own houses. However, an increase in

house prices arguably makes non-home owners worse off via higher rents or the higher savings required for future house purchase. So the consumption of this group may fall and the overall wealth effect may be negligible. Second, households may borrow vastly more cheaply if they own housing equity which may be used as collateral. Then an increase in house prices raises housing equity and cheaper borrowing typically results in increased consumption. Third, both house prices and household consumption tend to be positively related to household expectations of future earnings.

This empirical relationship between household consumption and house prices is by no means a stable one, but it is nevertheless important for monetary policy because house price inflation, being positively related to household consumption, is therefore positively related to aggregate demand and hence future inflation. So even though house prices are not included in the Consumer Price Index, monetary policy must pay them close attention (see Aoki et al. 2001, for more detail).

The level of house prices today is apparently very high in the sense that it is well above its average level relative to earnings (see Figure 3). Currently, house prices are close to six times average earnings and this ratio would have to fall by around 32% to reach its average level since 1982. As we shall see, however, there are good reasons for believing that today the ratio of house prices to earnings in equilibrium may be higher than the average ratio since 1982. Precisely how much higher is very uncertain. Furthermore, the length of time it will take for house prices to get back to the equilibrium ratio relative to earnings is also very uncertain. This double uncertainty explains why commentators and analysts produce such a wide variety of prognoses for the housing market, from the very softest of soft landings to crashes of dramatic proportions.

Turning to the reasons why the equilibrium house prices to earnings ratio may have risen in recent years, the first obvious point is that the level of individual earnings is not the natural denominator. Rather, average household disposable income seems more reasonable. This is relevant because the proportion of two-earner households has been rising steadily over the last twenty five years. So if we restrict ourselves to the top 70% of income earners, because the majority of the rest are on state benefits and are unlikely to be in the market for houses, we see from Figure 3 that the ratio of house prices to the average household income of the top 70% of households is around 3.5 and would have to fall by

about 28 % to reach its average level since 1982, a fall which is some 4 percentage points lower than if we use earnings in the denominator. This fall is still substantial, however, so why might the equilibrium ratio have risen in recent years?

There are three factors which may be of some significance. First, the rate at which new dwellings are being built is at an historically low level whereas, for a variety of reasons, the growth in the population of working age and the net rate of formation of new households is relatively high (high divorce rates, high immigration rates etc)[5]. Second, the disappearance of the front end loading problem when inflation rates and nominal interest rates are low. For example, it might be quite sensible for young professionals to borrow, and for banks to lend them, four or even five times annual earnings to purchase a house given both their very high level of job security and their very rapid rate of prospective earnings growth. But in times of high inflation and high nominal interest rates, this is not possible. For example, suppose real interest rates are 3%. Then if inflation is 12% and nominal interest rates are 15%, a person borrowing four times their annual pre-tax salary will be paying over 60% of this pre-tax salary in mortgage payments in the first year – this simply cannot be done. Of course, in later years this proportion will fall rapidly. Nevertheless, the early years will provide a binding constraint on the multiple of earnings households can borrow.[6] In a low inflation environment, this binding constraint disappears. If inflation is 2% and nominal interest rates are 5%, an individual borrowing four times their annual salary will only be paying 20% of it in mortgage payments in the first year. Perfectly possible. So the elimination of this constraint as we have gradually moved from a high inflation, high interest rate era to a low inflation, low interest rate period will have raised the demand for housing in equilibrium, even when real interest rates remain unchanged.

The third factor underlying the potential rise in the equilibrium house price to earnings ratio is the apparently substantial and sustained fall in long-run risk free real interest rates. In Figure 4, we see the time paths of both the 10 year real rate and the 10 year forward, 10 year real rate, both derived from prices in the index-linked gilt market. Both these rates have fallen from close to four per cent in the mid-1990s to around two per cent since 1999. And the fact that the 10 year forward, 10 year real rate has fallen in exactly the same way as the spot rate suggests that markets expect the fall to have some degree of permanence. It is, however, possible that the measured fall in the risk free real rate derived from the

index-linked gilt market may be overstated because of the Minimum Funding Requirement announced in the 1997 Pensions Act. This introduced an element of demand for index-linked gilts which was almost independent of the real yield. However, a long-term risk free real rate close to 2% is not particularly unusual in the UK given that the average long-term real rate in the period 1951-97 was 2.21% according to Chadha and Dimsdale (1999, Table 3). Furthermore, Larsen et al. (2003) indicates that 10 year risk free real rates computed from a consumption based CAPM model with habit persistence also fell significantly from 1997 on. Long-term real rates are, of course, crucial in the housing market since they reflect the average rate which should be used to discount the returns on a long-lived asset and the real cost of long-term borrowing. One way of measuring the consequences of a fall in real interest rates on equilibrium house prices is to make use of the equilibrium relationship between rents in the housing market and house prices. (See Weeken, 2004 and Goldman Sachs, 2004 for examples.) If real net rentals (i.e. after subtracting maintenance and management costs) today are $D$ and they are expected to grow at a rate of $g$, then in equilibrium, the real price of houses,     will equal the discounted present value of real rents, that is

$P_h = D/(r_f + \rho - g)$ where $r_f$ is the risk free real interest rate and $\rho$ is the risk premium[7]. This means that for plausible values of $\rho$ and $g$, real house prices are sensitive to changes in the risk free real rate. For example, suppose rents grow at the same rate as real wages which implies that $g \cong 2\%$ and the long-run risk premium averages around 3% (see Weeken, 2004). Then if the risk free real rate falls from 4% to 2% the equilibrium ratio of real house prices to real rents will rise by nearly 67 per cent. Given our assumption that real rents tend to grow at the same rate as real wages, an assumption broadly consistent with the facts, the equilibrium ratio of house prices to earnings may be expected to rise by a similar amount solely because of the observed fall in the long-term real interest rate. And since the actual ratio of house prices to earnings has risen by around 70% since the mid-1990s to the present day, it may be argued that it is close to equilibrium. Of course this is a very rough and ready calculation. The remains of MIRAS were still in operation in the mid-1990s, although its impact was small by that stage. Transactions costs in the housing market are substantial and the rental market is subject to many tax and regulatory distortions. Furthermore, as we have seen, estimates of equilibrium house prices are sensitive to the value of the long-run real interest rate. For

example, in Goldman Sachs (2004), it is assumed that the real long rate will rise to 2.75%. This is a key factor underlying their prediction of a 20% fall in house prices by 2008.

Overall, this discussion leads us to the following conclusions. First, there are good reasons for believing that the equilibrium ratio of house prices to earnings is currently well above the average ratio of house prices to earnings over the last two decades. Second, the precise level of the equilibrium ratio of house prices to earnings is very uncertain and is very sensitive to the "equilibrium" level of the long-term real interest rate.

On top of this latter uncertainty there are two further key uncertainties relating to the operation of the housing market. First, as we have already noted, if the house price to earnings ratio is currently above the equilibrium rate, how rapidly will it return? Second, how big is the impact of a slowdown in house price inflation on household consumption? Given the above discussion, it is obvious that there is a significant probability that house prices will fall at some stage. Despite this, it is quite possible that house prices will not fall at all, although they are very likely to go down relative to earnings (that is, house price inflation will fall below around 4.5% p.a.).

**Debt, Consumption, House Prices and Monetary Policy**

In the previous sections, we have noted that there is very little relation between debt accumulation and consumption growth and hence between debt accumulation and future aggregate demand and inflation. We have also noted that there does appear to be some relationship between house price inflation and consumption growth, although it seems not to be a very stable one. However, because of this relationship, it is worth speculating on the prospects for house price inflation since future house price inflation will impact on household consumption growth and hence on the future path of general inflation.

Since monetary policy is governed by the inflation target, it is clear from the above that the scale of household debt accumulation is unlikely to have much of a direct impact on monetary policy[8]. By contrast, the current and future expected level of house price inflation will have a direct impact on monetary policy because of the effect on general inflation via household consumption growth.

**Footnotes**

1.  This is nothing new and the point has been made many times.  For example, Broadbent (2003) sets out the facts very clearly.

2.  The period 1996-7 was the era of Building Society demutualisations when households received substantial windfall gains.  These may have had an impact on consumption growth in the late 1990s.

3.  These are money <u>flows</u>.  This equation takes no account of the changes in value of the existing stock of assets which are very important in determining changes in the balance sheet position of households.

4.  For those readers who are more persuaded by the paraphernalia of Granger Causality Tests, no debt measure or combination of debt measures comes close to Granger causing real consumption once real post-tax labour income is included in the model.

5.  The Barker Interim Report (2003), has a lot of information on these issues.

6.  Of course, the front end loading problem can be entirely eliminated if the lender, at the end of each year, raises the nominal mortgage loan to offset at least some part of the real reduction in the loan which has come about via inflation.  Presumably because of the high transactions costs involved, such behaviour was not common during the high inflation period.

7.  The present value of real rents is
$$\int_0^\infty De^{gt} e^{-(r_f + \rho)t} dt = D/(r_f + \rho - g), \text{ so long as } r_f + \rho - g > 0.$$

8.  It may, of course, be argued that high levels of household debt may impact on the behaviour of the economy in response to shocks which may have implications for the conduct of monetary policy.  Generally, I do not find such arguments very persuasive (see Nickell, 2003a, 2003b).
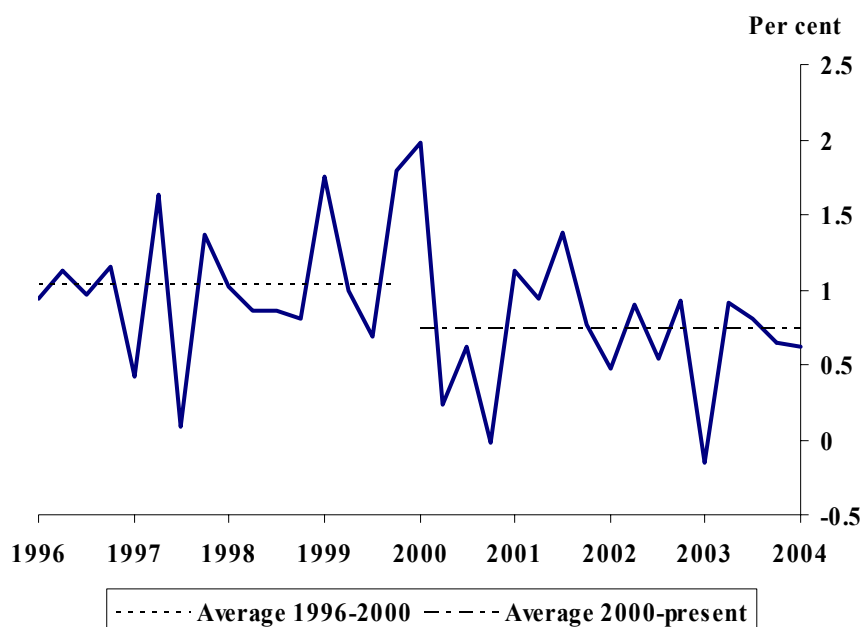
# References

Aoki, K., Proudman, J. and Vlieghe, G. (2002), "Why House Prices Matter", Bank of England Quarterly Bulletin, Winter.

Barker, K. (2003), Review of Housing Supply, Interim Report – Analysis (Norwich, HMSO).

Broadbent, B. (2003), "Why Household Borrowing is a Poor Guide to Household Spending", Goldman Sachs European Weekly Analyst (23rd May).

Chadha, J. S. and Dimsdale, N. H. (1999), "A Long View of Real Rates", Oxford Review of Economic Policy 15(2), 17-45.

Goldman Sachs (2004), "Adjusting to Lower House Prices", UK Economics Analyst, June.

Larsen, J., May, B. and Talbot, J. (2003)", Estimating Real Interest Rates for the

United Kingdom", Bank of England Working Paper No. 200.

Nickell, S. (2003a), "House Prices, Household Debt and Monetary Policy", Bank of England Quarterly Bulletin, Spring.

Nickell, S. (2003b), "Two Current Monetary Policy Issues", Bank of England Quarterly Bulletin, Winter.

Weeken, O. (2004), "Asset Pricing and the Housing Market", Bank of England Quarterly Bulletin, Spring.

**Table 1**

**Accumulation of Household Debt and Assets**

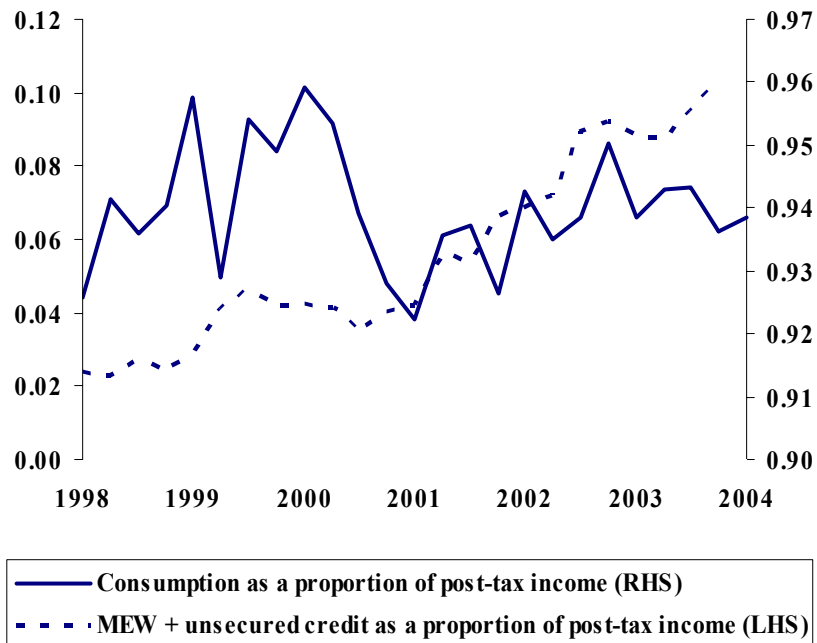| | NA of Financial Assets PT Income (%) | NA of Housing Assets ÷ PT Income (%) | NA of Financial Liabilities ÷ PT Income (%) | | |
| --- | --- | --- | --- | --- | --- |
| | | | Total | Secured | Unsecured |
| 1993 | 8.9 | 4.9 | 3.8 | 3.2 | 0.6 |
| 1994 | 10.2 | 5.3 | 5.3 | 4.1 | 1.2 |
| 1995 | 11.9 | 5.4 | 5.7 | 4.1 | 1.6 |
| 1996 | 11.3 | 5.6 | 6.0 | 3.9 | 2.1 |
| 1997 | 12.3 | 5.7 | 7.2 | 5.1 | 2.1 |
| 1998 | 7.9 | 5.8 | 7.8 | 5.4 | 2.4 |
| 1999 | 10.5 | 6.1 | 10.4 | 8.1 | 2.4 |
| 2000 | 9.0 | 5.9 | 10.1 | 8.0 | 2.1 |
| 2001 | 11.9 | 6.1 | 11.9 | 9.4 | 2.5 |
| 2002 | 14.8 | 6.7 | 16.1 | 13.2 | 2.9 |
| 2003 | 15.3 | 7.1 | 17.3 | 14.9 | 2.5 |

Source: ONS

Note: NA = Net Acquisition, PT = Post Tax.

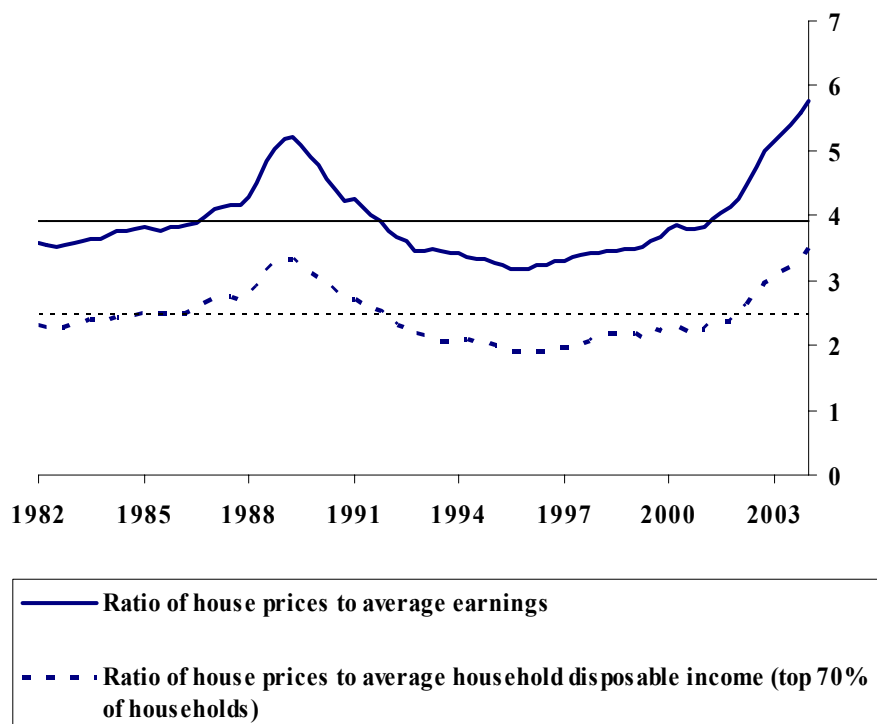**Figure 1**
**Quarterly consumption growth since 1996**



Source: ONS

**Figure 2**
**Consumption and debt since 1998**



| Consumption as a proportion of post-tax income (RHS) |
| MEW + unsecured credit as a proportion of post-tax income (LHS) |

*Source: ONS, Bank of England*

**Figure 3**
**House price to income ratios**



| Ratio of house prices to average earnings |
| Ratio of house prices to average household disposable income (top 70% of households) |

*Source: ONS, Halifax, Nationwide, General Household Survey*

**Figure 4**
**10 year real interest rates**



Per cent
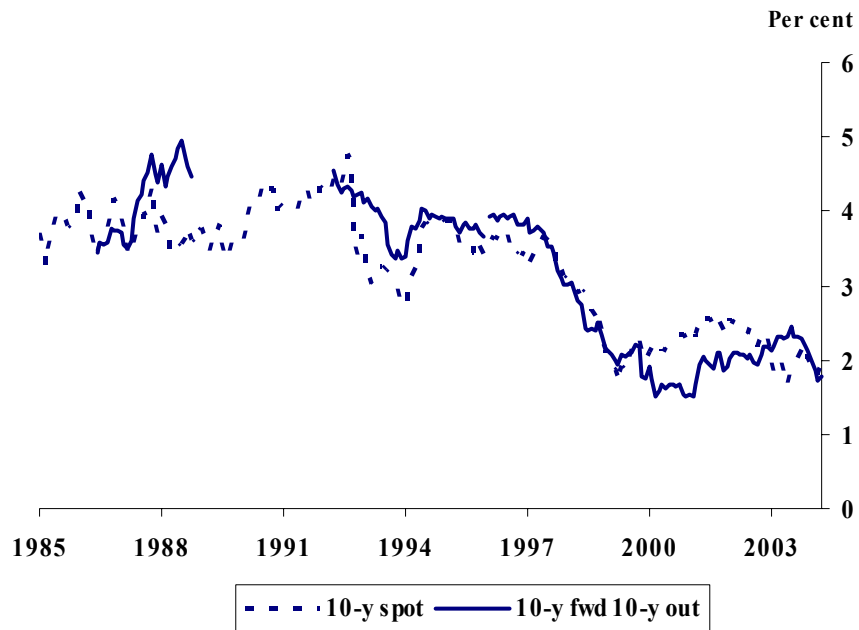
*Source: Bank of England*
*Note: Real interest rates implied by index linked gilts*

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