BANK OF ENGLAND

Speech

"Monetary Policy Issues: Past, Present, Future"

Speech given by

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

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Summary

Four issues are considered.

1. Has the MPC demonstrated a bias towards deflation?

The answer is no. Over the period 1999(2) to 2001(1) inflation undershot the target and would still have undershot the target even if interest rates had been set ¼ point lower during the relevant decision period 1997(2) to 1999(1). But the MPC over this period could not reasonably have been expected to predict the rise in sterling and the modest wage growth which generated the undershoot. Over the more recent period 2001(2) to 2002(1), inflation again undershot the target but this time, had interest rates been set ¼ point lower during the relevant decision period, inflation would have overshot the target. More generally, the fact that MPC decisions are found to be only a fraction away from optimal with the benefit of 20/20 hindsight looks like something to celebrate.

2. Can we expect a surge in productivity growth because of the New Economy?

The answer is probably not. Since 1995, the US has seen a boom in IT-related productivity growth. The UK saw no such boom, despite a high level of IT investment. While the UK/US productivity gap, which had been closing since 1980, was still quite wide in 1995, it is even wider today. So why do we believe that the UK is unlikely to start catching up any time soon? Basically, because of a number of structural problems. Relative to the US, the UK has lower levels of R&D spending and innovation, lower levels of competitive pressure on firms and specific weaknesses in general management skills and in post-school vocational education. Some of these problems are the subject of systematic policy attention, but it will take some time before any results start to show through.

3. What is the significance of the "imbalances" in the UK economy?

We consider three: (i) Consumption growth, debt and house prices; (ii) Domestic demand growth and the exchange rate; and (iii) Weak manufacturing and strong services. We conclude as follows. First, it is reasonable for consumers to take on higher levels of debt in a low inflation, low interest rate era. At some point, the transition to higher debt levels will end, with consumption growth slowing as a

consequence. There is no strong argument for the MPC to respond specifically to the current levels of debt over and above the response required if the consequent high levels of consumption growth leads to excessive inflationary pressure.

Second, with regard to house prices, there is no reason for a special increase in interest rates simply to "cool the housing market". The MPC should act if and when the impact of rising housing wealth on demand is such as to push the inflation forecast above target. Generally speaking, it does not have enough information to follow a policy of pricking potential asset price bubbles, en passant.

Third, the fact that domestic demand growth has been stronger than output growth for some time has put some pressure on the balance of payments. Recovery in the world economy will reduce the current account deficit as will the prospective slowdown in consumption growth when it occurs. This process may or may not be associated with a permanent fall in sterling. However, whether sterling falls or not, there is no reason for the MPC to react to any possible inflationary consequences of such a fall until it actually happens.

Fourth, there has recently been a dramatic contrast between expanding services and contracting manufacturing. The gap in growth rates between the two has been particularly wide because sterling is strong and the world economy has been weak. However, services growing faster than manufacturing is the normal state of affairs. Since the mid-1960s, an average of 125,000 manufacturing jobs have disappeared every year while a higher number of jobs has been created in other sectors, notably services. So when the world economy recovers, the gap will narrow but not disappear. Furthermore, monetary policy has no special role here. This is more the concern of regional and industrial policy.

4. What are the challenges for the immediate future?

In the latest Inflation Report, the MPC produced a central projection for a strong recovery in the UK with GDP growth above trend by 2003 and inflation rising above target at the end of the two-year forecast horizon. A mechanical rule which translates the central projection of inflation at the two-year point into an immediate interest rate adjustment would have generated a rise in rates in May. But such a mechanical rule is

not the best way of keeping inflation close to target. While it may take two years for interest rate changes to have their full impact, there is some impact well before then. This obviously means that a rise in interest rates further down the line would still impact on demand early enough to lower inflation to the target level at the end of the two-year period and beyond. Given the fragile and uncertain nature of the UK recovery, some delay in raising rates was the correct strategy for keeping inflation close to target over the long haul.

1. **Introduction**

Every so often, a particular issue excites those who are interested in monetary policy. For some period, the issue preoccupies analysts, then it tends to fade as it is replaced by something more exciting. In fact, given the slow-moving nature of the economy, issues tend to remain important for long periods, sometimes many years. For example, over two years ago, during my confirmation hearings at the Treasury Select Committee, there was a lengthy discussion of the strength of sterling and when it was going to fall.

The advantage of this is that one can write about this year's hot topics and also last year's hot topics without wasting the reader's time. So here we look at some current issues, such as consumer debt and house prices, and some of last year's topics, such as the New Economy. In fact, in what follows, we cover a wide range of issues, all of which are still live. First, we consider the question, has the MPC exhibited a deflationary bias? Our answer is no. Second, we discuss the New Economy and discuss the question, is the UK going to experience a surge in trend productivity growth[1] in the near future? Our answer is no. Third, we analyse the "imbalances" which currently afflict the UK economy. In particular, we focus on consumption growth, debt and house prices; domestic demand growth and the exchange rate; weak manufacturing and strong services. Broadly we conclude that unsustainable imbalances do not require any special response from the MPC over and above its watching brief on inflationary pressures looking forward. Finally, we look at the current prospects for monetary policy and explain why, when the MPC central projection for inflation rises above target at the two-year forecast horizon, this should not automatically mean that interest rates have to rise immediately in order to keep inflation close to target.

2. Has the MPC Exhibited Deflationary Bias?

It is often noted by commentators that, aside from the odd month, RPIX inflation has been below the 2.5 per cent target since 1999(2). Periodically this has led to accusations that monetary policy has been too tight and that the MPC has had a

deflationary bias[2]. Of course, policy being too tight, ex-post, does not necessarily imply a deflationary bias. The decisions may be spot on, but subsequent inflation reducing shocks can easily produce undershooting over quite long periods.

To investigate the hypothesis that the MPC has been biased towards deflation, we report (Table 1, Column 2) the path of RPIX inflation had the short-run interest rate been set at ¼ percentage point lower than its actual value since 1997(3)[3]. That is, we suppose that, in 1997(3), the MPC reduced the repo rate by ¼ percentage point on top of any other changes it actually made and that all subsequent MPC decisions on rate changes remained unchanged. To see what is going on, it is convenient to divide the period from 1999(2) into two sub-periods, namely 1999(2) to 2001(1) and 2001(2) to 2002(1).

TABLE 1

Retail Price Inflation (%pa): 1998-2002

		RPIX	RPIX ¼ point off interest rates since 1997(3)	RPIY
1998	2	2.94	2.95	2.25
	3	2.55	2.57	2.11
	4	2.53	2.56	1.83
1999	1	2.53	2.59	1.83
	2	2.30	2.39	1.62
	3	2.17	2.29	1.42
	4	2.16	2.31	1.67
2000	1	2.09	2.28	1.93
	2	2.07	2.29	1.72
	3	2.13	2.38	1.84
	4	2.11	2.40	1.77
2001	1	1.87	2.20	1.58
	2	2.26	2.63	2.63
	3	2.38	2.78	2.81
	4	1.95	2.38	2.41
2002	1	2.37	2.83	2.73

Sources: RPIX, RPIY, ONS. Column 2 is based on a simulation using the Bank of England Medium Term Model.

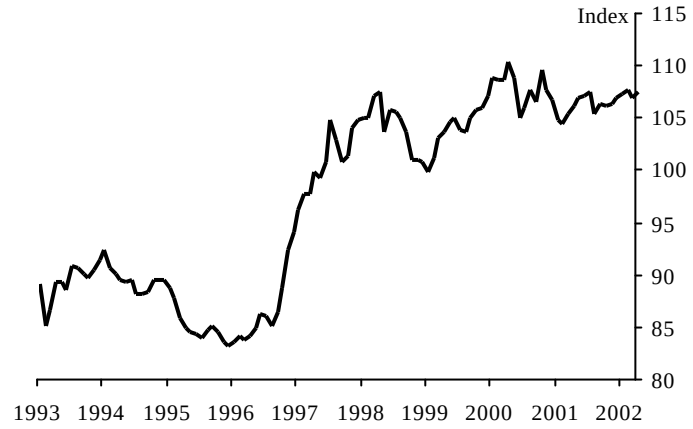
First, we consider the inflation outturns for the two-year sub-period 1999(2) to 2001(1). Over this time, the average quarterly inflation undershoot was 0.39 percentage points and had the MPC set the repo rate at a level ¼ percentage point lower, the average quarterly inflation undershoot would have been 0.18 percentage points. Furthermore, throughout the two-year period, the quarterly RPIX inflation rate would still have remained below target in every quarter. So over this period, we have prima facie evidence of deflationary bias.

Assuming that the full impact of interest rate changes takes about two years to come through, the question we must now investigate is why the decisions taken by the MPC in 1997(2) to 1999(1) generated a repo rate which was probably ¼ percentage point too high in the light of the inflation outcome two years later. Before looking at specific reasons it is worth noting first that to discover, ex post, that an economic policy was a tiny fraction away from what would have been optimal with 20/20 hindsight is hardly a major criticism. Second, it should be borne in mind that throughout the decision period, 1997(2) to 1999(1), inflation was actually above target in every quarter.

So, over the period 1997(2) to 1999(1), was the MPC exhibiting a small, perhaps even understandable[4], amount of deflationary bias, or was the subsequent undershoot the consequence of inflation-reducing shocks which could not reasonably have been forecast? Two factors were important over this period. More or less throughout, the exchange rate forecasts seriously under-predicted the outcome. Like most forecasters, the MPC uses an element of the "uncovered interest parity" theory[5] when trying to guess where the exchange rate is going. The idea here is that if domestic interest rates are higher than foreign interest rates, investors must think that the domestic exchange rate is going to fall, otherwise prospective returns on domestic assets would completely dominate those on foreign assets, so why would anyone hold foreign assets? Since over the period, UK interest rates did, indeed, tend to be higher than average foreign rates, the MPC, along with other forecasters, predicted that the sterling exchange rate would tend to fall over the two-year forecast horizon. In fact, the UK exchange rate was trending upwards for much of the period from 1997(2) to 2000(2), an upward move which continued to surprise (see Figure 1).

FIGURE 1

Sterling effective exchange rate



Source: ONS

And these surprise upward moves in the rate exerted downward pressure on import price inflation and hence on RPIX inflation throughout the relevant period.

The second factor was the rate of wage inflation. Over at least some of the relevant period, earnings forecasts tended to be too high, partly because earnings data were inaccurate on the upside and partly because improvements in the workings of the labour market were not fully apparent in the 1997/98 period.

I think it may readily be argued that movements in both the exchange rate and wage inflation over the relevant period could not reasonably have been forecast given the available information, and both these movements were systematically favourable for inflation. In the light of this, I think it is hard to make the accusation of systematic deflationary bias stick over the decision period 1997(2) to 1999(1). So what about the decision period [ie, 1999(2) to 2000(1)] for the RPIX inflation outcome in 2001(2) to 2002(1)?

Over this latter period, the quarterly RPIX inflation undershoot of the target was 0.26 percentage points. However, as we can see from Table 1, Column 2, had the repo rate been ¼ percentage point lower since 1997(3), there would have been an average quarterly overshoot of 0.16 percentage points. Although 0.16 percentage points is smaller than 0.26 percentage points it would be pedantic to argue that there was even prima facie evidence of deflationary bias over the year long decision period from 1999(2). It is, however, true that food price inflation during 2001 was surprisingly high, at least in part because of the bad weather in the preceding winter and the Foot and Mouth crisis. On the other hand, the fact that average excise taxes were not uprated in line with inflation in the 2001 budget systematically reduced RPI inflation during the following year. This at least partly contributed to the upward surge in RPIY inflation during the period 2001(2) to 2002(1) seen in Table 1, Column 3[6]. On balance, therefore, it seems hard to convict the MPC of deflationary bias during this later period. Of course, the consequences of the MPC decisions taken since 2000(3) have yet to work through fully, so we must wait a little before judgment on that period can be passed.

3. The New Economy

By 2000, it had become clear that in the second half of the 1990s, labour productivity growth in the United States had been greater than that in most major OECD countries for the first time since the Second World War. Until 1995, labour productivity growth in the OECD was broadly consistent with the notion that the United States was the country on the technological frontier and the other countries were slowly and fitfully catching up. From 1995, however, the United States appeared to be pulling away, with trend productivity growth having risen by around 1 percentage point per annum, a very surprising event. Something new appeared to be happening, so not surprisingly the phrase "New Economy" was coined.

Huge amounts of research have been devoted to understanding what is going on. In the United States, to explain the surge in growth. In Europe, to explaining the absence of such a surge.

The key issue for our purposes lies in the answer to the questions: (i) Can we expect a surge in UK labour productivity growth? And (ii) If so, when? This issue is vital for monetary policy, because if an increase in trend labour productivity growth is expected, then potential supply growth can also be expected to increase. This implies that a higher level of aggregate demand growth is consistent with stable inflation and monetary policy might have to be looser than would otherwise be the case. The correct monetary policy response would, of course, depend on the extent to which the expected increase in trend productivity growth, of itself, generated increases in consumption and investment.

What happened in the United States?

It is clear from the data that the productivity surge in the United States from 1995 was intimately connected to information technology (IT). This is starkly demonstrated in Table 2, taken from Stiroh (2001), which shows how the increase in US labour

Table 2

Annual Labour Productivity Growth (%) in the United States, 1987-99

Industries	1987-95	1995-99	%Output Share (1999)
IT-producing	8.24	11.90	5.3
IT-intensive	1.24	2.61	47.3
Other	0.98	1.11	47.4

Source: Stiroh (2001). The productivity numbers are employment weighted averages across industries. The IT-producing sectors are Industrial Machinery and Equipment; Electronic and other Electric Equipment.
The IT-intensive industries are those whose 1995 IT capital shares were above the 1995 median. The main sectors here are Telecom; Wholesale Trade; Retail Trade; Finance and Insurance (not Real Estate); Business Services; Health Services. These six sectors make up 77 per cent of the total output of the IT-intensive industries.

productivity growth after 1995 was concentrated more or less exclusively in the small IT producing sector and the IT-intensive users, most of which are in the service sector. The remaining half of the economy has seen no significant rise in productivity growth over the relevant period. There are three significant ways in which IT generates improved productivity growth. First, simply accumulating IT capital faster raises productivity growth almost mechanically, so long as workers equipped with more IT capital become more productive. Second, the rate of production of the scientific knowledge involved in producing IT equipment has risen. This is exemplified by Moore's law, according to which the processing power embodied in chips doubles every 18 months. This generates the productivity surge in the IT-producing sector as well as rapidly falling IT equipment prices. Finally, firms learn how to use IT equipment more effectively, recognising that they have to make complementary organisational investments (see Brynjolfsson and Hitt 2000, for example). The contributions of these three different factors to the total surge in productivity growth are roughly 40%, 25%, 35% respectively[7].

So what has been going on in the United States is fairly clear. There has been a very high rate of productivity growth in IT production for some time now and this became even more rapid in the late 1990s. As a consequence, the price of IT equipment has been falling fast and this encouraged a very rapid rate of accumulation of IT equipment by many firms outside the IT production sector, particularly in the large service sectors of the economy. These firms have been able to make very effective use of this IT equipment, often by comprehensive reorganisation of their operations,

and this has led to a marked improvement in productivity growth in these sectors. These improvements are driven, fundamentally, by the decline in the price of IT equipment and this can be expected to continue for some time. However, simply possessing lots of new IT equipment is not enough. Productivity improvements also depend on the ability of management to make good use of it using best practice methods. Many US companies have been able to do this, partly because they are driven into it by the very high levels of competition in many sectors of the US economy. Finally, it is worth remarking that despite the recent downturn, US productivity growth looks as if it will continue at high levels for some time yet.

Is this surge in productivity growth going to happen in the UK?

By 1999, it had become clear to all that the New Economy was well underway in the United States. This led many to believe that trend productivity growth was going to rise in the UK. For example, a Goldman Sachs paper (Davies, Brookes and Williams, 2000) cautiously predicted that UK productivity growth in 2000-2005 would be 0.8 percentage points per annum higher than in 1995-2000, a very substantial improvement. But before looking to the future, we must first look at what was going on in the UK while US productivity growth was taking off.

Not very much, at least according to the official data. On more or less every measure, average UK productivity growth in the second half of the 1990s was below that in the first half and below the long-run average. To be a bit more specific, between 1995 and 1999, US labour productivity in manufacturing rose by 24 percentage points relative to that in the UK and in market services, it rose by 13 percentage points (O'Mahony, 2002, Table 5). It is worth recording that similar numbers apply also to the European Union relative to the US, although the gap is smaller in manufacturing and larger in market services.

So the situation is one where UK productivity performance in the second half of the 1990s was exceptionally modest, with labour productivity starting in 1995 at a substantially lower level than that in the US in all sectors followed by a marked widening of this gap in the subsequent five years. So what factors might help us to understand this picture, particularly as firms in the UK had just as much access to rapidly cheapening IT equipment as those in the US? Consider first, the role of direct

inputs into production. As in the US, investment in IT equipment in the UK rose substantially in the second half of the 1990s as it did in telecom equipment. Yet the productivity growth of IT users was actually lower in the second half of the 1990s in the UK than over the previous 15 years (see UBS, 2002, Table 6). This is the key factor, because, as we saw in Table 2, it is the IT users who have driven the improvement in the US.

It has been argued that some of this stark contrast is simply down to measurement, with US output and price data taking better account of quality change than the corresponding UK data. However, as UBS (2002) indicates, even taking account of this, the contrast between the performances of the UK and the US remains. A further argument points out that the unemployed who obtained work in large numbers in the UK from 1994 were less skilled than the average employee and this held back productivity growth in the later 1990s. Unfortunately, this argument applies equally in the United States over the same period. Furthermore, the evidence presented in Crafts and O'Mahony (2000) suggests that labour force skill differences did not play any significant role in the widening gap between the UK and the US in the second half of the 1990s. So we are left with the simple fact that firms in the US made much better use of their new IT equipment than firms in the UK over this period. The question thus remains what are the underlying forces at work here and are they going to moderate in the near future?

Underlying forces holding the UK back and prospects for the future

It has long been known that while the UK has a very strong academic science base, it has been weak at translating this strength into innovation and industrial performance with the notable exception of the pharmaceuticals sector. Over the last twenty years, the share of both public and privately funded R&D expenditure in GDP has actually fallen in the UK whereas the opposite has happened in the US. R&D expenditure is particularly important in this regard because not only does it generate innovations but it also helps firms absorb the innovations of others (see Griffith et al, 1999), a factor which is particularly relevant here.

This is just a symptom, however. Underlying this are the following basic factors. First, as is clear from the analysis presented in McKinsey Global Institute (1998),

Nickell and Van Reenen (2001) and Baily (2001), the competitive pressures on US firms are, on average, greater than those exerted on firms in the UK. These pressures are fundamental in encouraging the use of new technologies and more generally in forcing firms to find ways to improve their operations. Second, in the UK, general management skills are not as highly valued in the UK market-place as skills in finance, accountancy and consultancy, so the brightest graduates tend to go into the latter areas. Furthermore, because a high proportion of UK companies are not operating at the frontier of best practice, the majority of managers learn the job outside a best-practice environment. This, of itself, inhibits the absorption of innovations. Finally, while the UK education system is good for those at the upper end of the ability range, the structure in place for post-school vocational education is weak. This leads to a noticeable shortfall in technician skills which holds back the absorption of new technologies.

Are any of these structural factors changing so that UK firms will start making significantly better use of IT in the near future? Starting with competition, many will find it surprising that there is a shortage of competition in the UK. Surely after twenty years of privatisation, deregulation and globalisation, competition is very fierce. However, it should not be forgotten that we have had twenty years of "restructuring" in many sectors much of which has had the effect of sustaining and even concentrating market power. So that net rates of return on capital in private non-financial corporations have been higher over the last five years than over most of the previous twenty five (see Figure 3 below, p.22), hardly a sign of significantly greater competition which might be expected to cut profitability[8]. This has been reinforced by the fact that, by comparison with the US, UK competition law has been relatively feeble. However, the UK anti-trust system was significantly strengthened from 1 March 2000, when the 1998 Competition Act came into force. This, along with further prospective tightening as a result of future planned changes in competition law, should raise the level of competitive intensity in the UK in the future.

A second recent change which could have some longer-term impact on productivity growth is the introduction of R&D subsidies. The available evidence suggests that these will raise business spending on R&D as a proportion of GDP and that this will have a positive impact on productivity over the longer term. Of the other issues

mentioned above, the only one which looks as if it might improve any time soon is the state of post-school vocational education. Some policy effort is currently being devoted to this area although it would be a mistake to be too optimistic about the outcome. The history of policy in vocational education over the last twenty years reveals just how difficult it is to make significant improvements.

To summarise, the UK has not seen a surge in IT generated productivity growth since 1995. This has made a productivity gap, which was wide in 1995, considerably wider by the present time. This period contrasts with the period from 1980 to 1995 when productivity growth in the UK was higher than in the US and there was some closing of the productivity gap (see O'Mahony and de Boer, 2002, Table 2). The persistence of a wide productivity gap and the ability of the US economy to make better use of new IT equipment are due to structural problems in the UK economy. These include low levels of R&D spend and innovation, low levels of competitive pressure on firms, weakness in general management skills with the labour market valuations placed on finance and consultancy skills being much higher than on general management and, finally, weakness in post-school vocational education. Some of these problems are the subject of systematic attention from policymakers but it would be unrealistic to expect any dramatic changes in the near future. As a consequence, there is no justification for setting monetary policy in the expectation that the UK economy will experience a surge in trend productivity growth in the near future. It may happen, but it would be unwise to bet on it[9].

4. Imbalances

The UK economy is currently suffering from a severe case of "imbalances" mostly of the "unsustainable" variety. Of course, since the economy is rarely spot on its balanced growth path, the situation at any moment is almost always unsustainable. So is the present pattern of "unsustainable imbalances" unduly worrying? Before discussing the nature of the current imbalances, why should imbalances in general concern the MPC? There are two sorts of reasons. First, as the economy moves back towards a more balanced situation this process may involve increasing inflationary or deflationary pressures which would require action on the part of the MPC. If the economy starts from a more unbalanced position, these pressures may well be greater.

It is good to be prepared for such possibilities although it may well be that no action is required until the pressures seem likely to materialise. Second, certain types of imbalance may resolve themselves very rapidly (eg, the bursting of an asset price bubble) which generates a high level of output and inflation volatility, making it harder for the MPC to hit the inflation target. The tricky question for the MPC is what action to take, if any, prior to the rapid resolution of the imbalance when it is uncertain when, or indeed if, any such rapid resolution will occur.

In the light of this general discussion, what are the specific imbalances currently facing us? There are three which we shall discuss.

(i) Consumption growth has been higher than GDP growth in all bar two quarters since 1998(1). In the more recent past, this consumption growth has been backed by very rapid growth in household debt, much of it secured on a housing stock which is rapidly rising in value. Household debt to income ratios are at record levels.

(ii) Related to this is the fact that annual domestic demand growth has been higher than annual GDP growth for the last five years. Over the same period, the balance of payments deficit has been a steadily rising proportion of GDP.

(iii) Manufacturing growth is much lower than growth in the service sector and the rate of return on capital in manufacturing is at a low level, both absolutely, and relative to that in services.

Consumption, Debt and House Prices

Associated with high levels of consumption growth have been two related factors, both of which have caused widespread concern, namely very high levels of growth of household debt and of house prices. We consider each in turn.

Debt

The level household debt relative to post-tax income in the UK is currently 118 per cent, a record level, having grown by over 15 per cent since 1997. Such record levels are by no means unusual in the sense that debt-income ratios in many other countries are of the same order of magnitude[10], but if this level is worrying, then this fact hardly makes it less worrying. Furthermore, the debt to income ratio is still rising. This increasing debt is being used both to fund property purchase and to help finance a

high level of consumption growth, which has recently been driven by growth in durables consumption.

Why might households wish to hold higher levels of debt today than in the past? One good reason is that we now live in a period of low inflation and hence of low nominal interest rates. Here is a simple example. Suppose that inflation is 12 per cent and interest rates are 15 per cent. Consider a household taking out a substantial debt of four times its annual disposable income, repayable over 25 years. Then in the first year, they would have to pay over 60 per cent of post-tax income in interest and repayments. Typically lenders would not allow a loan of this size because of the enormous size of the payments required relative to income. Of course, after ten years, annual disposable income would have risen by more than a multiple of three at 12 per cent inflation and the costs of interest plus repayment would be relatively modest. By the end of the loan, after 25 years, the repayment and interest costs would be negligible as disposable income would have risen by 17 times! But, because borrowers cannot cope with the early years of the loan, they probably would neither want nor be allowed to take on such a debt[11].

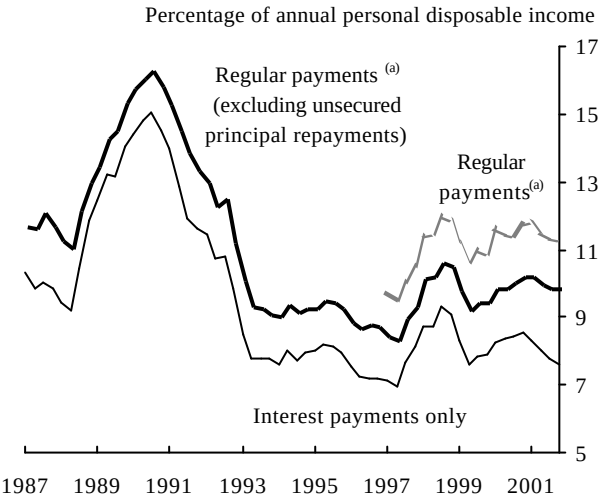
However, if inflation is 2.5 per cent and interest rates are 5.5 per cent, so the real interest rate is the same, this front-end loading problem no longer applies. In the first year, a loan of the same size would require a payment of around one quarter of annual disposable income, a situation which prudent lenders and borrowers might be prepared to contemplate. After 10 years, the payments on the loan would have diminished very little as a proportion of disposable income (by around 20 per cent), so the prudent borrowers would have to recognise they were in for a long haul. Nevertheless, it is easy to see that in a low inflation environment, households might well wish to, and be allowed to, take on more debt relative to income, despite unchanged real interest rates. So it is no surprise that in the high inflation period from 1974 to 1980, the average loan to income ratios for first-time house buyers was less than 2 whereas in the late 1990s it was in excess of 2.2 according to data from the Survey of Mortgage Lenders. Furthermore, the rules governing income multiples which mortgage lenders will contemplate are significantly more generous today than in the high inflation 1970s.

All this both enables us to understand why households might wish to borrow more in a low inflation environment and why this may be a prudent course. This is reflected by the relatively low levels of household "income gearing" we see today, despite record levels of debt (see Figure 2). At some point, of course, the move to higher "equilibrium" levels of debt will be complete and consumption growth will slow down as a consequence[12]. Such a shift would not be of undue concern, indeed the MPC has some slowing of consumption growth in their forecast. The only real problem is the uncertainty about when it will occur, but this is a run-of-the-mill monetary policy problem, not one which deserves the limelight.

But perhaps consumers are taking on all this debt, not as a result of prudent decision making on their part and on the part of lenders, but as a consequence of over optimism. For example, households might take on higher levels of debt because they expect their real incomes to grow more rapidly than normal in the future. This may have arisen because, for a variety of reasons, real disposable income has been particularly high over the last two years. Given the prospects for productivity growth which we have already discussed such a projection would be mistaken. If such an error were being made, once it became apparent, debt growth and hence consumption growth would tend to slow. However, it seems unlikely that this

FIGURE 2

Measures of UK household income gearing



Sources: ONS, Financial Research Survey and Bank of England

(a) 'Regular payments' should be considered as non-discretionary payments made as they include estimates of all interest payments, regular mortgage principal repayments and unsecured loan principal repayments. They do not include principal repayments on credit cards as these data are unavailable. Information on unsecured lending principal repayments is not available prior to 1997. Regular mortgage principal repayments are estimated prior to 1998.

would generate a sudden collapse in consumption. Much more likely is the sort of gradual slowdown we are expecting to happen anyway.

So is there any reason why we should be particularly worried about high and rising levels of debt? Of course, one obvious point is that the higher the level of debt, the more responsive is the absolute level of household interest charges to changes in interest rates and this may lead consumption to be more sensitive to monetary policy shifts. This is something that the MPC must take into account when setting rates, but it need not cause us undue concern. Of course, when interest rates rose from 8 per cent to 15 per cent during the late 1980s, the high levels of debt which had been accumulated at that time unquestionably made the subsequent recession substantially worse. However, the lesson to be drawn is not that high levels of debt are bad, per se, but that we should not allow the inflationary position to become so bad that such drastic interest rate rises become necessary to get inflation under control. Of course, one of the other consequences of the dramatic interest rate rises in the late 1980s was a collapse in the housing market. House prices are again approaching levels, relative to earnings, which ruled at that time[13], so is this a problem?

House Prices

House prices have grown by between 10 and 20 per cent in the last year, depending on which index is used. This is a simple consequence of high demand (low mortgage rates, high rates of population growth, the attractions of buy-to-let relative to equity investments) meeting low supply (lowest rate of new house building since the War). Housing wealth serves as collateral for borrowing and directly impacts on consumption. If housing wealth grows faster, consumption and aggregate demand grow faster and, looking forward, inflation rates will be higher. So the rate of growth of housing wealth is a significant factor in the deliberations of the MPC. This is straightforward. But should the MPC worry about house price inflation over and above its direct implications for future inflation?

It has been argued that there are particular dangers if a house price bubble develops. Consider the following scenario. In the rapidly expanding buy-to-let market (now around 5 per cent of housing transactions) a symptom of a bubble would be if individuals invested in buy-to-let property when expected rental incomes were not

enough to cover running costs plus mortgage payments, relying on rapid capital gains to make it a worth-while investment. The bubble then bursts when house-price growth starts to slow for other reasons. The buy-to-let investors start to suffer from cash flow problems and the slow growth in the value of their (housing) collateral limits borrowing opportunities so they dump their properties on the market and house prices fall. This would impact on regular owner-occupiers although, given low interest rates, they would have no difficulty in servicing their debts even if they had negative equity. Of course, negative equity could cause further problems if, for example, lenders insisted on higher interest rates because of the reduced collateral, or even insisted on some loan repayment. However, it is unlikely that a fall in house prices would cause the problems of the early 1990s, when interest rates were 15 per cent, but it may still be something to be avoided.

So where does the MPC enter this story? The boom and bust in the housing market does not cause any obvious problems for the average level of inflation but it might increase volatility which would make it harder for the MPC to keep close to the target. So could the MPC do anything about this scenario if it thought it was developing? In order to answer this question, we have to step back a little and consider how the MPC operates. By and large, it is sensible to think of the MPC as each month assessing where RPIX inflation is going over the next couple of years and if it is expected to go above target, to raise rates and if it is expected to go below target, to lower rates. There may be a tendency for commentators to focus on the two-year horizon, by which time the bulk of the current changes in rates will have worked through, but the relationship between the central projection of inflation relative to target at this two-year horizon and the current decision is not mechanical. For example, if the central projection is below target for most the time only rising to the target at the end of the two-year horizon, it may not be necessary to raise interest rates immediately in order to hit the target. The target could still be attained by raising rates later and this might be desirable if, for example, this path of rates generates a less volatile path of domestic demand in the mean time, which would enable the MPC to keep inflation closer to target further out. Furthermore, in this situation, raising rates later keeps inflation closer to target ahead of the two-year horizon.

How does this potential flexibility relate to a housing market bubble? If the MPC was certain that a housing market bubble was developing, it has been suggested that it could, perhaps, generate a smoother path of output and inflation by having a higher interest rate than would otherwise be necessary in the absence of the nascent bubble, in order to prevent the bubble actually taking off. The suggestion, therefore, is that the MPC could do better by responding to asset price bubbles over and above the response that would occur in the normal way of things because asset prices impact on demand and inflation prospects.

The problem with this proposal is that if it is to work out for the best, bubbles or speculative booms in asset prices must be rapidly identifiable and readily distinguishable, for example, from rapid movements in asset prices generated by warranted changes in expectations about fundamentals. The use of monetary policy to interfere with the latter kind of changes in asset prices would not improve inflation performance and would distort the allocation of resources for investment. So it is not to be recommended. Generally speaking, it is not possible, ex ante, to identify bubbles or speculative booms with any certainty, so the use of monetary policy to "nip them in the bud" is not normally a feasible strategy. We simply do not have enough information to operate this kind of sophisticated policy in a reliable fashion[14]. As a general rule it is better simply to focus on the longer-term consequences of asset price movements for inflation and leave it at that. Of course, if house prices really take off, MPC forecasts of inflation would also rise and the MPC would tend to raise rates. So this strategy is not a recipe for complacency, merely a common-sense framework for dealing with the problem.

Domestic demand growth and balance of payments deficits

Related to the high level of consumption growth in recent years has been the high level of domestic demand growth overall (consumption plus investment plus government), which has also been outstripping GDP growth for at least five years. Despite favourable movements in the terms of trade over this period, we have been spending more than we produce, with the gap being filled by the rest-of-the-world, who have been supplying us with more than we have been supplying them. So we have had a persistent trade deficit over this period which is now running at over 2 per cent of GDP.

The first question to ask is whether this is sustainable? For example, if UK citizens have lots of overseas assets generating high levels of interest and dividends and these substantially exceed the interest and dividends paid out to foreign holders of UK assets, then we could go on with a trade deficit forever. So to help consider sustainability, we add in these income and transfer flows to the trade deficit, the result being the current account deficit. On average over the last three years this is only a shade lower than the trade deficit, being just under 2 per cent of GDP. If correct, this would imply that foreigners were acquiring UK assets at a considerably faster rate than UK citizens were acquiring foreign assets. Is this an unsustainable situation?

The answer is not clear cut. First, it is worth noting that even before domestic demand started growing faster than GDP, we regularly had a current account deficit. For example, from 1970 to 1994, our deficit apparently averaged 1 per cent of GDP over the whole period. Second, if some countries are in deficit, others must be in surplus. The United States has an enormous deficit on its balance of payments (around 400 billion dollars per year). So where are the big surplus countries? There are two. Japan is a major surplus country but the biggest by far is a place called Discrepancy, which has had an annual surplus of around five times the UK deficit over each of the last three years. Much of this simply reflects mismeasurement which systematically overstates deficits and understates surpluses. One reason for this is that it is much harder to keep track of dividend and interest receipts, which often accrue to individuals, than of dividend and interest payouts which are generally undertaken by companies or official bodies. The upshot is that the measured UK balance of payments deficit may overstate the true figure by an unknown amount. A third point germane to sustainability is the fact that the balance of payments measures omit capital gains and losses on asset holdings. There is some evidence to suggest that capital gains on UK holdings of foreign assets exceed those on foreign holdings of domestic assets. This would increase the sustainability associated with any measured UK deficit[15].

The upshot of this discussion is that measured payments deficits of the current size can be sustained for considerable periods without significant adjustments being required. Furthermore, as the United States and Europe recovers, their demand

growth will rise relative to that in the UK (which has had a less severe slowdown). As a consequence, the UK payments deficit should fall back, particularly if consumption growth slows for reasons discussed in the previous section. The fundamental question is the extent to which, during the process where domestic consumption growth slows and world demand growth rises, the sterling exchange rate falls, thereby generating additional inflationary pressure. Some might argue that a fall in the exchange rate is necessary to help shift demand and supply patterns towards the international sector and assist in "rebalancing" the economy. This may or may not be true, but the key issue for the MPC is whether we should adjust interest rates today in order to forestall the potential inflationary consequences of a possible significant exchange rate fall in the future.

Turning to the issue of exchange rate movements, I said during my confirmation hearings at the Treasury Select Committee that any forecasts I make of the exchange rate are not worth the paper they are written on. I see no reason to change this view, although I should add that the evidence suggests that modest current account deficits can be sustained for many years and are of no great value for forecasting exchange rate movements in the medium term. Of course, when the MPC presents its forecasts in the Inflation Report, we have to make some assumption about future movements in the exchange rate. As we have already noted, the MPC's current convention is to include in its forecast an element based on uncovered interest parity. Given the international pattern of interest rates, this generates a very modest decline in the effective sterling exchange rate of around 2 ½ per cent over the two-year forecast horizon. This forecasting convention is nothing to do with the issues currently being discussed. The important question here is should we move interest rates up today in order to forestall the potential inflationary consequences of a significant exchange rate fall which might come about as UK domestic demand growth slows and international demand growth speeds up? In my view, the answer is simply no. If, and when, such a fall in the exchange rate comes about, then is the time to make appropriate adjustments, if any, in interest rates. To act pre-emptively on this front is difficult because of the huge uncertainties involved in forecasting exchange rate movements and not really necessary because the lags to demand from interest rates and exchange rates are of the same order of magnitude[16].

The imbalance between manufacturing and services

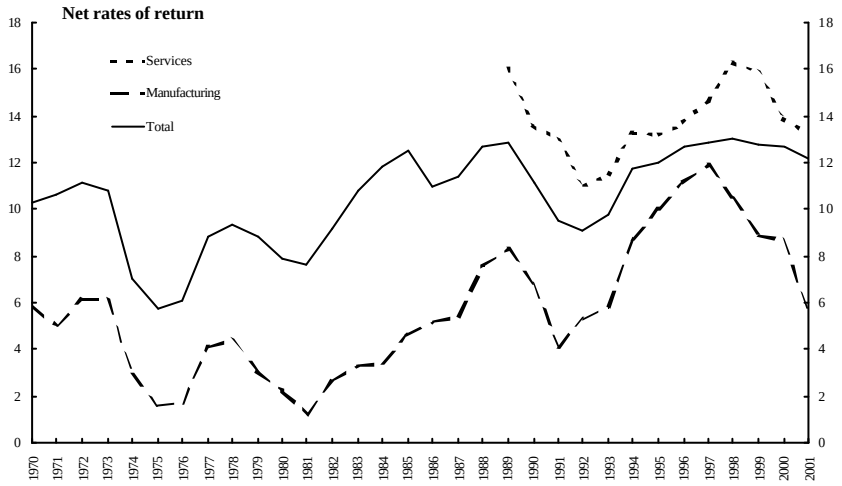
The third imbalance we shall discuss is that associated with the recent rapid decline in the manufacturing sector and the contrasting continuing strength of the services sector. This pattern is directly associated with the fact that the manufacturing sector is more open to international competition than the service sector and so the manufacturing sector has been strongly hit by the weakness of the world economy in the recent past and by the strength of sterling since 1997. Again, this might suggest that if the gap between the growth rates of the two sectors is to close, not only does the world economy have to recover, which it is expected to do, but the sterling effective exchange rate has to fall.

In order to analyse this question, it is helpful to look at the broader historical context. First, the manufacturing sector in all developed countries has been contracting relative to the service sector for at least thirty years. In other words, some degree of "imbalance" is the normal state of affairs. Second, reflecting this, we find that employment in manufacturing in the United Kingdom has been falling at an average rate of around 125,000 per year since it reached its peak in 1966. So an average of over 2,000 manufacturing jobs have been lost in the UK in every week for over 35 years. Since overall employment has risen over the same period, this loss has been more than compensated by the jobs gained in other sectors.

This continuing shift in activity out of manufacturing and into services has been driven by the fact that the returns on capital employed in manufacturing have been substantially below those in other sectors since at least 1970, as we can see from Figure 3. Looking more closely at the 1990s, we find that during the period when sterling was weak in the period from 1992 to 1996, rates of return in manufacturing rose to their highest level in the last 30 years. Even when sterling strengthened markedly up to 2000, the rate of return remained in excess of 8 per cent, far higher than the average in the 1970s and 1980s. Only when world demand shrank dramatically in 2001 did manufacturing returns fall back towards the previous average. So even if sterling remains strong, we can expect manufacturing returns to revert to a historically relatively high level when world demand growth recovers.

Overall, the history of sectoral employment shares and rates of return suggests that a return to a normal state of imbalance might come about without any substantial moves in the exchange rate[17]. This does not mean that they won't happen. Indeed, on the back of a strong euro and weak dollar, the sterling effective rate has fallen by around 4 per cent in the last six weeks. All that is being said here is that a substantial fall in sterling is not inevitable because of the manufacturing/services imbalance. While this imbalance has devastating implications for those individuals and regions on the losing side, the consequences for monetary policy, as opposed to social security policy or regional and industrial policy, are relatively slight.

FIGURE 3



Net rates of return on capital employed in private, non-financial, companies. Source: ONS.

Final reflections on imbalances

We have discussed the usual three suspects, first consumption growth, debt and house prices, second domestic demand growth and the exchange rate and finally, weak manufacturing and strong services. The following points have emerged.

First, there are good reasons why households will wish to, and be allowed to, take on higher levels of debt in an era of low inflation and low interest rates. At some stage, this move to a higher level of debt can be expected to come to an end of its own accord with consumption growth slowing as a consequence. There is no good reason why monetary policy should respond specifically to the current levels of debt over and above the response required if the consequent high levels of consumption growth leads to excessive inflationary pressure.

Second, while the current rate of house price inflation clearly cannot continue indefinitely, there is no reason for a special increase in interest rates specifically to "cool down the overheating housing market". If the impact of rising housing wealth on demand is such as to lead us to expect inflation to move above target, then the MPC must act. Generally speaking, it simply does not have enough information to start following a policy of pricking asset price bubbles, en passant.

Third, domestic demand growth has outstripped the growth of domestic output for some years and this has resulted in a current account deficit of around 2 per cent of GDP. Recovery in the world economy may reduce this deficit but questions remain concerning the sustainability of this situation. It is arguable that the required slowdown in domestic demand may be associated with a significant and permanent fall in the effective exchange rate. While this may happen at some stage[18], it is by no means certain. Furthermore, there is no reason for the MPC to react to the possible inflationary consequences of such a fall until it actually comes about.

Fourth, the dramatic contrast between a growing service sector and a contracting manufacturing sector is, in part, the consequence of the recent weakness in the international economy and the strength of sterling and, in part, a reflection of the longer-term decline of UK manufacturing which started in the mid-1960s. Over the last 35 years, an average of 125,000 manufacturing jobs have disappeared every year,

with at least as many being gained in other sectors. When the world economy recovers, the gap between the growth rates of manufacturing and services will narrow but we should not expect it to disappear, but merely to revert to longer-term trends. Monetary policy has no important role in this process. Overall therefore, unsustainable imbalances do not normally require any special response from the MPC over and above its watching brief on inflationary pressures looking forward.

5. The Budget and Other Near-Term Challenges for Monetary Policy

The general thinking of the MPC on the outlook for the future is set out in the latest Inflation Report (May 2002) so I shall only emphasise one or two crucial issues. First, the recovery in the rest of the world, and the recovery in the UK are both looking a little fragile. In the United States, there is no strong evidence of any recovery in investment which would underpin a strong economy going forward. In the Euro area, the weak recovery is almost entirely dependent on buoyant net trade and in the UK, while the surveys look good, we are still waiting for real action outside the retail sector.

Overlaying this is the Budget. The key points on spending were additional expenditure on health from 2003/04 and tax credits to improve work incentives and provide further support for those on low incomes. These changes are paid for by one percentage point increases in the rate of both employees' and employers' National Insurance contributions (NICs) taking effect from April 2003. The implications of these changes on future demand growth and inflation are fraught with uncertainties. The demand effects depend crucially on four factors. First, how much of the increased health expenditure is spent on higher pay for existing workers in the health sector? Second, what proportion of the additional health spending goes on imports relative to the import content of the private expenditure which is displaced because of the tax increases. This is an issue because the average import content of private expenditure is greater than the average import content of public expenditure. Third, how much of the tax credit income gets spent relative to the reduction in spending generated by the tax increases which pay for it? This is an issue because the recipients of the tax credits, on average, spend a higher proportion of their income than the average tax payer. Fourth, how much is private consumption moderated in

advance of the increase in employee NICs? The MPC has made judgments on all these questions based on all the information they could muster. But the level of uncertainty here is very great.

Then there is the direct impact on inflation of increases in NICs. Increases in employees' NICs will impact on inflation if the employees succeed in obtaining additional pay rises to compensate. Increases in employers' NICs inevitably raise labour costs in the first instance and the implications for inflation then depend on the extent to which these increases are passed on into prices, are absorbed by reduced margins or additional productivity increases or are compensated by employees accepting lower pay increases. Again, the MPC has made judgments based on past behaviour and other information. And again, the level of uncertainty is very great.

Further work is underway at the Bank to try and reduce the range of uncertainty, but in the mean time, the results of the MPC's judgments as reported in the Inflation Report generate a central projection for a steady recovery in the UK. GDP growth is above trend by 2003 and inflation below target until the very end of the forecast horizon, by which time it is rising quite rapidly. A mechanical rule which translates the central projection of inflation at the two-year horizon directly into an immediate interest rate adjustment suggests a rise in interest rates at the May meeting. The fact that this did not happen has been taken by some as an indication that the MPC has taken its eyes off the inflation target.

This is simply not the case. The central projection has inflation below target until the last quarter of the forecast horizon. While it may take two years for a rise in interest rates to have its maximum impact on inflation, it will start having an impact well before the two years are up. This immediately implies that a rise in interest rates some time later will still impact on demand early enough to lower inflation to the target level at the end of the two-year period. Given the current fragility of the recovery in the UK, some delay in raising rates seems to be an eminently sensible strategy.

Summary and Conclusions

In this paper, we have covered four issues which loom large when considering UK monetary policy, past, present and to come. First, we ask the question, has the MPC demonstrated a bias towards deflation? Our answer is that it is difficult to convict the MPC of such a bias despite the chronic undershooting of the 2.5 per cent inflation target since 1999(2). To get this answer, we consider what would have happened had interest rates been ¼ percentage point lower from 1997(3). Over the two-year period from 1999(2) to 2001(1), inflation would still have undershot the target in every quarter. Nevertheless we absolve the MPC of deflationary bias over the relevant decision period 1997(2) to 1999(1) essentially because, during this period, there was a tendency to under-predict the sterling effective exchange rate and to over-predict wage inflation. Both these mis-predictions could not reasonably have been avoided, given the information available at the time.

During the year from 2001(2) to 2002(1), had interest rates been ¼ percentage point lower since 1997(3), inflation would have overshot the target most of the time, so during the relevant decision period from 1999(2), there is no evidence of deflationary bias. Of course, for decisions taken since mid-2000, we have yet to see the full consequences. Overall, it is hard to convict the MPC of deflationary bias and, as a general point, the fact that MPC decisions are found to be only a fraction away from optimal with the benefit of 20/20 hindsight looks like something to celebrate rather than carp about.

The second question we look at is whether or not we can expect a surge in productivity growth in the UK because of the New Economy. We argue that the answer is probably not. Since 1995, unlike in the US, the UK has not seen a boom in IT-generated productivity growth despite a lot of IT investment. This contrasts with the previous 15 years when productivity growth in the UK was higher than in the US. However, there remained a large productivity gap which has been widening since 1995 as the US has made better use of new IT equipment. So why is the UK unlikely to start catching up in the near future? Basically, because of a number of structural problems. Relative to the US, the UK has lower levels of R&D spending and innovation, lower levels of competitive pressure on firms and weaknesses in both general management and post-school vocational education. While some of these

problems are the subject of systematic attention from policy makers it will take some time before any results will start to show through. In the mean time, there is no justification for setting UK monetary policy in the expectation of a surge in trend productivity growth.

The third issue we deal with is that of "imbalances". Here we discuss three aspects of the imbalances problem: (i) Consumption growth, debt and house prices; (ii) Domestic demand growth and the exchange rate; and (iii) Weak manufacturing and strong services. Our conclusions are as follows. Consumers are reasonable in taking on higher levels of debt because we now have low inflation, and low general levels of interest rates. At some point, the move to higher levels of debt will come to an end of its own accord, with consumption growth slowing as a consequence. The problem for the MPC is that we don't know when. However, there is no strong argument for monetary policy to respond specifically to the current levels of debt over and above the response required if the consequent high levels of consumption growth leads to excessive inflationary pressure.

Turning to house prices, there is no reason for a special increase in interest rates specifically to "cool down the housing market". The MPC should act if and when the impact of rising housing wealth on demand is such as to push forecast inflation above target. Generally speaking, it does not have enough information to follow a policy of pricking asset price bubbles, en passant. On domestic demand growth, the fact that this has been stronger than output growth has put pressure on the balance of payments. Recovery in the world economy will reduce the deficit as will the prospective slowdown in consumption growth when it eventually occurs. This process may or may not be associated with a fall in sterling. Whether sterling falls or not, there is no reason for the MPC to react to any possible inflationary consequences of such a fall until it actually happens.

Finally, on "imbalances", there is the dramatic contrast between expanding services and contracting manufacturing. The gap in growth rates between the two has been particularly wide because of the strength of sterling and the weakness of the world economy. However, some gap between the two is the normal state of affairs. Since the mid-1960s, an average of 125,000 manufacturing jobs have disappeared every

year. Furthermore, over the whole period, rates of return on capital in manufacturing have been far below the average rates of return in other sectors. So when the world economy recovers, the gap will narrow but not disappear. Furthermore, monetary policy has no important role in this process which is far more the concern of regional and industrial policy and social security policy.

The final issue we discuss is the immediate challenge facing monetary policy. The consequences of recent changes in the macroeconomy and the Budget have led the MPC to produce a central projection for a strong recovery in the UK with GDP growth above trend by 2003 and inflation below target until the very end of the forecast horizon when it moves above target and is rising quite rapidly. A mechanical rule which translates the central projection of inflation at the two-year horizon directly into an immediate interest rate adjustment would have suggested a rise in rates in May. But such a mechanical rule is not the best way of keeping inflation close to target. While it may take two years for a rise in interest rates to have their full impact, the impact starts well before then. So in a situation where inflation only rises above target at the end of the two-year horizon, a rise in interest rates further down the line would still impact on demand early enough to lower inflation to the target level at the end of the two-year period and beyond. And given the current fragile nature of the recovery in the UK, some delay in raising rates seems to be the correct strategy for keeping inflation as close as possible to target over the long haul.

Endnotes

1. The emphasis is on trend growth here. There will be a surge in productivity growth as we emerge from the recession for purely cyclical reasons.

2. Most recently this issue arose in the press following the presentation of Wallis (2001) at the Royal Economic Society Conference in March 2002 and the publication of Wadhwani (2002). Wallis himself does not, in fact, argue that monetary policy has had a deflationary bias although he does remark that "excessive concern with upside risks was not justified over the period considered".

3. This is based on a simulation of the Bank of England Macroeconomic Model (see Bank of England, 2000).

4. Understandable because inflation was above target throughout the period and the MPC was new and needed to build up credibility.

5. Actually, MPC exchange rate forecasts are an average of the path based on uncovered interest parity and an unchanged level. Ex-post, neither work particularly well, but then neither does any other known forecasting method.

6. RPIY inflation is RPIX inflation with taxes excluded. Part of the surge in RPIY inflation is also due to base effects, in other words, it would have risen even if excise taxes had been uprated in line with inflation in the 2001 budget because they were increased above inflation in the previous budget.

7. There is a lot of disagreement about these numbers. Looking at Jorgenson and Stiroh (2000), Oliner and Sichel (2000), Whelan (2000), US Council of Economic Advisors (2001), Gordon (2000), the respective percentages are in the ranges 30%-50%, 12%-40%, 0-63%. The contribution of the last factor is a particularly contentious issue.

8. In standard models, increasing competition leads to lower rates of return on capital. For those who like formal analysis, if a firm has a Cobb-Douglas technology and faces a downward sloping demand curve, maximising profit would imply

$$\mathrm{P}\left(1-1/h\right)(1-a)\mathrm{Y}/\mathrm{K}=C;\mathrm{P}\left(1-1/h\right)aY/L=W \qquad \text{where}$$

P is the output price, Y is output, K is capital, L is employment,
W is the wage, C is the cost of capital, $(1-a),a$ are the Cobb-Douglas exponents and h is the demand elasticity. These equations imply that profits,

$$\Pi = PY - WL = PY\left(1-\left(1/h\right)\right) \text{ and that}$$

$$\Pi / CK = \frac{1 - a\left(1 - 1/h\right)}{(1-a)\left(1 - 1/h\right)} \quad . \text{ But}$$

$$C = P_I\left(r + V - \dot{\mathrm{P}}_I / \mathrm{P}_I\right)$$

where P_I is the price of investment goods, $r - \dot{\mathrm{P}}_I / \mathrm{P}_I$ is the "own" real interest rate and V is the rate of depreciation. So the return on capital,

$$\Pi / \mathrm{P}_I \mathrm{K} = \frac{\left(1 - a\left(1 - 1/h\right)\right)\left(r + V - \dot{\mathrm{P}}_I / \mathrm{P}_I\right)}{(1-a)\left(1 - 1/h\right)}$$

which is decreasing in the standard measure of competition, h.

9. Lest it be thought that there is any contradiction between this statement and the much discussed rise in trend output growth assumed by the Treasury in the Budget forecast, there is not. The Treasury assumes no rise in trend productivity growth, looking forward. The rise in trend output growth comes from the assumed rise in employment growth arising from the projected increase in the growth in the population of working age provided by the Government Actuary's Department. Note that trend output growth is the sum of trend labour productivity growth and trend employment growth.

10. For example, in Germany, the United States and Australia.

11. Things are a bit more complex than this because it may be argued that, in a period of high inflation, borrowers and lenders would be happy to keep increasing the size of any loan as inflation continues to boost disposable income. In practice, however, the transactions costs associated with this process were so large during the high inflation period in the UK that such increases were relatively infrequent.

12. Formally, this process might be modelled by supposing that households faced a relaxation in their liquidity constraints, with the precise point in time at which this relaxation happened differing across households. This would lead to a higher rate of aggregate consumption growth for some period.

13. In 2002 Q1, the house price to earnings ratio was between 8.1 per cent (DTLR) and 20.8 percent (Halifax) below the 1989 peak. The house price to personal disposable income ratio was between 25.3 per cent (DTRL) and 36.5 per cent (Halifax) below the 1989 peak.

14. Not to mention the fact that a substantial rise in rates might be necessary to choke off a speculative boom and that such a rise would create further instability.

15. For example, once direct investment is measured at market value as opposed to the book value used in the standard statistics, the overall UK external asset position swings from one of net liabilities to one of net assets. In particular, if the method of adjusting direct investment due to Cliff Pratten is used, the deterioration in the UK external net asset position since 1996 is eliminated. For details, see Senior and Westwood (2001), in particular the Box on p.390.

16. The argument here is that the first round, price level effects from sudden exchange rate moves should be accommodated, with monetary policy only acting on the potential second-round effects.

17. Of course, the relevant exchange rate here is the real exchange rate. However, since 1993, real and nominal exchange rates have not diverged greatly because inflation rates in the major trading nations of the OECD have been very close by recent historical standards.

18. Indeed, it may already be happening.

References

Baily, M. N. (2001) "Macroeconomic Implications of the New Economy" in Economic Policy for the Information Economy, Symposium sponsored by the Federal Reserve Bank of Kansas City, Jackson Hold, Wyoming (August 30-September 1, 2001).

Bank of England (2000) "Economic Models at the Bank of England: September 2000 Update" (London: Bank of England).

Brynjolfsson, E. and Hitt, L. (2000) "Beyond Computation: Information Technology, Organizational Transformation and Business Practices". Journal of Economic Perspectives, 14(4), Fall, 23-48.

Council of Economic Advisers (2001) Annual Report in Economic Report of the President. Washington D.C. January.

Crafts, N. and O'Mahony, M. (2000) "A Perspective on UK Productivity Performance". London School of Economics, mimeo.

Davies, G., Brookes, M. and Williams, N. (2000) "Technology, the Internet and the New Global Economy", Goldman Sachs Global Economics Paper No.39, Goldman Sachs, March.

Gordon, R. J. (2000) "Does the 'New Economy' Measure up to the Great Inventions of the Past?" Journal of Economic Perspectives 14(4), Fall, 49-74.

Griffith, R., Redding, S. and Van Reenen, J. (1999) "Mapping the Two Faces of R&D: Productivity Growth in a Panel of OECD Manufacturing Industries", Institute for Fiscal Studies, mimeo.

Jorgenson, D. and Stiroh, K (2000) "Raising the Speed Limit: US Economic Growth in the Information Age" Brookings Papers on Economic Activity (1), 125-211.

McKinsey Global Institute (1998) Driving Productivity and Growth in the UK Economy, Washington D. C.: McKinsey Global Institute.

Nickell, S. and Van Reenen, J. (2002) "Country Studies: The United Kingdom" in Technological Innovation and Economic Performance, edited by B. Steil, D. G. Victor and R. R. Nelson (Princeton, N. J.: Princeton University Press).

Oliner, S. D. and Sichel, D. E. (2000) "The Resurgence of Growth in the Late 1990s: Is Information Technology the Story?" Journal of Economic Perspectives 14(4), Fall, 3-22.

O'Mahony, M. (2002) "Productivity and Convergence in the EU", National Institute Economic Review, 180, April, 72/82.

O'Mahony, M. and de Boer, W. (2002) "Britain's Relative Productivity Performance: Has Anything Changed?" National Institute Economic Review, 179, January, 38-43.

Senior, S. and Westwood, R. (2001) "The External Balance Sheet of the United Kingdom: Implications for Financial Stability?", Bank of England Quarterly Bulletin 41(4), 388-405.

Stiroh, K. J. (2001) "Information Technology and the US Productivity Revival: What do the Industry Data Say?" Federal Reserve Bank of New York Staff Reports, No.115, January.

UBS (2002) "European Potential: Summary" UBS Global Asset Management, Research Paper, 12 April.

Wadhwani, S. B. (2002) "The MPC: Some Further Challenges", Speech delivered at the National Institute of Economic and Social Research, Thursday, 16 May. 29, 02.

Wallis, K. F. (2001) "Chi-squared Tests of Interval and Density Forecasts, and the Bank of England's Fan Charts", Dept. of Economics, Warwick University.

Whelan, K. (2000) "Computers, Obsolescence and Productivity", Board of Governors of the Federal Reserve System, Finance and Economics DP 2000-06, January.