



BANK OF ENGLAND

# Speech

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## Is Inflation Dead?

Speech given by

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I am extremely grateful to Damon Clark, Joanne Cutler and John Henderson for their help and advice. Of course, all views that are expressed in this lecture are entirely personal and do not reflect the views of the Monetary Policy Committee or the Bank of England.

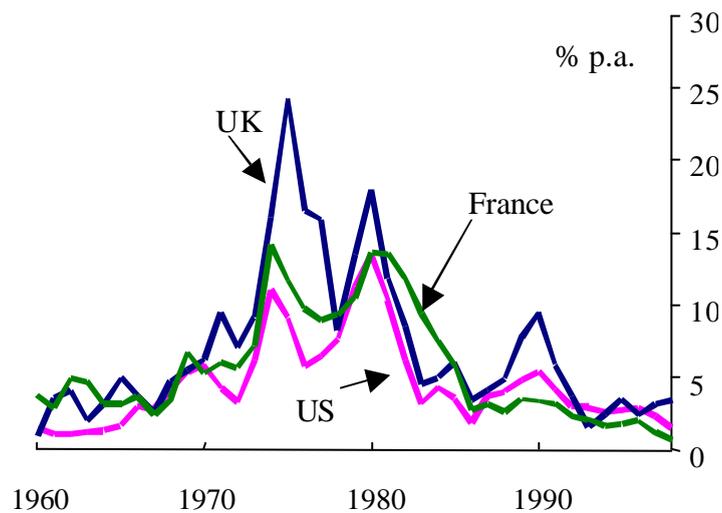
## SECTION 1 - IS INFLATION DEAD?

It is a great pleasure to be here today, especially at a time when there is an active policy debate in many developing countries about whether one should adopt institutional measures that attempt to entrench lower inflation. Of course, the National Council of Applied Economic Research is playing an active role in that debate in an Indian context.

In some OECD countries, the significant decline in inflation in recent years (Figure 1) appears to have been associated with some commentators either proclaiming the ‘Death of Inflation’ or heralding the onset of a pernicious deflation.

**Figure 1**

### Recent inflation performance



Central bankers who raise interest rates in order to hit inflation targets are, by these commentators, commonly described as fighting the last war. For example, Shilling (1998) argues that

“I believe that deflation is not just possible but highly likely.” (p-1)

or, Bootle (1996), who concludes his book by asserting,

“..it is right to speak not merely of the end, nor of the conquest, but rather of the death of inflation.” (p-225)

Such views appear to be predicated on a host of structural changes which have intensified product market competition and improved labour market performance in OECD countries, and do appear to be placing downward pressure on prices and wages; and these authors are right to remind us of the importance of some of these factors.

In the UK, the Government has asked the Monetary Policy Committee to attempt to achieve a 2½% inflation target, with an ‘open letter’ to the Chancellor being required if inflation falls outside the 1½%-3½% band.

In today’s lecture, I plan to discuss the important role accorded to these aforementioned structural disinflationary forces in my thinking. However, perhaps unsurprisingly, I will conclude that one cannot be complacent about inflation, and that central bankers still have a job to do!

## **SECTION 2 – SOME THEORETICAL CONSIDERATIONS**

As my colleague, William Buiter (1999) has recently emphasised again, inflation is, ultimately, a monetary phenomenon. An improvement, say, in the workings of the labour market is something that, in the long-run, would be associated with a lowering of the so-called non-accelerating inflation rate of unemployment (NAIRU, hereafter), but need have no direct impact on the inflation rate.

Specifically, suppose that we start in a position where inflation is running at 2½% and would, on unchanged interest rates, remain constant thereafter. Now, assume that the NAIRU falls for some exogenous reason e.g. a change in government policy vis-à-vis the administration of unemployment benefits. Then, other things being equal, inflation out -turns will start coming in below target. A central bank that, like the Bank of England (BoE hereafter), has a symmetric

inflation target will respond to the expected below target inflation by lowering interest rates. However, over time, the actual unemployment rate should drift down to the new, lower level of the NAIRU. When that happens, one would expect interest rates to rise back to their original level.

Hence, in the short-run, the benign structural factors should enable inflation to come in lower than before. However, a central bank like the BoE shall attempt to raise the inflation rate back to its original target level by lowering interest rates. Therefore, inflation does not necessarily die as central bankers with symmetric inflation targets actively resist deflation. I should say that the “short-run” in this example could, in practice, last several years, as structural factors that lower the NAIRU can, sometimes, improve gradually over a number of years.

The above example discussed the case of an improvement in labour market performance. In many respects, the effects of an intensification of product market competition are similar. In most models of union-based wage bargaining or efficiency wages, a change in product market conditions directly affects the wage outcome, and the NAIRU. Therefore, one could analyse it in a similar way to the improvement in labour market performance.

In discussing the impact of these supply-side improvements, I have deliberately abstracted from the demand-side impact of some of these supply-side changes, which, in general, might also affect the short-run level of interest rates. Specifically, a fall in the NAIRU may well be associated with a fall in the equity risk premium, and, hence, aggregate demand may rise in line with standard wealth effects. On the other hand, the restructuring activity that is typically associated with an intensification of product market competition usually leads to an increased sense of job insecurity, which hurts consumption.

While these demand-side considerations affect the precise path of interest rates, they are unlikely to affect the qualitative aspects of our basic thesis.

### **SECTION 3 – THE ROLE OF INTENSIFIED PRODUCT MARKET COMPETITION**

A variety of the structural changes that are supposed to have killed inflation are factors that have contributed to intensified product market competition. One would expect an increase in product market competition to lead to lower wages, as the relevant firms will tend to partially offset the effect on their profit margins – e.g. after the trucking regulatory reforms of the late 1970s in the US, Rose (1987) found that, between 1979 and 1985, there was a decline of approximately 40 per cent in the size of the union wage differential in trucking.<sup>1</sup>

Nickell, Vainiomaki and Wadhvani (1994) present evidence based on observing some 800 British manufacturing firms over time that product market power has a positive effect on wages, and that product market power also reduces the size of the negative effect of unemployment on wages, thereby making the labour market less “flexible”.

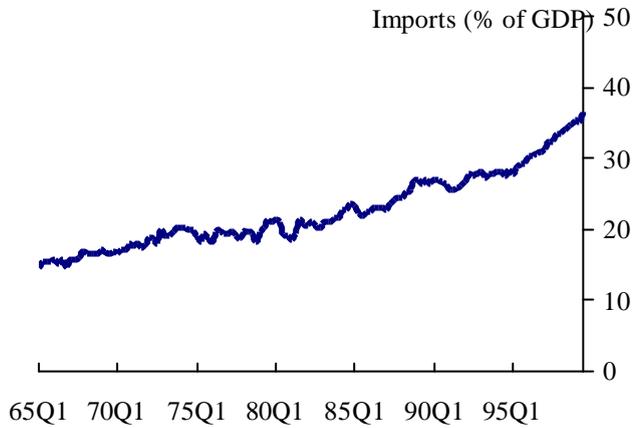
One reason that there has probably been an increase in product market competition is globalisation, i.e. the increasing integration of global product markets. Figure 2 suggests a striking increase in the degree of import penetration in the UK, which is representative of a more general trend in OECD countries. My colleague, DeAnne Julius (1999), has recently reminded us that foreign direct investment (FDI) has also played an important role in this context, with the UK now one of the most important outward investors worldwide (Figure 3). In a UK context, anecdotal evidence suggest that, in many industries, a combination of low cost imports and the threat of relocating a plant abroad has had a substantial effect in terms of keeping a lid on wages, and preliminary econometric work (see Clark and Wadhvani (1999)) is also supportive of this notion.

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<sup>1</sup> Most union bargaining models and efficiency wage models would yield the result that intensified product market competition would reduce wages and the NAIRU.

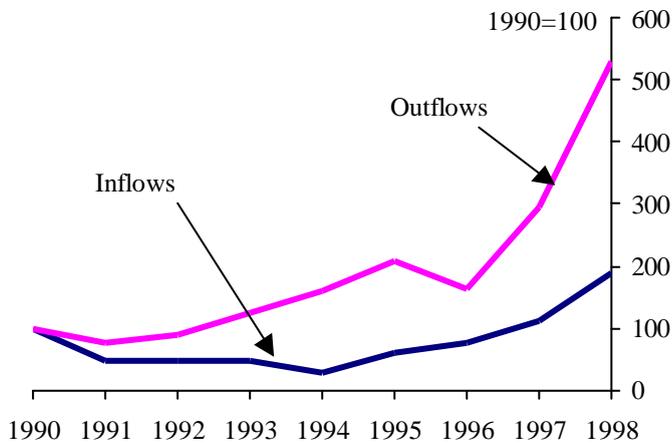
**Figure 2**

**Import penetration**



**Figure 3**

**UK FDI flows**



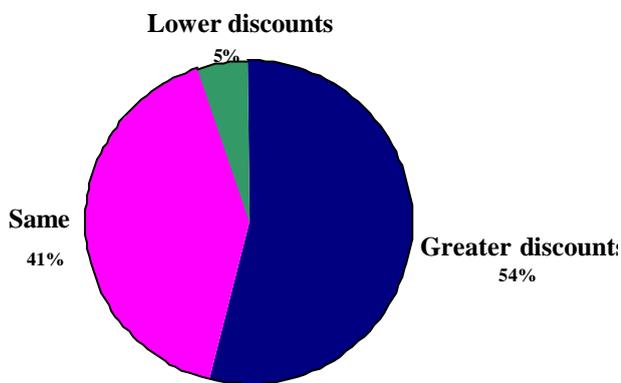
Source: IMF Balance of Payments statistics

Evidence of increased product market competition has not just been confined to globalisation. Government action has also played a role here. Privatisation and/or regulatory changes in a whole host of industries including gas, water, telecom, electricity, airports, rail, the docks and broadcasting have led to rather more competitive product market conditions.

Of course, the intensification of competition does not appear to have been confined just to the internationally traded or deregulated sectors – in a conjunctural context we do hear much about the ‘price wars’ in retailing as well. In a September 1999 survey carried out at the MPC’s request by the Bank’s regional agents, about half of all respondents reported more discounting over the past 12 months compared to a year ago (Figure 4). Moreover, over half of the respondents cited structural rather than cyclical reasons for increased discounting (Figure 5).

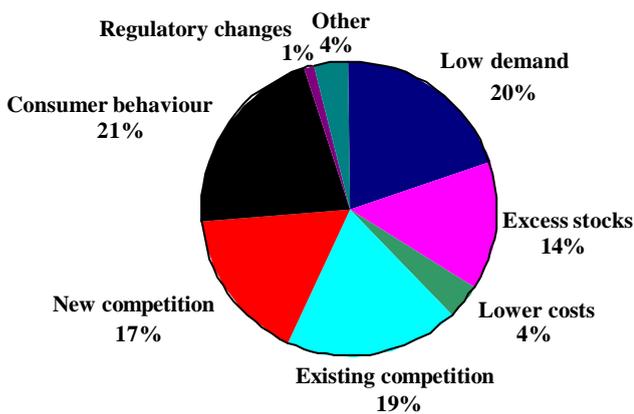
**Figure 4**

**Discounts over past year**



**Figure 5**

**Reasons for discounting**

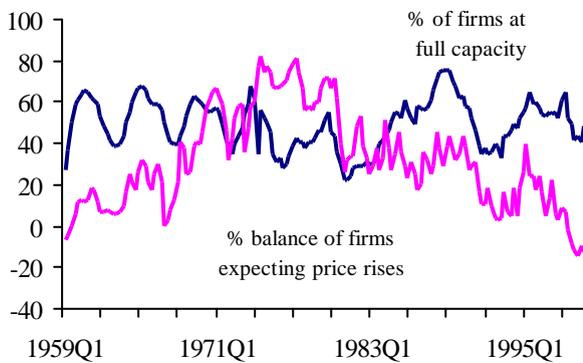


Note in particular, the evidence that an important factor (affecting 21% of cases) is a change in consumer behaviour in terms of being more conscious about the ‘value for money’. Now, a low inflation environment is one where consumers are less likely to confuse absolute and relative price changes, and, it does, therefore, make them more discerning buyers. Also, interestingly a more cost-conscious environment at work (because of intensified product market competition) probably makes individuals more price-conscious in their personal shopping habits as well.

Another bit of evidence for an intensification of product market competition is in Figure 6 – which is suggestive of a change in the relationship between domestic capacity utilisation and the balance of firms who expect to increase prices, in that, in the late 1990s, the perceived ability to increase prices seems lower, at any given level of utilisation, than in the 1970s or 1980s (though the 1960s looks similar).

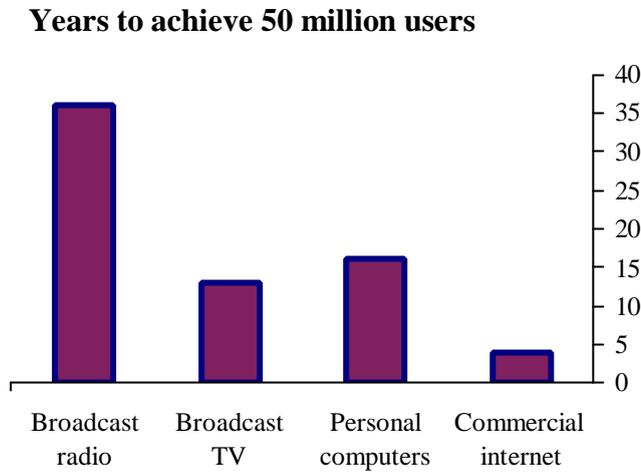
**Figure 6**

**CBI survey: Capacity utilisation and price pressures**



Over the next few years, though, a potentially important reason for intensified product market competition and/or efficiency gains is the development of the internet. As my colleague, DeAnne Julius (1999) has pointed out, it took 36 years to achieve 50 million users for radio, 13 years for TV, 16 for PCs, but, for the internet, it has taken fewer than 5! (Figure 7).

Figure 7



Source: US Commerce Dept

In the retail market, the main reasons for expecting lower prices include:-

- (i) standard theory predicts that high search costs allow prices to be above marginal costs in equilibrium (see, e.g. Salop (1979)) so one would expect the lowering of search costs associated with the internet to lower prices.
- (ii) Lower market entry costs must limit the price premiums sustainable by existing market participants by increasing actual or potential competition.
- (iii) Lower distribution and inventory costs by shortening the supply chain.

Hence, it is hardly surprising that Brynjolfsson and Smith (1999) found that the prices for books and CDs sold through the internet were 9%-16% lower than in conventional outlets, even after accounting for costs from shipping and handling, delivery, and local sales taxes.

## **SECTION 4 – STRUCTURAL IMPROVEMENTS IN THE UK LABOUR MARKET**

While it is true that there have been structural changes in the labour markets of most OECD countries – I shall illustrate my thesis with regard to the UK, since I know it somewhat better.

In attempting to explain why the NAIRU might have fallen since 1980, I initially draw on the standard reference works on attempting to explain UK unemployment, that are represented by Layard, Nickell and Jackman (1991), Minford (1992) and Nickell (1998).

Table 1 shows that union membership was as high as 49% in 1980 and had fallen to 30% by 1998. Strike activity was much higher in 1980, 957,000 working days lost to strikes, as compared to just 30,000 in 1998. This may, in part, be attributable to the changes in industrial relations legislation since 1979 (see, e.g. Brown and Wadhvani (1990)). The real oil price in 1980 was around five times as high as 1998. Similarly, an index of regional mismatch in 1980 was around six times as high as 1998. Further, the replacement ratio (i.e. the ratio of out-of-work benefit to estimated in-work income) in 1980 was higher than in 1998. Also, the benefits system was progressively tightened from 1986 with the Restart programme, under which unemployed people on benefit were interviewed every six months in order to ensure that they were looking for work, and to provide them with a menu of help.

**TABLE 1****SOME CONVENTIONAL FACTORS AFFECTING THE NAIRU: 1998 VS 1980**

<b>FACTORS</b>	<b>1998</b>	<b>1980</b>
UNION DENSITY	0.30	0.49
NUMBER OF WORKING DAYS LOST (000s)	30	957
REAL OIL PRICE	7.8	40.4
<u>MISMATCH</u>		
(a) REGIONAL	0.24	1.54
(b) SKILLS	5.22	5.00
LONG-TERM UNEMPLOYMENT  (Ratio of Total Unemployment)	31.4	34.8
REPLACEMENT RATIO	0.18	0.24
TAX WEDGE	0.36	0.35

## **SECTION 5 – A BREAKDOWN OF TRADITIONAL ECONOMIC RELATIONSHIPS**

In the US, economists have increasingly questioned the stability of the standard Phillips curve in which price inflation depends on the unemployment rate, past price inflation and standard measures of price supply shocks. For example, a recent paper by researchers at the Federal Reserve Board (see Brayton, Roberts and Williams (1999)) argues

“...the tendency of our baseline equations to significantly over-predict inflation since the mid-1990s, however, is an indication of structural change – perhaps a decline of the NAIRU” (page 9)

Using different specifications, Stock (1998) and Katz and Krueger (1999) have also concluded that the relationship between inflation and unemployment in the US has changed during the 1990s.

In the UK too, there is some evidence that the relationship between inflation and unemployment might have shifted during the 1990s. Specifically, Table 2 reports two different pieces of evidence on this issue. The first row contains the results of estimating a standard, ‘expectations-augmented Phillips curve’ – type specification for wages – we find that, from 1993 onwards, such an equation over-predicts wage growth by about 0.65 percentage points. The second row reports qualitatively similar results from a corresponding exercise carried out for the wage equation that is to be found in the Bank of England’s core macro-econometric model (see Bank of England (1999)). Of course, one way to interpret these results is that there has been a fall in the NAIRU.

**TABLE 2**

**EVIDENCE ON THE STABILITY OF WAGE EQUATIONS**

<b>ALTERNATIVE MODELS</b>	<b>COEFFICIENT<sup>1</sup> OF DUMMY VARIABLE</b>	<b>t-RATIO</b>
I – Expectations – augmented Phillips curve <sup>2</sup>	-0.65	-1.97
II – Core model wage <sup>3</sup> equation	-0.27	-2.5

Notes

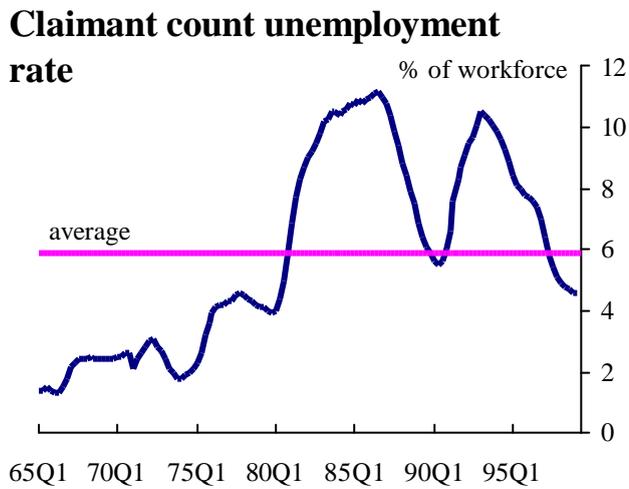
- 1 Dummy variable that takes value one from 1993 Q1.
- 2 Regression of 4-quarter change in earnings growth on five lags of the dependent variable, 4-quarter change in RPI inflation, log of the unemployment rate lagged four periods and seasonal dummies.
- 3 Wage equation as described in Bank of England (1999).

**SECTION 6 – HAS THE NAIRU FALLEN TO ‘GOLDEN AGE’ LEVELS?**

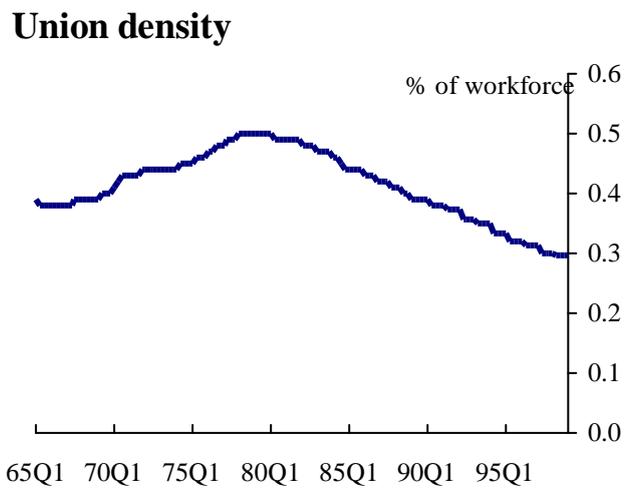
At first sight, one might feel that it is quite likely that the NAIRU has fallen to its “golden age” levels of the 1960s, when in the UK unemployment averaged around 2 ½% (vs. a current level of

4.2% on the claimant count) – Figure 8. First, union density is now rather lower (Figure 9), and working days lost in stoppages have almost vanished (Figure 10). Second, the ratio of out of work benefits to in work income is lower than in the sixties (Figure 11), and the real level of the oil price is also not much different (Figure 12).

**Figure 8**

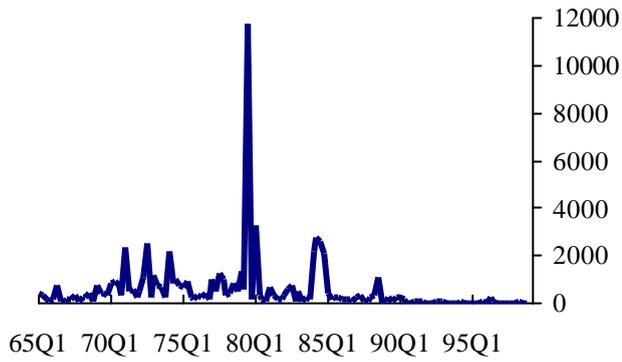


**Figure 9**



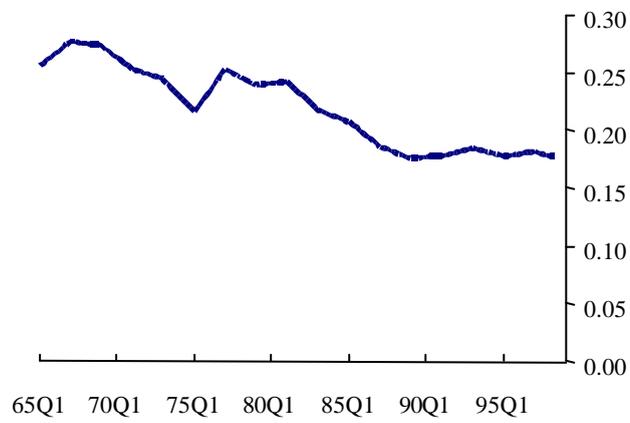
**Figure 10**

**Working days lost in all stoppages  
(000s)**



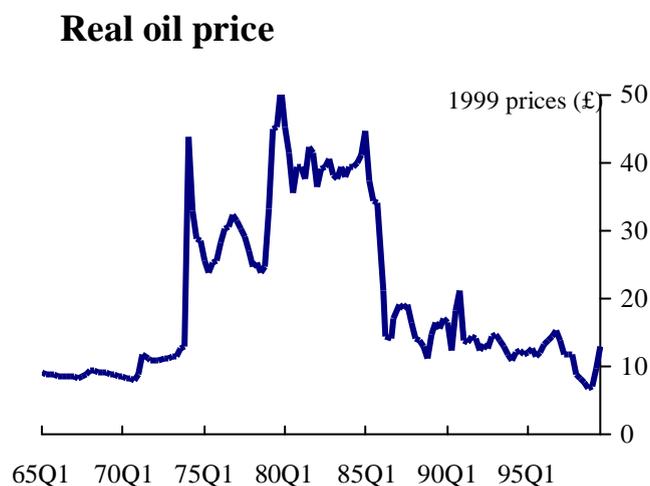
**Figure 11**

**Replacement ratio<sup>1</sup> (OECD)**



<sup>1</sup> Ratio of out of work benefits to in work income

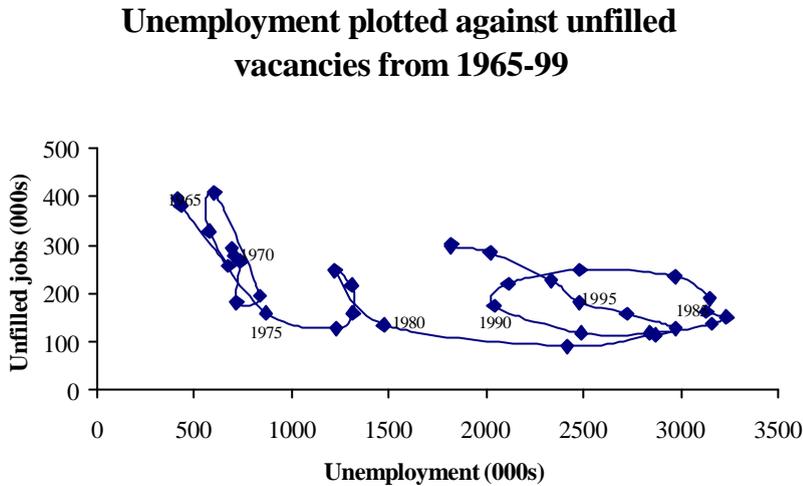
**Figure 12**



In addition, as we noted above, import penetration has steadily increased over the period (cf Figure 2), and, deregulation and privatisation have probably helped intensify the extent of product market competition.

However, there are several factors that have moved in the direction of increasing the NAIRU. Perhaps the most striking and direct evidence of the post-60s deterioration in the UK labour market is the fact that at any given level of vacancies, we have much more unemployment than we did before, i.e. the so-called Beveridge curve has moved out (Figure 13). This must have occurred either due to a reduction in the search effectiveness of the unemployed, or because of an increase in mismatch. Note that the reduction in search effectiveness might arise from either firms or workers becoming more choosy.

**Figure 13**

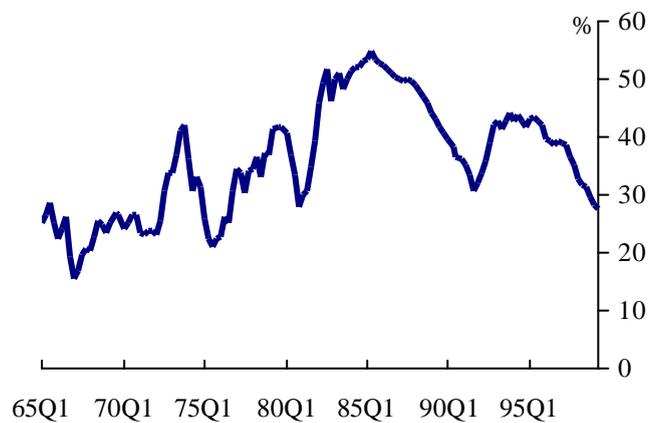


In his persuasive review of this question, Nickell (1999) points to several relevant considerations. First, perhaps encouraged by the indefinite availability of benefits for much of the period, the proportion of long-term unemployed has been high. Although it has fallen in recent years, it still remains above the average level of the sixties (cf Figure 14). Second, he points out that, in some respects, the benefit system is less job-friendly than in the sixties (notwithstanding the decline in the replacement ratio). In particular, housing benefit (which pays the rent) represents a significant fraction of total benefits for single persons who are unemployed, with a high implicit marginal tax rate of 65%. Third, the demand for unskilled workers has probably fallen (perhaps because of technical change and competition from the Newly Industrialised Countries) by more than its supply. On one index of skill mismatch, there is evidence that, on average, it is higher than it was in the sixties (Figure 15). Fourth, the average level of UK unemployment in the 1950s and 1960s was unusually low by long-term historical standards and it is possible that the 1960s were an anomalous period. In addition to Stephen Nickell's aforementioned arguments, there are at least two more considerations that are worthy of our attention. First, Andrew Oswald (1997) shows that over the last 30 years, countries with the fastest growth in home-ownership have also had the fastest growth in unemployment. In addition, countries with high levels of home ownership also appear to have higher unemployment. Oswald presents evidence suggesting that:

- (i) Unemployed home-owners are much less willing to move areas to find work than private renters. The latter have a notably fast outflow rate from unemployment in to jobs.
- (ii) UK regions with larger proportions of private renters have higher outflows from unemployment and larger numbers of movers per head.

**Figure 14**

**Long term unemployed (12 months)**



**Figure 15**

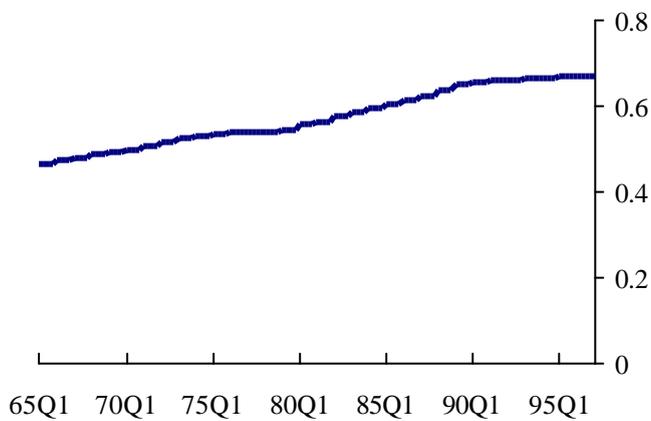
**Skill mismatch**



Clearly, at this point, we only have a few intriguing correlations, and much more research is needed. However, if Oswald's preliminary research is validated, then one could no longer regard the rise in owner-occupation (Figure 16) as an unmixed blessing, because, notwithstanding other social benefits, it would be a factor that keeps the NAIRU higher than it need be.

**Figure 16**

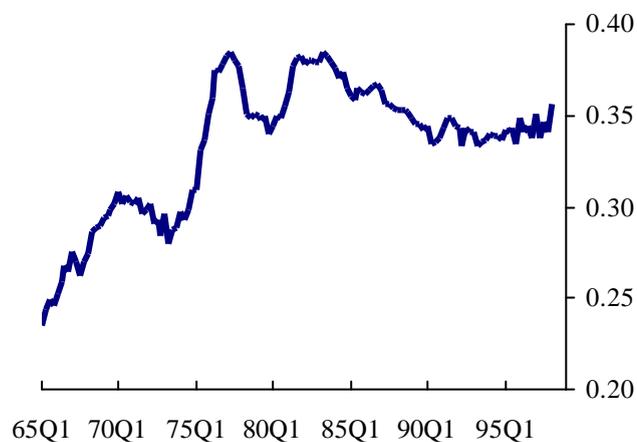
### Owner occupation rate



Another factor that might have contributed to a rise in the NAIRU since the sixties is the rather higher level of the tax wedge (Figure 17). Economists are fond of the notion that, in the long-run, a rise in the tax wedge has no consequences for the level of unemployment, with the labour market behaving as if labour supply is inelastic, and taxes are all shifted onto labour. However, Nickell and Layard (1998) record that the empirical evidence on this issue is mixed, so the rise in the overall tax burden must remain a candidate explanation for why the NAIRU now might be higher than in the sixties.

**Figure17**

**Tax wedge**



**SECTION 7 – THE CURRENT CONJUNCTURE**

Clearly, there is uncertainty about where the NAIRU is in relation to current unemployment. Our discussion above makes one relatively confident that the NAIRU today is below what it was in the 1980s, though it is likely to be above its level in the 1960s. However, as we saw above (Figure 8), the actual unemployment rate is already at a 20-year low, so the question that we have to ask ourselves is whether the benefits of the NAIRU-reducing structural changes in the labour and product markets have already been seen.

Figure 18 reminds us that, on a variety of measures, real earnings growth in 1999 has been higher than in recent years. However, one benign explanation of the rise in real wages is that it has arisen because of our inflation coming in rather lower than had been expected (cf Figure 19). Nevertheless, there is clear evidence of growing skill shortages and recruitment difficulties (Figure 20).

Figure 18

### Growth in real earnings and labour costs

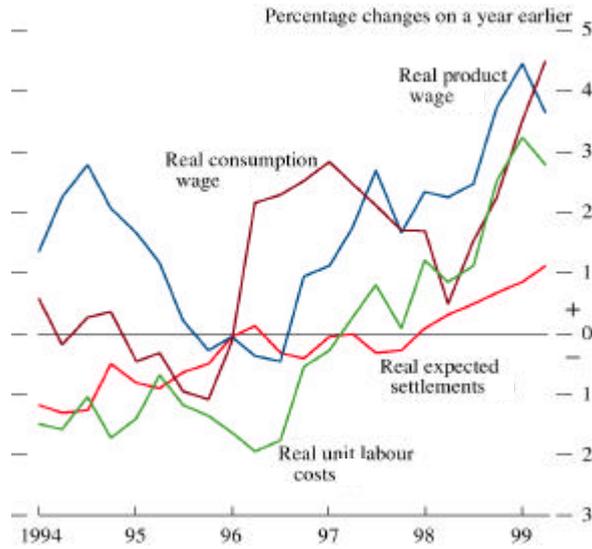
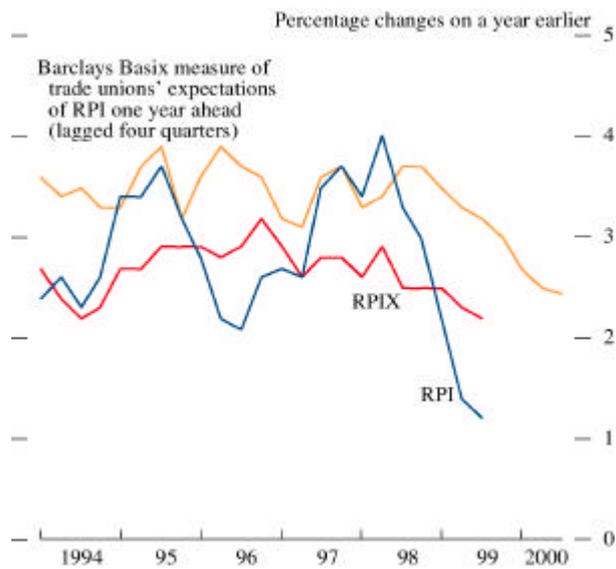
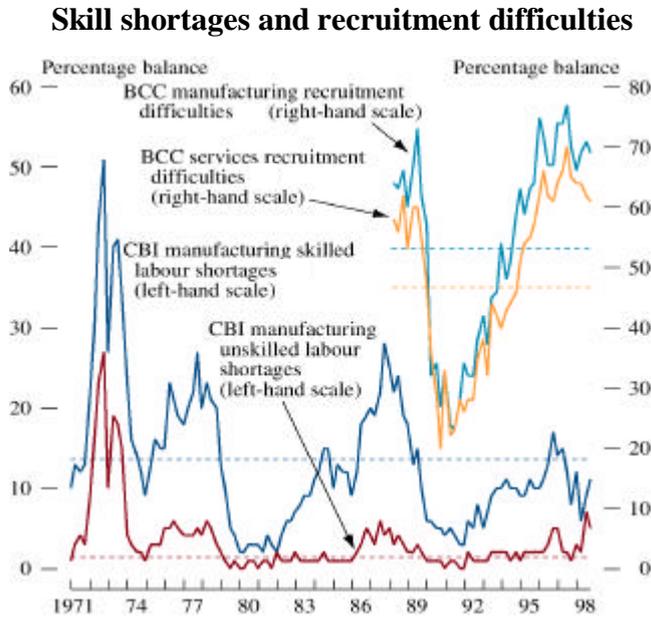


Figure 19

### Actual and expected inflation



**Figure 20**



Notwithstanding the evidence on ‘price wars’ in retailing that we alluded to above, perhaps because of growing wage pressure, some forward-looking survey indicators of prices have turned up in the services sector (Table 3). Hence, it is perhaps, not surprising that, in recent months, the MPC has felt it appropriate to raise interest rates by 25 b.p. on two occasions, in the spirit of early, pre-emptive action; suggesting that the committee, at least, does not believe that inflation is dead.

**Table 3**

**BCC and CIPS surveys of service sector prices**

	1998 Q2	Q3	Q4	1999 Q1	Q2	Q3	Q4
BCC services prices balance	22	12	17	17	11	22	n/a
CIPS services input prices	58.8	57.8	54.6	54.9	55.5	54.5	57.1 <sup>1</sup>
CIPS services prices charged	51.9	51.3	47.9	49.7	50.9	49.2	53.2 <sup>1</sup>

Sources: CIPS and BCC

1. November Figure

Note that when preparing our inflation forecast for the Inflation Report (November 1999), the committee explicitly allowed for a reduction in structural price-cost margins to reflect a likely intensification of product market competition (arising from, e.g. the internet), but this did not preclude inflation rising to the target level at the end of two years.

**CONCLUSIONS**

I have argued today that significant structural changes in labour and product markets in OECD countries have reduced the NAIRU, but that it would be wrong to conclude that these structural changes have led to the ‘death of inflation’. Inflation is, ultimately, a monetary phenomenon, and keeping inflation low depends on whether there is the political will to take the sometimes difficult decisions necessary to achieve that end. Hence, designing institutions that entrench low inflation remains an important part of the policy agenda.

Of course, we do not desire low inflation for its own sake, but because it might help boost growth – a recent cross-country study concluded (see Romer and Romer (1998)) –

“on average, the poor are much better off in countries where monetary policy has kept inflation low and aggregate demand stable.”.

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