

MONETARY POLICY IN THE UK

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Abstract

We argue in this contribution that the institutional dimension of the Bank of England (BoE) monetary policy and the role the UK HM Treasury assumes in this framework are both firmly based on the New Consensus in Macroeconomics (NCM), a theoretical framework upon which also the Inflation Targeting policy element is firmly based. This paper discusses these aspects of the UK monetary policy, and then assesses the policy that has been pursued since 1997 (with some reference made to the period between 1992 and 1997 when a version of the framework was introduced). The strategy has been successful in terms of keeping UK inflation rates within the targets set by HM Treasury. However, a number of problematic issues are highlighted and discussed.

1. Introduction*

The Monetary Policy Committee (MPC) of the independent Bank of England (BoE) operates and conducts monetary policy in the UK. The UK HM Treasury designs and sets the objective(s) and the inflation target of the UK monetary policy; it also appoints members of the MPC. In this framework, the BoE via the MPC decides on the instrument to be used to meet the objective(s) and the inflation target set by HM Treasury. The BoE, therefore, has instrumental independence but not policy goal independence. The aim of this paper is to investigate and assess the BoE's conduct and operation of monetary policy in the UK and the role of HM Treasury in the process. The pursuit of this particular policy, which has come to be known as Inflation Targeting (IT), covers the period since October 1992, when the BoE adopted the principle of IT, to today. The focus, however, is on the period since May 1997 when the Chancellor of the Exchequer gave independence to the BoE.

The paper begins with a discussion of the institutional dimension of the BoE monetary policy, and the role the UK HM Treasury assumes in this framework. This is followed by a short review of the theoretical framework upon which the IT policy element is firmly based. The rest of the paper attempts to assess the policy that has been pursued since 1992 with the modifications introduced in 1997, where a number of problematic issues are highlighted. A final section summarises the argument and concludes.

2. The UK Monetary Policy Framework

In September 1992 the UK was forced out of the Exchange Rate Mechanism (ERM). In October 1992 the Chancellor of the Exchequer introduced some form of IT. The

main features of that era, which were modified in 1997, were the following: 1%-4% inflation target; regular monthly monetary meetings between the Chancellor of the Exchequer and the Governor of the Bank of England to decide the level of the rate of interest; the BoE would give public advice to the Chancellor of the Exchequer, who was responsible to take the actual decisions on interest rates. In 1993 the inflation report was published for the first time, and in 1995 the publication of the minutes of the monthly monetary meetings, between the Chancellor and the Governor, was inaugurated. It is true to say that over that period there were disagreements between the Chancellor of the Exchequer and the Governor of the BoE, which affected adversely the credibility of the system in place (see Cobham, 2006, pp. F189-F190, for examples of those disagreements).

In May 1997 the new Chancellor of the Exchequer gave independence to the BoE, and assigned operational responsibility of monetary policy to its newly created Monetary Policy Committee (MPC). The MPC meets at least once per month to set the rate of interest (also six times a year to set research priorities).¹ The minutes of the meetings are released on the Wednesday of the week that follows the monthly meeting of the MPC. It is clear from the minutes of the MPC meetings that before policy decisions are reached, comprehensive discussions take place on a number of issues, including “developments in financial markets; the international economy; money, credit, demand and output; and supply, costs and prices” (MPC, 2006b, for July). The membership of the MPC comprises of the Governor of the BoE and the two Deputy Governors; two BoE members (appointed by the Governor of the BoE in consultation with the Chancellor of the Exchequer); four external members, appointed by the Chancellor of the Exchequer; and there is also a Treasury Representative who attends and speaks but has no vote (this is an observer not a full member of the MPC).

The internal members are permanent appointments, while the external members serve for a three-year period with the possibility of reappointment.

The main features of the new arrangements may be summarized: the primary objective of monetary policy is price stability and inflation is a monetary phenomenon. Price stability is achieved when inflation remains low and stable for a long period of time. In this monetary policy framework, public announcement of official inflation target is undertaken, thus the acronym 'IT framework'. IT in the UK is conditioned on what inflation is expected to be rather than on what it is in view of the time lags in monetary policy. Subject to achieving and maintaining price stability in this way, the BoE is also expected to support the economic policy of the government, which includes growth and employment. Price stability is, thus, thought to be a precondition for high growth and employment. In the post-1997 system the MPC is accountable to Parliament.² Scrutiny is exercised through regular reports and evidence given to the House of Commons Treasury Select Committee, which also holds confirmation hearings for new MPC members. Scrutiny is also exercised through a House of Lords Select Committee on Economic Affairs. The MPC is also accountable to the public at large through the publication of the minutes of the MPC meetings and the Inflation Report (see, for example, MPC, 2006a, letter of the Chancellor to the BoE Governor, annex to minutes for April).

The government, however, retains overall responsibility for monetary policy. It is responsible for designing the framework and it sets the inflation target. Once the inflation target is set, it becomes primarily a technical issue as to what level of interest rates is appropriate to meet the target. The MPC is responsible for setting the appropriate interest rate to meet the set inflation target by the Chancellor of the Exchequer. The BoE has, thus, instrument independence, but not goal independence,

in its pursuit of monetary policy. In doing so, the BoE pursues the principle of ‘constrained discretion’, which is the middle ground between ‘rules’ and ‘discretion’ (Bernanke and Mishkin, 1997). Ever since 1992, but more so since 1997, enhanced responsibility of the BoE for its actions, accountability to the government and parliament, which implies transparency in actual policy making, are important attributes of the policy. Furthermore, the BoE is very concerned about openness, communication, and credibility. Individual reputation of MPC members is another important ingredient of the BoE monetary policy framework in view of the published minutes of each meeting of the MPC, which reveal individual voting.

In May 1997, the inflation target was changed to 2.5% with 1% tolerance range. The Retail Price Index (RPIX), excluding mortgage interest payments, was to be the new target. That was changed in December 2003 to the Harmonised Inflation Consumer Index (HICP) with 2% being the central target and with a 1% tolerance range (Brown, 2003).³ Defining IT within a range introduces a certain degree of flexibility in the conduct of monetary policy. Credibility attained through pre-commitment to the inflation target without government interference is thought to be paramount. The inflation target is symmetrical, i.e. deviations below target are treated in the same way as deviations above the target. The symmetry of the target is underlined by the *open-letter procedure*. When inflation outcomes depart from the target by more than 1%, in *either direction*, the Governor of the BoE, on behalf of the MPC, is required to write an open letter to the Chancellor of the Exchequer, and explain (i) the reasons why the actual inflation rate is not within the prescribed target range; (ii) the policy action contemplated to deal with it and to bring actual inflation within the set range; (iii) the period in which inflation is expected to return to target; and (iv) how this approach meets the Government’s objectives for growth and employment. An interesting feature of the open-letter procedure is that it recognises that there are circumstances,

as for example in the case of temporary supply shocks, under which pursuit of the IT procedure, as normally expected, would be excessively costly in terms of real economic performance. A second letter should be sent after three months of the first letter if inflation remains 1% above or below target. It is clearly stated, though, that an open letter does not necessarily imply sign of failure.⁴

One final comment on the BoE framework is on the coordination between monetary and fiscal policies. In view of the BoE operational independence, such coordination might be difficult and can create scope for uncertainty and conflict. Buiters (2000) suggests that there are two dimensions to this argument. There can be uncertainty as to how the two parties view the exogenous environment within which they operate. There can also be strategic uncertainty, in the sense of a policy game, as to how each party would respond to the other party's actions. However, the Treasury Representative on the MPC should be able to shore any potential differences in terms of each party's knowledge of the common policy environment. The strategic uncertainty, however, is more serious and could potentially create problems, in that the MPC and the Treasury might not act cooperatively in the sense of a policy game, where the two parties make binding commitments about current and future decisions and actions. Buiters (2000) suggests that repeated policy games should prevent such occurrence. While this may be true, the MPC setup is an excellent forum for proper coordination of the two policies without reconciling on the independence of either.

3. The Economics of UK Monetary Policy

The economics of the BoE's IT are firmly embedded in equations (1) to (6) as shown below. It is based on the 'The New Consensus Macroeconomics' (NCM) and here we present it when extended to an open economy as in Arestis (2007) – see, also, Agénor,

2002. This is clearly a typically simplified formulation of a more complex model utilised by the BoE in their monetary policy deliberations. Although simplified, it delivers the gist of the theoretical framework from which current monetary policy is rooted. There are six equations in the model as follows.

$$\begin{aligned}
 (1) \quad & Y_t^g = \alpha_0 + \alpha_1 \cdot Y_{t-1}^g + \alpha_2 \cdot E_t[Y_{t+1}^g] + \alpha_3 \cdot (R_t - E_t[p_{t+1}]) + \alpha_4 \cdot rer_t + s_1 \\
 (2) \quad & p_t = \beta_1 \cdot Y_t^g + \beta_2 \cdot p_{t-1} + \beta_3 \cdot E_t[p_{t+1}] + \beta_4 \cdot (E_t[p_{w,t+1}] - E_t[\Delta er_t]) + s_2 \\
 (3) \quad & R_t = (1 - \gamma_0) \cdot [RR^* + E_t[p_{t+1}]] + \gamma_1 \cdot Y_{t-1}^g + \gamma_2 (p_{t-1} - p^T) + \gamma_3 \cdot R_{t-1} + s_3 \\
 (4) \quad & rer_t = \delta_0 + \delta_1 \cdot \{(R_t - E_t[p_{t+1}]) - (R_{w,t} - E_t[p_{w,t+1}])\} + \delta_2 \cdot CA_t + \delta_3 \cdot rer_t + s_4 \\
 (5) \quad & CA_t = \eta_0 + \eta_1 \cdot rer_t + \eta_2 \cdot Y_t^g + \eta_3 \cdot Y_{w,t}^g + s_5 \\
 (6) \quad & er_t = rer_t + P_{w,t} - P_t
 \end{aligned}$$

with $\beta_2 + \beta_3 + \beta_4 = 1$; where α_0 is a constant that could reflect, inter alia, the fiscal stance, Y^g is the domestic output gap and Y_w^g is world output gap; R is the nominal rate of interest and R_w is the world nominal interest rate; p stands for the rate of inflation, p^w for the world inflation rate, and p^T for the inflation rate target; RR^* is the ‘equilibrium’ real rate of interest, that is the rate of interest consistent with zero output gap, which implies from *equation (2)* a constant rate of inflation; rer stands for the real exchange rate, and er for the nominal exchange rate, defined as in *equation (6)* and expressed as foreign currency units per domestic currency unit; P_w and P (in logarithms) are world and domestic price levels respectively, CA is the current account of the balance of payments, and s_i (with $i = 1, 2, 3, 4, 5$) represents stochastic shocks, and E_t refers to expectations held at time t . The change in the nominal exchange rate appearing in *equation (2)* can be derived from *equation (6)* as

$$\Delta er_t = \Delta rer_t + p_{w,t} - p_t.$$

Equation (1) is the aggregate demand equation that emanates from intertemporal optimization of a utility function that reflects optimal consumption smoothing. It is, thus, a forward-looking expectational IS relationship. The model allows for sticky prices in view of the lagged-adjustment elements in this relationship and in the Phillips-curve relationship (the lagged price level in *equation (2)*), and full price flexibility in the long run. The real exchange rate affects the demand for imports and exports, and thereby the level of demand and economic activity. *Equation (2)* is a Phillips curve, with the term $E_t(p_{t+1})$ reflecting the focus of monetary policy on the expectations channel.⁵ *Equation (3)* is a monetary-policy rule, where the nominal interest rate responds symmetrically to inflation. Inflation above the set target leads to higher interest rates to contain inflation, whereas inflation below the target requires lower interest rates to stimulate the economy and increase inflation. The monetary policy rule in *equation (3)* embodies the notion of an equilibrium rate of interest, labelled as RR^* . When inflation is on target and output gap is zero, the actual real rate set by monetary policy rule is equal to this equilibrium rate.⁶ *Equation (4)* determines the exchange rate, while *equation (5)* determines the current account position. Finally, *equation (6)* expresses the nominal exchange rate in terms of the real exchange rate. There are six equations and six unknowns: output, interest rate, inflation, real exchange rate, current account, and nominal exchange rate defined as in (6).

We may now briefly summarise the main features of this framework, highlight its policy implications and explain how monetary policy is expected to operate. The policy aims at ultimate targets, rather than intermediate instruments. In this endeavour, policymakers are supposed to contribute to a clear understanding by the public of their policy intentions. Monetary policy is viewed as the main instrument of macroeconomic policy, which should be operated only by experts in the form of the 'independent' BoE. Fiscal policy in this theoretical framework is downgraded, since it

is no longer thought of as an effective stabilization instrument. Fiscal policy should only focus on medium to long-term objectives (Bean, 2007). Shocks to the level of demand can be met by variations in the rate of interest to ensure that inflation does not develop, if unemployment falls below the NAIRU (non-accelerating inflation rate of unemployment). The implication of this analysis is that monetary policy cannot have permanent effects on the level of economic activity. It can only have temporary effects, which persist for a number of periods in the short run before they completely dissipate in price adjustments.

Changes in the nominal rate of interest, as determined by the operating policy rule of the BoE, are associated with the real rate of interest changing in view of the sticky prices assumption. Changes in real interest rates affect consumption and investment, so that domestic aggregate demand is affected. Nominal interest rates can have further effects via credit and collateral effects, as well as via the normal wealth effects. In the case of open economies changes in the domestic real rate of interest influence the real exchange rate, with the latter affecting directly the prices of imported goods and the volume of exports and imports. Total aggregate demand, with aggregate supply given, along with the prices of imports, ultimately influences the targeted inflation. Changes in the rate of interest are thereby expected to affect the target inflation rate in the long run. No impact on real economic activity by changes in interest rates is hypothesised in the long run. Long-run real economic activity can only be affected via microeconomic policies to the extent that they can create flexible markets, especially so labour markets.

4. Assessing the UK Monetary Policy Framework

Figure 1 portrays a revealing picture of the IT episode so far in the UK. In this figure the actual inflation rate over the period (calculated as the annualized increase in RPIX to September 2003, the thick line; and as the annualized increase in HICP after October 2003, the dotted line) is shown. It is clear from this figure that the actual inflation rate has never failed to be within the tolerance range of the inflation targets imposed by the UK HM Treasury. These are depicted in Figure 1 by the continuous straight lines.

[FIGURE 1 HERE]

The point inflation targets are portrayed as the dotted lines in the same figure. The MPC has always enjoyed success in this sense. However, despite this apparent success, we suggest that there are a few problems with this particular way of conducting and implementing monetary policy. More precisely, we deal with the following problems in turn.

- Actual inflation has been systematically below the mid-point target, implying tight monetary policy;
- Insufficient attention paid to the exchange rate;
- Price stability is not enough: past experience is replete with examples of price stability followed by economic and financial crises;
- Countries that do not pursue IT type of policies have done as well as the UK;
- MPC membership problems.

We begin with the first problem to which we have just alluded.

4.1 Actual inflation below the mid-point target, implying tight monetary policy

Figure 1 is again relevant here. Inflation had been falling well before 1992; in fact, IT was implemented only after inflation had been tamed. One may also make the point that over the period since 1992 the economic climate in the UK, and elsewhere, has been very calm; it can actually be described as the ‘nice period’. In fact, after a pick reached in 1990, the RPIX inflation rate dropped to annualized magnitudes of 4% and falling, just before IT was introduced. Thereafter, inflation records would never cross the upper bound imposed by HM Treasury in 1992 and subsequently in 1997 and 2003.

However, a closer look into the experience with IT reveals an interesting problem. To begin with, one may note that a very different pattern is observed between the periods before and after ‘independence’ was given to the BoE. As Figure 1 reveals, during the first stage (1992-1997) the actual rate of inflation tended to be above the mid-point of the 1%-4% range. Ever since the BoE was granted ‘independence’ in 1997, the same occurred only during very short periods of time. Most of the time during the latter period actual inflation has been nearer to the lower bound, clearly implying that monetary policy has been relatively tight, in any case tighter than the previous 1992-1997 era. To the extent monetary policy can have real effects, domestic or via the exchange rate (see below), this suggests that interest rates in the UK may have been unnecessarily higher than they might have been in the circumstances of the period under scrutiny.

4.2 Insufficient attention paid to the exchange rate

A further problem with the BoE monetary policy analysis has to do with the exchange rate, which may not be given sufficient attention. It is actually clear from equation (3) that the BoE does not consider exchange rate considerations to play any direct role in the setting of interest rates. And yet the interest rate parity theorem indicates that the difference between the domestic interest rate and the foreign interest rate will be equal to the (expected) rate of change of the exchange rate. A relatively high (low) domestic interest rate would then be associated with expectations of a depreciating (appreciating) currency. Although the uncovered interest rate parity result often appears not to hold empirically, it could still be expected that there is some relationship between domestic interest rates, relative to international rates, and movements in the exchange rate. Changes in domestic interest rates, relative to international interest rates and for given expectations, would affect the exchange rate, which can have significant effects on the real part of the economy. Furthermore, there may be indirect effects in so far as changes in the exchange rate influence expectations on future inflation. The exchange rate, therefore, could be an important channel through which the effects of interest rates may operate. It transmits part of the effects of changes in the policy instrument, and also the effects of various foreign shocks.

Given this potentially critical role of the exchange rate in the transmission process of monetary policy, excessive fluctuations in interest rates may lead to a relatively high degree of output volatility (Agénor, 2002). It is interesting to note in this context the conclusion reached by the UK House of Lords Select Committee on Economic Affairs (House of Lords, 2004a, 2004b) on this issue. The Committee refers to its “predecessor Committee” that “commented on the prominent role played in the

United Kingdom by the exchange rate in the transmission of interest rates to inflation. They found that, according to the BoE economic model, in the first year 80% of the effect of an increase in interest rates is via an appreciation of the exchange rate” (House of Lords, 2004a, p. 26). In fact, between August 1996 and July 1997 the effective pound exchange rate appreciated by 23% putting a severe pressure on the manufacturing sector whose output fell in the following years. Manufacturing output actually fell between 1997 and 2002 after growing at 2% between 1992 and 1997.⁷ That level of the exchange rate has actually been sustained ever since. Since differences in inflation rates were not wide among developed countries, the real exchange rate also went through a similar process of appreciation (see Figure 2). Despite this, the MPC considered at the time that intervention to influence the exchange rate would probably not have had the desired effect for the purposes of price stability.⁸ In the event high interest rates kept an appreciated exchange rate as shown in Figure 2 (where the official BoE interest rate is portrayed).

[FIGURE 2 HERE]

It has been argued (Wadhvani, 2000) that exchange rate misalignments should have a place in equation (3) above. The MPC’s argument, as revealed by the minutes of the MPC meetings and Inflation Reports, is that the exchange rate might react erratically to such behaviour. Furthermore, such behaviour might confuse the markets and financial markets in particular, as to the role of the exchange rate in the reaction function, equation (3) above, thereby undermining MPC credibility and its objective of price stability. The adoption of IT, it is argued, leads to a more stable currency since it signals a clear commitment to price stability in a freely floating exchange rate system (see Cobham, 2006, for a detailed analysis and references to the relevant MPC minutes and Inflation Reports). This, of course, does not mean that monitoring

exchange rate developments should not be undertaken. Indeed, weighting them into decisions on setting monetary policy instruments is common practice in the MPC proceedings (see, for example the minutes of the MPC meetings). Still, the monolithic domestic focus on inflation targeting, however, entails the real danger of “a combination of internal price stability and exchange rate instability” (Goodhart, 2005, p. 301). This occurrence is very real in view of the desire, especially by policy makers, to uphold domestic price stability at any cost.

It ought to be recognised, though, that there are real difficulties with these suggestions. These relate to the fact that the determinants and dynamics of exchange rate movements have proved nearly impossible to model satisfactorily. The theory, briefly summarised above (interest rate parity), indicates a close relationship between interest rate differentials and expected exchange rate movements, which would severely limit variations in interest rates. However, the model does not seem to work empirically. In fact, it is true to say that exchange rate variations have proved notoriously difficult to model, regardless of the theoretical framework one might adopt. Indeed, it is true to suggest that while in the past the exchange rate channel was one of the main transmission avenues of monetary policy, this may no longer be the case. This channel is thought to be rather ambiguous, both in terms of the influence of interest rate changes on the exchange rate, and of the latter on domestic prices. In addition to the arguments advanced earlier, one further difficulty is due to international capital movements becoming more equity related. A recent report in the *Financial Times* (Fund Management section, 16 January 2006) makes the point that between a third and a half of institutional investors in Northern Europe, Australia and the UK, are either well placed in the equity market or are increasingly becoming so. Under such circumstances, changes in the rate of interest would have ambiguous effects. For example, a rise in interest rates might reduce rather than encourage

inward capital movements. The effect of interest rate changes on the exchange rate may have become rather ambiguous.⁹ This, though, does not mean less concern with the behaviour of the exchange rate; it would rather suggest that more attention should be paid to exchange rate considerations. Indeed, it may very well be the case that under such circumstances it is the whole IT framework that may need serious re-examination.

4.3 Price stability is not enough

The vigorous focus on price stability by the BoE raises the issue of whether such an objective is enough by itself.¹⁰ White (2006) argues that the pursuit of such an objective, which has reduced inflation from the earlier high levels, has actually produced benefits to the economies pursuing it. At the same time, though, achieving price stability in the short run might not be sufficient to avoid serious macroeconomic downturns in the short or medium term. In fact, Fair (2006) produces estimates for the US that suggest reducing price level variability by 18% results in an increase in output variability by 21%, augmenting at the same time variability in the unemployment rate by 19%. Furthermore, history is replete with examples of periods of relative absence of inflationary pressures followed by major economic and financial crises. We cite only but a few instances in what follows to make the point.

Perhaps the best case in this context is that of the US in the 1920s and 1930s. Most of the 1920s in the US were characterised by price stability with tendencies of deflation in the same decade. There was technological innovation, rising productivity, strong investment and financial innovations that led to plentiful consumer credit (Eichengreen and Mitchener, 2003). All that turned into the 1930s Great Depression in the US. Massive decreases in output and employment, cumulative deflation along

with financial distress, were the main characteristics. As Samuelson (1993) reports “Between 1930 and 1939 U.S. unemployment averaged 18.2%. The economy's output of goods and services (gross national product) declined 30% between 1929 and 1933 and recovered to the 1929 level only in 1939. Prices of almost everything (farm products, raw materials, industrial goods, stocks) fell dramatically. Farm prices, for instance, dropped 51% from 1929 to 1933” (p. 1). A more recent example is Japan. The 1980s was a decade of price stability, with a yearly average inflation rate of 2.6%, following 6.7% in the last half of the previous decade. This period was also characterized by healthy investment rates with the financial sector enjoying technological innovation and deregulation. That, however, did not prevent the problems in Japan ever since the early 1990s. Growth per capita averaged only 1% annually in the 1990s, and after having oscillated around 2.5% during the decade of the 1980s, unemployment rose systematically during the early nineties evolving around 5% in the last year of the decade and thereafter. The banking sector witnessed a number of bankruptcies in spite of strong and sustained government intervention. The South East Asia crisis in the late 1990s is still another recent example. After the effects of the oil price and debt crisis passed by early in the 1980s, inflation in these countries was stable and below 10% in most of them.¹¹ That period of relative stability was associated with healthy growth in credit investment and GDP over most of the period. However, this was not enough to prevent the deep crisis in the summer of 1997, causing countries in the area to experience high costs in terms of GDP (with reductions mostly above 5%), thereby triggering rising unemployment, which in most countries continues to be high even nowadays.¹²

Even more recently, the collapse of stock markets in the US and elsewhere in March 2001, had been preceded by price stability, along with a sharp increase in private investment associated with advances in productivity of the ‘New Economy’. Here

again, price stability was not sufficient to ensure high and sustained growth in economic activity. Interestingly enough, the post-2001 period in the US was characterised by unprecedented monetary and fiscal policy easing, which although managed to restore growth eventually, the pace of economic recovery was the slowest recorded in the post-second-world-war era. Yet another telling example is the Economic and Monetary Union (EMU) in Europe. Although the European Central Bank (ECB) does not pursue an inflation targeting policy (Duisenberg, 2003; Issing, 2003; see, also, footnote 9 below), it does, nonetheless, pursue a monetary policy strategy with “the clear commitment to the maintenance of price stability over the medium term” which “implies a stable nominal anchor to the economy in all circumstances” (ECB, 2001, p. 49). Admittedly the EMU as a block has done very poorly in terms of output growth and employment ever since its creation in January 1999, despite achieving price stability (around 2%). GDP in the EMU has grown at the disappointingly low rate of less than 2%, when the US GDP growth rate has exceeded 3%. In fact, not only is potential growth relatively low but also its actual growth performance is falling short of the low potential (see, for example, Padoa-Schioppa, 2005). There can hardly be clearer evidence of macroeconomic policy failure, despite focusing upon and achieving price stability.

The inevitable conclusion is that price stability does not necessarily guarantee benefits to the relevant economies. Consequently, the objective of price stability might have to be applied more flexibly, with a longer-run focus than the current monolithic concentration upon it. Also, and more importantly, it should be pursued in tandem with other objectives, such as output stabilisation.

4.4 Countries that do not pursue IT type of policies have done as well as the UK

Countries where central banks do not pursue the IT strategy have performed at least as well as the UK, where the BoE has a strong focus on the principles of IT. In what follows in this sub-section we pursue this argument at some length. We begin by examining the adoption of IT in the UK, assessing whether significant changes in the stochastic mean of inflation performance follows the adoption of such strategy. For this purpose we apply intervention analysis to structural Time Series Models (STM) following an approach first suggested by Harvey (1996).¹³ In addition to the UK case, where the IT strategy has been pursued, we also include, in the same model, countries that have not pursued a similar strategy, considered as a control group. The performance of both sets of countries is then assessed.

STMs decompose time series into unobserved components with specific and meaningful dynamic properties such as stochastic trends, seasonals and short-run shocks. These procedures, therefore, allow for isolating permanent and transitory changes occurring to a series, such as trends and seasonal effects, from those happening due to specific events previously identified by the researcher. The analysis of the effect of such incidents is known as intervention analysis (Box-Tiao, 1975). STMs may employ only one relevant variable, as in the univariate models, or a vector of variables, as in the case of multivariate STMs. For the purposes of this contribution, multivariate analysis makes use of time series corresponding to more than one country at the same time. Multivariate STMs are particularly relevant to IT since they “are shown to provide an ideal framework for carrying out intervention analysis with control groups” (Harvey, 1996). In our case, the implementation of IT is considered as the intervention, i.e. the event whose effect is to be assessed. For this purpose, following Harvey (1996), we employ inflation rate series observed in countries, which have implemented IT, and also in those that have not implemented this strategy, i.e. the control group. Modeling of this type provides observable changes

in the intervention units and in the control units. We apply the multivariate form of the STM to inflation series in the UK and also to the European Monetary Union (EMU) and to the US, the two cases that do not pursue IT and which comprise the control group.¹⁴

In what follows we represent a typical form of STM, the Local Linear Trend model, sufficiently generalized to account for intervention, in our case the imposition of IT. The following three equations comprise the model.¹⁵

$$(7) \quad \pi_t = \mu_t + \gamma_t + \varepsilon_t$$

$$(8) \quad \mu_t = \mu_{t-1} + \beta_{t-1} + \delta \cdot \omega_t + \eta_t$$

$$(9) \quad \beta_t = \beta_{t-1} + \zeta_t$$

In the *measurement equation* (7), the vector to be modelled, π_t , has a dimension equal to 3, and it is composed of the inflation rates prevailing at time t in the UK, as the IT country, and also of the inflation rates at time t in the two non-IT cases used as the control group (EMU and the US). It is explained by the stochastic trend component (μ_t), by a seasonal component (γ_t), modelled in a trigonometric form, and a random shock (ε_t). The *level equation* (8) explains the stochastic trends (μ_t) corresponding to each of the countries included in the sample. It follows a random walk and is influenced by shocks both in terms of its slope (β_t), and its level (random shocks labelled as η_t). The slope (β_t) is, therefore, a stochastic component, modelled as in the *local equation* (9), where ζ_t is a relevant perturbation. ω_t is the intervention variable, so δ registers the impact of the policy intervention on inflation. In order to capture a shift in the underlying trend of the series, the intervention variable ω_t takes

the value of 0 for the non-intervention time periods and 1 at the time the strategy is imposed. All perturbations, ε_t , η_t and ζ_t , and the ones corresponding to the seasonal component, are normally distributed with zero means and constant variance and covariance matrices.

In Table 1 and Figures 3a, 3b and 3c, we present results for the UK and the two countries in the control group. We use each country's headline CPI, over the period 1980Q1 to 2004Q4. The reported results correspond to the episodes of IT imposition in the UK. First, in Model 1 we report results following intervention as imposed in the quarter when IT was first implemented, i.e. 1992Q4. Model 2 registers the effects of applying fully-fledged IT. That is, the intervention is considered when the BoE was granted 'independence' in 1997Q2. Finally, Model 3 refers to the effects of both key dates for IT in the UK.

[TABLE 1 HERE]

The estimated coefficients for the intervention parameter in the case of the UK, in the three applications, are included in the third column under the label 'Coefficient', with the t- and p-values in the two columns next to that of the coefficients. These cases have the common characteristic of being associated by insignificant intervention coefficients. In three out of the four cases reported, the sign of the intervention coefficient is negative and insignificant, while in one case it is positive and insignificant. In Figures 3a, 3b, and 3c we present the stochastic trends estimated for all countries involved in the analysis for the UK, along with the point of intervention, indicated with a vertical bar. As expected for this case, the estimated trend for the UK shows just a small change after the intervention, whichever model is selected for the

analysis. This is especially noticeable when compared with the control group. Both, EMU and US, show a smooth on-going trend at each point of intervention. Note that this comparison also exposes a pattern of convergence in the long run between the inflation-rate series corresponding to all three countries. It should also be noted that the downward trend in the three countries commences in the early 1990s. In the UK, IT was introduced after inflation had been tamed. However, the conclusion that IT was totally ineffective may be too hasty in that IT implementation may have so affected inflation expectations that subsequent inflation levels were contained within the IT limits. Indeed, a number of authors (for example, Bernanke et al., 1999; Corbo et al., 2002; Petursson, 2004) have argued that IT was a great deal more successful in ‘locking-in’ low levels of inflation, rather than actually achieving lower inflation rates.

[FIGURES 3a, 3b AND 3c HERE]

We explore further this suggestion by offering further tests for the possibility of ‘lock-in’ effects. We undertake this task with the help of Table 2 and the two figures, 4a and 4b. In the left hand side of the latter figures we plot actual and forecast values for the series considered in the analysis of the UK case alongside the corresponding confidence intervals for the forecasts. CUSUM standardized residual plots for each series are depicted on the right hand side of Figures 4a and 4b along with their corresponding confidence intervals. The latter plots are produced by utilising the formula (10):

$$CUSUM(t) = \sum_{j=\tau+1}^t \tilde{v}_j \quad (10)$$

where (\tilde{v}_t) are one step-ahead predictions. First, STMs are estimated for the period prior to intervention ($t=1, \dots, \tau-1$). Then, one-step ahead predictions are undertaken for $t= \tau+1 \dots T$, and these are compared with the actual values of inflation. As a result of this procedure, we compute standardized one step-ahead prediction errors (\tilde{v}_t) , which are then used via equation (10) to produce Figures 4a and 4b. This procedure enables us to examine the possibility of ‘lock-in’ effects. The CUSUM-t test is applied to each estimated model. The CUSUM-t test provides an assessment of the CUSUM plots. It is calculated as:

$$CUSUM - t = (T - \tau)^{-1/2} \cdot \sum_{j=\tau+1}^{T-\tau} \tilde{v}_j \quad (11)$$

and is distributed as a t-statistic with $(T-\tau)$ degrees of freedom. This t-statistic should be used when there is suspicion of possible ‘breakaways’ of a certain sign, that is, when the cumulative standard errors may potentially drift away with a systematic sign. In this case, the t-statistic is used to test whether, following the intervention, there is a consistent pattern that would suggest failure to control inflation at the level that the model would predict, should there not be any change in the monetary strategy. If any systematic pattern of ‘breakaways’ were noticeable, this would be taken as evidence of absence of a ‘lock-in’ effect.

As mentioned already, the results for the application of this test to Models 1 and 2 (of Table 1) are reported in Table 2 and Figure 4a and 4b.

[TABLE 2 AND FIGURES 4a AND 4b HERE]

For each model CUSUM-t statistics are calculated both for the UK and the control group. These statistics, as mentioned above, are distributed as t_{T-t} and reported for the UK in the second column of Table 2, and for the other two countries in the next two columns. The number of degrees of freedom is reported in column 5. According to these statistics, in both models ‘breakaways’ are rejected in the case of the three countries as they are well below the critical value at the 5% level of significance. In none of the cases reported in Figures 4a and 4b do forecast values lie outside of the confidence interval, nor do the CUSUM plots show any significant drift, being always very close to 0. We are, therefore, able to derive two important conclusions on the basis of these results. The first is that IT has been a success story in ‘locking-in’ inflation rates and thus avoiding a ‘bounce-back’ in inflation. The second is that a similar conclusion is applicable in the case of the two countries included in the control group. This clearly indicates that it may very well be the case that the apparent success of the ‘lock-in’ effect may be due to other factors than IT intervention.

So how can one explain the relevant low and stable inflation achieved not merely in the UK but elsewhere too? In the 2006 Bank for International Settlements annual report (BIS, 2006) it is suggested that the recent low and stable inflation rates since the mid-1980s may very well be due to the direct and indirect effects of globalisation. So much so that this on-going process of globalisation, the report suggests, may have enabled monetary policy to be less tightening than otherwise in reaching its objective(s). The report offers five channels to explain how this phenomenon may have operated: (i) opening global markets in goods, services and factors, cheap imports and greater cross-border investment are claimed to have reduced the costs of taming and keeping low inflation rates, without necessitating deep recession and rising unemployment rates; (ii) the consequent competition may have removed

country-specific constraints and enabled the smoothing of business cycles in the process; this, in turn, may have made Central Banks more focused on maintaining low inflation; (iii) through the outflow of capital, increased global competition may have also amplified the penalties imposed on countries judged to have unsound policies, thereby imposing more discipline on policy-makers; (iv) deflation might be less costly in this new environment, where more efficient global markets of goods and factor inputs prevail, with increased incentives to promote market flexibility; and (v) with globalisation bringing down inflation, the credibility of central bankers has been enhanced substantially, helping to align expectations in a reinforcing manner.¹⁶

The International Monetary Fund 2006 *World Economic Outlook* (IMF, 2006) not only concurs with this explanation but it also offers a sixth channel. According to this explanation globalization may have induced incentives to raise productivity (helped by information technology developments) through enhanced pressures to innovate, along with stronger price and non-price competition. As a result, world aggregate supply increases (and China has helped a great deal on this score) thereby putting downward pressure on world prices. Still another reason for lower inflation rates throughout the world may have been due to the popular and determined political consensus that inflation must be tamed at any cost (Buiter, 2000). Related to these explanations there are two further arguments. The first is that larger markets resulting from globalisation produce economies of scale and enhanced competition both of which lead to higher productivity and downward pressures on inflation (Venables, 2006). The second argument is that globalisation through greater competition weakens the power of domestic monopolies and labour unions, thereby flattening the long-run Phillips curve. This then implies more credibility and durable commitment to low inflation (Rogoff, 2006; see, also, Bean, 2006). Relevant discussion and empirical evidence is provided by Kohn (2006), who argues that while inflation is ultimately a

monetary phenomenon, globalisation may have had a significant downward pressure on inflation. Especially so in view of the opening up of mainly China and India, where the low cost of production has caused a geographic shift of production toward these countries thereby increasing world aggregate supply. Kohn (op. cit.) reports rather mixed empirical results on the impact of globalisation on inflation. This leads to the conclusion that while globalisation has changed the dynamics of inflation determination, “huge gaps and puzzles remain But the evidence seems to suggest that to date the effects have been gradual and limited: a greater role for the direct and indirect effect of import prices; possibly some damping of unit labour costs, though less so for prices from this channel judging from high profit margins; and potentially a smaller effect of the domestic output gap and a greater effect of foreign output gaps, but here too the evidence is far from conclusive” (pp. 9-10).

4.5 MPC membership problems

A number of additional ingredients of the BoE monetary policy framework appear to be of some importance. These come under the headlines of: openness and transparency, accountability, communication of the essentials of monetary policy, credibility, and reputation of the MPC members. It is generally accepted that the BoE conduct of monetary policy has been a model for the rest of central banks on all these aspects. One particular problem, however, which invites some comment, is the last aspect of the list just mentioned, namely the credibility and reputation of the members of the MPC committee. This aspect assumes particular significance in view of the fact that the published minutes (ever since 1995 as mentioned above) reveal the voting of the individual members at each meeting of the MPC. Although there does not appear to have been any serious problems on this front, the recent appointment of external members has invited some criticism. The seriousness of this criticism emanates from

the fact that it has come from the Governor of the BoE in his remarks to the Treasury Select Committee on the 29th of June 2006. The Governor criticized the Chancellor of the Exchequer for ‘an unclear, informal and slow’ way of choosing new members of the BoE’s MPC members. The Governor contrasted the “clear arrangement for the setting of interest rates with areas where the institutional arrangements are not as clear, such as the appointment of the members of the committee”.¹⁷ He went further to express concern with the present system of appointing external MPC members, which is “very informal and seems to result in appointments made very much at the last minute. I can’t think of anyone who benefits from that”. The governor was very clear that his concern was with “the timing. It’s not the people or how the process works in essence. It’s trying to find a mechanism for ensuring that decisions are taken in a timely way”.¹⁸

The Governor took that opportunity to highlight the paramount importance of these appointments. He suggested that there should be “some presumptive timetable” for “What matters is getting it right. But to do that I suspect does mean a slightly more systematic process”, which “would be helpful”. It is, of course, natural that “there will always be vacancies when people leave unexpectedly, and it’s more important to take one’s time to get the appointment right than to rush into a replacement”. The implication is, of course, that the process of appointing the external members of the MPC is highly secretive and in the hands of the Chancellor of the Exchequer. It would appear that the need for greater transparency in the process of MPC appointments could potentially become a serious issue. The further potential implication of his type of incidents and remarks is that it may be a sign of rising tensions between the Governor of the BoE and the Chancellor of the Exchequer. If this were to be validated, it could potentially affect adversely the credibility of the policy framework. Such an occurrence would not be unrelated to the criticism of the process between

1992-1997 when loss of credibility occurred as a result of disagreements between the Governor of the BoE and the Chancellor of the Exchequer as noted above.

5. Summary and Conclusions

We have attempted to investigate and assess the BoE's conduct and operation of monetary policy in the UK, which has come to be known as IT, and the role of HM Treasury in the process. The time period considered spans from October 1992, when the BoE adopted the principle of IT, including the changes introduced in 1997, to today.

We have focused at the beginning of the paper on the institutional dimension of the BoE monetary policy, and the role assigned to the UK HM Treasury in this framework. We then proceeded to highlight the theoretical framework upon which the IT policy framework is based. The policy that has been pursued since 1992 has been assessed, and a number of problems have been identified.

The strategy has been successful in terms of keeping UK inflation rates within the targets set by HM Treasury. Indeed, we have produced evidence that suggests that the policy has managed to 'lock-in' the UK inflation rate at low levels. But then non-IT countries have been as successful in this regard. Recent low inflation rates are the result of other forces, perhaps that of globalisation. We have asked whether the focus on price stability is sufficient to achieve healthy economic life, and questioned the de-emphasis of the role of the exchange rate in the IT regime. There is evidence that suggests monetary policy in the UK may have been too tight and there may be potentially problems with the process of appointing MPC members. Clearly, more thought should be channelled into the current framework of the UK monetary policy.

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Footnotes

* We are grateful to Carlo Panico for helpful comments. The usual disclaimer applies.

¹ The rate of interest set by the MPC is the official Bank rate, and is paid on reserves held by commercial banks with the BoE.

² The MPC operated on a *de facto* basis for a year. In June 1998 the assigned objectives and the *modus operandi* of the MPC to meet the government's inflation target were given a statutory basis in the Bank of England Act of 1998.

³ HICP has been developed by the European Union (EU) in order to allow for cross-country comparisons, and it is currently used by the ECB. The main difference between these two price indices is that HICP excludes council taxes and other housing costs, which are included in the RPIX. Note, however, that mortgage interest payments, are excluded from both indices. Also, HICP is calculated using the geometric mean of prices involved, while the arithmetic mean is used for RPIX purposes. In general terms, HICP is expected to be lower than RPIX, largely because of the exclusion from HICP of council taxes and other housing costs, which are included in RPIX. Also, since the arithmetic mean is utilised to calculate RPIX, this can lead to a small upward bias known as 'price bounce' (Roe and Fenwick, 2004).

⁴ It is to be noted that at the time of writing (Autumn, 2006), it has not been yet necessary to invoke the open-letter procedure.

⁵ The expectations channel emphasises the forward-looking nature of the IT policy. Given the paramount role assigned to expectations, influencing forward-looking

behaviour would imply that sharp changes in official interest rates are unnecessary. A phenomenon dubbed as the 'Maradona' theory of interest rate determination (King, 2005).

⁶ There are real difficulties and uncertainties that relate to arriving at robust estimates of the monetary rules of the type summarised in equation (3). The empirical estimates of RR^* in particular are very imprecise (Weber, 2006).

⁷ Output in the service sector grew by 3.6% in both periods (Cobham, 2006, p. F205).

⁸ The strategy followed by the MPC of keeping interest rates high in view of expected currency depreciation has been criticized by Allsopp, Kara and Nelson (2006); see, also, Kirsanova, Leith and Wren-Lewis (2006).

⁹ An interesting implication from the analysis in the text is that instead of external effects as discussed above, it could be that the rather sharp increase in personal assets and debts, may have made personal expenditure more sensitive to interest rate changes. It may, thus, be the case that although the transmission mechanism has not changed, it is the uncertainty about the coefficients in the relationships involved in the process that may be changing. The danger being that the policy response might be wrong in view of the uncertainty about the transmission mechanism.

¹⁰ Price stability is defined as low inflation (around 2%). The implicit assumption in this definition is that deflation, where prices fall in aggregate, is not consistent with price stability.

¹¹ The Philippines was an exception; inflation peaked in two years, 1984 and 1991, above 10%.

¹² The sources for the figures mentioned in this section are DataStream and the Penn World Tables.

¹³ See, also, Angeriz and Arestis (2005a, 2005b) for applications in the case of a number of OECD countries that pursue the IT strategy.

¹⁴ In the case of the EMU, the ECB does not pursue the IT strategy; they have instead a ‘comfort zone’ for the inflation rate. In the words of its highest officer, the ECB approach to monetary policy does not entail an inflation target: “I protest against the word ‘target’. We do not have a target ... we won’t have a target” (Duisenberg, 2003; see, also, Issing, 2003). In the US, the Federal Reserve System (Fed) does not pursue the IT strategy either. The current Fed mandate, set by law in 1977 and reaffirmed in 2000, is that it should pursue three objectives in its conduct of monetary policy: maximum employment, stable prices and moderate long-term interest rates. This is not an IT strategy.

¹⁵ For the more technical details of the technique utilised for the purposes of this section, see Harvey (1989, p. 31).

¹⁶ Central banks are accused, however, that by keeping interest rates too low for too long have allowed asset prices to surge and global imbalances to reach problematic levels. Unlike the Federal Reserve System in the US, this does not appear to have been obviously so in the case of the BoE.

¹⁷ The comments reported in the text were prompted by the fact that the MPC was left with only seven members instead of the nine (the quorum is six members). That was caused by one resignation, one member had to be replaced normally, and another died during his term of office.

¹⁸ The appointment of one of the external members of the MPC in May 2006 took ten days from initial approach to job confirmation. This was a very short period indeed, apparently.

Table 1 Model Estimates

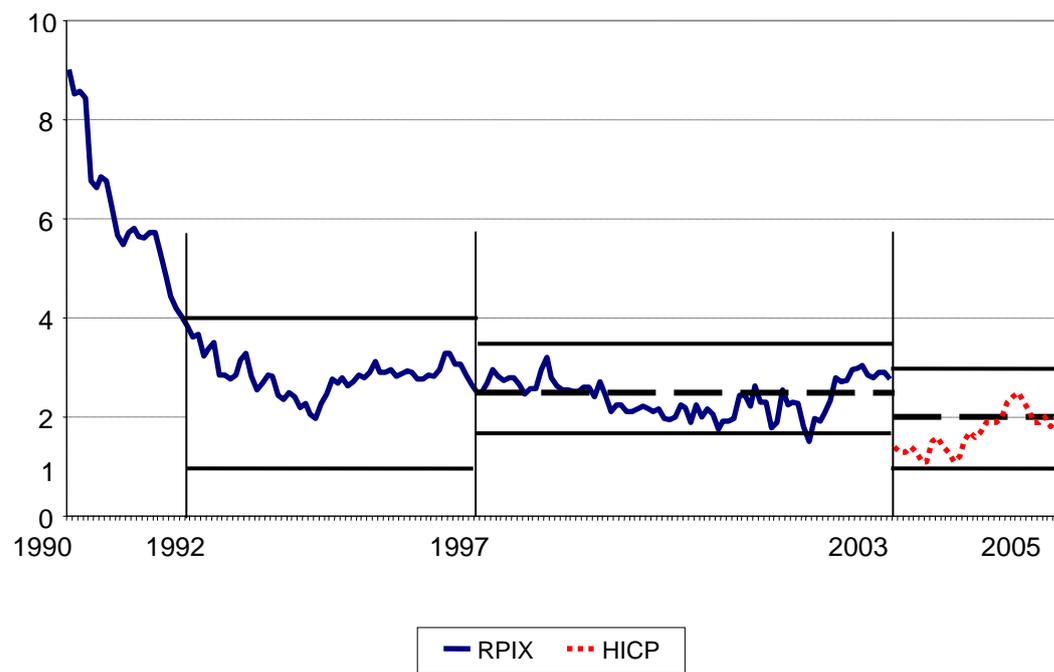
Model	Date of Intervention	Coefficient	t-value	p-value
Model 1	1992Q4	-0.235	-1.176	[0.242]
Model 2	1997Q2	-0.758	-0.356	[0.728]
Model 3	1992Q4	-0.219	-1.054	[0.294]
	1997Q2	0.027	0.137	[0.891]

Note: The period of estimation is 1980Q1-2004Q4. The critical t-value is 1.96.

Table 2 Predictive testing methods: CUSUM-t test

Model	UK	US	EMU	Degrees of freedom
Model 1	0.008	1.353	1.219	48
Model 2	-0.483	-0.021	0.586	30

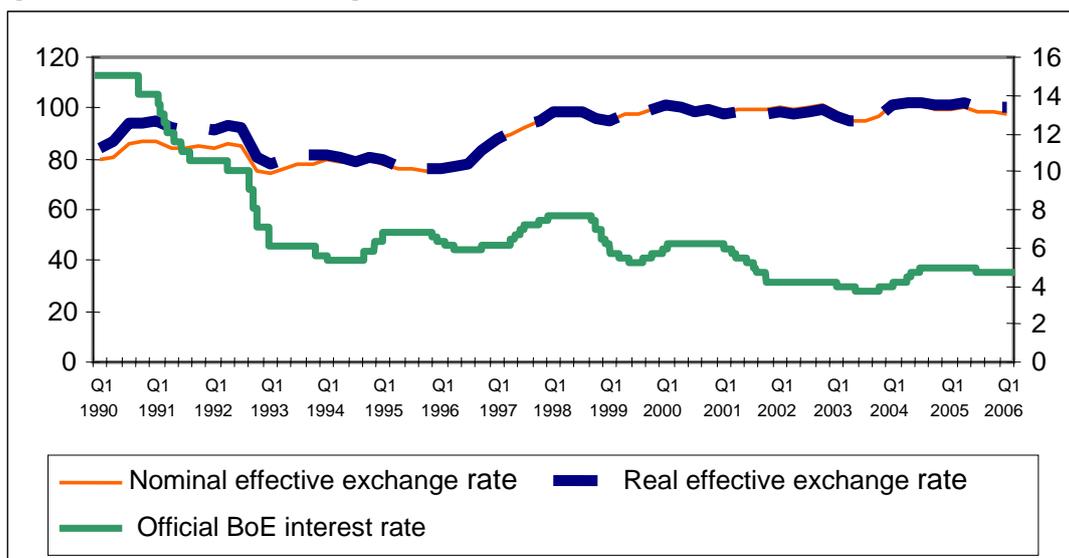
Note: The span of data for these countries is 1980(Q1)-1998(Q2). Critical t-values are: 2.01 for 48 degrees of freedom and 2.04 for 30 degrees of freedom.

Figure 1. IT Regimes in the UK and Annual Rate of Inflation

Source: Office of National Statistics (2006).

Note: RPIX and HICP are in growth rates.

Figure 2. Effective Exchange Rates (Real and Nominal)



Source: DataStream (exchange rate, defined as foreign currency per unit of domestic currency) and BoE (interest rate, which is available on: <http://www.bankofengland.co.uk/statistics/rates/baserate.pdf>).

Note: See Lynch and Whitaker (2006) for more details on the definition and calculation of the effective exchange rate.

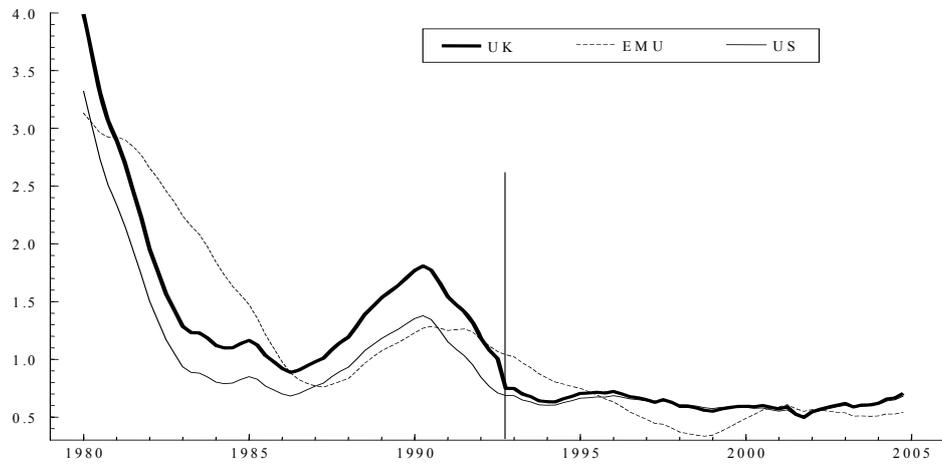
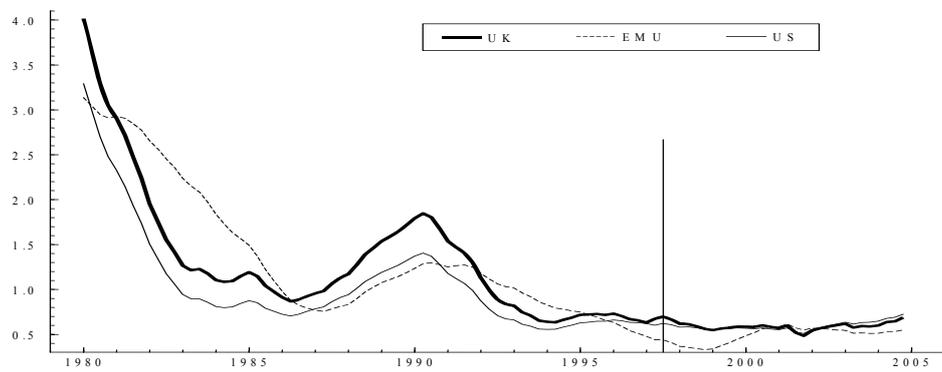
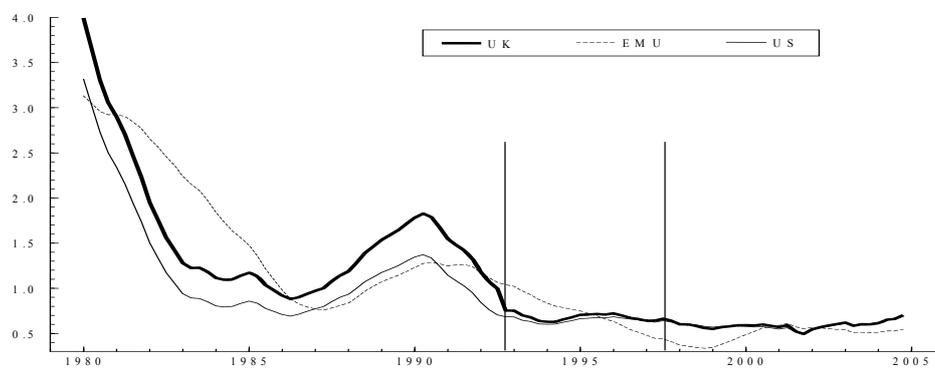
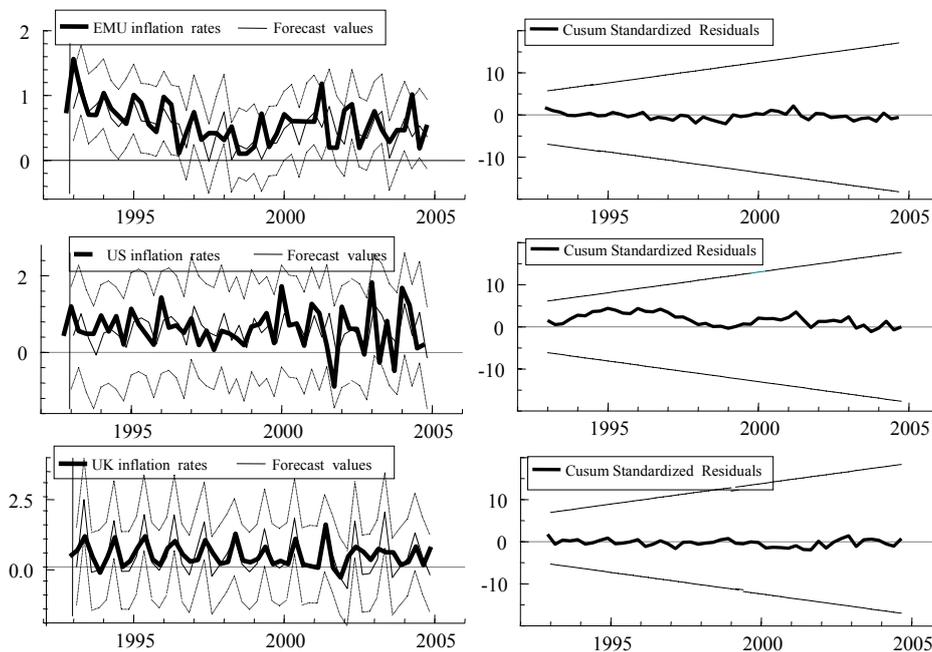
Figure 3a Trends in the UK and Control Group. Intervention in 1992 (in %)**Figure 3b Trends in the UK and Control Group. Intervention in 1997 (in %)**

Figure 3c Trends in the UK and Control Group. Interventions in 1992 and 1997
(in %)

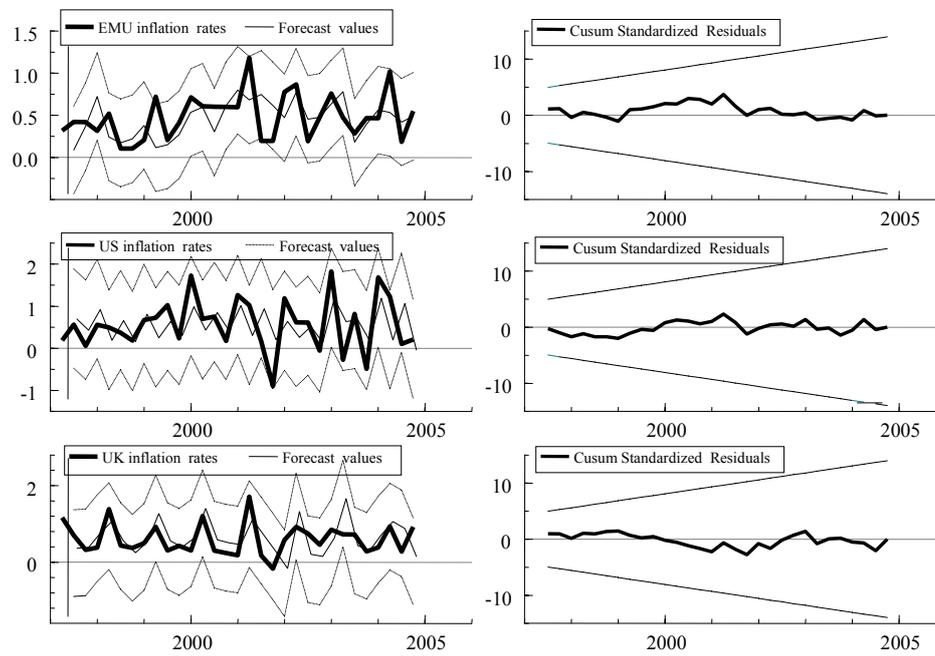


**Figure 4a. Inflation: Actual and Forecast Values. CUSUM function
Intervention in 1992**



Note: The left hand-side graphs show inflation rates and forecast values with the corresponding confidence intervals (the latter in dotted lines). The right hand-side graphs portray CUSUM functions, calculated with standardized residuals and the corresponding confidence intervals.

**Figure 4b. Inflation: Actual and Forecast Values. CUSUM function
Intervention in 1997**



Note: Same as Note in Figure 4a.