# The UK and the Eurozone

Michael Artis, EUI and CEPR

*Acknowledgments*

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## *Introduction*

It has become difficult to write about this subject. Participating in a monetary union is not simply a matter of economics but a political matter, and it has become clear that for the UK, for the moment - and for the foreseeable future - politics has ruled out British participation in the Eurozone. The subject is a non-issue in this sense.

The immediate political background contains some striking ironies. After the new Labour Government came to power in Britain in 1997, a strikingly – for the UK - pro-Euro and pro-European stance was articulated, as will be explained below. It was clarified that the decision to join the Euro had in effect been taken subject to an appraisal of the economics of the matter, and that this appraisal would emerge from an investigation by H.M.Treasury. Given a positive appraisal the decision was to be put to a referendum. Whilst public opinion remained deeply sceptical it was widely believed that the Prime Minister intended to put his weight behind a positive referendum campaign. In the sequel, the appraisal was negative, public opinion remained notably cool and Mr Blair, it is widely agreed, lost his credibility with the electorate and thus his power to persuade British citizens of the merits of adopting the Euro.

Economic analysis of the pros and cons of UK membership of the Eurozone is plentiful: Artis (2000) was updated in Artis (2002), whilst Barrell (2002), Barrell and Weale (2003) and Barr et al (2003) have provided more recent assessments. This is not to mention the assessments produced by the "pro" and "anti" camps, and the earlier report commissioned by HM Treasury from Lord Currie (1997). But the most recent, and much the most comprehensive, assessment is that of the Treasury's. This

is widely agreed to constitute a first class piece of work and although its negative verdict might be seen as "over-determined", given the state of public opinion, it is the obvious starting point for us. Consequently in what follows, we first outline the political background, including the state of public opinion, in more detail and then move on to consider the Treasury's assessment against the backdrop of a rehearsal of developments in optimal currency area theory. The Treasury's assessment is quite recent (July 2003) and not much has happened in the period since that would disturb the Treasury's conclusions given the logic underlying its approach; nevertheless we can take the opportunity to update ourselves in salient respects. More important, perhaps, we might want to ask whether the Treasury's assessment left anything of importance out of the reckoning. Then, as it seems easy to motivate the UK citizen's preference for the known and for what works well as opposed to what seems like a leap in the dark we provide some comparisons of the UK's economic performance with those of its Eurozone comparators so as to clarify this. Last of all, as the UK seems to be adopting the "Canada solution" by default we adduce a few comments on how Treasury assessment methods might apply to Canada were that country to contemplate a m onetary union with the US.

### *1. The political background*

Public opinion in Britain, as is well known, has long been sceptical of the merits of joining the Eurozone. Against that background it came as an important new initiative when the new Labour Government in 1997 committed the UK to the principle of joining the single currency[1]. This was done on the basis of four key points. These were summarized by the Chancellor of the Exchequer as:

> first, a successful single currency within a single European market would in principle be of benefit to Europe and to the UK: in terms of trade, transparency of costs and currency stability;
>
> second, the constitutional issue is a factor in the UK's decision but it is not an overriding one, so long as membership is in the national interest, the case is clear and unambiguous and there is popular consent;

[1] Mullen and Birkett (2003), writing before the release of the Treasury's assessment, provide a more comprehensive account of the political background than it is feasible to present here.

> third, the basis for the decision as to whether there is a clear and unambiguous economic case for membership is the Treasury's comprehensive and rigourous assessment of the five economic tests; and,
>
> fourth, whenever the decision to enter is taken by the British government, it should be put to a referendum of the British people

This statement indicates that the government would put the case to a referendum in the event that the Treasury's assessment of the economic case were favourable, and that that assessment was to take the form of an assessment of the "five tests". Whilst there was an initial (negative) assessment in 1997 (HM Treasury, 1997), it was only in June 2003 that a more full-blown assessment was released, on the basis of the Chancellor's promise that "the assessment will be the most robust, rigourous and comprehensive work the Treasury has ever done".

These are the five tests:

> Are business cycles and economic structures compatible so that we and others could live comfortably with euro interest rates on a permanent basis?
>
> If problems emerge is there sufficient flexibility to deal with them?
>
> Would joining EMU create better conditions for firms making long-term decisions to invest in Britain?
>
> What impact would entry into EMU have on the competitive position of the UK's financial services industry, particularly the City's wholesale markets?
>
> In summary, will joining EMU promote higher growth, stability and a lasting increase in jobs?

It is the first two and perhaps the last of these tests that correspond most closely to the concerns that traditionally motivate the relevant economic theory (optimal currency area theory) as we shall see. The fourth question is a "special interest" question that does not make a very dignified entry in a list of issues supposed to reflect the interests of the country as a whole, though it may have the merit of "realism" in that City opinion had been a strong voice in an earlier wave of Eurosceptic opinion. Going further back in history readers will doubtless recollect a long tradition of financial

sector interests in the UK prevailing over those of manufacturing industry[2]. The third question, which reflects in particular concerns about the possible deflection of FDI from the UK in the event of a decision not to join the Eurozone is not one that admits of an independent answer. As the Treasury's assessment in fact concludes, positive answers to the "OCA" questions suggest a positive answer to this one also

Thus the situation is that the UK government, despite having made generally approving statements about the Eurozone and the prospects for the UK in joining it, nonetheless has argued that the economic arguments need to be satisfied before it will call a referendum on the issue. It is clear that it would be advocating a "Yes" vote in such a referendum and it must also be clear that it would not be likely to call a referendum that would be likely to be lost.

Although in this paper I hope to convey that the Treasury provided a high level of analysis of the issue, it has to be admitted that no economic appraisal can be open-and-shut; besides the well-known propensity of economists to hold differing opinions, there are many points at which trade-offs appear, and guesses about the future are called for which are inevitably disputable. For these reasons, the prospect of producing a "clear and unambiguous" economic case for membership must appear in some permanent doubt. That qualifying words and phrases like these appear in the call for the assessment suggests that politicians have reserved for themselves in advance a means, in case of necessity, to tilt the conclusion in the direction desired[3].
Meanwhile the balance of British public opinion remains firmly opposed, as briefly discussed below.

### *2. The balance of public opinion*

There are many opinion polls taken on the issue of joining the Eurozone. Table 1 is an extract from a series conducted by ICM for the Guardian and News of the World newspapers. It is very clear that in answer to the Question – "If there were a referendum on joining the European single currency (the Euro)?, the public has never

[2] Cf . Churchill's famous remark, in a letter to Niemeyer at the Treasury after the UK's return to gold in 1925: "I would rather see Finance less proud and Industry more content" (the letter, dated the 22nd of February 1926, is quoted in Moggridge (1972)).

**Table 1. Some opinion poll evidence on public opinion towards the Euro**

***(ICM polls for the Guardian and the News of the World)***

Responses to the Question: If there were to be a referendum, would you vote to join the European Single Currency (the Euro) or would you vote not to join?

| Month | Year | Vote to join, % | Vote not join, % | Undecided, % |
|---|---|---|---|---|
| June | 1999 | 27 | 61 | 13 |
| December | 1999 | 24 | 61 | 15 |
| June | 2000 | 23 | 58 | 19 |
| December | 2000 | 24 | 64 | 12 |
| June | 2001 | 25 | 61 | 15 |
| December | 2001 | 31 | 58 | 11 |
| June | 2001 | 25 | 58 | 17 |
| December | 2002 | 26 | 58 | 16 |
| June | 2003 | 21 | 62 | 16 |
| December | 2003 | 22 | 67 | 11 |

Responses to the Question: Leaving aside how you would vote, in 10 years' time which of the following do you think is the most likely?

| | | Britain included, % | Britain excluded, % | Euro will have failed,% | Don't know % |
|---|---|---|---|---|---|
| July | 1999 | 36 | 26 | 20 | 10 |
| June | 2000 | 40 | 25 | 24 | 11 |
| May | 2001 | 39 | 21 | 31 | 9 |
| December | 2001 | 62 | 14 | 19 | 5 |

[3] It may be worth noting that the British practice was unlike that of the Swedish and Finnish precedents; in those cases the task of preparing a report was assigned to a committee of experts appointed partly from the academic community.

mustered even a one-third fraction of support. The "don't knows" are sometimes (but not recently) quite numerous and in the past have given ground for the hope among pro-Euro enthusiasts that a sustained government campaign would increase the pro-faction to a majority – but there was clearly always a long way to go. An interesting reflection on this is given by the figures reported in the lower part of the table. These figures (unfortunately results are not available for a more recent period) show that, at least in 2000 and 2001, many people (and in December 2001, a majority of those polled) expected the UK to be a member of the Eurozone in 10 years' time, even whilst there was a current balance of opinion against and a referendum was promised. (There can be many speculations about the reasons for this apparent violation of the transitivity of rational expectations: I leave these as "an exercise for the interested reader"). It might have been thought that, whatever the state of public opinion, business opinion would nonetheless provide a bedrock of favourable sentiment. Even this is not obvious however. The most detailed survey of business opinion in existence seems to be that which was made available in 1999, where just 49% of respondent firms (weighted by employment) expressed themselves in favour of joining the Euro. As I reported earlier (Artis, 2000) among professional (academic) economists a majority (64%) can be found in favour of Euro membership (this was in a poll conducted by the Economist in April 1999, and could have changed since); the majority was bigger (67%) among those economists declaring themselves as "macroeconomists". "Monetary" economists (monetarists?) in this poll found 2 to 1 against Euro membership. The general state of opinion in the UK on this issue, then, has been and remains quite sceptical.

### *3. Optimal Currency Area Theory*

The Treasury's assessment can be seen against the background of the economists' traditional approach in the area – so-called optimal currency area (OCA) theory, and the many extensions and modifications that have been made to it since its initial articulation. The structure of optimal currency area theory is relatively easy to motivate. A currency is the more useful the wider its acceptability: from this point of view the world is the natural optimal currency area. But, having a single currency entails having a single monetary policy and while different areas of the world experience different shocks, there is value in having an independent monetary policy as this policy can be used to help stabilize the local economy. Moreover, with

different currencies there will be exchange rates linking them and those exchange rates themselves – aside from responding to the promptings of differential monetary policies - can be assumed to fluctuate in such a way as to absorb shocks. This is, more or less, a statement of the original Mundellian (Mundell, 1961) vision of an optimal currency area. The additional point to make is that Mundell saw geographical labour mobility as a means of absorbing region- or country-specific shocks: this criterion has been supplanted in current analysis by a more general emphasis on the desirability of internal labour market flexibility. A useful restatement of this framework in cost-benefit terms was suggested by Krugman at a CEPR-Bank of Greece conference and is published in Krugman (1990). At the risk of appearing unduly didactic for this audience Krugman's restatement is shown in Figure 1. The Figure describes the position for a country contemplating joining a monetary union with a group of others. Costs and benefits (we might imagine them to be expressed in ratio to GDP) are plotted along the upright axis. Along the horizontal axis is plotted the value of the country's trade with these potential monetary union partners (this could be expressed as the sum of imports from and exports to the potential partner countries again scaled by GDP, as in conventional measures of openness) [4]. As indicated, the usefulness of a money increases with its area of acceptability, so here we would expect benefits to rise with trade, a shown by the upward slope of the BB schedule. The cost of joining the monetary union is the loss of the value of being able to employ an independent monetary policy to cope with idiosyncratic shocks – nor will the exchange rate be there to absorb such shocks. The CC schedule would therefore be displaced more to the right the greater the propensity of the country to experience such idiosyncratic shocks and more to the left in the contrary case. The CC schedule may also slope down from left to right if Mackinnon's (Mackinnon 1963) speculation is right. Mackinnon reasoned that the more trade a country is doing with its potential partners, the less effective would an exchange rate change against those partners be. This might seem counterintuitive, but MacKinnon's argument is that if most of the wage basket is composed of imported or exportable goods, a nominal exchange rate devaluation will be more likely to lead to a matching rise in wages and prices, nullifying its effect.

[4] In principle discounting should be involved, so that one should look at discounted sums of future costs and benefits. The only place that this has been explicitly attempted is in the paper by Cottarelli

The message of the diagram is simple: if the country's trade with its potential partners takes it to the right of the point of intersection between the BB schedule and its CC schedule, then benefits exceed costs and the country should join the monetary union. In the contrary case, it should not – at least on economic grounds, it should not.

Two important points can immediately be made using this diagram. First, as the BB schedule here refers only to *economic* benefits, it is always possible to hypothesise political benefits or disbenefits (e.g. of sovereignty) that should also be taken into account; the "sovereignty" benefit of independence, for example, could be expressed by lowering the benefit curve, so that a decision to join the monetary union would *ipso facto* become less likely.

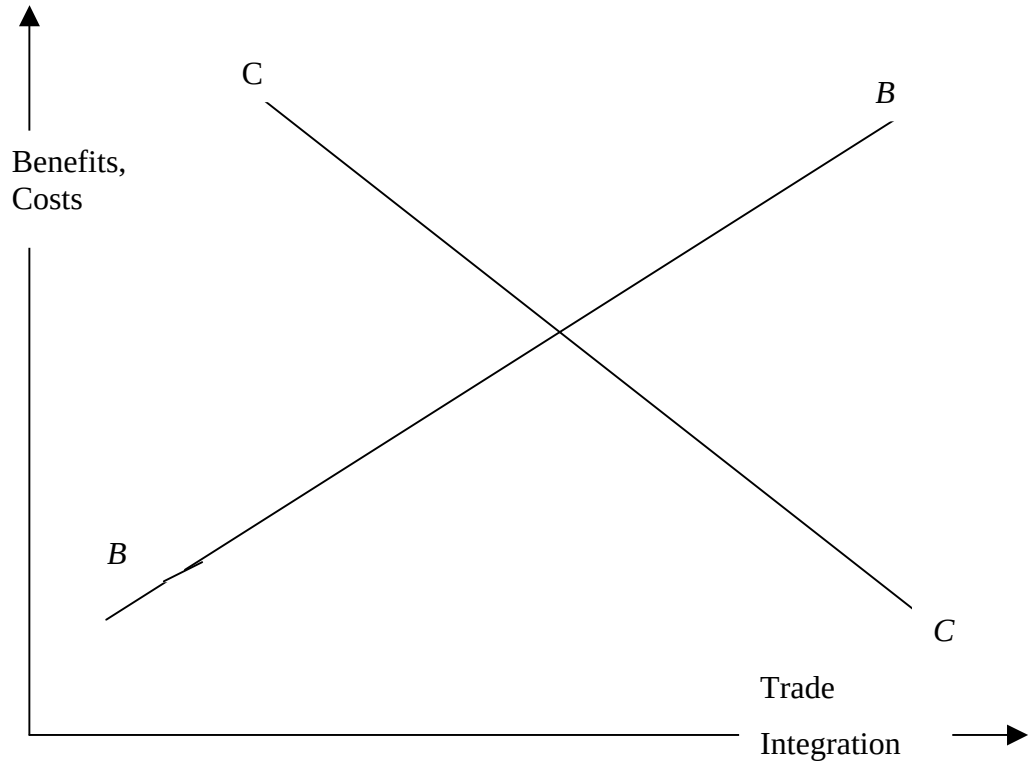


Figure 1. Joining a monetary union as a cost-benefit decision

It follows that the tendency of some economists to view the poor predictive power of the OCA analysis as a defect may be misplaced. The general view that there are more monies in the world than seems optimal may simply reflect the value of "sovereignty" arguments – and the often overriding nature of political arguments. But this does not

and Escolano (2004), where an effort is made – using data from the Treasury assessment – to comment

in itself invalidate the usefulness of optimal currency area theory: it can always be used to demonstrate the economic cost of a political decision, or its implied benefit. Second, it is notable that small countries tend to trade more (relative to GDP say) than large countries – on this count they should therefore be more favourable to monetary union arrangements - and it is indeed a "stylized fact" that smaller countries seem to prefer monetary unions, or qualitatively similar exchange rate arrangements.

When it comes to empirical applications of traditional optimal currency area theory and particularly in the case of the UK and the Euro (on which, for example, see Artis (2000)), the principal interest has been in tying down the position of the CC schedule. The UK, as any member of the European Union (and only EU members are eligible for participation in the EMU), conducts a large share of its trade with its prospective partners and there has been rather little need to discuss the BB curve in empirical terms. Thus a good deal of the empirical work has been devoted to the identification of business cycles in the UK and the EU countries, and in trying to identify the shocks that drive these cycles. Not infrequently in the past the verdict of investigations of this kind has been somewhat negative, reflecting the fact that the UK cycle has appeared to be asynchronous with the business cycle in most EU countries. Whilst a reinvestigation of this issue necessarily remained at the forefront of the Treasury's assessment of the five tests, that assessment had also to recognize a number of important new developments in optimal currency area theory.

*New developments*

There have been a number of new developments in OCA theory that have led, on the whole, to a more favourable view of the likely outcome of the cost-benefit calculus. Not surprisingly, they have been driven in part by the interest aroused by the EMU experiment. They can be appreciated within the confines of the diagram. I distinguish four such developments.

*First, there has been growing doubt about the efficacy of the exchange rate as a shock-absorber*: if these doubts are verified, the costs of abandoning a separate currency should be seen to be reduced . In the diagram, the CC schedule moves to the left. This doubt – in distinction to the earlier faith in flexible exchange rates displayed

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on the appropriate *timing* of UK entry into the Eurozone.

by both monetarists (e.g., Friedman, 1953) and Keynesians (e.g. Meade, 1955) has been reinforced by the evidence of "contagion" in foreign exchange rate crises and is exemplified in the decline in interest in macro-stories about exchange rate determination and the increased interest in microstructure accounts (e.g., see Lyons, 1993). Still, it was always possible to maintain that the behaviour of the *sterling* exchange rate was normally a rational outcome of speculation on the fundamentals (even the 1992 crash could be seen as a rational judgment by the market, at least given the Bundesbank's behaviour).[5] But scepticism about the good behaviour of the sterling exchange rate was reinforced by the strong appreciation in the rate from 1997 onward – an appreciation which was regarded as unwanted by the Bank of England's Monetary Policy Committee. It led directly to Willem Buiter's declaring (Buiter 2000) "I view exchange rate flexibility as a source of shocks and instability as well as (or even rather than) a mechanism for responding effectively to fundamental shocks arising elsewhere". Cobham (2002) meanwhile provided a narrative account that supported the idea that the sterling exchange rate had deviated from its fundamental equilibrium value over a lengthy period of time.

*Second, there has been growing interest in the idea that the OCA criteria may be "endogenous", specifically that they may be easier to satisfy ex post than ex ante.* The mechanism suggested is that joining a monetary union increases trade and that increased trade conduces to a decline in the incidence of idiosyncratic shocks. In addition to moving further to the right on the horizontal axis of the diagram (as trade increases), a country which joined a monetary union would, on this argument, also find that its CC schedule moved to the left. This line of argument had been fuelled by a study by Frankel and Rose (1997) that uncovered a positive relationship between the amount of bilateral trade and the synchronization of trade between pairs of countries, and then by a series of studies initiated by Rose (2000) that appeared to demonstrate a very strong positive effect of monetary unions on trade.

*Third, a line of argument has been developed to suggest that monetary union, by removing exchange rate risk, stimulates the financial integration of the area, which in turn facilitates risk-sharing.* More specifically, financial integration is seen as encouraging consumption risk-sharing. Thus, even if the pattern of shocks to output remains, access to a union-wide capital market should afford to agents the possibility

[5] The 1976 sterling crisis, on the other hand, did exemplify the foreign exchange market's capacity for

of holding their savings in the form of claims on output in different parts of the union, thus diversifying the risk to consumption.[6] Since the object of stabilization policy is to assist the stabilization of consumption, this reduces the premium on that type of policy, again moving the CC schedule to the left in the diagram. Intriguingly, Mundell himself can be found to have adumbrated this point as long ago as 1973, so that it has become fashionable to distinguish "Mundell(1)" from "Mundell(2)". But the credit for raising and pursuing this idea goes to (the late) Oved Yosha and his colleagues (e.g., Asdrubali, Sorenson and Yosha, 1996). Curiously, perhaps, this effect was not predicted or looked for even in the optimistic EMU scenarios painted by the European Commission in the early days.

*A fourth development has been the recognition that countries may wish to join (or, indeed, leave) a monetary union if that union offers a superior (inferior) policy framework.* This argument can perhaps be seen, in terms of the diagram, as shifting the BB curve (upwards in the favourable case, downwards in the other case). In a limited form this idea has been in circulation for some time (Tavlas (1993) mentions it in his 1993 review of optimal currency area theory) and in this limited form it has been incorporated into formal OCA analytics (Alesina and Barro, 2002). The "limited form" referred to here is the policy commitment technology afforded by Central Bank independence. In its more recent articulation, however, a more embracing type of framework is seen to be at stake, one that involves fiscal as well as monetary policy. The argument is that a good policy framework provides transparency of policy to agents, assuring them that the objectives of policy are sensible ones and providing a means of monitoring that policy easily. In the best case this puts the markets "on side" with the policy-makers, leading to smoother and more effective policy and a more stable economic environment. This in turn is seen as beneficial for investment and growth.

How did the Treasury address the traditional and newer arguments of OCA theory as applied to the particular case of the UK and the Eurozone? This is what we look at in the next section.

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self-induced crisis, not dependent on the fundamentals.

[6] This might even give rise to a feedback whereby *output* becomes more specialised, and hence more prone to asymmetric shocks.

*Box 1. The 18 EMU Studies*

- The five tests framework
- Analysis of European and UK business cycles and shocks
- Estimates of equilibrium exchange rates for sterling against the euro
- Housing, consumption and EMU
- EMU and the monetary transmission mechanism
- Modelling the transition to EMU
- Modelling shocks and adjustment mechanisms in EMU
- EMU and labour market flexibility
- The exchange rate and macroeconomic adjustment
- EMU and the cost of capital
- EMU and business sectors
- The location of financial activity and the euro
- EMU and trade
- Prices and EMU
- The United States as a monetary union
- Policy frameworks in the UK and EMU
- Submissions on EMU from leading academics
- Fiscal stabilization and EMU – a discussion paper

### *4. How the Treasury did the job*

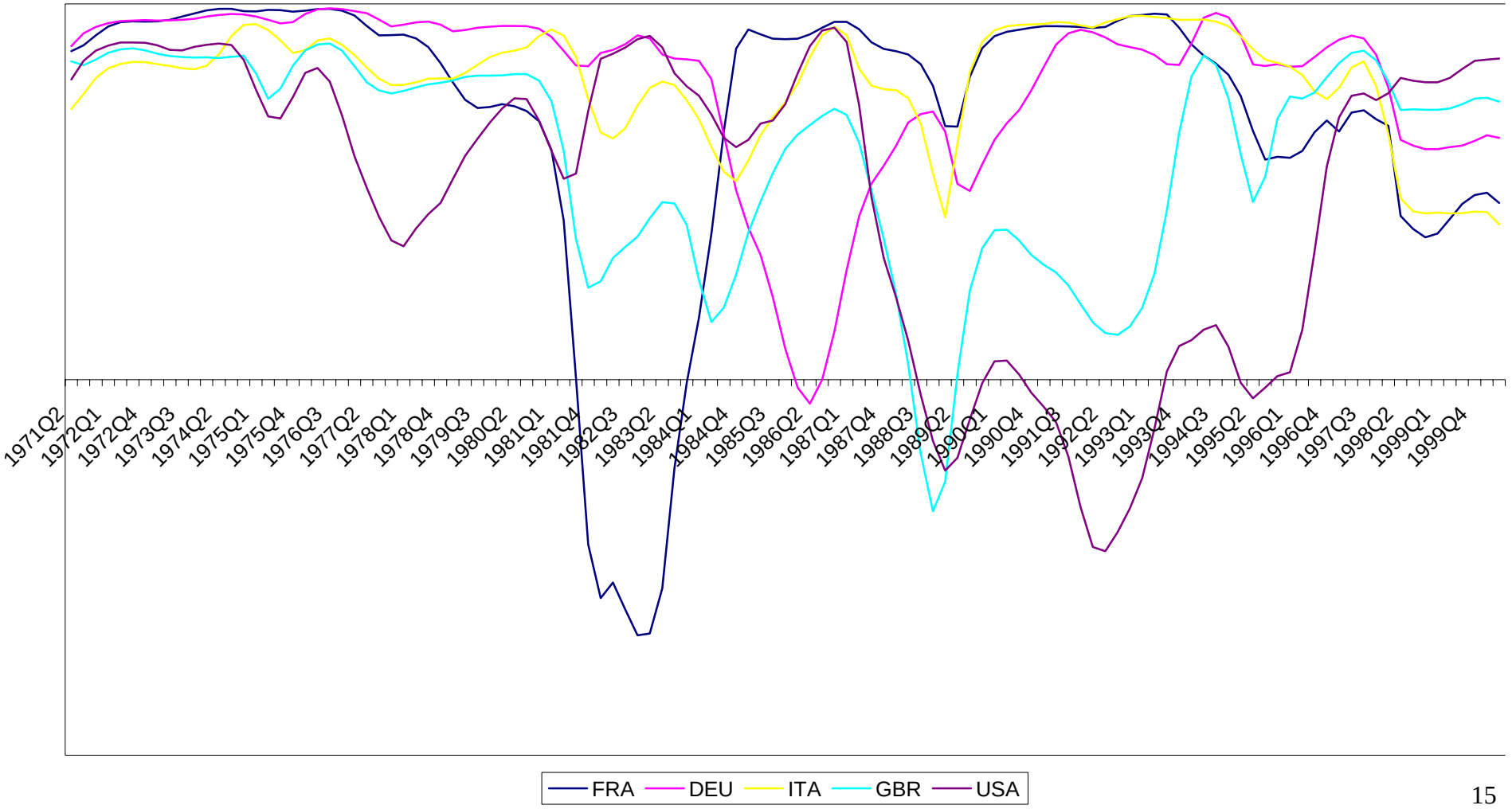
The 18 "EMU studies" provide the supporting evidence to which the Treasury's assessment makes ample reference and substantial use. These studies are in some cases authored by an academic, or written by the Treasury with consultancy assistance from an academic. Some of the studies are backward-looking in the sense that they review, rerun and update previous academic work. Others take on the task of building and estimating a model to suit the purpose or use an existing model. One of the studies publishes the opinions of academics, elicited by the Treasury as a response to a request to update and reflect upon earlier work by the author. The list of studies by title (Box 1) indicates the range of the enquiry. The first study listed – The five tests framework – sets out the logic of the enquiry. But we are only interested here in the subset that reflects OCA issues (interestingly, perhaps, the single test that the Treasury declared to be satisfied is the "special interest" one pertaining to the City, which we regard in any case as beyond the pale).

With this item and the FDI item excluded, the main headings under which the Treasury pursued its enquiry can be labelled as: convergence and the monetary transmission mechanism; the role of the exchange rate in macroeconomic adjustment; trade; and the policy frameworks issue. The Treasury reaches its overall assessment by grading each of these areas of concern in terms of the risk they pose, and then combining the grades.

*Convergence.* As regards convergence the first task was to take stock of the existing evidence. This meant reviewing and updating the literature dealing with the stochastic behaviour of the British economy and the UK's business cycle experience relative to that of her principal possible partners. Here the UK "idiosyncracy" – the fact that her business cycle experience seemed to be out of step with that of her continental counterparts, despite a not dissimilar orientation of trade, seemed much less evident that in the past. Some confirmation of this could be had from a statistical exercise in which the UK economy was counterfactually brought into the Eurozone in 1999. At that time the gap between short term interest rates in the UK and in th

**Figure 2.**

**Cross-correlations of cyclical deviates (v.EU15):**
**5-year moving averages**



Eurozone was relatively wide and the simulation, not surprisingly, shows the UK experiencing higher output growth and inflation during its hypothetical membership than was the case outside. The interest rate shock involved in joining the Eurozone would not have been nearly so large in 2002-2003 (though it has increased in 2004). The apprehension that existed at one time (see Artis and Zhang, 1999 for example) that countries in the Eurozone would converge more rapidly than those outside is currently in doubt. Recent experience – to put matters loosely - suggests that globalization may be proceeding faster than Europeanization (see e.g., Artis, 2003 and Bovi, 2003). The evidence collected by the Treasury reflects this and adds a further point: business cycles, both in the UK and elsewhere, have generally declined in amplitude. This means that, even to the extent that synchronization is less than perfect, the distances between countries at different points in their cycles is not large. In turn this suggests that the potential "ill fit" of a "one size fits all" monetary policy cannot be so large. The premium placed on convergence and stability throughout the report is high, yet perhaps not fully explained, as Cottarelli and Escolano (2004) argue.

**Table 2. Cross-correlations of cyclical deviates, 1970-2001**

| | France | Germany | Italy | UK | EU15 | US | Canada |
|---|---|---|---|---|---|---|---|
| France | 1 | 0,65 | 0,65 | 0,59 | 0,82 | 0,41 | 0,41 |
| Germany | 0,65 | 1 | 0,64 | 0,43 | 0,84 | 0,56 | 0,35 |
| Italy | 0,65 | 0,64 | 1 | 0,43 | 0,81 | 0,36 | 0,48 |
| UK | 0,59 | 0,43 | 0,43 | 1 | 0,68 | 0,65 | 0,50 |
| EU15 | 0,82 | 0,84 | 0,81 | 0,68 | 1 | 0,62 | 0,50 |
| US | 0,41 | 0,56 | 0,36 | 0,65 | 0,62 | 1 | 0,72 |
| Canada | 0,41 | 0,35 | 0,48 | 0,50 | 0,50 | 0,72 | 1 |

Some pertinent illustrative features are shown in Table 2 and Figures 2 and 3. Table 2 shows the cross-correlations of the cyclical deviates of GDP over the period from 1970 to 2001. The original quarterly series are drawn from the IMF and detrending is accomplished by applying the H-P band-pass filter described in Artis, Marcellino and Proietti (2002). These results indicate that the UK is relatively more synchronous with the US than with its large European neighbours who, in turn, hang together more closely than they do with the US – albeit the differences do not appear to be all that large. Through time, though, there have been some considerable variations in the relative correlations. Figure 2 illustrates. 5-year centred moving averages of the cross

correlations (vis-a vis the EU15) are shown here, the length of the window being chosen to reflect that of the average business cycle. *Inter alia*, the figure illustrates the tendency for the large continental European economies to hang together and a propensity for the UK to follow the US. Very noticeable is the coming together of all the cycles towards the end of the period, reflecting the globally synchronous nature of recent cyclical experience.[7] Figure 3 shows a moving average of the RMS of the *difference* between the detrended GDP series for France and for the UK. This illustrates the point that declining cyclical amplitudes have complemented increased sychronization in bringing the economies closer together. With the benefit of a handful of additional data points, and a different detrending method, the result is to support the Treasury's assessment, that convergence has increased but that there is a background and history of greater divergence, so that the sustainability of the welcome trend is not yet assured.

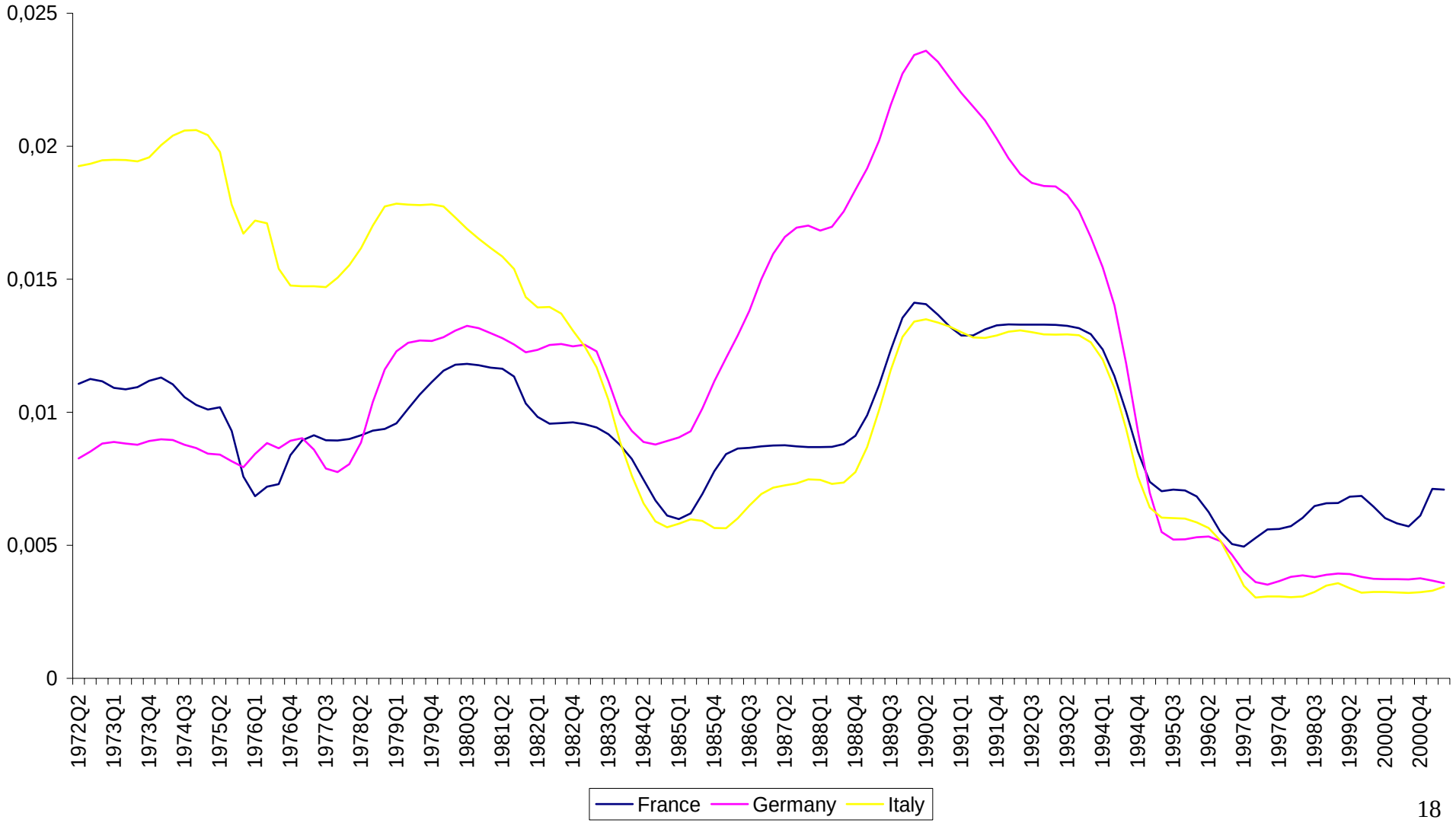
*The monetary transmission mechanism*

A way of thinking about the stochastic behaviour of the economy, its business cycle and the effects of policy is to think of initiating shocks being followed by a propagation through the economy. Business cycle theory today hews to this (Frisch-Haavelmo) model almost completely. It implies that the length and amplitude of the business cycle depend critically on the structure of financial, goods and labour markets as well as upon policy. It follows that differences between countries in their observed business cycle behaviour may be due to differences in the propagation mechanism just as much as to any differences in initiating shocks. Here the Treasury notes that responses to nominal interest rate changes (the "monetary transmission mechanism") differ between the Eurozone and the UK economies. It is not uncommon to treat these differences as making for an asymmetric shock in the presence of a change in the common interest rate. Indeed, it seems obvious at first sight that a common monetary policy in the presence of asymmetric transmission mechanisms

[7] Correlations against the EU15 are reinforced for the European countries by reason of the fact that the EU 15 aggregate contains these countries – but *mutatis mutandis*, the series of cross correlations against individual countries show the same features.

**Figure 3.**

**RMS deviation cycle versus United Kingdom (5-year moving average)**



will be a source of trouble. The Treasury's assessment makes a great deal of this, with specific reference to differences in the way in which housing finance is provided in the UK and the Eurozone economies. But it is entirely arguable that this emphasis is not well-placed. Many of those features that make for differences between monetary transmission mechanisms are features that make for exactly similar differences in the propagation mechanism attaching to any originating shock. For example, rigidities in labour markets are likely to make for greater persistence in the face of a shock; and, similarly, they will make the response to a monetary shock a long-drawn out affair. These are two faces of the same coin. It follows that since the European Central Bank can only deal with common shocks (asymmetric ones must be left to individual country fiscal and other policies to deal with), differences between countries in monetary transmission mechanisms should not merely be tolerated but even welcomed as offsets to the differences that prevail in the propagation mechanisms attaching to shocks.[8] At any rate, differences in monetary transmission mechanisms may well be exaggerated as a source of difficulty. Even so, it is differences between the economies in the operation of housing market finance that draws the "highest" risk-rating assessment of all in the Treasury's report. Of course this is not an unreasonable rating *to have given at the time (or to give now)*, since the UK can be seen as having suffered a positive idiosyncratic shock in the recent period, for which a switch to lower interest rates could be seen as quite inappropriate – but this could perhaps be better seen as a transitional problem as Cottarelli and Escolano (2004) appear to suggest..

*The role of the exchange rate.* The Treasury study rightly takes very seriously the allegation that the exchange rate is destabilizing, and suggests quite strongly the opposite view. Not to do so would be to admit to a serious deficiency in the operation of UK monetary policy. In particular, the simulation adverted to earlier, of an EMU entry in 1999, is taken to show that the high exchange rate in fact experienced was an adjustment "in the right direction" to offset an expansionary shock. Departures (even sustained departures) from the exchange rate's equilibrium level do not necessarily

[8] Adão et al. (1999) provide a tightly specified model in which differences in monetary transmission mechanisms *exactly* offset differences in propagation mechanisms. In such a setting differences between countries in their monetary transmission mechanisms should cause no concern at all.

imply that it is not a good stabilizer – on the contrary, if the exchange rate is to be seen as a stabilizer, it will need to depart from its equilibrium value as circumstances demand. This is a good point and it is backed up by a sophisticated Structural Vector Autoregression (SVAR) analysis which aims to clarify dissenting academic views and in fact suggests that the exchange rate has not been destabilizing – even if it has not necessarily been a good stabilizer. These points are made at a level of sophistication somewhat beyond the level at which the opposing claims have often been made though they remain disputable. In particular the Treasury's preferred model analyzes the behaviour of the *real*, rather than the *nominal* exchange rate. Yet it is the latter that which might be expected to respond to monetary policy and in this respect it is the more relevant variable to investigate. In a paper which takes this point Michael Ehrmann and I (Artis and Ehrmann, 2004) have shown that the UK is an indifferent candidate for monetary union: monetary policy is important and shocks are asymmetric against Eurozone partners. But the exchange rate *per se* is not actively helpful in stabilizing the economy and seems to dance to its own tune. The model is explained in some detail in Appendix 1.

*Trade.* Following the original study by Rose of the effects of monetary union on trade, there has been a plethora of similar studies. Rose's initial (Rose, 2000) estimates of a huge effect of monetary union on trade (of some 300-400%) have been reduced to more modest proportions in many of the subsequent studies, including those by Rose himself. The basic problem can be seen as the absence of any clear theory combined with the absence of any clearly relevant historical example. The "theory guide" suggested by volatility studies would say that monetary union is simply reducing exchange rate volatility to zero; no existing volatility studies would supply a large figure for the effect of such a reduction in volatility.[9] Rose's work turned on the use of large panel data sets, where monetary union status appears as a dummy variable. On examination, many of the monetary unions identified in Rose's statistical studies proved to involve small and often poor countries. The most "representative" case available for the UK is perhaps that of Ireland's withdrawal from its monetary union with the UK when it joined the ERM. An influential study of this case (Walsh and Thom 2001) concluded that this withdrawal made no difference to the extent of

Ireland's trade with the UK. On the other hand, in the short sample of evidence available to us from the Eurozone's own experience in this respect, some trade creation seems to be detectable. The Treasury study, reasonably, suggests a small (as these things go: an increase of 50%) positive, effect, but this too is disputable. The evidence is based on only four years of EMU, and is detectable only after conditioning on a number of economic variables (see Micco et al. 2003). The large effects uncovered by Rose can be argued to be the product of "more than" a common currency (factors like a common framework of commercial law, common shopping hours and transport regulation and a host of others may be important). Of course EMU, too, is designed to be part of an enterprise in "completing the single market", something more than "just" a common currency so that in the longer run some of the Rose effects should be expected to appear. One of the reasons why the trade effect is important is the idea that it can be linked to output growth – a stylised magnitude quoted by the Treasury is that output growth is enhanced by .3 of 1 per cent for every percentage point increase in the trade/GDP ratio. Evidently, either these effects are long-delayed or the numbers are quite inflated, since the growth effect of the Euro is far from obvious in the current performance of the Eurozone economies (see below, Table 3).

*Policy frameworks.* The UK Treasury has taken some pride in the fact the UK has been able to set up a framework for monetary and for fiscal policy which is often used as an exemplar of how these things should be arranged. The advantages are seen not only in the greater transparency of policy *per se* that such frameworks provide, but in the growth-friendly stability that ensues. The Treasury's assessment finds that whilst the UK has a superior policy framework, the Eurozone nonetheless also has the foundations for such a framework. It may seem surprising that the Treasury was not harsher in its judgment here. Recent experience of the Eurozone's Stability and Growth Pact make a poor advertisement for the Eurozone's policy framework. Some might add that the ECB could be convicted of dealing too weakly with the common deflationary shock in Europe since 2000, thus exacerbating the pressure on the fiscal side (see Artis and Allsopp, 2003). All in all, the exchange of a good (some would say a very good) policy framework for a dubious and inconsistent one that is implicit

[9] In any case, the overall effect on exchange rate volatility of UK adoption of the Euro is not clear in sign since the Euro appears to be more volatile against the dollar than is sterling.

in the UK's joining the Eurozone can be viewed as an important loss. It is part of the background to the negative response given by the opinion poll respondent (or can be easily rationalized as such by the policy-conscious economist).

**Table 3. Economic performance of the UK and its comparators**

| | inflation | | | |
|---|---|---|---|---|
| | 1970-80 | 1980-90 | 1990-03 | 1998-03 |
| United Kingdom | 12,63 | 7,44 | 3,31 | 2,38 |
| France | 8,91 | 7,38 | 1,88 | 1,42 |
| Germany | 4,89 | 2,91 | 2,14 | 1,38 |
| Italy | 12,33 | 11,20 | 3,70 | 2,35 |
| Canada | 7,38 | 6,51 | 2,31 | 2,17 |
| United States | 7,10 | 5,55 | 2,87 | 2,30 |

| | output growth | | | |
|---|---|---|---|---|
| | 1970-80 | 1980-90 | 1990-03 | 1998-03 |
| United Kingdom | 2,45 | 2,38 | 2,20 | 2,61 |
| France | 3,94 | 2,04 | 1,82 | 2,46 |
| Germany | 2,94 | 1,79 | 1,80 | 1,29 |
| Italy | 3,65 | 2,38 | 1,48 | 1,54 |
| Canada | 4,28 | 3,05 | 2,63 | 3,71 |
| United States | 3,61 | 3,08 | 2,87 | 2,96 |

| | unemployment rate | | | |
|---|---|---|---|---|
| | 1970-80 | 1980-90 | 1990-03 | 1998-03 |
| United Kingdom | 3,77 | 9,71 | 7,32 | 5,54 |
| France | 3,89 | 9,10 | 10,46 | 9,83 |
| Germany | 1,43 | 5,17 | 8,24 | 8,05 |
| Italy | 4,68 | 8,44 | 10,34 | 10,27 |
| Canada | 6,68 | 9,38 | 8,91 | 7,53 |
| United States | 6,21 | 7,28 | 5,58 | 4,87 |

Source: *IMF/ifs, OECD Economic Outlook*

### *5. The Canada solution?*

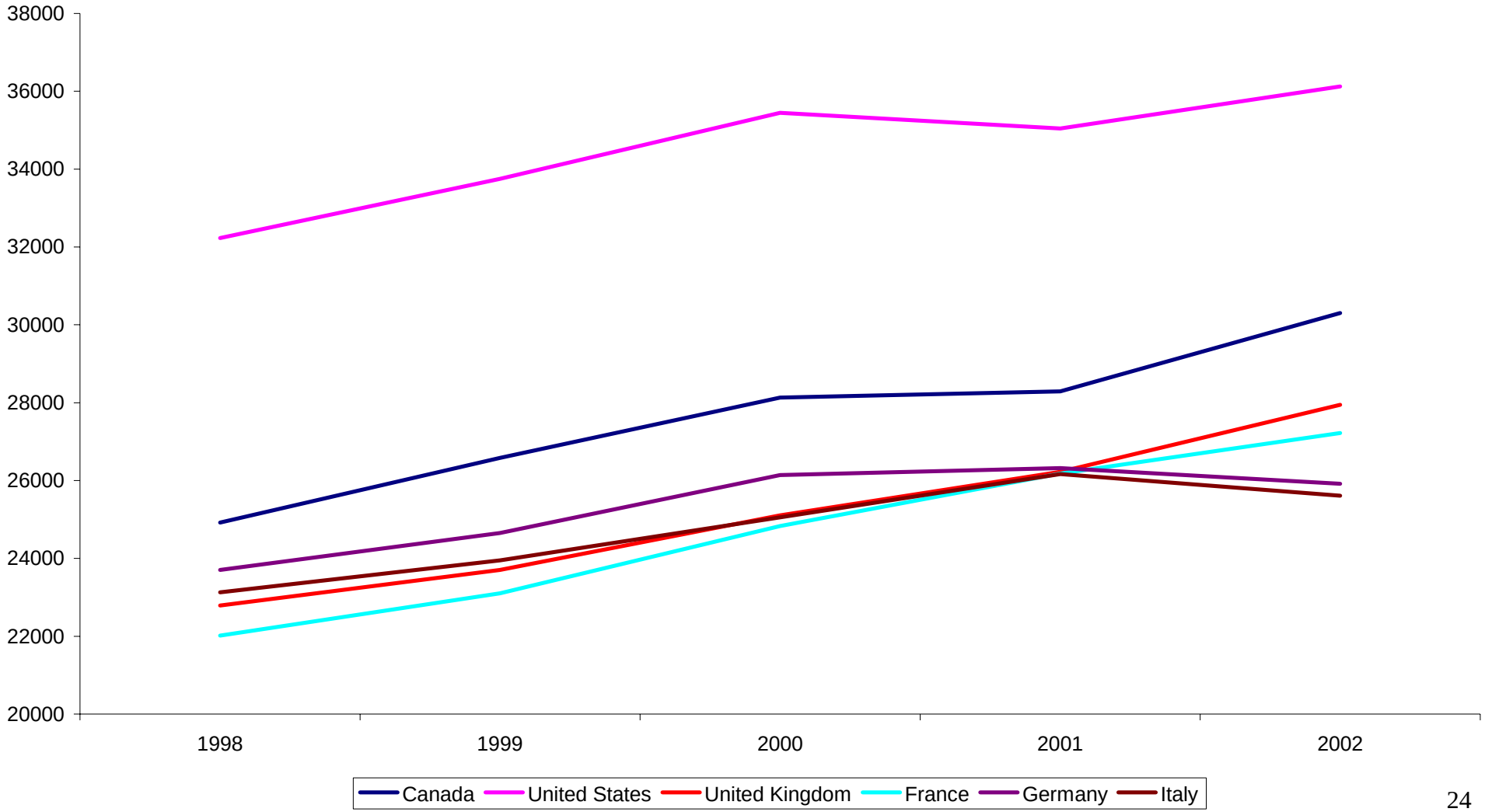
The Treasury's overall negative assessment of the "five tests" is not the end of the matter, but it has suggested to many people that the UK may in effect have opted for the "Canada solution" (cf. Artis, 2000) – that is, to float indefinitely alongside a large monetary union as Canada does. The average opinion poll respondent may see little reason to disturb the UK's situation. Not only is she told that the UK's policy framework is superior to that which prevails in the Eurozone, but she can see that the objective facts of output growth, unemployment and inflation strongly favour the status quo. See Table 3: inflation in the UK is a little higher in the period since 1998 than it has been in the major countries of the EuroZone. But output growth has been considerably higher and unemployment markedly lower in the UK in the same period. As Figure 3 shows, per capita GDP at pps has recently been growing faster and now stands above that of these same economies. On this basis the "Canada solution" seems tempting.

Would Treasury reasoning for Canada, on the hypothesis of a monetary union option with the US produce the same result as for the UK? Of course, Canada does not have a monetary union option in front of it, but only quasi-monetary union options such as adopting a Currency Board in the US dollar or (US-) "dollarizing" both of which are obviously inferior.[10] But, if it did, a Treasury style answer could, whilst obviously recognizing the trade benefits of monetary union, and the high degree of sympathy in the experience of shocks, find two sources for caution. The first would pertain to the performance of the exchange rate as a shock absorber. Here the Bank of Canada (see Schembri, 2001) has argued (producing econometric evidence in its favour) that the Canadian dollar reacts appropriately to shocks which impinge more strongly on natural resource outputs in which Canada is relatively more strongly endowed, whilst the Canadian dollar/US dollar exchange rate is generally not volatile by global standards. Then, when it comes to policy frameworks, Canada can claim to be one of the earliest and most successful of inflation targeters, whilst having at the same time a fiscal framework with clear objectives and responsible fiscal policies; in both respects, the comparison with the US is a favourable one. Then again., the political background would inevitably again be a prominent force in any final assessment.

[10] Buiter (1999), in an otherwise sympathetic appraisal of Canada's MU alternative, rules out these quasi-MU options. They are inferior in providing no role for Canadian interests in the conduct of monetary policy and, in the case of dollarization, leading to a loss of seignorage revenues...

**Figure 4.**

**GDP per capita (at PPP exchange rates)**



## *6 Conclusions*

We are on year on from the UK Treasury's landmark study of the economic merits for the UK of Euro entry. The negative verdict that the assessment reaches rests heavily on the merits of undisturbed stability. This underlies the concern with the housing market and its peculiar finances, though this could equally be seen as a reflection of a particular idiosyncratic shock From this point of view an important omission is any serious discussion of the prospects for financial integration in the Euro Area; the new line of literature developed by the late Oved Yosha and various associates is not taken into much account. Of course, it would be easy to argue that the Euro Area's financial; integration has still a long way to go, despite the impressive progress made in the bond markets.

One point that should be strongly emphasized is that the study recommends a number of *positive* steps, which, if taken, seem likely to bring the prospect of a favourable verdict in the future somewhat closer. This is in harmony with the idea that the government's policy should be seen as Mullen and Birkitt (2003) have claimed, as one of "prepare and persuade" rather than of "wait and see". Among these positive steps, it was recommended that the Bank of England be instructed to focus on the harmonized index of consumer prices (HICP), which will bring it in line with ECB practice, whilst changes to housing market finance are to be encouraged. In some other respects the suggestion is that the Eurozone should bring its practices into comparability with those in the UK.

Meanwhile public opinion remains notably sceptical. The initiative to join the Euro seems effectively politically dead. The latest Euro parlour game is to speculate on what it would take for all this to change. One ingredient is usually seen to be a "clear and unambiguous" improvement in the performance of the major Eurozone economies, something much to be desired on other grounds.

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## *Appendix 1 The new approach to OCA theory*

A new approach to optimal currency area theory has stemmed from the perception among observers of emerging market economies that in such economies the null hypothesis of traditional OCA theory fails, and fails badly (see Frankel, 2004 for example). The OCA null is the hypothesis that outside a monetary union a country can have a well-functioning monetary policy and an exchange rate for its independent currency that reinforces the stabilizing action of monetary policy. To the contrary, emerging market economy experience illustrates that a high price may be paid for an independent monetary policy; foreign exchange markets are subject to fads and movements not justified by the fundamentals. Those movements, in the worst case, may be positively destabilizing and obstructive to policy. It is a debated question how far the same diagnosis applies to the foreign exchange markets of mature economies. Some observers will argue that in a world of highly mobile capital foreign exchange markets are liable to be unhelpful even in the case of mature economies, although – in the presence of well-developed domestic capital markets – some of the worst effects seen in emerging market economies can be avoided.

The model put forward in Artis and Ehrmann (2004) is an attempt to grapple with this issue, analysing in an SVAR context, four economies with a monetary union, or quasi-monetary union, option, viz: the UK, Canada, Sweden and Denmark. The model and the results for the UK are summarized here.

Our VAR model consists of $x_t = [\Delta y_t \quad r_t^* \quad r_t \quad \Delta p_t \quad \Delta e_t]'$, where, all variables except the interest rates being in logs, $\Delta y_t$ denotes output (industrial poduction) growth, $r_t^*$ the "foreign" short-term nominal interest rate (identified with Germany's policy rate), $r_t$ the domestic UK short-term nominal interest rate, $\Delta p_t$ (RPIX) inflation and $\Delta e_t$ the rate of appreciation of the nominal exchange rate of the sterling against the DM. The model is formulated as

$$A_0 x_t = A(L) x_{t-1} + \varepsilon_t, \tag{1}$$

with $\varepsilon_t \sim iidN(0, \Sigma_\varepsilon)$.

This model implies that the economy is subject to several structural shocks $\varepsilon_t$. They consist of $\varepsilon_t = [\varepsilon_t^s \quad \varepsilon_t^d \quad \varepsilon_t^{m^*} \quad \varepsilon_t^m \quad \varepsilon_t^e]'$, where $\varepsilon_t^s$ indicates a supply shock, $\varepsilon_t^d$ a demand shock, $\varepsilon_t^{m^*}$ and $\varepsilon_t^m$ foreign and home monetary policy shocks and $\varepsilon_t^e$ the exchange rate shock. We refer to the last three as "nominal" shocks.

Estimation of this model is performed for its reduced form

$$x_t = A_0^{-1} A(L) x_{t-1} + A_0^{-1} \varepsilon_t , \qquad (2)$$

which is not identified; to reconstruct (1) from the estimated parameters of (2), 25 identification assumptions need to be imposed (equal to the number of parameters in the matrix $A_0$). Fifteen of these arise from the standard assumption that the structural errors have unit variance and are uncorrelated, i.e. $\Sigma_\varepsilon = I$. The remaining restrictions are derived as follows.

Following Blanchard and Quah (1989), we identify the supply shock as the only one in the system which has a permanent effect on output. Furthermore, we identify the demand shock as the only one of the remaining shocks (i.e., of those with only temporary output effects) that can influence output contemporaneously (or, in other words, we assume that none of the nominal shocks has immediate effects on output).

We are left with the task of identifying the three nominal shocks, domestic and German monetary policy and the exchange rate shock. To identify the German monetary policy shock, we assume that the German interest rate neither reacts contemporaneously to a monetary policy shock in the UK, nor to an exchange rate shock. We furthermore assume that the Bundesbank does not react to movements in the DM/sterling exchange rate. We impose the latter two restrictions only contemporaneously, and leave the response of the German interest rate unrestricted for longer horizons. This leaves us with the task of identifying the shocks to domestic monetary policy and the exchange rate. Since the UK has experienced bouts of official and unofficial exchange rate targeting during the estimation period (1980:1-1998:12), there is an endogeneity problem here. We follow Smets (1997) in estimating the weight, $\alpha$, which central banks attach to exchange rate developments when setting monetary policy. With this knowledge it is possible to disentangle these two shocks.

Once all the shocks apart from the monetary policy and exchange rate shock are identified (which implies that the systematic component of monetary policy in

response to those shocks has been determined), the unexplained components of the exchange rate and the interest rate are driven entirely by the monetary policy and the exchange rate shocks. Equation (3) shows this for the interest rate and equation (4) for the exchange rate:

$$u_t^r = \alpha_1 \varepsilon_t^m + \alpha_2 \varepsilon_t^e \tag{3}$$

$$u_t^e = \beta_1 \varepsilon_t^m + \beta_2 \varepsilon_t^e \tag{4}$$

In equation (3) the interest rate is shown as determined by the autonomous monetary policy setting, $\varepsilon_t^m$, as well as by its response to exchange market shocks, $\varepsilon_t^e$. Equivalently, in equation (4) the exchange rate depends on domestic monetary policy shocks as well as an exchange market disturbances. Solving model (3) to (4) for the structural monetary policy shock, $\varepsilon_t^m$, yields:

$$\varepsilon_t^m = \frac{\beta_2}{\alpha_1\beta_2 - \alpha_2\beta_1} u_t^r + \frac{\alpha_2}{\alpha_1\beta_2 - \alpha_2\beta_1} u_t^e \tag{5}$$

Equation (5) denotes how the central bank sets its monetary policy, given the current interest rate and the exchange rate. Normalising the sum of the weights on the two residuals to one, we arrive at

$$\varepsilon_t^m = (1-\omega) u_t^r + \omega u_t^e, \tag{6}$$

where $\omega = -\frac{\alpha_2}{\beta_2 - \alpha_2}$.[11] With an estimate for $\omega$, the remaining identification problem is solved, since this allows us to derive the structural shocks from the reduced form shocks. Smets (1997) suggests to estimate $\omega$ by transforming (6) into the regression model

$$u_t^r = -\frac{\omega}{1-\omega} u_t^e + \frac{1}{1-\omega} \varepsilon_t^m \tag{7}$$

where the observed variable $u_t^r$ is explained by the observable $u_t^e$ and a random shock, $1/(1-\omega)\,\varepsilon_t^m$. Since regressor and disturbance are correlated, (7) is estimated by Hansen's (1982) GMM estimator.

These identification assumptions allow us to proceed in the usual way to an estimation which will yield informative impulse response functions and a forecast error variance

[11] $\alpha_2$ as defined in (3) is expected to be negative, since an appreciation of the exchange rate should lead to a fall in the interest rate. $\beta_2$, on the other hand, should be positive, as is obvious from (4). It follows that $\omega \in [0,1]$.

decomposition. (In the full paper, a number of sensitivity tests are also carried out to confirm the robustness of the results). Figure A1 below shows the impulse response functions. They supply answers to the following important questions: does the exchange rate respond to supply and demand shocks? Is it, in that sense stabilizing? If not, to what shocks does it respond? Do output and prices respond in a significant way to exchange rate shocks? In any case, do shocks appear to be asymmetric as between the UK and Germany? If so, an independent monetary policy could be useful in principle – but only if it is significant for output and/or prices.

Figure A1 suggests a negative answer to the first question. The exchange rate does not show a significant response to demand and supply shocks, and in that sense is not a stabilizer. It appears to respond mainly to monetary policy and to shocks arising in the foreign exchange market itself – in that sense "dancing to its own tune". However, although the exchange rate responds to non-fundamental shocks, it does not appear to have first order effects on output or prices, and in that sense these gyrations are not harmful. The exchange rate could only have the potential to be a stabilizer if shocks were asymmetric between the UK and Germany. In the sense that the response of the German and the domestic interest rate to supply and demand shocks differs in sign, the evidence is that the shocks are in fact asymmetric. An independent monetary policy can therefore make sense, provided it is effective, as appears to be the case for output (though not prices) in this estimation.

In sum, this study suggests that monetary union between the UK and the Eurozone (taking Germany as the proxy for the latter) is not strongly indicated: shocks are asymmetric and although the exchange rate is not a good stabilizer an independent monetary policy has the potential to be so.

**Figure A1: Impulse Response Functions for the United Kingdom**

Source: Artis and Ehrmann (2004)