

Should Britain join the euro — the Chancellor's five tests examined

by

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***I am grateful for most useful comments to two anonymous referees.**

During the 1980s the issue of Britain's membership of the European Monetary System's Exchange Rate Mechanism was a constant source of political controversy, ultimately playing a part in the schism between Margaret Thatcher and her Chancellor, Nigel Lawson, and also in the final drama of her resignation as a serving Prime Minister. As is well-known, Britain entered the ERM in 1990, only to exit from it in 1992. During the 1990s the equivalent monetary issue concerning European exchange rate arrangements has been that of joining the euro. After the ERM's travails in the early 1990s the leaders of continental European countries, notably Chancellor Kohl of Germany and President Mitterrand of France, decided to embark on monetary union. In the Maastricht Treaty Britain negotiated an opt-out from this. In January 1999 the euro was launched in virtual form; and in January 2002 the euro has materialised as notes and coins. The debate in Britain has been focused by the knowledge that joining the euro is in large measure irreversible, unlike joining the ERM. It is of course not impossible to leave the euro; anything in politics is possible. But joining does put enormous barriers in the way of leaving: for example there is no provision in the Rome Treaty (as subsequently amended, notably by the Maastricht Treaty) for doing so and therefore it would involve a violation of the Treaty with unpredictable ramifications. The question of joining has therefore been considered of such importance, both practical and constitutional, that it has forced politicians to offer the people a referendum. The present government has stated that if and when it decides that joining is something it would recommend to the country, it will then hold a binding referendum on entry. It has also let it be known that its decisions would be highly dependent on the economics of joining; it has admitted that there are political and constitutional considerations but suggested that these are secondary. The Chancellor of the Exchequer drew up the Five Economic Tests for entry with the full authority of the government; it was said that they must be met 'clearly and unambiguously'.

In brief (for a full list see Bush, 2001, p. 27), the first test concerns whether the UK has achieved 'convergence' with the rest of the EU; the second whether there is sufficient economic flexibility in the UK and the EU to avoid problems; the third concerns the effects on inward investment; the fourth those on the City of London. In a fit of commonsense, the Chancellor and his economic advisers listed as the 'fifth test' for Britain's entry into the euro the general economic effects of monetary union on the British economy, thus in effect sweeping all the other tests up into this very one. This gives us a welcome opportunity to consider the overall economic calculus of entry.

Before we begin we should mention politics, however. The difficulty of placing economics at the centre of the decision has been a source of continuous tension in the debate, within all the parties. The problem is that the driving force of monetary union

on the continent has always been political; it has been seen by most of its protagonists, certainly Chancellor Kohl and President Mitterrand, as a measure that would propel participants into political union at a faster pace. Indeed, the economic problems monetary union would throw up were regarded by them as a useful extra propulsant. This has meant that these continental leaders have constantly applied pressure on the UK to join for the same political reasons - they want us to join the club they have in mind, in order to enjoy our assistance (our strengths) and to limit our ability to compete with it and even undermine it by doing things differently. But within the UK there are many, including a large majority of the public, who do not share this continental vision of ultimate political union; they want Britain to be an independent nation in a Europe of independent but cooperating nations. As a result those UK politicians who want Britain to join the euro have couched the case in economic terms, to avoid alienating this majority opinion; they have generally argued that it will not lead to political union and that those continental politicians wanting such a union are in retreat. Those UK politicians who oppose UK entry have felt no such necessity to downplay the political risks of submergence in a European superstate. Like most serious political arguments, there is little chance that either side will be convinced by evidence or reasoned debate to change their position. Values are at stake; and it is also rather difficult to know just how the European Union itself will evolve- into a tight federal union or a large and loose cooperative group of independent nations.

It is against this background that we consider the economic costs and benefits. Fortunately, economics has developed fairly robust means of testing arguments and evidence. There is a body of economic theory within which the logic of arguments can be evaluated. Furthermore we have increasingly good access to data and econometric tools, so that evidence can be brought to bear. This means that, much as some participants in the debate would like the economics to be vague and impressionistic so that political preferences could easily be dressed up as economic arguments, modern economics does not easily oblige.

My aim in this short booklet is to set out in as clear a way as I can what the economic arguments on both sides are; and then to discuss what theory and evidence we can bring to bear on them so as to evaluate the gains and losses to the UK economy were it to join. Economics is a quantitative subject; therefore what is true for the UK may not be true for other countries. We will see that there are both gains and losses. For the UK the calculation will depend on its particular characteristics. For other countries with other characteristics the calculation may well therefore be different. But needless to say this booklet is about the UK only.

Chapter 1: The benefits of EMU

The economic benefits put forward for EMU consist of three main elements: the reduction in transactions cost of changing currency; the reduction of exchange risk leading to greater trade and foreign investment with the rest of Europe, and to a lower risk-premium embodied in the cost of raising capital; and increased transparency in price comparison.

Transactions costs

EMU would mean that currency exchange between pounds and euros would no longer occur; this would save resources (reflected in the margins of currency dealers in a competitive market). The EU Commission did a study (EU, 1990) of the savings and found that on average across the EMU members there would be savings in dealers' margins of 0.4% of GDP. However, for countries with advanced banking systems, such as the UK, it found the saving to be much smaller, at around 0.1% of GDP. The reason was that the vast proportion of currency exchanges between pounds and euros take place via the banking system (as for example in inter-firm trade payments or credit card payments); these transactions, whatever margins may be marked up on them, are costless in resources since in a computerised banking transaction conversion of a payment into another currency requires the computer merely to perform one extra operation, at essentially zero marginal cost. So the cost only arises when people change hand-to-hand currency, basically small tourist transactions.

0.1% of UK GDP is about £1 billion per year - a fairly small sum though of course it is a gain that in principle continues indefinitely, at a level depending on the share of such currency exchanges in GDP. It seems rather likely in fact that these exchanges will steadily diminish in importance as credit card and other banking payment mechanisms penetrate ever deeper into tourist practice. A reasonable practical assumption might be that it remains about constant in absolute terms at £1 billion in today's prices.

The transactions cost argument does not end there. In order to join EMU there must be a large one-off transactions cost in the form of changing the pound into euros - including changing over the vending machines, the accounting systems, and the banks' high street machines. There have been a range of estimates of this, which were usefully reviewed recently by the House of Commons Trade and Industry Committee (House of Commons, 2000), together with work of their own. They concluded that a reasonable central estimate of the changeover cost was £30 billion.

To reach an overall assessment of the net transactions cost one must either turn this last one-off cost into an annual charge or convert the ongoing gain above into a 'present value equivalent'. This is easily done. If we take the real rate of interest as around 4%; then the annualised charge on £30 billion is £1.2 billion, slightly more than the £1 billion annual gain. Or equivalently the present value of £1 billion is £25 billion ($\text{£1 billion}/0.04$), rather less than the one-off cost. By playing with the real rate assumed one can push the comparison either way; and in any case both sets of estimates must be regarded as of doubtful accuracy. In other words, the transactions cost argument for going in turns out to be on balance of little weight.

Exchange risk, trade, foreign investment and the cost of capital

The core of the argument for going into EMU is the elimination of exchange risk against the euro. It is argued (for example, in Britain in Europe, 2000) that this elimination is like the removal of a trade barrier and will promote much more trade with Europe, will increase foreign investment in the UK, and will reduce the cost of capital by merging the rather risky and limited sterling capital market into the bigger and less risky euro capital market.

Let us examine this argument in two stages. First, let us assume that exchange risk is an important influence on trade, foreign investment and the cost of capital. Second, we will consider this assumption critically.

So, assuming exchange risk is a big factor, consider whether joining the euro will actually reduce it or not and if so by how much. Here we immediately trip over the key point that joining the euro is not to join a world currency but a regional one. Unfortunately for our exchange risk we trade very heavily with the dollar area. Let us not get tied up in the vexed question of the exact shares of our trade with Europe and with the USA, and what sorts of trade should be counted (in goods? in goods and services? or in all cross-border transactions including foreign investment and earnings on them?). The point is that if we regard exchange risk as a sort of tax on transactions involving exchanging currency, then it is plain that the broadest definition should be used for the 'trade' affected by this tax. Most of the world outside Europe either uses the dollar or is tied to it in some formal or informal way. We might then say, in a rough and ready way, that we trade and invest half with the euro area and half with the dollar area. (This, by the way, is not the same issue as the currency in which trade is denominated or invoiced, in which the dollar heavily preponderates; invoicing is about how the risk is shared between buyers and sellers, not about the total risk involved.)

It so happens that the euro/dollar exchange rate has been highly variable for a very long time - see Figure 1 which shows the DM/dollar rate up to January 1999 and thereafter links on the euro-dollar rate (this linkage assumes that the DM would have been the dominating element in the behaviour of the euro, had it existed before). Nor have the sources of that variability been removed. They include the very different philosophies of regulation ('Rhenish' versus 'Anglo-Saxon' capitalism) which lead to swings in market sentiment about likely future success; differences in business cycle timing which cause swings in interest rates; and differences in adoption of new technologies. It is true that differences in inflation are now small but that has been so now for at least a decade and a half; this has not stopped very large swings in the exchange rate due to these other reasons which affect the 'real exchange rate' (that is, the exchange rate adjusted for relative inflation.)

Figure 1: Euro per US dollar

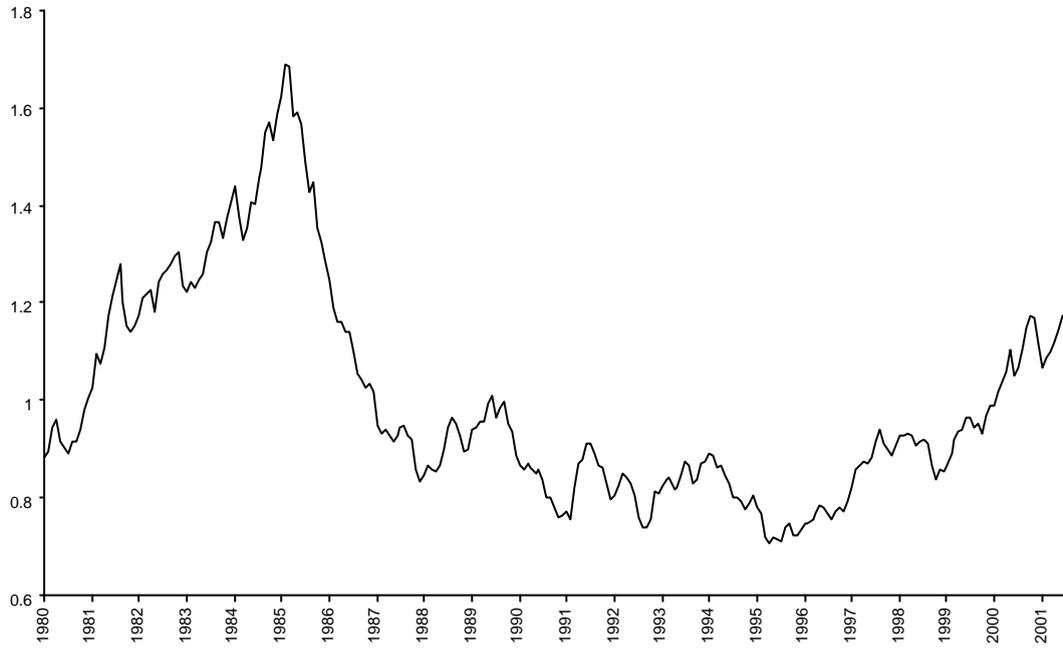


Figure 2: UK Trade Weighted Exchange Rate
Euro-Dollar Exchange Rate
(1990=100)



The problem then for the UK is that if we join the euro we thereby increase our exchange risk against the dollar as the euro swings around against it. If we remain outside, the pound can as these swings occur 'go between' the two, rather like someone sitting on the middle of a seesaw. The chart of our own effective (or average) exchange rate - Figure 2 - juxtaposed against the euro/dollar exchange rate shows rather clearly that we have been able to enjoy less volatility in our overall exchange rate by tying to neither of these two big regional currencies.

We have some concrete experience of experimenting with such tying. When we first shadowed and then tied to the DM from 1988-1992, we experienced substantial average exchange rate volatility as German reunification led to a large appreciation of the DM against the dollar. That too can be seen clearly in Figure 2. Since we left the ERM in 1992 the DM first continued to appreciate against the dollar and then from 1995 began to plunge; from January 1999 its euro successor has plunged further. The pound has fluctuated less in its average value.

So what we find is that there is no necessary gain in exchange risk reduction in joining the euro and that it is even possible that our overall exchange risk would rise. This message is confirmed by stochastic simulations on the Liverpool Model of the UK, reported in Minford (2001), where we find that the variability of the real exchange rate actually rises slightly under EMU compared with floating. The standard deviation of the UK real exchange rate is just under 11% under floating and just over 11% under EMU under the standard assumptions we make; under the whole variety of other assumptions that we investigate this relationship of the two hardly changes, average variability under EMU always being a little bit higher than that under floating. This, perhaps rather surprising, finding essentially comes from the very large shocks injected by the variations in the euro's own real exchange rate (basically against the dollar area) into the UK's real exchange rate- in other words, exactly the factor we worry about above, that the euro/dollar rate is highly volatile.

From the viewpoint of shareholder welfare, we must also stress that the composition of currency risk is also a factor. A doubling of dollar risk for the elimination of euro risk would be welfare-reducing, even though this would keep 'average risk' unchanged; the reason is the usual one in economics of 'diminishing marginal utility'. The gains I make as a euro trader get progressively smaller as the risk falls to zero, but the losses made by you as a dollar trader get progressively larger as your risk rises to a doubling. So add up all your losses and they dominate my overall gains from the change-over to the euro. In short, adopting the euro could actually diminish UK welfare as a result of exchange risk both in total and in composition.

Let us now turn to the second leg of the argument and ask just how important exchange risk is as a factor determining trade, foreign investment and the cost of capital - both in general and specifically for the UK. This concerns the extent to which modern financial markets can diversify this risk away; the more they can, the cheaper for example the 'hedging' deal they can offer a trader (i.e. a trader who is exposed to foreign exchange risk can insure it by covering his exposed position by buying or selling foreign currency for future delivery from a financier, usually a bank, that then carries the risk). Without going into the rather involved theory, the risk can be diversified away to the extent that a currency gyrates independently of general trends

or fluctuations - by pooling a lot of independent risks in a large portfolio a bank can largely eliminate these sources of risk at the portfolio level. On top of this big enough financial intermediaries can ignore moderate amounts of risk, acting as a 'risk-neutral' insurer.

In trade the main risk is that the exchange rate will change after the deal has been concluded - this will usually be over the short term, say months or a year. In foreign investment the risk is that the plant in the host country will experience a rise in costs of production that is not matched by a fall in the exchange rate - that is, the country's real exchange rate will rise, so reducing real profitability; there is then the further risk that its real exchange rate will fall relative to the investor country's so causing them to be worth less on repatriation. In raising capital the capital provider faces the risk that the loan or share will be devalued by an exchange rate fall. In each case the risk involving the exchange rate is slightly different but in all cases the question is the same: can financial markets diversify away this risk to a level sufficient to ignore? The broad answer will be that if a country's exchange rate or real exchange rate largely varies with domestic factors which are therefore idiosyncratic then its exchange risk will be highly diversifiable. To the extent to which a country is highly vulnerable to world or general turbulence it is not. One can see therefore that a country which is well-run, with a sound monetary policy and a flexible supply side, should be able to withstand general turbulence; it will have its own upsets of course (foot and mouth say) but these can be diversified against by the international financial community by investing in foreign assets with which these domestic shocks are uncorrelated.

We may then turn to the question of whether exchange risk will affect a country's domestic real interest rate. The theory tells us that through the international movement of funds to take advantage of arbitrage and speculative opportunities domestic real interest rates will be equal to the 'world' real interest rate (which we can approximate by that of the dollar, the world's dominant currency) plus a risk-premium reflecting the non-diversifiable volatility of the exchange rate. The discussion in the last paragraph immediately tells us that this risk-premium will be small for a reasonably well-managed economy.

So the theory suggests that a well-managed country should not have much of a problem with exchange risk in general. Its cost of capital will be at world market rates; its foreign investors will be calm about possible future movements in the real exchange rate; and its traders will have a wide scope to hedge at modest cost. On the other hand a badly-managed country vulnerable to crises triggered by world recession for example because of poor monetary policy and inflexible labour markets could well find exchange risk a big problem - such indeed seems to have been the position of Italy before its accession to the euro was agreed and this accounts for the eagerness with which Italy pursued a campaign to join EMU against German reluctance.

We may at this point address the argument (made much of in Britain in Europe, 2000) that a country's exchange rate is vulnerable to 'bubbles', that is irrational movements based on pure sentiment rather than fundamentals; the best-managed country can have its exchange rate 'attacked by speculators' in such a bubble and this, it is argued, will generally be triggered by world events in a contagious way so that their possibility cannot easily be diversified against. By joining the euro such bubbles are closed

down, it is further argued. However, the evidence for such bubbles is poor and the theory surrounding them is controversial (in a forthcoming book, 'Advanced Macroeconomics- A primer', David Peel and I review the theory carefully and suggest that in the end it relies on systematic irrationality among market participants). We can furthermore account for what are claimed to be bubbles in terms of natural market concerns about future policies. A good case in point is the euro's fall; many of those who support bubbles also believe the euro's fall is a bubble. Yet that fall can easily be explained by the poor supply-side policies being pursued in the euro area, the resulting high unemployment and the fears in the market that this could destabilise the conduct of euro policy, and even endanger the existence of the euro.

If we look at the data, as I do in Minford (2001), we find that the volatility in the pound's risk-premium (the supposed source of the bubble) is not an important factor in determining the variability of the economy under floating. When it is tripled, the comparison with EMU changes only modestly: the economy remains far more variable under EMU than under floating. So, even if some of the volatility of the UK's risk-premium were due to bubbles, the evidence reveals it as of no practical importance.

There are therefore good theoretical reasons for doubting the importance of exchange risk as a factor affecting the UK; such risk as there is should be readily diversifiable in financial markets, resulting in little cost to insure and so having little impact on the real economy. The empirical studies available tend to support this judgement. A wide range of studies surveyed and in many cases commissioned by the IMF found little, if any, impact of exchange rate volatility on trade (a typical example is Bailey et al, 1987) In a recent theoretical study of this issue Bacchetta and van Winkoop (2000) note that 'the substantial empirical literature examining the link between exchange-rate uncertainty and trade has not found a consistent relationship', adding that 'in papers that find a negative relationship, it is generally weak'; the theoretical general equilibrium benchmark model they consider implies no relationship at all between trade and the exchange rate regime.

The factors moving foreign investment have also been widely studied; and foreign exchange risk is generally found to be a minor consideration (recent evidence bearing on the UK is examined, for example, in Leach, 2001). As for the cost of capital, an exchange risk premium is found for countries that have poor domestic policies; the UK has in the past suffered from this problem - one has only to go back to the 1970s and the early 1980s battle for reforms to see this in the data. But in the last decade, once the exit from the ERM had been digested and a new monetary consensus against inflation forged, we have seen the emergence of a minimal risk-premium over world capital costs. For example UK gilts now sell on yield similar to both German bunds and US Treasuries.

We should mention two studies that appear to point the opposite way, both of them cited as important evidence in Britain in Europe (2000). The first, by Professor Andrew Rose of Berkeley (Rose, 1999), finds a statistical relationship between the size of bilateral trade of two countries and whether they are in a monetary union; his coefficient implies that trade is tripled by monetary union. However, economists have been highly sceptical of this claim (see the Rose, 1999, reference; also Persson, 2001, and Nitsch, 2001) on the grounds that the coefficient comes from the experience of

many small dependent economies in monetary unions with large, usually 'mother', countries; there is really no way of distinguishing the effect of close ties of dependency on close trade patterns from that of monetary union itself. Monetary union is a sign of an extraordinary closeness of relations in general, from which trade closeness is bound to flow. Rose claims he has 'controlled' for such closeness factors by including proxies for these such as 'colonial dependency'. This unfortunately does not resolve the problem; suppose there was a colony that broke its ties with the mother country and as part of that broke up its monetary union. The only distinction between it and another colony that did not would be its absence of monetary union. So monetary union would in effect be the indicator of closeness of general ties. In effect this problem (known as 'selection bias') is insuperable without being able somehow to choose the cases where monetary union did and did not take place randomly, quite separately from the cases where political ties occurred or broke down. If these things occur together, because of some third unobserved cause, then there is no means of distinguishing their effect.

The second study is by John McCallum of the Royal Bank of Canada (McCallum, 1995). It concerns Canada's trade with the US. He shows that in spite of its effectively free market with the USA Canada trades much less with the USA than it does within its own borders, even in contiguous states. Britain in Europe (2000) claims this as evidence that were Canada to have a monetary union with the USA trade would be much higher. Yet the McCallum paper claims nothing of the sort, merely that 'the existence of the border' reduces trade; indeed the paper makes no mention of monetary union. Canada, being a different country, has a myriad of different institutions that between them change incentives to trade, these being summarised in 'the border'. One of them plainly is a different currency but it is only one of many. As with Rose's study it is impossible to divorce the closeness of ties evidenced by monetary union from the effects of these ties themselves; were Canada to be in a monetary union with the US it would no doubt be because there was high degree of mutual trust and a willingness to remove institutional differences. Their removal would lead to a Canadian province on one side of the US border being essentially like a US state on the other side - regulatory arrangements, legal procedures, etc would be the same, there would be no customs posts or different forms to fill in and so on. 'The border' would have gone - but not just separate currencies.

Unfortunately to determine the separate effect of monetary union requires that monetary union be something that can be varied quite separately from general closeness, as argued above; and the data do not provide this experiment. These two studies, in spite of their sophisticated econometrics, do not get around this problem in the case of monetary union. We can look at the evidence of the effects on trade of exchange rate volatility; there at least one can find separate movement of the volatility measure divorced from the movement of other factors. As we have seen it does not reveal much if any effect.

There are a few cases where countries have maintained normal relations in other respects but have decided to make or break monetary unions. Flandreau (2001) examined the cases of the Latin Monetary Union of 1865 (between Belgium, France, Italy and Switzerland) and the Scandinavian Monetary Union of 1873 (between Sweden, Denmark and Norway) and found no evidence of trade effects of monetary

union. Aristotelous (2001) found none on US-UK trade from movements on and off the Gold Standard and the break-up of Bretton Woods. Most relevantly for the UK Thom and Walsh (2002) found no trade effects from Ireland's breaking-up of monetary union with the UK in 1979. What all these studies confirm is that trade patterns are determined by comparative advantage, not by monetary factors, not even monetary union. If monetary risk is like a trade barrier, then it is- as we might have suspected from the theory of diversifiability- an exiguously small one.

In conclusion, this, the major argument adduced for entry, does not appear to be of much quantitative significance. It might even go the wrong way. One can agree that having a common money across the world would bring some gains of market integration - even if modest - while disagreeing that adopting a regional currency like the euro will bring even modest gains.

Transparency of price comparison

Prices, it is said, will be easier to compare in a foreign currency; hence the consumer will gain from greater competition bringing enhanced price similarity (adjusted for quality differences). For countries with populated land borders such as Belgium or the Netherlands the argument has some force as border people are constantly involved in price comparisons which could be costly in time. However, the UK has no land borders with the euro-zone (other than the mainly rural one between Northern Ireland and Eire). So the argument in our case can only be of interest for substantial traded goods or services: we are hardly going to be comparing the price of Coca-Colas and haircuts (unlike the residents of Maastricht, say). The main example given is motor cars where it is argued that UK car prices are higher than on the continent because we have a different currency.

It is quite important to distinguish the argument from those of transactions costs or exchange risk already considered. It is identifying a special transactions cost - namely that of comparing prices which with different currencies involves a calculator say or some extra mental arithmetic. So in the case of cars it is being claimed that the extra cost of getting out a calculator to compare say Belgian prices of Fords with those in Birmingham is an important element keeping up prices in Birmingham. A moment's reflection reveals the absurdity of this claim; assume that there were competitive dealers offering to get you a Belgian car in place of a Birmingham one; would they not first quote you the sterling-equivalent prices or, if not, would you not find it a trivial chore to get out your calculator when making such a big purchase?

In fact there have been a number of investigations (mainly by the Competition Commission and its predecessor body, the Monopolies and Mergers Commission) of why car prices are different in the UK from the continent. The major reason (MMC, 1992) found has been the exclusive-dealer system which permits car companies to prevent cross-trading; another has been different regulatory systems (including driving on the left/right); another has been the tax treatment of company cars and the resulting vigour of the second-hand market. Even the existence of the Internet, which could lower the costs of trading, has not apparently much affected the matter; internet traders have just as much difficulty getting around the car companies.

One is driven to conclude that, apart from border towns where obviously comparing small items would be costly in different currencies, this transparency argument is of little interest. As border towns are not relevant to the UK, that ends it from the UK viewpoint.

Chapter 2: The costs of EMU for the UK

There are three main economic costs that have been identified in joining the EMU: the difficulty of dealing with shocks without the use of independent interest rate and exchange rate movements; the effects of 'harmonisation' initiatives associated with EMU; and the concerns that we could be involved in the bailing-out of continental countries with financial problems particularly associated with state pension deficits.

Our focus here is on these economic arguments. But we should point out in passing that the nature of the political union implicit in the monetary union plans is relevant to the last two economic arguments. Both harmonisation and bail-out concerns are directly related to the strength of the desire for political union. The stronger the push for political union the more of a constituency there is for harmonisation as well as for mutual cross-country support. Britain in Europe (2000) argues that harmonisation is a strictly separate matter from EMU and that bail-out is explicitly ruled out by the Maastricht Treaty. This however fails to recognise the way that EU institutions have been deliberately used to advance the cause of political union- for example the expectation of the European Court that its judgements should advance unification; the use of the Single Market Act with its qualified majority voting to force the limitation of working hours on the UK as a health and safety measure; and the series of summits organised by the Commission under successive country presidencies to further union in foreign and defence policy . EMU creates a further set of institutions through which arrangements can be made to increase unification between EMU members; linkages can be set up that get around notional 'separateness' or the vetoing of bail-out - 'support' after all can be 'voluntary' or 'common taxes' can be 'redistributed'. Joining EMU means that the UK is subject to its extra set of arrangements. It is like being caught in a double spider's web when you are lightly entangled in a single one from which you can still disentangle yourself.

In effect EMU is a process which is designed to produce a high degree of economic and political integration. In joining it, a country is unable to avoid signing up to that process; staying outside, it can remain part of the existing Treaty which deals with trade, movements of productive factors and the Single Market. Clearly, an EMU which was a system designed solely to share a common money, with member countries remaining independent countries, cooperating merely in the enforcement of good competitive norms and the freest possible trade would be a different proposition and the arguments that follow would need important modification. Indeed were the EU and its EMU branch to be intended as a sort of early 20th century Gold Standard world writ large, with free trade, untrammelled labour mobility, competition and flexible labour markets, it would offer some definite attractions to be put in the balance (and clearly affecting the balance of arguments on the five tests). However, it is plain to see that this is not the EMU on offer. The EMU we are assessing here is the one that is on offer.

Shocks without an independent currency

A single currency implies a single interest rate unless there are such barriers to the movement of money as exchange controls or differential taxes on interest rates - all of which are of course explicitly forbidden under the Maastricht Treaty, with no conceivable loop-hole.

One can understand this point by considering whether York and Manchester could have different deposit rates or lending rates. If for example York paid higher deposit rates and charged higher loan rates, then all the deposits would flow to York and all the borrowing would flow to Manchester. Both sets of banks would go bankrupt in a matter of weeks; York with no lending business, Manchester with no deposits. So of course they must push their rates into line to stop these ('arbitrage') flows of business.

This could be prevented by exchange controls stopping people moving their money or their loan business. Or else York could have a separate exchange rate. Plainly by joining the UK monetary union they give up their separate exchange rate and having no powers to levy controls they therefore share an interest rate. This then happens under EMU between London and Frankfurt. It is worth dwelling on this since some people ask why there cannot be different interest rates for different regions or industries within a union; why all the fuss, they ask. The answer is there could be but only with regional exchange controls which would be very bad for any economy, besides being unlawful.

At the heart of the case against joining EMU is the consequence of abandoning a separate interest rate for the UK, which comes with a separate exchange rate or currency. In effect the exchange rate by moving allows one country's interest rate to be different from another's. It is sometimes said that 'in a globalised world' a country cannot really have an independent monetary policy, i.e. a different interest rate that it chooses. This is simply wrong. The way monetary policy works is precisely that it engineers an interest rate to suit its own conditions and objectives and that the exchange rate moves ('floats') to prevent money flowing in or out of the rest of the world to frustrate that chosen interest rate. It does so because under floating exchange rates, as normally defined, the country's central bank does not intervene in the foreign exchange market; if it were to do so, it would compromise its ability to set its own interest rates because by exchanging its own money for foreign money it would alter its domestic money market conditions and so its interest rates.

For example suppose Japan lowers interest rates (as it has done to virtually zero); holders of yen deposits then have an incentive to move their money to London say or New York to get the higher interest rates they can get there. But as they do so they find that they cannot go to the Bank of Japan, the central bank, and get dollars or pounds because the BOJ will not want to take in the yen in exchange as that would reduce the yen money supply and raise interest rates back up again with the shortage of money. So those who want to move their money have to find someone in the private market to buy the dollars or pounds from. As all these extra yen are offered on the market for pounds and dollars, they drive down the yen; as people holding dollars or pounds do not want to sell them, the yen goes down until the market is in equilibrium. This equilibrium will happen when the yen is so low that it is expected to go up again; then the expected capital gain on a rising yen will just offset the much

lower interest rate on yen deposits. Of course when that happens those Japanese who wanted to move their money out will no longer want to do so any more; so in effect they will happily keep their money on deposit at the zero interest rate. In short the exchange rate moves to 'insulate' the home interest rate chosen from whatever interest rates prevail abroad; movements of money do not frustrate the chosen interest rate because the exchange rate moves enough to stop the money from actually moving.

What this means is that with a separate currency which freely floats as required by differing interest rates or other factors that influence people's desires to put money in different countries, the Bank of England has the power to alter interest rates to suit the UK. The exchange rate will then move as necessary to permit this. Joining EMU means that the UK interest rate is set by the European Central Bank in Frankfurt to suit, in its chosen sense, the needs of the whole euro-zone which may of course be very different from the UK's. For example, as we found when in the Exchange Rate Mechanism (which imposed fixed exchange rates though stopped short of EMU), if the UK is in recession and the rest of the euro-zone is not, then its recession can become longer and worse because interest rates cannot be lowered. With repeated differential shocks this would mean that the UK would suffer greater variability of unemployment, output and prices than it would with freedom to set its own interest rates.

It is theoretically possible that having the same interest rate as the rest of the euro-zone would not cause this higher UK variability - or at least not much. These conditions are known as the 'optimal currency area' conditions:

1. shocks could be very similar in effect - 'symmetric'. This might be because industries are similar; because the economy has a similar structure of financial and other arrangements so that it responds in the same way to similar shocks; or because it has a similar trade pattern and, even better, trades very largely with other euro-zone countries.
2. there are powerful fiscal compensation mechanisms, as happens in most countries - a region hit by a shock benefits from paying less taxes, gets more benefit payments, and may get special regional assistance.
3. labour moves freely so that a region doing well sucks in workers unemployed in regions doing badly; this happens strongly in the USA.
4. wages are highly flexible so that a region hit by a nasty shock causing unemployment lowers its wages and prices, while other regions raise theirs; this then quickly sets in train counteracting creation of employment in the former and contraction of it in the latter.

These conditions are effectively what the Chancellor's tests 1 and 2 are concerned with. Casual, as well as detailed, observation reveals that conditions 1-4 are not met in the euro-zone (for an exhaustive treatment see Bush, 2001)..

On 1, recent evidence of business cycle behaviour suggests that the UK cycle for the last two decades has been far closer to the US one than to the European one. The UK's response to interest rate movements is also differentially responsive owing to the preponderance of variable-rate mortgages.

On 2, plainly the EU has essentially no budget for such purposes. On 3, language, differential national regulations and housing market rigidities make mobility difficult except for certain types of low-skilled worker (such as hotel and catering staff).

As for 4, in the UK there is nowadays a reasonable degree of wage flexibility as a result of the substantial liberalising reforms of the last two decades. But there is little in the rest of the euro-zone where strong unions and heavy regulations on working conditions make it difficult; the main hope would be that unions are willing in time to negotiate wage moderation which in certain circumstances could be a weak substitute for flexibility. However this may take a long time and substantial unemployment to achieve, so it is unlikely to avoid substantial unemployment variability.

Hence the evidence is in a general way suggestive that 1-4 will not be of much help to the UK. However counter-claims are made and in the end it is an empirical matter, to be assessed in the light of evidence on the UK's likely behaviour in the face of likely shocks. It is this that I address in Minford (2001). The method (known as 'stochastic simulation') is described in detail there. In short it is to pepper a well-trying model of the UK with a large number of typical shocks drawn from past experience; and then to see what the variability of the economy is under the two alternative monetary regimes - EMU versus policy as now set by the Bank of England under floating exchange rates.

We can summarise our findings as follows (the box below contains some details). Joining EMU would increase the variability of the UK economy - the 'boom-and-bust' factor - by about 75%. This is also a widely-used measure of the cost involved, as experienced by politicians facing popular pressures. This increased cost is largely insensitive to the sort of ameliorative changes that euro advocates have put forward. Greater UK labour market flexibility helps a bit; so does smaller UK responsiveness to interest rates. But the extent is small, the big difference remains. The reason is that the UK is both unable to respond to shocks optimally with its own interest rate and also is destabilised by euro shocks (especially against the dollar), given that we trade so heavily with the rest of the world. This is the case even though we freely allow fiscal stabilisers full play, not merely the automatic ones but also extra discretionary public spending response to the cycle. Were unemployment to reach the double-digit rates we have seen in the early 1980s and early 1990s the difference of variability would be even larger, and it would be more serious too, as the absolute variation in unemployment would rise more than proportionately with this higher baseline unemployment. Euro advocates claim that outside EMU the pound would suffer enhanced volatility; our estimates allow for the volatility in the pound's risk-premium experienced in the past decade but we checked what would happen to the comparison if we allowed for a tripling of it. Again, the difference is reduced but not much, basically because the economy's built-in monetary shock absorbers work pretty well. That then remains the key point; running a modern economy with popular consent requires efficient shock absorbers and joining EMU not merely removes them but provides an additional source of shocks from the euro itself.

An earlier study by Barrell and Dury (2000), using the National Institute's multi-country model, found that the costs would be less than ours. If we translate their findings into the terms of our boom and bust index, their index would be 42% higher

under the euro than under floating (against our 75%). They find that under the euro UK output (and so by implication unemployment) would be 51% more volatile as measured by its variance against our 27%; this greater effect is probably the result of their model structure being more Keynesian (with less price/wage flexibility). However, on inflation they find rather strangely that inflation volatility would actually fall 44% under the euro- our finding was that it would rise by a massive 880%, essentially because the euro's volatility against the dollar would move traded goods prices around sharply, rather as has happened recently in Ireland. On inspection we can account for this different finding in terms of three major differences in the methods they use. First, they assume that the risk-premium on sterling is given by the 'forecasting error' between the forward rate and the exchange rate outturn. However, the two things are different; the risk-premium is an element included in the forward rate as the price of risk, whereas the forecast error is an element occurring later after the price has been quoted. Plainly, the price of risk reflects the anticipation of possible future errors on average (typically their variance); it cannot be assumed to be equal to any and every actual future error. To assume it in a stochastic simulation exercise like this one will in practice make the assumed risk-premium excessively volatile by a large margin

Second, they assume that UK monetary policy is set according to somewhat arbitrary rules- they impose a rigid postulated 'inflation target' operating rule. We assume by contrast that UK interest rates are set according to the rule under which the Monetary Policy Committee does the best possible job it can within the freedom given it by floating exchange rates; this involves interest rates reacting to inflation with a weight of 1.5 against one on output of 0.5- rather similar to what we observe the MPC do in practice. Given that the MPC has done a rather good job of stabilising both inflation and output in an essentially pragmatic way, and can presumably learn to adjust to changes both in circumstances and the UK's economic behaviour, the Barrell/Dury assumption puts the floating regime under an unfair handicap.

Third, the period from which they draw the shocks with which their model is peppered is 1991-7 during which the crucial euro-dollar exchange rate happens to have been more stable than in the fuller 1986-2000 period we use. One can understand this point more clearly by reference to Figure 1 above; there one can see that the from 1986 to 1991 the dollar fell considerably against the euro; from 1991-97 it moved up and down moderately; before then rising again in the latest period to 2000. Thus by omitting both the earlier and the later period the euro-dollar rate's instability is markedly understated. It is likely that were the Barrell/Dury study to be rerun on this basis they too would find that inflation volatility would increase under the euro quite substantially. If so then their overall boom-and-bust index would be comparable to ours, thus joining a series of studies of models indicating this cost would be substantial.

In a recent article Barrell (2002) has criticised my own study on a number of grounds. The first is that I drew shocks from the 1980s 'for a currency that nobody then assumed would exist'. However we have to have a sample of shocks for a duration long enough to represent the range of experience the UK might face. 1991-97, chosen by Barrell and Dury, has the problems we saw above; yet even then the euro did not exist. Given the existence of active exchange rate coordination by France (as well as most other countries later forming the euro-zone) with the Dm during the 1980s, it seems reasonable to assume that, had the euro existed, it would have behaved something like the average of the euro currencies. As it happens its behaviour since

1997 has echoed the volatility of the late 1980s as explained already; it would seem safer, given that we must factor in the euro's behaviour, to use a longer period rather than focus on an artificially less volatile, shorter period.

Secondly, Barrell argues that I neglect the reaction of the ECB through its interest-rate setting to the euro's behaviour and in general to UK shocks which are correlated with euro-zone shocks. However, I allowed fully for any correlation between the euro interest rate and both the euro and all UK shocks; the drawings of shocks made for our stochastic simulation are done by the bootstrap method in which the whole set of shocks for a quarter is drawn at once. This means that the correlations between the shocks in the data are fully preserved in the simulations. Hence we are allowing fully for the historical reaction of euro-zone interest rates to UK and euro shocks. Barrell asserts that this can be done better by simulating a multi-country model in which an assumption is made about the ECB's reaction function. But this would be to substitute assumptions for actual historical reactions.

On the particular point that UK inflation volatility would be greater inside the euro, Barrell counters that the ECB would react to dampen it down (unlike in the case of Ireland). Would it do so more than by the average of euro-zone behaviour already captured in the historical correlations? One must doubt it given that the UK would be one country of 13, with a GDP weight of about a fifth.

Interestingly, when all is said and done Barrell and Dury find a much greater increase of UK output volatility on going into EMU than I do. It is over inflation that they differ; and there it is hard to resist the conclusion that they have made a variety of special assumptions that have the effect of greatly understating the inflationary problems the UK would experience, along the lines that Ireland has so dramatically found.

Harmonisation

As we saw above, what is needed to make EMU work better - i.e. to avoid undue instability in the economy as a result of losing control of monetary policy - is greater wage flexibility, in the absence of the large federal budgets and the labour mobility that the EU does not have. However, there is little sign of the emergence of this flexibility. Instead, it is being suggested on the continent that what is needed is 'harmonisation' of taxes and other institutions. The argument appears to be that this will reduce the extent of differences in response to shocks and even increase the similarity of shocks by somehow creating a similarity of industrial structure. The basis for such arguments is extremely tenuous; possibly responses to shocks could become marginally more similar but even this is not clear since the dissimilarities could have been partially offsetting, and certainly there is no reason to suppose it would create a similarity of structure. More seriously, what protagonists of harmonisation probably have in mind is the aim of building up central federal institutions which would ultimately have revenues and the power, like any state, to make transfers to and from regions with asymmetric shocks; harmonisation does not

in itself provide any help for EMU but it is a stepping stone to state powers which would.

Given the preferences of the majority of states in the euro-zone, this harmonisation would be around a rate of taxation, social support and regulation well above that currently prevailing in the UK. It is a matter of speculation what exact level of harmonisation would be aimed at but we calculated the effects of different levels of labour market intervention within the Liverpool Model (details of which can be found in Minford, 2001), to illustrate the problem for the UK of finding itself pressured one way or another into adopting such levels.

Table 1 The effects on UK output and unemployment of EU-style social measures

I. A minimum wage		
where wage is	(a) 50% of male median	(b) 2/3 of average
Long term effects on:		
Output (%)	-1.5	-5.0
Unemployment		
% of labour force	+1.8	+5.0
million	+0.5	+1.4

II. Union power simulation		
	Union power rises	
	a) to mid-80s level	(b) to 1980 level
Long term effects on:		
Output (%)	-3.0	-5.8
Unemployment		
% of labour force	+1.3	+4.3
million	+0.4	+1.3

III. Rise in the social cost burden on employers		
	a) by 20% of wages	(b) by 60% of wages
Long term effects on:		
Output (%)	-4.4	-11.0
Unemployment		
% of labour force	+3.0	+18.0
million	+0.9	+5.5

IV. Combination of Minimum wages, union power rise, and higher social cost burdens on employers (combination of I-III, (a) and (b))		
	Least	Most
Long term effects on:		
Output (%)	-9.0	-20.0
Unemployment		
% of labour force	+10.0	(extreme value)
million	+3.0	(extreme value)

Source: Minford, 1998.

It can be seen that these are large costs, even in the least-cost scenario with its cost at 9% of GDP and 10% on unemployment. The high-cost scenario is obviously hugely damaging, at 20% of GDP and an unquantifiable rise in unemployment.

These are just illustrations, a sample of effects. Damage would similarly be done by the forced raising of tax rates - as yet less likely, but only in the short term.

Some of these changes are coming in to a certain extent as a result of EU pressures independent of EMU. However, harmonisation is part of the centralising EMU agenda; and the club within a club that meets to decide policy on EMU matters will increase the pressure to move this agenda forwards for members of the euro-zone. Joining EMU would put increased impetus behind the harmonisation agenda for the UK.

Bail-out and the emerging state pension crisis

The three largest nations in the euro-zone, Germany, France and Italy, have serious projected state pension deficits. In 1996 an OECD paper (Roseveare et al, 1996) projected them to reach respectively about 10%, 8% and 11% of GDP by 2030. Since then Germany and Italy have taken some steps to reduce their prospective deficits; France has taken none. The OECD work has not been updated but various factors have become worse since that study and they may have wiped out the contribution of those policy changes. Notably unemployment is turning out worse and growth slower than expected. The politics of cutting pension benefits is speculative given that ageing populations will increasingly be dominated by older voters; yet the effects of raising taxation further would be yet lower growth and worse unemployment. Hence it must be a matter of concern to the UK that the cost of meeting potentially explosive state financial liabilities might somehow fall in part on the British taxpayer. The more integrated EMU becomes the greater both the political pressures for concerted action and the economic fallout from letting a fellow-EMU member-state default partially on its debts. This fallout includes the risk of contamination of one's own debt status as well as indirect losses of trade, public procurement business and any other joint activities.

For just the same reason - fear of bail-out, in their case focused on Italy - German leaders insisted on the Stability Pact which is intended to limit state deficits to 1% of GDP other than in exceptional circumstances. The Pact creates difficulties for countries wishing to use fiscal policy to stabilise their economies; it even forces countries to override the automatic fiscal stabilisers that come about from the normal fall in tax revenues and rise in benefits as the economy goes into recession. This is because the 1% is not adjusted for the business cycle (such was the German fear that countries would get around it). Discretionary fiscal policy - i.e. that deliberately alters tax rates or spending programmes - is probably not an effective stabilising instrument, being both slow and potentially counter-productive (as current Japanese experience illustrates) since rising debt induces households to save more. But to override the automatic stabilisers (which are built into for example our simulations in the section above) could certainly worsen cyclical swings.

Yet, while it hobbles the fiscal stabilisers, it seems unlikely that the Pact would actually stop a serious bail-out problem. State pension liabilities are routinely treated as an off-budget item (i.e pensions are only counted when they are actually paid and the obligation to pay them is not considered as equivalent to a debt); the resulting liabilities can be allowed to run up, threatening prospective deficits which are ignored until too late. If a country had high unemployment, a recession and political problems, one can easily imagine a sympathetic attitude developing among EMU members to a permissive policy.

It is worth recalling that the prospective state pension deficits of the big three EMU members in 2030 quoted above are projected as equal to over one third of the UK's GDP - that is, nearly as much as the existing 40% tax share of GDP. The risk of even part of this winding up as a charge on the UK taxpayer is a serious worry about entering EMU.

Chapter 3: Conclusions

We examined the alleged benefits of joining EMU and found that:

1. the reduction of transactions costs of currency exchange would be small and would be roughly offset by the one-off cost of currency conversion.
2. there would be some gain from eliminating exchange risk against the euro but this could well be largely, or even more than, offset by increased volatility against the dollar with around half our trade broadly defined with countries either on or closely-linked to the dollar. We also found that in any case exchange risk does not appear to have an important effect on trade or foreign investment, and in the UK case, on the cost of capital.
3. there are potential benefits from increased price transparency in border areas but this is of no real relevance to the UK; for large traded items this transparency would amount to the trivial saving on use of a calculator.

We then looked at the potential costs of the EMU project as it is currently planned, namely a centralising one with the aim of strengthening political union, and we found that:

1. the loss of independent monetary policy (interest-rate-setting powers) on joining EMU would raise the economy's cyclical instability substantially.
2. the harmonisation agenda, motivated by the centralising aim, could inflict serious damage on UK employment and output by reducing labour competitiveness.
3. there is a risk, in the emerging state pension crisis of the three major EMU members, that under a centralised EMU the UK taxpayer could find himself contributing to their state pension deficits which could by 2030 be worth more than one third of the UK's GDP.

We have considered the political aspects of EMU only in terms of their relevance to these economic issues (though clearly they are of the utmost importance in the wide public debate). This relevance lies in the political aims of the project which is to centralise power in a political federal union, without abandoning the main social democratic tenets of the major states such as France and Germany that currently dominate the EMU membership. It is these aims that dictate the harmonisation agenda

and these tenets that explain the slowness and unwillingness to cut pension entitlements as a way of curing pension deficits.

Plainly it would be welcome if these political aspects were replaced by a free market approach within a Treaty of cooperating nation-states; this would reduce the costs under 2 and 3 above and if wage flexibility and labour mobility were promoted as part of that approach, it would also reduce the costs under 1 above. The increasing competitiveness of the euro-zone under it could also lead to a stronger euro, more stable against the dollar which would improve the assessment of the benefit under 2 above.

Yet we have to assess the EMU project as it is currently planned by the dominant states within the euro-zone. That is how we have done it, in a spirit of realism and honesty. It would be nice to pretend EMU was something else that we would like better; but it is not and it would be wrong for us to assess it as if it was. One can bear in mind the possibility that it could become a different project; but the likelihood of that possibility is extremely small. The final conclusion must be that EMU, as it is constituted and planned, would be strongly against British interests to join.

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Appendix: The comparison of EMU with Floating for the UK- source Minford (2001)

The basic result of our exercise is displayed in figure 1 which shows the variance for four key variables - output around its potential or 'trend', inflation, unemployment and real short-term interest rates. There are two diamond-shaped graphs; one shows the combination of these variances under floating, the other under EMU. The graph shows the logarithms (to base 10) of the variances; this means that an equal distance along two axes measures an equal proportional rise in the two variances and as one

moves along an axis each equal length is the same proportional rise (from the starting point of the length). For ease of comparison the floating ones are set equal to 0.1 so that the EMU diamond shows the EMU variances as a proportion of the corresponding floating ones (the scale being logarithmic we can accommodate the wildly differing proportions involved on the same scale). What we see is that all the implied variances are considerably higher under EMU than under floating. The variance (the square of the standard deviation) is used, as is standard, in our measures of welfare cost. That of output around its trend is nearly a third higher; that of unemployment nearly a fifth higher; real interest rates a multiple of over 4 times; and that of inflation under EMU is approximately tenfold that under floating. The EMU environment is one in which ECB nominal interest rates are moving a fair amount for euro-zone-wide reasons and yet because they are poorly addressed to UK shocks the UK economy experiences considerably worse output, employment and above all inflation swings.

How can such a big difference arise? First, let us be clear about the floating monetary rule we have used. It is one in which interest rates react in a rather standard way to the deviations of current output, inflation and also M0 from their targets. This gives a standard deviation of real interest rates of 2.6% (p.a.), of inflation of 2.1% (p.a.), and of output of 2.5% around its trend; these values seem to match reasonably with what we would expect from the current environment under the MPC.

Second, consider the factors driving inflation under EMU. UK prices of traded goods and services would be set in world markets at euro prices. They would be impacted upon therefore by three forces: by the movements in the euro exchange rate (principally against the dollar), by competing euro-zone prices and by UK costs. UK non-traded prices would be driven by UK costs and to some degree the pressure from traded prices. This makes up a cocktail of shocks. The euro has been notoriously volatile against the dollar. UK costs have had a roller-coaster ride from the push and pull of Tory and Labour supply-side policies. Finally, euro inflation has had the usual ups and downs.

Meanwhile under EMU euro-interest rates are reacting to their own euro-agenda and not targeted on UK inflation or output except as a small part of an overall euro-average. Hence these interest rates act not as a reactive stabiliser but as an independent source of shocks to the UK economy. We should stress that to the extent there has been any correlation of these interest rates with UK shocks over the past decade and a half it is wholly picked up in our methods. But because this correlation is small, and inflation variance is raised under EMU by the shocks described in the last paragraph, the variance of the real short-run interest rate (the nominal interest rates minus expected future inflation) also rises sharply.

When we consider the nature of the EMU regime in this way, we should not really be too surprised at the greater variability it creates. We can perhaps see an example of this at work in recent EMU experience in two ways. First, there is the extraordinary case of Ireland, where under the impact of the boom induced by reducing interest rates to euro-levels of 3% or so and of the sharp depreciation of the euro, inflation rose to a peak of nearly 7% and is still running at 4-5%. Such behaviour greatly exceeds the sort of normally higher inflation one would expect from a country with faster productivity growth in tradeable goods than in non-tradeables (the so-called

Balassa-Samuelson effect) Given some similarities and close trading relations between the UK and Ireland, it is reasonable to expect that had the UK also joined the euro on Jan 1 1999 it too would have experienced these problems to at least some degree. Second, we can inspect the range of inflation currently (June 2001) in the euro-zone: from 1.3% in France and 1.4% in Germany to 3.0% in Spain, 3.1% in Denmark and 4.9% in the Netherlands, much like Ireland. The range across countries is 4% currently and has peaked thus far at 6%. By contrast in the past five years UK inflation (RPIX) has stayed comfortably within the range of 1% either side of the Bank of England's 2.5% target.

It is natural to ask what these differences in variability imply for 'welfare' or the degree of painfulness of the EMU option. The main approach that has been used to this has been to give 'weights' to the different variances that appear to cause political and popular concern, i.e. the ones we have just discussed, and add them up into a measure of welfare cost (the inverse of welfare). To illustrate, let us arbitrarily give the above variances the weights 1 each for output and unemployment, and 0.1 each for inflation and real interest rates (it is usual to give such price variables a lower weight in such 'welfare functions' on the grounds that they affect people's living standards more indirectly, though clearly the choice is a matter of judgement, essentially political); plainly then we wind up with a big difference in welfare. EMU welfare on this measure is 57% of that under floating - equivalently the EMU welfare cost is 1.75 times that of floating. We will use this approach in what follows and refer to it as the popular welfare cost of EMU.

This does not measure the average person's welfare, however one plays with the weights, because it is in effect treating political reaction as equivalent to true dissatisfaction. But of course the extent of politically-expressed displeasure exaggerates the true average discomfort, partly because to get results in the cross-currents of debate one's case must be put as strongly as possible but mainly because the costs of volatility fall disproportionately on groups that are different from the average - for example, those who lose their jobs or have their houses repossessed or whose businesses fail. We will argue nevertheless that we should pay attention to the popular welfare cost because it is the bitterness and displeasure of these groups that gets reflected in the political debate more than the calm of the average person.

The Table below shows how this comparison changes as assumptions are changed about the euro or UK environment. Though particular elements in the comparison can be improved under certain assumptions, the general position remains that loss of independent monetary policy creates serious additional volatility for the UK economy.

A final important point is the decomposition of this rise in volatility into its major sources. We found that the key source was the volatility in the euro's rate against the dollar. If we ran the same exercise keeping the euro's real exchange rate (and for good measure also its inflation rate and interest rate) completely shock-free, then the UK boom-and-bust index rises only by 16% on euro entry. This can be thought of as the effect of having UK shocks altogether unstabilised by an interest rate response, as compared with having the MPC responding sensitively. (The Liverpool Model, being at the Classical end of the spectrum, suggests that the economy is pretty robust to shocks). However, when we reinject all the euro shocks kept out above, we obtain the

full effect of 75%; this indicates that some four fifths ($[75-16]/75$) of the extra turbulence the UK would experience inside the euro is the result of the euro-zone's own turbulence, especially against the dollar. This highlights the key difference between joining a world currency and joining a regional currency; the latter may destabilise your currency against third-country currencies. Notice that, were the euro to become stable against the dollar- say by dint of the two regions converging in terms of market flexibility- and were the EU to become a free trade bloc of cooperating countries, the economic problems for the UK would be considerably reduced.

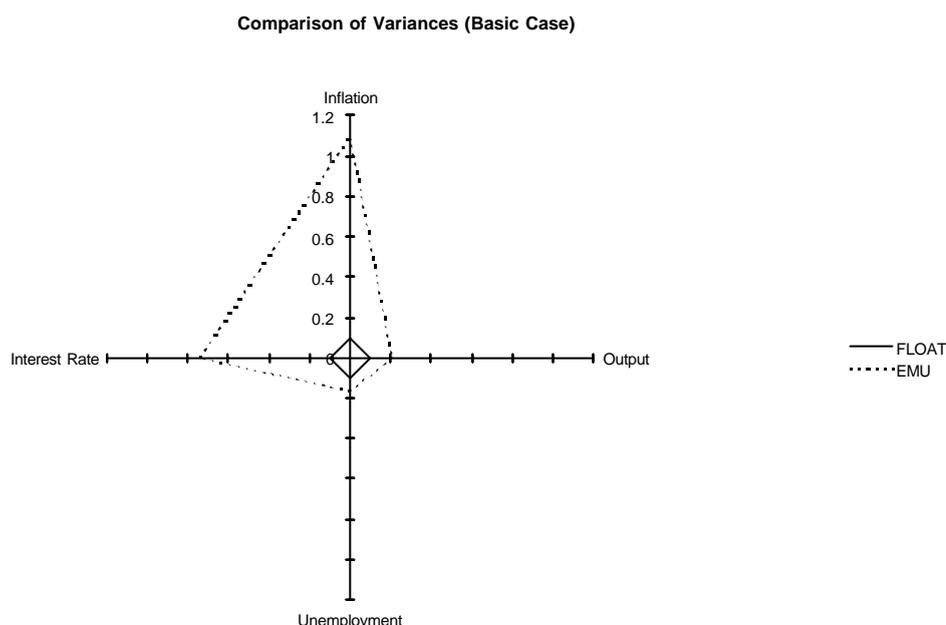


FIGURE 1: Floating and EMU compared (Basic Case)

Table: The welfare losses (political cost) produced by EMU compared with floating (floating=1.0)+

		ratio of variances (EMU/floating)- output; unemployment; real interest rate; inflation
The central case	1.75	1.27 1.17 4.39 9.80
No indexation	1.88	1.51 1.43 4.57 7.36
Low interest rate sensitivity	1.63	1.09 1.08 4.11 9.99
More labour market flexibility+	2.24	1.22 1.09 4.30 21.9
High unemployment	1.78	1.27 1.22 4.45 9.91
More exchange rate instability	1.57	1.13 1.15 3.19 8.54
Enhanced fiscal stabilisers*	1.69	1.18 1.14 4.37 9.70

+the weights used in the political cost are (all divided by the weights total of 2.2):1 for output and unemployment variance; 0.1 for inflation and real interest rate variances

*assumes no enhanced fiscal activism under floating

+ monetary policy response to inflation under floating raised by a third, to output lowered by a third, to counteract greater inflation volatility from greater wage volatility.