
What do we now know about currency unions?

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The paper presents the text of an inaugural lecture given at the Bank of England in December 2005 in memory of John Flemming. It provides a personal view of the lessons that can be drawn about currency unions from the experience of the European Monetary Union. It argues that business cycle concurrence is a less important criterion for participation than was once believed. Most important is the integration of financial markets and the shrinking of financial premia that individual countries face: this opens the way for countries to share risk, thereby enhancing welfare.

Introduction

Ladies and gentlemen. The founders of this lecture series have bestowed on me a very great honour in asking me to give the inaugural address. John Flemming was an economist of enormous range and talent.⁽¹⁾ Yet he was one of those people of great accomplishment who never denigrates the work of others or pass gratuitous judgement. This was one of his most endearing characteristics. He also had a finely balanced sense of humour; he usually enjoyed his own jokes (always a good sign!), smiling in a gentle way when he delivered them. John did his profession, and his country, great service not only in the work he did for the Bank and afterwards for the EBRD and in publishing, but also by offering his services as Treasurer or Editor to associations like the British Academy and the Royal Economic Society. He did these things out of a desire to be useful rather than as a stepping stone to some higher office. In fact, although he was offered the Drummond Chair in Political Economy at Oxford, he turned this down to work for the Bank of England. The resultant commuting trips from Oxford to London produced John's book on *Inflation* with its intuitive explanation of how the focus of expectations of inflation can progress from the level to the rate of change; and from the rate of change to the rate of change of the rate of change. John's bent was analytical rather than empirical, though analytical with a point — empirical or policy-related — rather than for its own sake. Relative to the topic on which I have chosen to speak tonight I do not think John is on record with any comment. He was,

apparently, a champion of exchange rate targeting if not especially of the policy of shadowing the D-mark or subsequently the entry of sterling into the Exchange Rate Mechanism. Still, it is just the kind of thing that John would have written a pithy comment about; had he lived a little longer he might well have been tempted to join in the fashion for 'drawing lessons' about currency unions from our recent and ongoing experience of a new one — that of the euro area or euro zone. I do not know what he would have said had he joined in this fashion, but I am sure it would have been simultaneously enlightening and entertaining. I can only try to emulate that example.

What do we now know about currency unions?

While what I will say is provoked by our experience of the Economic and Monetary Union (EMU), I do not propose that this should be interpreted in a narrow way. For example, I find the eagerness with which the European Union's New Member States aspire to join the euro area, despite some distinctly weak credentials as judged by traditional theory, notable. Reflecting on this helps to bring one to a different view of currency union than before — as I hope to suggest. And, it is also the case that some new thinking on currency unions has emerged which seems to owe only a little to experience and much more to pure reflection. Treating our experience of the euro area as an 'experiment' from which to draw lessons has reminded me also of the fact that, before the introduction of the euro itself, there was an 'experiment before the experiment', a trial called

(1) I am indebted to Charles Goodhart for some of the following revelations about John's life and work.

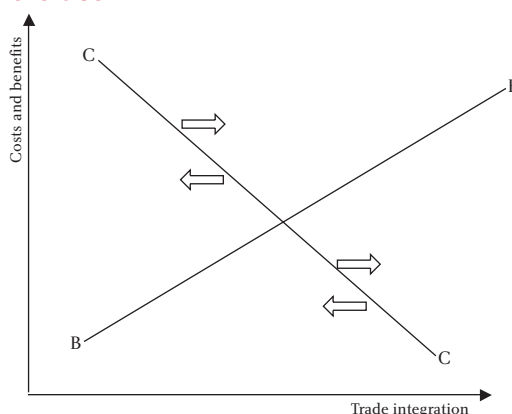
'Ecco L'Euro' which featured the premature introduction of the euro. I shall have a few words to say about that towards the end of this lecture.

It is standard to start with a rehearsal of the traditional theory of optimal currency areas and I will follow that path. One of the things that I shall suggest is that the standard theory can be expressed in a framework which can accommodate a number of non-standard propositions, so that — whatever one may ultimately judge to be the remaining core of truth in the traditional theory — it is at least useful as a vessel for conveying the impact of some new propositions upon the core of the traditional theory.

As is well known, the core of traditional optimal currency area theory was articulated by Mundell (1961) and elaborated by, among others, McKinnon (1963) and Kenen (1969). The initiating idea is that money, as a network good, is the more useful the more widely used it is. From this point of view the world would seem to be the obvious optimal domain of a currency. The qualification promoted by Mundell was that a currency offered a country a means of conducting a distinctive stabilisation policy based on using its own monetary policy to offset asymmetric shocks.⁽¹⁾ With a separate currency there comes an exchange rate against other currencies. It was envisaged that the exchange market would participate constructively in a similar stabilisation endeavour, with the exchange rate fluctuating around its equilibrium in countercyclical fashion. Early discussion of exchange rate dynamics showed that 'Keynesians' (like Meade (1955)) and 'monetarists' (like Friedman (1953)) shared a degree of agreement that the foreign exchange market might be trusted to hunt for, and speculate upon, its equilibrium. This component of the traditional optimum currency area (OCA) argument is sufficiently quintessential as to deserve the title of the 'OCA null'.

The flexible framework in which these ideas — and yet others of relevance — can be demonstrated uses one of Paul Krugman's diagrams. This one comes from his paper 'Lessons from Massachusetts' (Krugman (1993)). The diagram (Chart 1) pictures the elements of a cost-benefit analysis for a country contemplating joining a currency union with a partner or a group of partner countries.

Chart 1
Optimum currency area theory as a cost-benefit exercise



The vertical axis plots the costs or benefits of entry, suitably scaled. The horizontal axis plots the degree of trade integration of the country concerned with its potential currency union partners. Since the benefits of having a single currency are identified with the associated reduction in foreign exchange transaction costs, it seems clear that the higher level of trade the greater the benefit of the union. When the European Commission came to address this issue in its famous report 'One market, one money' (1990), it obtained data directly from banks on the margins charged for foreign exchange transactions in order to quantify this effect. Reasonably enough, it appeared that the more efficient a country's banking system, the lower the transactions cost and the less the benefit of going to the common currency. (For the United Kingdom, as a country with a relatively efficient banking system, the gains implied were of the order of 0.1%–0.2% of GDP.) Other gains can be suggested — in transparency and hence in competitive pressure, for example. These, too, might be suggested to be a positive function of the amount of trade. The upshot is that the benefits (BB) schedule slopes up from left to right.

The stabilisation benefits that result for a country from retaining its own monetary policy and flexible exchange rate entail a 'cost schedule' (CC) that can be depicted in the diagram for a country contemplating joining a monetary union. The costs of going to a common currency are thought of as the loss of benefit of having an individual currency and the stabilisation benefits involved — higher, the greater the incidence of

(1) Another much simpler idea is that money offers the benefit of seignorage to the issuer and where formal taxes are hard to collect, this can be a compelling motive for several money-issuers to arise.

asymmetric shocks requiring a distinctive monetary policy (and lower in the opposite case) and lower to the extent that alternative policies or institutional features are available (for example, a flexible fiscal policy or flexible labour markets) that reduce the need for stabilisation policy. The cost schedule may also slope down from right to left if McKinnon's speculation is true. McKinnon (1963) argued that the more integrated an economy is, the larger is likely to be the fraction of the consumption basket made up by imported or exportable goods and the less the leverage of nominal exchange rate changes over the real rate, as unions and price-setters would match such changes with domestic wage and price changes.

The resultant diagram shows a crossover of the benefit (BB) schedule and the cost (CC) schedule, at a critical level of integration. To the right of this critical level, benefits exceed costs and the country should accede to the currency union. To the left, costs exceed benefits and the country should not accede. As drawn, we are just concerned with current measures, but the cost-benefit framework makes it natural to think in terms of discounted measures. In this case it would be natural to assume that a country would join a union when the discounted benefit exceeds the cost. But, as Cottarelli and Escolano (2004) point out, this might not be the best criterion. It might be that by waiting a country could come by a higher benefit/cost ratio and, in general, choosing a date for entry which *maximises* the discounted benefit/cost ratio seems preferable.

I want to appeal to this framework to motivate four questions that I hope to explore with you.

- First of all, there is the issue of business cycle cross-correlations. The traditional theory suggests that a high degree of business cycle convergence (thus, high business cycle cross-correlations) is conducive to a positive currency union decision. In the diagram, a higher degree of convergence pushes the CC schedule to the left and inward. Yet we know that several members of the euro area — Finland and Ireland are prominent examples — had only weak business cycle convergence with the core countries in the Union when they joined. The question is: could such countries expect that membership of the Union would, in and of itself, produce a higher degree of convergence? In other words, is the position of the CC schedule
- endogenous to the entry decision? Some people have thought so. What do we now know about this?
- A second issue that is raised in this framework pertains to another possible source of endogeneity. Trade can be expected to increase as a result of entry into the Union; the reduction in transactions costs can be analysed as analogous to a cut in tariff rates and as a decline to zero in the volatility of the 'legacy exchange rate'. The question is: will this be a small effect, as the suggested models imply, or will it be much larger? Some research — including HM Treasury (2003) — has thrown up very large effects. If such estimates are correct, this too could be a source of endogeneity of the entry decision: after entry, the growth of trade could be such as to indicate the optimality of an entry decision not indicated before entry. (In the diagram, the position of the country moves rapidly to the right after joining, making it more likely that it will exceed the critical value of trade integration.) But this is a fast-moving field. After a wave of studies indicating large effects of entry upon trade, there has recently been a wave of studies indicating *much smaller* effects.
- A third issue is raised by the evident keenness of the New Member States to join the euro zone despite what traditional theory would indicate to be indifferent credentials. One rationale for their behaviour is that the 'OCA null' fails in their case — so that, so far from complementing the stabilising actions of the monetary authorities, the foreign exchange market acts to exacerbate shocks and to frustrate the authorities' attempt to stabilise the economy. In the event that this is the case, the CC schedule should be depicted as having moved sharply in towards the origin: there is no worthwhile stabilisation opportunity afforded to the country in isolation from the union and hence no loss of benefit, no cost, from joining the Union. In fact the cost of isolation is the higher interest rate that the market requires as insurance against the volatility of the market, and this can be avoided by joining the Union. Of course, this is not just an issue for the New Member States; it is potentially one, also, for countries like the United Kingdom, Sweden and Denmark, not to mention perhaps Canada, New Zealand and Australia. There are a number of recent studies available that attempt to deal with this very important issue.

- The fourth issue relates to the stabilisation objective and the financial integration of the Union. Although the traditional theory by default suggests that the stabilisation objective is one for output, economic theory indicates that the objective is properly one for consumption. In a financially integrated area, agents are able to offset the effect of output shocks on consumption by holding diversified portfolios of assets and in this way spreading risk. It may seem strange that the presence of a fluctuating exchange rate is enough substantially to prevent financial integration, but the evidence suggests that it is. To that extent, it is the financial integration effects of the Union that are the most important dimension to consider. To the extent that financial integration follows currency union, the benefits are considerable. In terms of the diagram, the CC schedule is again pushed inward to the left making the Union option a more attractive one.

These are the four issues where I think the accretion of knowledge as a result of the EMU experiment, or simply as the result of more recent reflection, is most salient. But I will finish this lecture by noting another experiment in currency union. Called 'Ecco L'Euro', this is the occasion in which the Italian Comunes of Pontassieve and Fiesole experimented with the premature introduction of the euro. As I took part in this trial, I thought it would be instructive to include a brief account of it.

Does membership of a monetary union promote business cycle convergence?

Has EMU brought about a closer convergence of the constituent economies' business cycles? From one point of view, this is a daft question, for the following reason. A stylised minimal length of a business cycle is five years; while EMU has been in existence for six years so we have one-and-a-fifth observations! But to get around this we can bundle together some pre-EMU years with the EMU years on the assumption that late-EMU is 'like' EMU and use this time period in which to examine the issue. We shall see what happens when we do that.

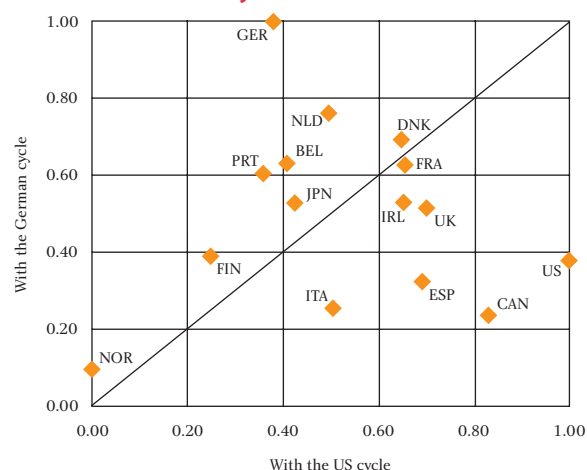
First, we may consider on what basis it is that convergence or non-convergence might be expected. Two avenues for a convergence effect have been considered in the literature. One is the expectation that a growth of international trade would promote a convergence in exposure to shocks and hence in

business cycles. Another is the idea that policy is administered with error and the reduction of asymmetric policy error exemplified in the adoption of a common monetary policy should reduce asymmetric shocks in the propagation of business cycles. Against these presumptions however, it can be argued, first that EMU might promote specialisation and hence favour asymmetric shocks; and, second, that gross policy errors aside, individual country policy rules may have produced a greater similarity of final outcome (business cycles) in the face of idiosyncratic shocks than will be revealed under a 'one size fits all' policy. *A priori* reasoning seems inadequate and can only produce ambiguous conclusions. It is not even possible to regard the experience of other monetary unions as a clear guide. For example, while it remains the case that intranational business cycle correlations are generally much higher for the United States than they are for the ensemble of European countries, there are some striking instances of low, even negative, business cycle cross-correlations even in the US experience.

Let us go back to the idea of bundling together some pre-EMU experience with the EMU period. In Artis and Zhang (1997), we took data from the OECD's trade cycle data base and plotted the country cross-correlations of these cyclical deviates against Germany against the corresponding cross-correlations *vis-à-vis* the United States. We compared an initial period with a later ('ERM') period. Comparing the two periods we found that, whereas in the first period there was a relatively wide dispersion of observations suggestive of a loose world cycle, in the second period countries that were members, or apprentice members, of the ERM exhibited a relatively higher correlation *vis-à-vis* Germany than the United States. Perhaps, by implication, we would find this trend continued in data for the full EMU period. The paper is still widely — but misleadingly — quoted to that effect.

Charts 2–4 use later, revised OECD trade cycle data. The initial move to a closer correlation with Germany than with the United States (comparing Charts 2 and 3) appears, as in our earlier data set, for most countries, especially those associated with the ERM. (Japan appears as an 'honorary member' of the ERM, itself a warning against a too strong identification with the ERM.) But in the EMU ('post-ERM') period shown in Chart 4, this differentiation falls away. Germany is now highly correlated with the United States and it makes no sense to distinguish a European cycle effect.

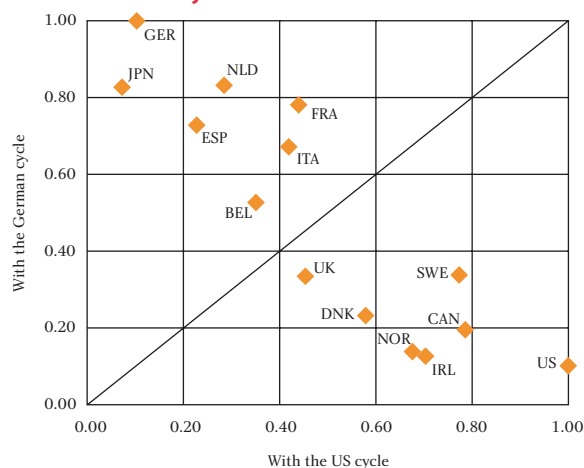
Chart 2
Pre-ERM business cycle affiliations



Business cycle cross-correlations with the United States and Germany, pre-ERM period 1961:1–1979:3 (OECD trade cycle database).

Country abbreviations are: BEL, Belgium; CAN, Canada; DNK, Denmark; FIN, Finland; FRA, France; GER, Germany; IRL, Ireland; ITA, Italy; JPN, Japan; NLD, Netherlands; NOR, Norway; PRT, Portugal; ESP, Spain; SWE, Sweden; UK, United Kingdom; and US, United States.

Chart 3
ERM business cycle affiliations



Business cycle cross-correlations with the United States and Germany, ERM period 1979:4–1993:12 (OECD trade cycle database).

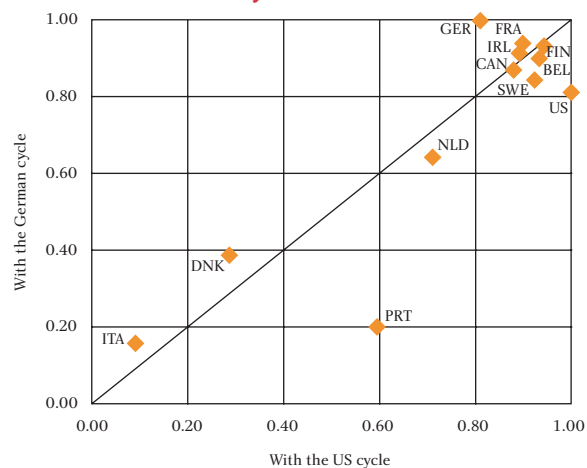
Finland and Portugal are not visible because the negative correlations are not shown.

See note to Chart 2 for country abbreviations.

In principle it might still be possible that there is a 'Europeanisation' effect in the data which is masked by the global impact of the 2000–01 shock; but if so, this effect will only be apparent when some other shocks come along that serve to identify a European cycle distinct from a North American or World cycle.

This rather negative conclusion implied by the data has received confirmation in a handful of other recent studies: examples are Artis (2003), Camacho *et al*

Chart 4
Post-ERM business cycle affiliations



Business cycle cross-correlations with the United States and Germany, post-ERM period 1994:1–2000:12 (OECD trade cycle database).

Spain, Japan, Norway and the United Kingdom are not visible because the negative correlations are not shown.

See note to Chart 2 for country abbreviations.

(2005), and Bovi (2004). These studies use different data and a variety of techniques, implying a degree of robustness in the underlying findings.⁽¹⁾ My conclusion from all this is that we still do not know whether — let alone over what time span — currency union creates business cycle convergence. But since currency unions are endogenous, we might hazard that they naturally arise where there is not only a high level of trade already but also a high level of business cycle convergence. (It has often been noted that the core countries of EMU did little to analyse the optimality of the move to EMU — all the exercises in this direction seem to have come from countries like the United Kingdom, Sweden, Finland, Poland and the Czech Republic. It is as if the core countries 'knew' that they did not need to perform these exercises.)

Do currency unions create trade?

It is implicit in our framework that monetary union, by cutting transactions costs (and perhaps by reducing volatility) will create some trade. But the orders of magnitude involved are relatively small; in particular, there does not seem to be reliable evidence that volatile exchange rates deter trade. The profession's sceptical reaction to Andrew Rose's early estimates of very large trade effects (Frankel and Rose (1997), (1998); Rose (2000)) was therefore not surprising. Rose deployed panel data estimation, with currency union entering as a dummy variable and (bilateral) trade as the *explicandum*.

(1) Bovi's contribution is of particular interest because it deploys a measure of group-wise synchronisation where the existing literature uses only bilateral measures.

The panels involved a large cross-section, but a rather weak time dimension. The order of magnitude of the effect initially detected was of the order of 300%. But these estimates were unduly dependent upon monetary unions between small 'postage stamp' countries and larger neighbours and upon developing economy experience. More modest later estimates (eg Persson (2001)) continued to be compatible with a large effect, however.

For developed countries the most pertinent example appeared to be that of the break-up of the exchange rate union between the Republic of Ireland and the United Kingdom; Thom and Walsh (2001) claimed to find no great decline in Anglo-Irish trade as a result of the Republic joining the euro area. The most influential adaptation of the Rose approach, however, came with the paper by Micco *et al* (2003) which focused on Europe and used data which overlapped with the euro period. Micco and his colleagues also found large effects from the introduction of the euro on trade, even if not quite so large as some of Rose's earliest estimates. HM Treasury (2003) updated and replicated the Micco study, reporting a potential increase in trade for the United Kingdom following entry into the euro zone of 50% in total. Since trade creation is usually associated with some growth multiplier, the output growth implications of this finding were significant.

Since the Treasury's work there has emerged a number of studies critical of the design of the Micco *et al* study, including: Bun and Klaassen (2004); Gomes *et al* (2004); de Nardis and Vicarelli (2003); Baldwin (2005); and Berger and Nitsch (2005). The common feature of the critical line pursued in these studies is that EMU itself is endogenous to the process of integration, more so among the core economies of Europe than among the peripheral countries. This might suggest that any dating is largely arbitrary. More constructively, some of these studies suggest that the counterfactual — what trade would have been but for the euro — can be reconstructed or related to a measure of integration. Econometric analysis is not likely to be reliable in settling this matter. Rather, what we have to say is that the critics appear to have a good point. And, HM Treasury's cautious evaluation of its own findings stands on firm ground.

A final observation is that we now know more about the scale of the 'border effect'. It appears that trade between pairs of Canadian cities is up to 20 times larger than

between similarly distanced pairs of cities, one of which is Canadian and one American. It may be a 'border effect' that Rose has picked up in his very large estimates of the currency union effect. Currency is only one element in what goes to make a border effect, but it may be the most important. Financial experience suggests that it could easily be so, as we discuss below.

How well does the 'OCA null' hold?

We earlier identified the 'OCA null' as the proposition that the exchange rate moves in the 'correct' way to dampen shocks and thus to complement a stabilising monetary policy. A number of observers (eg Frankel (2003) and Buiter (2000)) have questioned whether this is the case, the former for developing and emerging economies, the latter for the United Kingdom. A canonical model for the exploration of the issues is a structural VAR incorporating (at least) output, prices, interest rates and the exchange rate. Such a model usually requires the imposition of zero restrictions on the impact of certain shocks (a more agnostic approach simply imposes sign restrictions, as in Farrant and Peersman (2004) and Peersman (2005)) and seeks to identify whether the exchange rate responds in the 'right way' to the various shocks and in particular to discover whether the exchange rate tends to 'chase its own tail', responding simply to shocks arising in the foreign exchange market (as was the verdict of an early study in this genre by Canzoneri *et al* (1996)). Specifications have varied, one strand selecting the real exchange rate for analysis and relating this to measures of *relative* output, *relative* prices and *relative* interest rates. This is inferior, it seems to me, to the specification in Artis and Ehrmann (2006) where the nominal, not the real, rate is the centre of attention and variables are studied in absolute, not relative form. The reason for this preference is that it is variation in the nominal rate which joining a monetary union entails the loss of. The use of the relative forms of output, prices etc obscures who does the adjusting; appears to make it a matter of indifference that transmission mechanisms differ between countries; and biases the results in the sense that the formulation already implies that only asymmetric shocks will be identified, whereas an important question is precisely that of the relative frequency of symmetric versus asymmetric shocks.

The general run of results shows some differences between the modelling approaches and/or between large and small countries. Approaches that follow Clarida and

Gali (1994) — such as Peersman (2005) and Farrant and Peersman (2004) — tend to find evidence in favour of the OCA null, while the others find a larger role for nominal shocks (though Farrant and Peersman (2004) find a large role for nominal shocks, suggesting that the exchange rate may be a source of shocks rather than a shock-absorber). There is some suggestion in the studies to date that smaller countries exhibit less tendency to confirm the OCA null. For instance, the paper by Borghijs and Kuijs (2004) examines the experience of the Central and Eastern European countries using a variant of the SVAR approach and concludes that ‘the results cast doubt on the usefulness of the exchange rate as a shock-absorber; the exchange rate appears on average to have served as much or more as an unhelpful propagator of LM shocks than as a useful absorber of IS shocks’, adding that ‘they suggest that the costs of losing exchange rate flexibility in the CEECs are limited, if even positive’.

It is not clear that the same scepticism should apply to exchange rate flexibility in larger economies, for which there are relatively few comparable studies. In my paper with Michael Ehrmann (Artis and Ehrmann (2006)), we concluded that the United Kingdom was an indifferent candidate for European Monetary Union as nominal shocks played a large role in determining the exchange rate, though the evidence suggested that UK monetary policy was effective and the exchange rate, though not responding to the right signals, did not appear to be capable of damaging the real economy. At the same time, most shocks were diagnosed as asymmetric shocks. In the period since 1997, there have been intermittent criticisms that a high exchange rate has unduly dampened economic activity. Cobham (2002), for example, provides a sustained account of monetary policy concerns about the exchange rate in this period. One is invited to draw the conclusion that the exchange rate has been buoyed up by unreasonably bullish sentiment and that it has done harm. By contrast, in the Treasury’s EuroReport, the exchange rate was given credit for having done the right thing — namely appreciating in the face of an inflationary shock.

There is an argument in the literature that exchange rate pass-through is now so low that exchange rate changes cannot be expected to have direct impact on relative prices. Hence, one possible conclusion is that as exchange rate movements appear to have little effect, monetary union is an easier step (Engel (2002)).

Obstfeld (2002) argues that this line of argument is premature. In a world of globalised business it may very well be that there is a high degree of pricing to market so that prices in the shops are immune to exchange rate changes. But intermediate goods prices do change and the consequence of an alteration in the exchange rate may very well be a redirection of the sourcing of the supply of the good in question. Thus the activity effects of a change in the exchange rate may stay much the same as in earlier accounts when relative consumer prices changed. Furthermore, those activity effects will likely have price effects too, somewhere down the line.

What is the bottom line to this discussion? The OCA null has been held in question and for many countries — predominantly smaller countries with poorly developed domestic capital markets and those with no reputation and little experience of operating in a world of highly mobile capital flows — that questioning is appropriate. They lose little or nothing in joining a monetary union therefore, as they are unable to operate an effective stabilisation policy. Indeed there may be some clear gains: the real rate of interest will be lower in the union as the premium for operating an independent monetary policy disappears and it may even be the case that some of these countries are well placed in terms of business cycle convergence to benefit from stabilisation policy at union level that they have not been able to implement for themselves.

As an addendum at this point I note some evidence from a study I carried out into the business cycle convergence of the New Member States (Artis *et al* (2005)). Table A shows the cross-correlations of cyclical deviates of industrial production in the CEECs *vis-à-vis* the euro area and selected member countries of the area. Only Hungary, and, to an extent, Poland display high correlations; some are even negative.⁽¹⁾

Table A
Cross-correlations of business cycle deviates; industrial production, band-pass filtered 1993–2002. Central and Eastern European countries

	CZE	SVK	POL	HUN	SVN	EST	LVA	LIT
D	0.17	0.23	0.66	0.92	0.67	0.45	0.03	-0.04
A	-0.09	0.28	0.57	0.82	0.34	0.12	-0.18	-0.39
I	0.27	0.48	0.66	0.70	0.57	0.41	0.00	0.05
EURO	0.16	0.32	0.67	0.91	0.65	0.40	-0.02	-0.04

Source: Artis *et al* (2005); figures in bold are statistically significant.

Country abbreviations are: CZE, Czech Republic; EST, Estonia; HUN, Hungary; LVA, Latvia; LIT, Lithuania; POL, Poland; SVK, Slovakia; and SVN, Slovenia.

(1) As explained in the source from which these data are drawn industrial production cross-correlations are generally higher than those involving GDP (see Artis *et al* (2005)).

Financial integration

One of the enduring ‘puzzles’ of international economics has been the persistence and size of what has become known as the ‘home bias’ in portfolio allocation. Investors invest far less than they ‘should’ in international assets, diversify overseas far less and correspondingly insure themselves against risk by holding overseas assets to a much lesser extent than they ‘should’. This bias can help to account for the widespread violation of the expectation that, as a result of consumption risk-spreading internationally, growth rates of consumption across nations should display less variation than growth rates of output do. And the bias can also help explain why countries often ‘fail’ the Feldstein-Horioka ‘test’ and behave as though their investment opportunities were constrained by domestic savings.⁽¹⁾ Karen Lewis (1999) provides a comprehensive account of this bias and its ramifications.

In previous work it has never been clear that the exchange rate and exchange rate risk should play more than a supporting role in accounting for this bias. After all, there are plenty of other candidates — differences in commercial law, transport regulations, weights and measures etc. McKinnon (2004) makes particular mention of the fact that the exchange rate and exchange rate risk have not generally been given the predominating role in the list of obstacles that might lead to a home bias.

The advent of EMU seems to have dented the home bias paradigm considerably. The evidence from the bond markets shows that interest rate differentials between euro-area government bonds are negligible, whereas prior to the advent of the euro, those differentials were sometimes large. It is (almost) as if the previous country plus exchange rate premium has been shown to be almost all down to an exchange rate premium. Blanchard and Giavazzi (2002) show that while there has been an increase in the spread of current account deficits and surpluses throughout the OECD, the examples of Greece and Portugal seem to indicate that within the euro area, the constraint on current account deficits no longer holds at all. Table B is drawn from their paper and shows that estimates of the coefficient

in a regression of the investment ratio on the savings ratio are lower for euro-area countries (whether or not Portugal and Greece are excluded, as in the column ‘Euro area minus’).⁽²⁾ For such countries entry into the euro would seem to take place against a background in which the BB schedule in Chart 1 is lifted upwards. But there is more to it than this.

Table B
Feldstein-Horioka coefficients, 1975–2001

	OECD	OECD minus	EU	Euro area	Euro area minus
1975–2001	0.58	0.51	0.47	0.35	0.39
1975–90	0.56	0.55	0.50	0.41	0.49
1991–2001	0.57	0.38	0.36	0.14	0.26

Source: Blanchard and Giavazzi (2002).

The heart of the traditional OCA argument is that the possession of an ‘own currency’ allows monetary policy to perform a stabilisation function. By default aimed at output in this story, theory suggests that it is really consumption which is the proper object of stabilisation. Now consumption can be smoothed relative to output either through a fiscal channel (as tax rates and government spending respond to changes in the level of activity) or through private channels. The late Oved Yosha, with various colleagues (as in Asdrubali *et al* (1996)), did much to delineate these channels and to operationalise the quantification of different routes through which the public and private sectors can smooth consumption. When these routes are quantified it is standard to find (eg Crucini and Hess (2000)) that there is a large difference between the amount of risk-sharing that takes place between the regions of a country and that between countries. The former is much larger than the latter, reflecting the operation of a home bias once again (Tables C and D, drawn from a study of the United Kingdom by Labhard and Sawicki (2006) underline this strongly). Hence the extent to which a currency union automatically reduces the home bias is of the greatest importance. In the limit, it could imply that upon joining a currency union, a country will find itself better able to stabilise consumption. Hence the apparatus of output stabilisation through monetary and fiscal policy is no longer necessary. The CC schedule in Chart 1 thus vanishes towards the origin. Indeed, it can be hazarded that this effect could ‘turn

(1) In their 1980 article Feldstein and Horioka ran a cross-section regression of the investment/GDP ratio on savings (similarly scaled by GDP) as a test for the mobility of capital. They argued that in the presence of perfect capital markets there should essentially be no connection between domestic savings and domestic investment, though their results pointed to a high correlation coefficient. Various arguments have been deployed since to explain why the test may itself be flawed but its intuitive simplicity continues to attract replications.

(2) The column ‘OECD minus’ drops a heterogeneous group of countries which the authors felt might not conform to the paradigm of an advanced developed economy.

OCA upside down' in the sense that the financial integration of the currency union could be seen by agents as permitting a degree of specialisation in output at the national level that would have appeared unwise before. With specialisation would come *more* asymmetric shocks and less business cycle convergence. In short, where traditional theory would look to business cycle convergence to sustain a currency union, under the new approach currency union could even lead to less business cycle convergence.

Table C
Risk-sharing across UK regions

Per cent^(a)

	Capital markets	Fiscal transfer	Intertemporal	Total smoothed	Total unsmoothed
1975–99	47	-4	37	79	21
1975–87	47	-8	45	82	18
1988–99	51	–	25	76	24

Source: Labhard and Sawicki (2006).

(a) The final two columns report the proportion of income shocks that are smoothed (or otherwise) in their impact on consumption. The first three columns distinguish the channels through which smoothing takes place, based on regression evidence.

Table D
International risk-sharing: the United Kingdom and the OECD

Per cent^(a)

	Factor income	Depreciation	Transfers	Savings	Total smoothed	Total unsmoothed
1971–99	–	-1	-1	6	5	95
1971–87	1	–	-1	6	5	95
1988–99	–	-3	-1	6	5	95

Source: Labhard and Sawicki (2006).

(a) The final two columns report the proportion of income shocks that are smoothed (or otherwise) in their impact on consumption. The first four columns distinguish the channels through which smoothing takes place, based on national accounts data.

That the most recent developments in currency union theory should lead in this direction is paradoxical in another way too. Early discussions of the feasibility of currency union stressed that the fiscal channel was necessary to promote risk-sharing between regions of a country. American observers were prone to comment that, because of their federal income tax and expenditure system, '40 cents in the dollar' of a primary income shock would be automatically offset. As the EMU had then, and still has, no prospect of a central budget function of sufficient size, the corresponding figure for the EMU is very close to zero. However, later work has done much to clarify concepts and the stylised '40 cents in the dollar' has become according to Melitz (2004), '12–15 cents in the dollar'. Moreover in these early debates the role of the private sector was entirely overlooked. It is clear that within the euro area, risk-sharing through private channels has not yet reached the levels that are experienced in the United

States (pre-euro studies show that risk-sharing is considerably less in Europe) and it is clear that some institutional and cultural changes are necessary to complete the process of diminishing the home bias. We all know that retail banking in the euro zone is still subject to national protectionist policies, for example, and there are many other shortfalls. Nevertheless, the advent of the euro has imparted momentum towards change in the relevant areas.

Broad conclusions

We have learnt several important things about the way that currency unions work and develop. The contribution of traditional theory is still important, but with respect to the four issues I put on the table at the start of this lecture:

- It is probably wrong to expect much by way of induced business cycle convergence.
- It is probably wrong to think of the euro *per se* as spurring a vast increase in trade. Trade within the EU and especially within the euro zone and its core members is (and would have been) growing fast anyway.
- For some countries, including some prospective members of the euro area, the benefits to be derived from currency union membership are huge. Any qualification deriving from a lack of business cycle convergence is probably of second order importance.
- The financial aspects of currency union membership have been underplayed in the past, whereas their implications appear in fact to be highly significant. Indeed they are arguably the most significant factor that we now know about and didn't before.

Ecco L'Euro

By way of concluding, I promised to comment on another experiment in currency union, namely the project 'Ecco L'Euro'. This experiment was mounted in the Comunes of Fiesole and Pontassieve, near Florence. The idea of the experiment was to spread information about the euro by a real-time simulation. The permission of the Banca d'Italia was obtained for the circulation within these Comunes of 'euro symbols' which could be accepted as legal tender by various enterprises within the Comunes. The exchange rate of

the lira to the euro symbol was fixed at a convenient 2000:1 (cf the actual rate of 1936.27:1). Shops were encouraged to adopt dual pricing. The experiment was monitored by a scientific committee based in the European University Institute, and monitoring involved *inter alia* the circulation and processing of questionnaires.

Here are some of the results of this interesting venture:

1. The experiment demonstrated the network nature of money. The geographical and temporal limitations of the legal tender status of the euro symbols meant that few people used the symbols, although many held them.
2. This might seem also like an instance of Gresham's Law: soaring prices of the euro symbols in collectors' shops in Florence and Rome gave the impression that the lira was a weak currency. The true model, though, is more like one for a special philatelic sale.
3. The problem of lack of use of the new currency was targeted by the introduction of a 'points card'. When a transaction was executed in the new currency the retailer would stamp a square on the card. When filled, the card could be exchanged for a watch (big card) or a tiepin (small card). The theory of money is concerned with motives for holding money — including the transactions motive since money has to be held before it is used. Here we have the 'watch' (or 'tiepin') motive for holding (using) money!
4. The questionnaires established that rounding was quite often in the downward direction. But in this experiment people could always use either currency and prices were quoted in both. In the event — ie, when the real new currency was introduced, Italians experienced an upwards blip in the price level associated with the introduction of the new currency in apparent violation of monetary neutrality.⁽¹⁾
5. Our questionnaires established that in some cases (mostly, those of older people) the experiment had caused confusion even with the convenient exchange rate. Subsequently Dzuida and Mastrobuoni (2005) argued that the confusion amounted to a real change, which can be modelled as increasing the monopoly power of retailers.
6. The Comunes added seigniorage (identified as the difference between the face value and the production cost of the symbols) to their coffers in the order of LIT 20,000 per inhabitant. But this was more than offset by other promotional expenses associated with the project (including the cost of the watches and tiepins).
7. It might be argued that a temporally limited experiment cannot really stand in for the real thing — simply because it is not the real thing and is known not to be so. Even so the value of positive lessons learnt from the experiment was perhaps disappointingly small, but notably very small in relation to the 'PR' success of the project as a whole.

(1) In fact the blip was experienced in other euro-area countries too. Eurostat gave an estimate of 0.2% as the size of the blip in the euro-area HCPI associated with the introduction of the physical new currency.

References

- Artis, M J (2003)**, 'Is there a European business cycle?', *Ces-ifo Working Paper no. 1053*.
- Artis, M J and Ehrmann, M (2006)**, 'The exchange rate — a shock-absorber or source of shocks? A study of four open economies', *Journal of International Money and Finance*, forthcoming.
- Artis, M J, Marcellino, M and Proietti, T (2005)**, 'Business cycles in the accession countries and their conformity with the euro area', *Journal of Business Cycle Measurement and Analysis*, Vol. 2, pages 7–42.
- Artis, M J and Zhang, W (1997)**, 'International business cycles and the ERM', *International Journal of Finance and Economics*, Vol. 2, pages 1–16.
- Asdrubali, P, Sorenson, B and Yosha, O (1996)**, 'Channels of inter-state risk-sharing: United States 1963–1990', *Quarterly Journal of Economics*, Vol. 111, pages 1,081–100.
- Baldwin, R (2005)**, 'The euro's trade effects', paper prepared for the ECB workshop 'What effect is EMU having...?', Frankfurt, June.
- Berger, H and Nitsch, V (2005)**, 'Zooming out: the trade effect of the euro in historical perspective', *Ces-ifo Working Paper no. 1435*.
- Blanchard, O and Giavazzi, F (2002)**, 'Current account deficits in the euro area: the end of the Feldstein-Horioka puzzle?', *Brookings Papers in Economic Activity*, Vol. 2, pages 147–209.
- Borghijis, A and Kuijs, L (2004)**, 'Exchange rates in Central Europe: a blessing or a curse?', *IMF Working Paper*, WP/04/2.
- Bovi, M (2004)**, *Bulletin of the Oxford University of Economics and Statistics*.
- Buiter, W (2000)**, 'Optimal currency areas: why does the exchange rate regime matter?', *Scottish Journal of Political Economy*, Vol. 47, pages 213–50.
- Bun, M J G and Klaassen, F J G M (2004)**, 'The euro effect on trade is not as large as commonly thought', revision of 'The importance of accounting for time trends when estimating the euro effect on trade', *Tinbergen Institute Discussion Paper*, DP 03-086/2, University of Amsterdam; downloadable from www1.fee.uva.nl/pp/klaassen/.
- Camacho, M, Perez Quiroz, G and Saiz, L (2005)**, 'Do European business cycles look like one?', *Bank of Spain Working Paper no. 0518*.
- Canzoneri, M, Valles, M and Vinals, J (1996)**, 'Do exchange rates move to address international macroeconomic imbalances?', *CEPR Discussion Paper no. 1498*.
- Clarida, R and Gali, J (1994)**, 'Sources of real exchange rate fluctuations: how important are nominal shocks?', *Carnegie-Rochester Conference on Public Policy*, Vol. 41, pages 1–56.
- Cobham, D (2002)**, 'The exchange rate as a source of disturbances: the UK 1979–2000', *National Institute Economic Review*, No. 181, July, pages 96–112.

Comission of the European Communities (1990), 'One market, one money: an evaluation of the potential benefits and costs of forming an economic and monetary union', *European Economy*, No. 44, October.

Cottarelli, C and Escolano, J (2004), 'Assessing the assessment: a critical look at the June 2003 assessment of the United Kingdom's five tests', *IMF Working Paper*, WP 04/116.

Crucini, M and Hess, G (2000), 'International and intranational risk-sharing', in Hess, G and Van Wincoop, E (eds), *Intranational macroeconomics*, Cambridge University Press.

de Nardis, S and Vicarelli, C (2003), 'The impact of euro on trade: the (early) effect is not so large', *ISAE Working Paper 31/03*, Rome.

Dzuida, W and Mastrobuoni, G (2005), 'The euro changeover and its effects on price transparency and inflation. Mission euro, mission accomplished!', *mimeo*, available at www.princeton.edu/~gmastrob/pdf/euro.pdf.

Engel, C (2002), 'The responsiveness of consumer prices to exchange rates and the implications for exchange rate policy: a survey of a few recent new open economy macro models', *NBER Working Paper no. 8725*.

Farrant, K and Peersman, G (2004), 'Is the exchange rate a shock absorber or a source of shocks? New empirical evidence', *Journal of Money, Credit and Banking*.

Feldstein, M and Horioka, C (1980), 'Domestic saving and international capital flows', *Economic Journal*, Vol. 90, pages 314–29.

Frankel, J (2003), 'Experience of and lessons from exchange rate regimes in emerging economies', *NBER Working Paper no. 10032*.

Frankel, J and Rose, A (1997), 'Is EMU more justifiable *ex-post* than *ex-ante*?', *European Economic Review*, Vol. 41, pages 753–60.

Frankel, J and Rose, A (1998), 'The endogeneity of the optimum currency area criteria', *Economic Journal*, Vol. 108, pages 1,009–25.

Friedman, M (1953), 'The case for flexible exchange rates', in *Essays in Positive Economics*, University of Chicago Press, pages 157–203.

Gomes, T, Graham, C, Helliwell, J, Kano, T, Murray, J and Schembri, L (2004), 'The euro and trade: is there a positive effect?', unpublished, International Department, Bank of Canada.

HM Treasury (2003), *UK membership of the single currency — an assessment of the five economic tests*, CM 5776, London, HMSO, June.

Kenen, P B (1969), 'The theory of optimum currency areas: an eclectic view', in Mundell R A and Swoboda, A (eds), *Problems of the international economy*, Cambridge University Press.

Krugman, P (1993), 'Lessons from Massachusetts for EMU', in Torres, F and Giavazzi, F (eds), *Adjustment and growth in the European Monetary Union*, Cambridge University Press.

Labhard, V and Sawicki, M (2006), 'International and intranational consumption risk sharing: the evidence for the UK and OECD', *Bank of England Working Paper*, forthcoming.

- Lewis, K (1999)**, 'Trying to explain the home bias in equities and consumption', *Journal of Economic Literature*, Vol. 37, pages 571–608.
- McKinnon, R A (1963)**, 'Optimum currency areas', *American Economic Review*, Vol. 53, September, pages 717–25.
- McKinnon, R I (2004)**, 'Optimum currency areas and key currencies: Mundel I versus Mundell II', *Journal of Common Market Studies*, Vol. 42, pages 689–715.
- Meade, J (1955)**, 'The case for variable exchange rates', *The Three Banks Review*.
- Melitz, J (2004)**, 'Risk-sharing and EMU', *Journal of Common Market Studies*, Vol. 42, pages 815–40.
- Micco, A, Stein, E and Ordóñez, G (2003)**, 'The currency union effect on trade: early evidence from EMU', *Economic Policy*, Vol. 37, pages 317–56.
- Mundell, R A (1961)**, 'A theory of optimum currency areas', *American Economic Review*, Vol. 51, September, pages 657–65.
- Obstfeld, M (2002)**, 'Exchange rates and adjustment: perspectives from the new open macroeconomics', *NBER Working Paper no. 9118*.
- Peersman, G (2005)**, 'The relative importance of symmetric and asymmetric shocks and the determination of the exchange rate', *mimeo*.
- Persson, T (2001)**, 'Currency unions and trade: how large is the treatment effect?', *Economic Policy*, Vol. 16, pages 433–48.
- Rose, A K (2000)**, 'One money, one market: estimating the effect of common currencies on trade', *Economic Policy*, Vol. 30, April, pages 7–45.
- Thom, R and Walsh, F (2001)**, 'The effect of a common currency on trade: Ireland before and after the sterling link', *mimeo*, University College, Dublin.