

“EMU and the Euro: An American Perspective”

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Has the euro been a success, in its first 1 ½ years life? The answer is simple. It has been a success as a new international currency. But it has not been a success as a currency in which to invest; that is, it has gone down in value. These are two distinct aspects of a currency -- the extent to which it is used internationally and its value on the foreign exchange market. It would be wrong to say that there are no connections whatsoever between international use and foreign exchange value. Indeed, there are causal links in both directions. If there is a decline in the use of a currency as a store of value, e.g., if central banks around the world switch their reserves out of that currency into others, that may cause a depreciation. And conversely, a currency that has a reputation for losing value will not be a good candidate for international use. But the correlation is less than one would think. In particular, the rankings of the currencies in international use -- euro, dollar, pound, yen, DM, Swiss franc, SDR -- tend to change quite slowly over time -- on the scale of decades -- whereas the exchange rates among them can change rapidly -- large movements on the scale of months, or even days. The financial press from time to time goes through a period when it confuses the international currency question with the exchange rate question, and I think it may be doing so again now with the euro.

An Increase in International Use is Not to Be Confused with an Increase in Demand

It is not the financial press alone that presumes that a newly successful international currency will necessarily experience an increase in demand and therefore an appreciation. Two years ago, a few prominent economists were predicting that, come January 1, 1999, there would be a worldwide shift out of dollar reserves into the new alternative, and the increased demand for euros might cause a large appreciation.¹ They reasoned that the new euro would meet the qualifications for international currency status roughly as well as the dollar. So international use of the euro would jump sharply above the sum of the prior use of the DM, franc, lira, etc. After all, the euro economy is as large

¹ “There will probably be a portfolio diversification of \$500 billion to \$1 trillion into euros. Most of this shift will come out of the dollar. This in turn will have a significant impact on exchange rates during a long transition period. The euro will move higher than will be comfortable for many Europeans...The euro will probably be strong from its inception.” -- Bergsten (1997, p. 84-85). Also, Portes and Rey (1998) suggested that American policymakers were overly pessimistic about the euro’s prospects.

as the US economy, so why shouldn't it be used as widely? The predicted effect on asset demands is reasonable, at least over time. But the predicted effect on the exchange rate has of course not materialized. These predictions did not adequately allow for the fact that an increase in international use means not just an increase in demand for euro assets but also an increase in the supply. One way of understanding the depreciation that has occurred since January 1999 is that the supply of euro-denominated assets has increased more than the demand.

There are a variety of indicators of international currency use. The sort that is available on the most timely basis is the currency of denomination in cross-border financial transactions. The euro is already widely used to denominate bonds. Within Europe there has been a tremendous increase in issues of corporate bonds, denominated in euros, together with a rapid integration of government bond markets, equity markets, and banking. While the frenetic activity seems to be related to the debut of the euro, it does not meet the definition of "international currency use," because it is taking place inside the currency's home region.

Outside Europe, the euro is a success as well.² Detken and Hartmann (2000) have studied the data from the euro's first year in operation, doing a careful job of netting out intra-euro-area holdings in order to be able to trace back a measure of euro-precursor currencies for five years before 1999 that is comparable with post-1999 numbers. They find more of an increase in the supply of euro-denominated assets outside of Europe than an increase in demand.³ To be sure, unless these excess-supplied euros are piling up as dealer inventories, then arithmetically they must be matched by an increase in demand from European residents. (This pattern of capital outflow is reflected more generally in Europe's balance of payments statistics, though that leaves aside currency of denomination.) A depreciation of the euro does not automatically follow. It pends which came first, the increase in supply of euro-denominated assets from non-residents or the increase in demand from residents. Nevertheless the finding is suggestive. At a minimum, it illustrates well the point that an increase in international use of a currency need not mean an increase in net demand for that currency or an appreciation.

The measures available since the debut of the euro so far are limited to the denomination of financial transactions. The single best indicator of international use, holdings of reserves by central banks, won't be available from the IMF for several months yet. Data on foreign exchange turnover will not be available until 2001, cash held outside the home country will not be a relevant measure until euro notes and coins are printed in 2002, and data on invoicing in trade are always hard to come by.

It is a fair guess that over the next few years the other measures will bear out the early statistics from the capital markets: that the euro is the number two international currency, ahead of the yen, and is rapidly gaining acceptance, but is not yet ready to take

² Based on 1999 data, "...the euro has become the second most important currency in virtually all segments of international capital markets right from the start of stage 3" (Detkens and Hartmann, 2000). Euro issues continued as strong in the first quarter of 2000 as in 1999, and "...regular emerging market issuers now seem to regard the euro market as a genuine alternative to dollar markets" (Bishop, 2000).

³ "All this suggests that most of the euro bond and notes supplied...are effectively held by euro area residents and not by external investors so far...More precisely, it suggests that part of the euro's depreciation in the first months of stage 3 might have been associated with a (temporary) international excess euro asset supply." Measures other than the new flows of bonds and notes show less of an increase (i.e., the flow of issues in the money market, or any of the cumulative stock numbers).

on the dollar for the number one slot. Let us turn to a consideration of the determinants of international currency status.

What Makes an International Currency?

There are four major sorts of conditions that determine whether a currency is an international currency.⁴

(1) Patterns of output and trade. The currency of a country that has a large share in international output, trade and finance has a natural advantage. The U.S. economy is still the world's largest, in terms of output and trade, larger than the 11 economies of euroland aggregated together. If the United Kingdom and the three other non-member EU countries join EMU, however, the area will be virtually equal in economic size to the United States.

(2) History. There is a strong inertial bias, in favor of using whatever currency has been the vehicle currency in the past. An individual (exporter, importer, borrower, lender, or currency trader) is more likely to use a given currency in his or her transactions if everyone else is doing so. For this reason, the world's choice of international currency is characterized by multiple stable equilibria.⁵ The pound remained an important international currency even after the United Kingdom lost its position as an economic superpower early in the century. In the present context, the inertial bias favors the continued central role of the dollar.

(3) The country's financial markets. Capital and money markets must be not only open and free of controls, but also well-developed, deep and liquid. The large financial marketplaces of New York and London benefit the dollar and pound relative to the euro and yen. Frankfurt or other financial centers on the continent might catch up, but this would take a long time.

(4) Confidence in the value of the currency. Even if a key currency were used only as a unit of account, a necessary qualification would be that its value not fluctuate erratically. As it is, a key currency is also used as a form in which to hold assets (firms hold working balances of the currencies in which they invoice, investors hold bonds issued internationally, and central banks hold currency reserves). Here confidence that the value of the currency will be stable, and particularly that it will not be inflated away in the future, is critical. Both the Fed and the ECB currently have strong non-inflationary reputations. The besmirching of the US record from relatively high inflation and depreciation in the 1970s has by now been mostly erased, and is roughly cancelled out on the European side by the addition of other countries that have diluted somewhat the existing reputation for monetary rectitude in the DM area. As regards recent statistics, there is little to choose between the large current account deficit and slightly higher inflation rate in the US, on the one hand, and the much-discussed depreciation of the euro since its birth, on the other.

Thus two of the four determinants of reserve currency status -- developed financial markets and historical inertia -- support the dollar over the euro. By the other two criteria, economic size and reputation for stability, the dollar and euro are likely to be roughly ties.

⁴ Bergsten (1975), Kenen (1983), Tavlas and Ozeki (1991), Frankel (1992), and Hale (1995).

⁵ Krugman (1984).

One can fit data on reserve currency shares (1975-97) econometrically to an equation that includes the influence of relative country size, ten-year inflation averages and 5-year exchange rate volatility averages. (The equation does not take into account financial market development.) It yields the rough prediction that the euro will eventually rise to something like a 32 per cent share of central bank holdings, but the share remains below the US share, which is predicted at 48 percent, unless there is a major change in the macroeconomic determinants, relative to 1997.⁶ The statistical prediction should not be taken too literally. But it bolsters the view that the euro will be a solid number two. Adjustment is very slow, so the share would take a long time to reach this predicted level, if it ever does so. Indeed, I predict that when the numbers are released for end-1999, because of the disappearance of intra-euroland currency holdings they will show a *decrease* in the euro share since 1998; and even after adjusting pre-1999 figures for intra-euroland holdings will show an increase in the euro share of less than one percentage point. I do not expect that the euro will be able to challenge the dollar in the number one slot for many years to come.

Why Has the Euro Been Weak?

If the depreciation of the euro does not signify its rejection as an international currency, then what does it signify? In my view, the general upward swing of the dollar (especially against the euro) over the last five years can readily be explained by fundamentals. In the first place, the dollar was undervalued in mid-1995, as I will argue momentarily.⁷ In the second place, US economic performance throughout the last five years has amazed everyone. Regardless whether one uses the term “new economy,” the performance appears to be based in part on favorable long-term structural trends.⁸ I do not wish to belabor what is already called American triumphalism. But Americans do find it surprising, after all we have learned about the virtues of free markets, that in Germany, for example, retail stores are still restricted in their opening times and prevented from offering free gifts, discounts, or unlimited lifetime guarantees with their merchandise. Such regulations cannot help but stifle economic growth.

What does this mean for the exchange rate? The strong supply-led American growth has raised the demand for US money. Yes, the US trade deficit implies that the dollar will eventually have to undergo a substantial real depreciation; but this need not happen soon. In fact, given the rapid rate of expansion of US consumption and investment that we have experienced, the strong dollar, trade deficit and capital inflow have been useful safety valves. I would expect dollar depreciation to come when the US economy slows down, and not necessarily before that.

⁶ Chinn memo, May 30, 1999.

⁷ This is not hindsight. E.g., Frankel (1995).

⁸ What are the reasons for superior US economic performance? In addition to transitory short-term factors and the medium-term factors of good fiscal and monetary policy, there is a list of long-term factors: (1) Deregulation (trucking, airlines, natural gas, and banking in the late 1970s, telecommunications in the 1980s, and electricity now); (2) globalization; and (3) innovation, in the technological sense (especially IT), as well as in the form of more competitive goods and labor markets (corporate restructuring, the move to managed health care, and flexible labor markets) and public sector reform. But, as Paul Krugman has said, the now “self-evident” superiority of American-style capitalism may prove as over-done in the coming decade as the previously self-evident superiority of Japanese-style capitalism proved in the 1990s, or as, before that, the model of ever-rising prices for natural resources proved in the 1980s.

In light of solid growth and low inflation in Europe, however, there is a good case that the euro has been somewhat undervalued over the last year, particularly against the yen.⁹ I would call a dollar/euro rate of .89 or lower (the May floor) an overshoot. By this I mean not just a case of Dornbusch overshooting (which is entirely consistent with efficient financial markets), but a case of bandwagon overshooting, such as the dollar experienced in 1985 and the yen in 1995. I call these episodes “overshooting of the overshooting equilibrium.” The movement initially comes in response to a shift in macroeconomic fundamentals such as the real interest differential, but then -- contrary to theory -- is carried along by momentum after the shift in fundamentals has ceased. It seems to happen in episodes when the initial shift is drawn out over a few years, thereby establishing a trend that technical analysts can leap onto.¹⁰

“That’s What They Said About the Dollar, Not Long Ago”

By the spring of 1995, the dollar had fallen to 80 yen. This movement had originated in the Bank of Japan’s tightening of monetary policy in 1990, but had long since moved beyond that. The episode is worth some elaboration, because it may hold some parallels for the recent experience of the euro. The depreciation of the dollar in 1994 and early 1995 had little or no basis in fundamentals. In my view, it could only be attributed to a circular dialectic in which the traders sold dollars in the mistaken belief that the US Administration wanted the currency to depreciate, in confirmation of which they would cite newspaper reports. The journalists who wrote the stories about a weak-dollar policy ignored actual Administration statements and interventions in support of the dollar during this period, and instead tended simply to cite as evidence that the dollar was in fact depreciating. Ultimately the cycle was broken, when central bank intervention -- carried out in a coordinated and newsworthy manner -- was able to convince observers of the Administration’s intentions, and to help bring the market back to reality in mid-1995. One of the reasons for the success of the intervention was that the yen/dollar rate had reached an extreme level. (I don’t think the undervaluation of the euro this spring was as extreme. The ECB was probably wise to hold its fire at this time, but for implied verbal threats.)

One aspect of the “selling short” of the dollar by public commentators in 1994-95 was a selling short of its role as an international currency. The February 25, 1995, issue of *The Economist* included an influential article and leader arguing that “the dollar's dominance is waning,” at the expense of the DM in particular. Others were still touting the yen as the challenger.¹¹ Typical of the articles lamenting the decline of the US currency was one opining “the administration is indifferent to the slide of the dollar as the premier reserve and trading currency,” and another which concluded that the dollar

⁹ Chinn (2000)’s equation says the euro was undervalued 13-15% in January 2000. Estimates based on PPP tend to show greater undervaluation.

¹⁰ To quote Bundesbank President Ernst Welteke, “The herd-like behaviour of markets can lead to a situation in which market values move away from fundamental data for a certain period...” Cologne speech, reported in *Financial Times*, May 23, 2000, p.2.

¹¹ E.g., Tavlas and Ozeki (1991) and Hale (1995).

may be "going the way of sterling, the guilder, the ducat and the bezant."¹² What was remarkable about these articles is that, in pronouncing a verdict on the currency rankings, they tended to ignore the actual statistics on international currency use. Whereas the dollar as a reserve currency had lost much ground to the yen and mark in the 1970s and 1980s, this trend had actually reversed in the 1990s. Furthermore, a tremendous demand for dollar notes in Latin America and Eastern Europe had sucked half of the supply of US currency outside the country. Yet most commentators reasoned from the general anti-dollar mood, and more specifically from the observed depreciation, to conclude that there was a marked decline in the dollar's status as the leading international currency.

The 1995 commentary on international currency trends may or may not fit into a larger pattern of bandwagon behavior. But I think it is clear that commentators were unable to resist the temptation to mix the international currency question with the exchange value question, and on this account came to misleading conclusions. This is where I see the parallel with the euro five years later. The euro's 1999-2000 depreciation may be attributable to fundamentals or it may be attributable to a bandwagon. But, either way, I see a danger in the temptation to leap from short-term exchange market developments to conclusions about its prospects as an internationally accepted currency.

I offer a prediction. Sometime in the future there will be a major appreciation of the euro against the dollar. (Conceivably the rebound of the euro that we have seen in June could be the beginning.) My prediction is that after a few years of euro appreciation we will see a new surge of commentary to the effect that the euro is challenging the dollar as the world's number one international currency. The actual statistics on euro use at that time will probably not exceed the trend that is expected now. But the temptation to spin a connection between the exchange rate and international currency status will once again be irresistible. And the commentary, just like the anti-euro commentary of 2000 or the anti-dollar commentary of 1995, will probably last no longer than the next reversal in the exchange rate.

The Views of American Economists on EMU

I have discussed the questions of the performance of the euro on the foreign exchange market and success as an international currency, and the tendency to confuse the two. A third kind of success is relevant as well. That is the larger question of the historic experiment of EMU -- yet another wholly distinct topic. [Again, there are connections among the questions. One way that EMU could in theory founder some day would be irresistible pressure for strong monetary expansion, arising for example from explosive debt in a particular part of the region; in that event, failure of EMU would be correlated with depreciation of the euro and with the loss of the competition for international currency status. But there is no reason to expect this to happen, nor any other reason necessarily to expect developments in these different areas to be highly

¹² Kunz (1995, p.22) and Kindleberger (1995, p.6), respectively. The famous US Treasury incantation, "a strong dollar is in the United States' national interest," was already in place at this time. It is the listeners, not the policy itself, that has changed since 1994.

correlated. Thus I will consider the question of the desirability of EMU independently from the other two questions.]

I have long noticed a tendency among some Europeans -- taxi-drivers of Paris, if not financial leaders of Frankfurt and Milan -- to presume that Americans want EMU to fail. We supposedly view it as a geopolitical threat to the United States.¹³ It is undeniable that a majority of American economists have historically been skeptical of EMU. But our thinking has evolved over time, becoming more receptive in some ways. This is not solely because EMU is now an accomplished fact, but is in line with changes in intellectual fashion in monetary theory more generally, in addition to developments in the international monetary system.

I see several phases in thinking among US international monetary economists. The sequence begins with the traditional Optimum Currency Area idea introduced in the 1960s, on which much of the skepticism has always been based. We have now "progressed" to the "corners hypothesis," which came out of the experience of the late 1990s.

Robert Mundell complains that the idea of the optimum currency area, a concept he originally introduced, is regularly used as an argument against EMU and other currency unions. The irony, of course, is that he has for 30 years been strongly on the pro side. But I believe a fair reading of the optimum currency area literature is that it is stacked neither for nor against currency unions, but rather is useful precisely because it recognizes that the choice of exchange rate regime should depend on the particular circumstances facing a given country, and because it offers a still-useful framework for making the judgment.

The Optimum Currency Area

Countries that are highly integrated with each other, with respect to trade and other economic relationships, are more likely to constitute an optimum currency area (OCA). An optimum currency area is a region for which it is optimal to have its own currency and its own monetary policy. This definition, though in common use, may be too broad to be of optimum usefulness. It can be given some more content by asserting the generalization that smaller units tend to be more open and integrated with their neighbors than larger units.¹⁴ Then an OCA can be defined as *a region that is neither so small and open that it would be better off pegging its currency to a neighbor, nor so large that it would be better off splitting into subregions with different currencies*. Even to the extent that corner solutions are appropriate for given countries, the optimal geographic coverage for a common currency is likely to be intermediate in size: larger than a city and smaller than the entire planet.

¹³ In fact, the US administration regards as quite minor the disadvantages of EMU to the United States, such as a possible diminution of the seignorage from dollars held abroad, now worth \$16 billion/year. The geopolitical advantages of having a more united and stable Europe are considered far greater than the disadvantages.

¹⁴ Gravity estimates suggest that for every one percent increase in the size of a country's economy, its ratio of trade to GDP falls by about .3 percent.

Why does the OCA criterion depend on openness? The advantages of fixed exchange rates increase with the degree of economic integration, while the advantages of flexible exchange rates diminish. The two big advantages of fixing the exchange rate are: (1) to reduce transactions costs and exchange rate risk that can discourage trade and investment, and (2) to provide a credible nominal anchor for monetary policy. If traded goods constitute a large proportion of the economy, then exchange rate uncertainty is a more serious issue for the country in the aggregate.¹⁵ Such an economy may be too small and too open to have an independently floating currency. At the same time, because fixing the exchange rate in such a country goes further toward fixing the entire price level, an exchange rate peg is more likely to be credible, and thus more likely to succeed in reducing inflationary expectations.

Furthermore, the chief advantage of a floating exchange rate, the ability to pursue an independent monetary policy, is in many ways weaker for an economy that is highly integrated with its neighbors. This is because there are ways that such a country or region can cope with an adverse shock even in the absence of discretionary changes in macroeconomic policy. Consider first, as the criterion for openness, the marginal propensity to import. Variability in output under a fixed exchange rate is relatively low when the marginal propensity to import is high; openness acts as an automatic stabilizer.

Consider next, as the criterion of openness the ease of labor movement between the country in question and its neighbors. If the economy is highly integrated with its neighbors by this criterion, then workers may be able to respond to a local recession by moving across the border to get jobs, so there is less need for a local monetary expansion or devaluation.¹⁶

Of course the neighbor may be in recession at the same time. *To the extent that shocks to the two economies are correlated, however, monetary independence is not needed in any case: the two can share a monetary expansion in tandem.* There is less need for a flexible exchange rate between them to accommodate differences. Thus the correlation or symmetry of shocks is a key criterion.

Consider, finally, a rather special kind of integration: the existence of a federal fiscal system to transfer funds to regions that suffer adverse shocks. The existence of such a system, like the existence of high labor mobility or high correlation of shocks, makes monetary independence less necessary.

Stretching the definition of integration even further, another kind of integration, more political in nature, can help reduce the need for monetary independence: to the extent that domestic residents have economic priorities, especially on fighting inflation versus unemployment, that are similar to those of their neighbors there will be less need for a differentiated response to common shocks.¹⁷ Finally, to the extent that individuals think of themselves as citizens of Europe more than citizens of their own country, they may be willing on political grounds to forego discretionary monetary

¹⁵ This is the rationale for the openness criterion originally suggested by McKinnon (1963).

¹⁶ Labor mobility was the criterion identified by Mundell (1961).

¹⁷ Corden (1972) and Alesina and Grilli (1991).

responses even to disturbances that are so large that a national policy response would be in their economic advantage. Conversely, to the extent they prize their national sovereignty, they will not want to give up their national currency even if it is economically advantageous.

We have just seen that regional units are more likely to benefit, on net, from joining together to form a monetary union if: (1) they trade a lot with each other, (2) there is high degree of labor mobility among them, (3) the economic shocks they face are highly correlated, or (4) there exists a federal fiscal system to transfer funds to regions that suffer adverse shocks. How does the EU look, according to these four criteria?

Each of these criteria can be quantified, but it is very difficult to know what is the critical level of integration at which the advantages of belonging to a currency area outweigh the disadvantages. The states of the United States constitute a possible standard of comparison. It seems quite clear that the degree of openness of the states, and the degree of economic integration among them, are sufficiently high to justify their use of a common currency. How do the members of the European Union compare to the states in this regard? US states appear to be more open than European countries, by both the trade and labor mobility criteria. It appears that when an adverse shock hits a region of the US such as New England or the oil states of the South, out migration of workers is the most important mechanism whereby unemployment rates and wages are eventually re-equilibrated across regions.¹⁸

Labor mobility among European countries is much lower than in the United States. In some parts, the geographical radius within which many people live their entire lives is smaller than the distance over which Los Angelenos commute to work on a daily basis.¹⁹ Americans are three times as likely to move between states as are Germans to move between their lander.²⁰ Europeans are presumably even less inclined to move across national boundaries within the European Union than they are to move within their own countries, especially in light of linguistic differences. Thus, by the labor mobility criterion, European countries are less well-suited to a common currency than are American states.²¹

¹⁸ Blanchard and Katz (1992).

¹⁹ While economists and demographers may have their own ways of measuring labor mobility, anthropologists/archaeologists recently produced an extreme illustration of low mobility in the U.K.. Excavation near the town of Cheddar, England, uncovered a 8,980-year old skeleton. Scientists, having obtained a sample of DNA from "Cheddar Man," set off to see if they could find a match among any of the residents of the nearby town. Before long, they were able to verify that a local schoolteacher, Adrian Targett, was a direct relation of Cheddar Man. (Norman Davies, "The Isles," Oxford University Press.) The schoolteacher lived only one-half mile from his forebearer's cave. Evidently, in this one English family at least, successive generations do not like to move far from their ancestral home.

²⁰ Eichengreen, 1994.

²¹ Decressin, Jorg, and Antonio Fatas, 1995.

The other two criteria are also better satisfied within the United States than within Europe. Disturbances across U.S. regions have a relatively high correlation, compared to members of the European Union.²²

When disparities in income do arise in the United States, federal fiscal policy helps to narrow them. One estimate suggests that when a region's per capita income falls by one dollar, the final reduction in its disposable income is only 70 cents. The difference, a 30 per cent federal cushioning effect, includes both an automatic decrease in federal tax receipts plus an automatic increase in unemployment compensation and other transfers. The cushioning effect has been estimated at 17 percent in the case of Canada. European countries have greater scope for domestic fiscal stabilization than do American states (and will retain at least some of this scope despite the fiscal constraints that the EMU process is imposing on them). Furthermore there are some cross-country fiscal transfer mechanisms. Nevertheless, neither the fiscal transfer mechanisms that are already in place within the European Union nor those that are contemplated under EMU -- so-called "structural funds" -- are as large as those in the U.S. (or Canadian) federal fiscal system.²³

Corners

Whereas the traditional OCA literature emphasized trade and output patterns, modern exchange rate analysis is dominated heavily by financial markets and issues of credibility. More recent thought is in some ways more sympathetic to currency unions in general, and to EMU in particular. I have in mind writings on the lack of credibility of intermediate exchange rate regimes like target zones or adjustable pegs.

The failure of the European Exchange Rate Mechanism in 1992-93 seemed at first to justify skepticism regarding EMU, precisely on the OCA grounds that Germany had experienced a real shock (reunification) not shared by the rest of Europe. But an alternative interpretation was that the crises were not justified by macroeconomic fundamentals, and instead were a case of so-called "second-generation models of speculative attack," based on multiple equilibria.

The episode suggested to some that a gradual transition to EMU, where the width of the target zone was narrowed in steps, might not be the best way to proceed after all (Crockett, 1994). Obstfeld and Rogoff (1995) concluded, "A careful examination of the genesis of speculative attacks suggests that even broad-band systems in the current EMS style pose difficulties, and that there is little, if any, comfortable middle ground between floating rates and the adoption by countries of a common currency." The lesson that "the best way to cross a chasm is in a single jump" was seemingly borne out later by the successful leap from wide bands to EMU in 1998-99.

Thus was born the hypothesis that the two corners of free floating and firm fixing are viable, but intermediate regimes are not. After the currency crises of East Asia in

²² Bayoumi and Eichengreen (1993).

²³ We are using Bayoumi and Masson, rather than earlier estimates by Sala-I-Martin and Sachs (1991) or lower estimates suggested by von Hagen.

1997-98, the corners hypothesis rapidly became conventional wisdom. Unfortunately, its many proponents have failed to offer a theoretical rationale.²⁴

Although the context of the corners hypothesis is the new world of financial crises, a theoretical rationale may be available in an updated version of the optimum currency area literature. Some of the key OCA criteria, which are supposedly parameters, in fact change over time, particularly the degree of trade integration and correlation of shocks. Furthermore, they change in response to the decision to form a monetary union itself.

Recent research has applied the gravity model of bilateral trade to large data sets of trade among pairs of countries or other smaller political units, and has come up with some striking conclusions. The first finding is that a pair of units that share a common currency are likely to trade three times as much with each other as a pair that uses different currencies other things held equal.²⁵ Evidently there is a large discrete benefit to be had from going beyond reducing exchange rate variability to zero. The outright elimination of the difference in currencies removes transactions costs as well as what would otherwise be a residual fear of abandonment of a fixed exchange rate. The second finding is that the higher level of bilateral trade also raises total trade. A third finding is that this increase in trade is good for growth. An illustrative estimate is that the increased openness that Poland would experience by adopting the euro might raise income per capita by 20 per cent, spread out over a period of 20 years or longer.²⁶ The fourth finding is that, despite an increase in specialization, the higher level of trade among members of a currency union raises rather than lowers the correlation of shocks among the members.

The higher trade integration and higher symmetry of shocks mean that two of the criteria for an optimum currency area are more likely to be satisfied *ex post*, after the countries go ahead with monetary union, than *ex ante*. A country that appears to be on the margin of satisfying the OCA criteria might do well to take the plunge, under the theory that the case is likely to look stronger after enough time has passed.²⁷ It seems to me that if the euro-11 can make it through the next couple of decades without a major asymmetric shock, the member countries will by then have become sufficiently integrated that EMU will have become a success -- not just in the sense of holding together, or of having a successful currency, but in the sense that is of ultimate importance: bringing net economic benefits to its population.

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²⁴ Frankel, Schmukler and Servén (2000) document the rise of the corners hypothesis.

²⁵ Rose (2000).

²⁶ Frankel and Rose (2000).

²⁷ Frankel and Rose (1997) and Engel and Rose (2000).

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Table 1 THE IMPORTANCE OF MAJOR CURRENCIES ON THE EVE OF EMU
(SHARES IN INTERNATIONAL USE)

	OFFICIAL USE OF CURRENCIES	CURRENCY OF DENOMINATION IN PRIVATE TRANSACTIONS				
	Pegging of minor currencies ⁱ	Foreign exchange reserves held by central banks ⁱⁱ	Foreign exchange trading in world markets ⁱⁱⁱ	Inter- national capital markets ^{iv}	Inter- national trade ^v	Cash held outside home country ^{vi}
Dollar	.39	.61	.44	.54	.48	.78
Mark	.06	.13	.15	.11	.16	.22
Yen	.00	.05	.11	.08	.05	NA
Pound sterling	.00	.04	.06	.08	} .15	.00
French Franc	.29	.01	.03	.06		.00
other EMS currencies	.04	}NA	} .09	NA		.00
ECU ^{vii}	.00			.01	.00	.00
Other / un- specified	.22	.11	.15	.12	.16	<u>NA</u>

ⁱ Source: IMF, *International Financial Statistics*. Data pertain to 3/31/98. None of the EMS countries was officially classified as pegging to the deutschemark or ECU. (“Other” includes SDR and South African rand, at .08 and .06 respectively.)

ⁱⁱ Source: IMF, *Annual Report 1998*, Table I.2. Data pertain to end-1997. (“Other” includes Swiss franc at .01.)

ⁱⁱⁱ Source: Bank for International Settlements, Basle, 1998. Data pertain to April 1998. All figures have been divided by 2, so that total adds to 100% even though there are two currencies in each transaction. (“Other” includes Swiss franc at .04.)

iv. Total funds raised in 1996, including international bond issues, medium and long-term syndicated bank loans, and other debt facilities. Source: N. Funke and M. Kennedy, "International Implications of European Economic and Monetary Union," *Economics Department Working Paper* No. 174, OECD, Paris, 1997.

v. Source: *ibid.* Data pertain to 1992. ("Other EMS currencies" are Italian lira and Dutch guilder.)

vi. Data pertain to 1995. Source: Calculated from US and German central banks' estimates (B. Eichengreen and J. Frankel, "The SDR, Reserve Currencies, and the Future of the International Monetary System," in The Future of the SDR in Light of Changes in the International Financial System, edited by M. Mussa, J. Boughton, and P. Isard, International Monetary Fund, 1996). Shares of the yen and Swiss franc are set at zero for lack of data, even though they are thought to be greater than that (K. Rogoff, "Large Banknotes: Will the Euro Go Underground?" in Economic Policy, April 1998).

vii. In January 1999, the ECU became the euro. The mark, French franc, and nine other EU currencies are irrevocably fixed to the euro, and are to disappear entirely by 2002.