

An International Role for the Euro?

Charles Wyplosz

Graduate Institute of International Studies and CEPR

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Introduction

The international role of the euro is the hidden agenda of Europe's long-planned adoption of a single currency. Some Europeans long for regaining monetary leadership, either for political symbolism or because they believe that it is financially profitable. Some in the US are concerned for exactly symmetric reasons. Central bankers, as usual, worry that they may lose control but relish the thought of the impact that their cryptic pronouncements might have on markets all over the world. Markets wonder if there is money to be made by moving faster than officialdom. In the crime and underground business, this may be seen as yet another opportunity of evading detection, although there are risks ahead. This paper reviews and assesses the so far limited literature on the issue.

The next section puts the emergence of the euro in historical perspective. It recalls the replacement of sterling by the dollar. Section 2 analyses what are the defining characteristics of a world currency. Section 3 evaluates the euro's chance of reaching this status. Whether it is a desirable outcome or not for Europe is discussed in Section 4, while Section 5 speculates on the implications of a bipolar international monetary system. The last section briefly concludes.

1. A brief historical overview

1.1. What is a world currency?¹

It is customary to look at an international currency from the viewpoint of the functions traditionally ascribed to a national currency: medium of exchange, unit of account and store of value. Table 1, from Krugman (1991), summarizes the situation distinguishing private from public use. By and large, the private use of an international currency is no different from the private use of a national currency: it is used to carry out transactions, to price goods, services and assets, and to be held as an asset. The only exception concerns the fact that, internationally, currencies can be exchanged against each other. When financial markets chose to make quotations in one particular currency, that currency acquires international status. The most popular view of an international currency is when it is widely used as a medium of exchange (Italian tourists take dollars when they travel to Indonesia).

What is specific to an international currency is its official use. Domestically, a currency typically has sole legal tender status. There is no similarly internationally recognized legal tender status but monetary authorities have various ways of raising a currency's status above the rest of the crowd. This can be done by using systematically one currency to trade on foreign exchange markets or by holding it as foreign exchange reserves. The most formal step is to choose a currency to which one's own currency is attached, either through of fixed peg or through more flexible arrangements ranging from a crawling peg to targeting.

Table 1.

¹ For more details on the history of the international monetary system, see Eichengreen (1994) and Burda and Wyplosz (1997).

There is no magic threshold that separates a plain from an international currency. The six cells in Table 1 allow us to assess the degree of internationalization of a currency. Of course, there are links between the various functions. For example, it is because the US dollar (henceforth, dollar for short) is widely used as a medium of exchange that people hold it as a store of value. The dollar is the only currency that currently performs all six functions. The DM and the yen perform these functions, but to a lesser degree and only in some regions.

1.2. How the dollar won the world

The first world currency (in modern times) has been sterling. Sterling ruled the financial world at the end of last century and up to WWI. This was the time of the Gold Standard. Paper money was spreading fast but remained fully convertible in gold. In that sense, paper currencies were just titles to gold. So what does it mean that sterling was *the* world currency? In terms of Table 1, sterling was widely used as a unit of account for international transactions, as well as an investment and reserve currency. The City of London was by far the largest financial center. More importantly perhaps, the Bank of England's setting of its own interest rate affected the cost of money in the rest of the world. The Bank was able to control interest rates by engaging into liquidity management, thus departing from full gold coverage of sterling paper. The Bank's influence was related to its reputation: departures from full backing was not seen as a threat by holders of Sterling paper. Interest rates in other countries followed Sterling interest rate due to its widespread use of sterling as private and official store of value.

Following WWI, Britain considered that, to retain its central role, Sterling would have to recover its gold value which had been suspended at the outset of hostilities. The Chancellor of

the Exchequer, Winston Churchill, mistakenly associated reputation with continuity. The problem was that from 1913 to 1920 prices had increased by 150% in Britain. Having only depreciated by 30%, sterling was already overvalued. Returning to the pre-war parity resulted into a major loss of competitiveness and trade deficits. The situation was not sustainable and Sterling started to fade away as a store of value. It remained a unit of account until WWII, but alongside the dollar which gradually took over status of world currency.

The US emerged from WWII with a strong economy and political supremacy. The Marshall Plan well illustrates the imbalance between the UK and the US at that time. The Gold Exchange Standard adopted in Bretton-Woods in 1944 put the dollar squarely in center stage. All currencies were to be pegged to the dollar and the dollar would be pegged to gold. The dollar proceeded to fill all the functions shown in Table 1.

The demise of the Bretton-Woods system partly weakened and partly strengthened the dollar. The Jamaica 1973 agreement formally marked the end of compulsory pegging to the dollar. In that sense the dollar has partly lost its function as official unit of account. The number of countries that continue to peg to the dollar has continuously decreased since then. Table 2 shows that only 21 of the 181 members of the International Monetary Fund (IMF) are pegged to the dollar. Yet the table understates the role of the dollar since many of the currencies classified as having chosen “other pegs” in fact use currency baskets in which the dollar figure prominently. On the other side, since 1971 gold has essentially lost all monetary function, leaving the dollar as *the* ultimate unit of account.

Table 2

1.3. Europe’s slow rise

After 1973, the dollar has ceased to enjoy a legal advantage over potential competitors. In effect, its role has been declining, albeit very slowly. This evolution is illustrated by the evolution of foreign exchange reserves (the store of value official function). Table 3 shows that the dollar's share has been gradually eroded since 1973. The newly emerging currencies are the DM and the yen, with some limited role for ECU-denominated assets.

Table 3

This pattern is quite general across the diverse functions of what makes an international currency. In particular, the DM and the ECU have won the beginning of an international recognition, cutting into the dollar's domination. Part of the reason lies in Europe. The existence of a fixed exchange rate arrangement, the EMS, has prompted member central banks to intervene increasingly in common currencies. This in turn has led to holding foreign exchange reserves in European currencies. Another, more important, explanation is the emergence of the DM as the European currency.

Up until the mid-eighties, the Bundesbank was known as a highly reputable central bank which had shielded Germany from the boom and bust swings that followed the two oil shocks. Yet, the DM was one member of the European Monetary System (EMS) among others. Certainly, the DM was a currency that no one would ever expect to see depreciated, but that is how far it could be singled out. By the end of the eighties, the EMS came to be known as a DM area and Fed-watchers started to train to become Bundesbank-watchers as well. Nowadays no one remotely interested in international finance can afford to ignore on which day the Council of

the Bundesbank meets and Mr. Tietmeyer is almost as well known to the broad public as Mr. Greenspan. What happened?²

The DM has become the currency against which other currencies can only depreciate. Its interest rates have naturally become the base from which interest rates elsewhere in Europe are set. In the other EMS countries, the interest rate is the German rate *plus* expected depreciation *vis a vis* the DM over the relevant horizon. Any move by the Bundesbank that affects the German interest rate is immediately followed by similar changes in other EMS interest rates. The link has been made increasingly tighter as restrictions to capital movements, widespread in the seventies and early eighties, were gradually eliminated, being outlawed as of July 1990 by the Single Act (Figure 1). This evolution has meant that the Bundesbank *de facto* controls all interest rates in the EMS, giving the DM a weight far larger than justified by the economic size of Germany.

Figure 1

2. What do we know about world currencies?

This section will look at various possible reasons why a currency becomes international. Two main theories have been proposed. One concerns the means of payments function, the other the store of value function. We look at each theory separately and then draw a number of implications.

2.1. Vehicle currencies

² The history of the emergence of the DM as the prime EMS currency has been described by many authors. See, e.g., Giavazzi and Giovannini (1989), Begg and Wyplosz (1993) and Burda and Wyplosz (1997).

2.1.1. Invoicing. Trade can be paid for in the exporter's currency, in the importer's currency, or in a third vehicle currency. Since the seminal work of Grassman (1973), it is known that trade tends to be invoiced in the exporter's currency. If that were always the case, then invoicing would be proportional to the volume of exports country by country. The recent estimates shown in the right panel of Table 4 broadly confirm this result, but the rule is not very robust. Only in the US does it come close to being exactly satisfied. In the other countries a significant and often growing proportion of exports are not invoiced in the domestic currency. For smaller countries it is not even a tendency.

The left panel of the panel confirms the special status of the dollar. In 1992 48% of all international trade was invoiced in dollar. This is 3.6 times the share of the US in world trade. The only other currency whose share of invoicing exceeds the country's trade share is Germany (1.4 times), while the ratio is exactly 1 for sterling and the franc which appear to be minor invoicing currency. The weight of the US has declined since 1980 but this almost entirely explained by the decline of oil in world trade (due to the fall of oil prices after 1986). When this factor is accounted for, the role of various currencies has hardly changed since 1980.

Table 4

It is not easy to explain these facts by appealing to commercial practices. Some authors (e.g. McKinnon, 1979) have argued that sellers of differentiated goods use their market power to impose invoicing in their own currency and thus avoid currency risk. Indeed Tavlas (1991) shows that trade invoicing is linked to exports of specialized products and to the extent of trade with developing countries. However Rao and Magee (1980) have shown an exporter

should be indifferent between charging a lower price for invoicing in one own's currency or a higher price to compensate for the exchange risk when invoicing is in a foreign currency. Given this equivalence, we are left with no good reason why exports tend to be invoiced in the exporter's currency. The explanation must lie elsewhere.

2.1.2. Transaction costs. A more promising explanation takes into account the costs of transaction in foreign currencies. A number of authors (Niehans, 1969, Krugman, 1980, Chrystal, 1984) have looked into the possibility that the cost of exchanging currency, which must be borne by one of the two parties³, may differ according to the currencies involved. For example, when goods are exported from Denmark to the Netherlands, either the exporter or the importer will have to face the cost of changing guilders into krone. The choice must be, implicitly at least, part of the negotiation on the price of the deal. In that case both parties stand to benefit from lower transaction costs.

What if it is cheaper to go from guilders into dollars and then from dollars into krone? In that case it is easier and cheaper to invoice the deal in dollars. The Dutch importer will face one transaction cost as she buys the dollars, and the Danish exporter will face another cost in selling the dollars for krone. Both will be better off, and will not even have to bargain on the currency used in invoicing.

Transaction costs are related to three services that foreign exchange market intermediaries must perform. First is order processing. To execute orders for their customers, intermediaries must be continuously present in the market and subscribe to information and trading systems.

³ This is not quite true as will become clearer soon.

This includes finding counterparts. Second come inventory costs. As they must hold adequate amounts of currencies, intermediaries face costs of unbalanced portfolios and the risk of capital losses. The last cost is that of acquiring the information needed to price currencies. Clearly, at least for order processing and information costs, there exist increasing returns to scale so that larger markets should lead to lower costs. The second cost is related to the volatility of exchange rates (more generally to the risk/return characteristic of currencies, which includes correlations with wider market returns).

Increasing returns to scale imply that transaction costs should naturally lead to a few large wholesale markets for the main currencies, while the other currencies should be dealt with on smaller retail markets. Recent statistical work (Hartmann, 1996) broadly confirms both the theoretical prediction and earlier empirical studies, but it also indicates that there is much more to it. Table 5 shows a couple of examples. The costs of transaction of the largest wholesale foreign market, between the dollar and the DM, appear larger than for two retail markets, the franc and guilder vis a vis the DM. Part of the explanation has to do with exchange rate volatility, which is clearly lower for the guilder/DM rate. Another part of the story is that transaction costs are not well-known. The table reports inter-dealer spreads quoted on Reuters. These are quotes, not transactions. They refer to the inter-dealer market, not to transactions affecting end users. The European Commission report (1990, p. 65) had publicized enormous costs for the retail market, between 200 and 300 basis points.

Table 5

The conclusion is that increasing returns are present on foreign exchange markets. *Ceteris paribus*, this should lead to a limited number of wholesale markets involving a few vehicle currencies. In particular the dollar is often used as third currency for transactions between countries with “minor” currencies. The DM could also be fulfilling this function within Europe.

2.1.3. Foreign exchange reserves and central bank interventions. So far we have looked at the size of the market as explained by private behavior. Two of the attributes of an international currency are official store of value and use as means of payment in official transactions. Central banks are occasionally present on foreign exchange markets. Even in countries like the US, Japan or the UK which do not have a formal exchange rate target, central banks are known to be keen to restrain volatility (Funabashi, 1988).

Little is publicly known of interventions in general, and of the currency in which they are undertaken in particular. What is better known is the currency denomination of officially held foreign exchange reserves. The US dollar represents about 75% of world exchange reserves. At about 10% the DM is a distant second, leaving several other currencies (sterling, SDRs, ECUs, French and Swiss francs) to share the rest. The dominance of the dollar is linked to its role as vehicle currency for trade: central banks care about exchange rates partly because they are concerned that fluctuations may affect competition in goods and services. It matters for them to limit volatility of the currencies used in international trade.

Foreign exchange reserves are directly associated with trade in developing countries whose currencies are not convertible, or at least not widely traded. These countries consider that they need reserves to face their import expenses. There is natural tendency for them to hold as reserves the same currencies that they use in trading with the rest of the world. This establishes another link from vehicle currency to official currency.

2.1.4. Summary. We have encountered two main reasons for a currency to be used as a vehicle for international transactions: low cost and official use. Yet, these two factors too need to be explained. This is left for Section 2.3 below.

2.2. Store of value and portfolio diversification

The analysis so far concerns currencies defined as cash, i.e. liabilities of the central banks. As a store of value, however, what matters really are not holdings of cash but holdings of interest-yielding assets. Some of these assets are issued by the public sector (Treasury bills and bonds) but also by the private sector. In fact, this is where the big numbers are.

2.2.1. Country size. Looking first at internationally held bonds (issued by public and private borrowers as well as by international organizations), estimates by the BIS for end 1996 report a total of about \$3200 billion. Table 6 shows that some \$1200 billion was denominated in dollars, \$520 billion in yen and \$350 billion in DM. These numbers could just reflect the size of public debts in the largest countries. Table 6 relates the two measures and partly confirms this interpretation: internationally held bonds in the domestic currency represent about 25% of the US and German public debts. There are indications (Bénassy-Quéré and Deusy-Fournier, 1995) that a significant share of internationally held dollar and DM bonds are public debt while, in the case of the yen, most of the foreign-held bonds are private issues.

Table 6

Does country size matter? Figure 2 relates two measures of currency internationalization to GDPs. The first measure is the value of international loans (loans from a country's resident to a resident of another country) by currency of denomination. The BIS reports for end 1996 international loans amounting to \$7,600 billion, with \$3,260 billion denominated in dollars,

\$1,150 billion in DM and \$ 875 in yen. The second measure is the currency denomination of cross-border bank holdings. The Swiss franc clearly plays a special role, but it has considerably declined since the liberalization of capital flows in Europe in the mid-eighties. The figure shows again that the dollar and the mark rank about equally, ahead of France, Japan and the UK.

Figure 2

These numbers conceal a well-known result from the international finance literature: there is surprisingly little portfolio diversification across borders.⁴ The phenomenon of "home country bias" concerns the two definition of "foreign assets": individuals and financial institutions alike tend to hold mostly assets issued by fellow residents, and they also tend to hold assets mostly denominated in their home currency. The many explanations offered to explain this phenomenon go far beyond the brief of the present paper. The three main ones are: 1) a preference for domestically produced goods; 2) information asymmetries, the fact that it is easier to know about the credit-worthiness of resident than foreign borrowers; 3) regulations, ranging from capital controls to restrictions on pension fund portfolios. Thus, to become an international store of value, a currency must climb a steep hill. It is unlikely that the world will support more than one, maybe two or three genuine world currencies.

2.2.2. Market Effects. Empirical work suggests that, beyond size, stability in terms of inflation and exchange rates affects the use of a currency in international portfolios. Most important, maybe, is the existence of wide and deep financial markets on which assets can be traded and currencies exchanged.

⁴ See Solnik (1974), Dumas (1994), Tesar and Weber (1992).

Yet, market location does not determine the influence of currencies as can be seen from Table 7. London is by far the largest foreign exchange market but sterling plays a relatively minor role. On the other side, the DM is the second most traded currency while Frankfurt is a rather small market. Developments in financial market technologies increasingly allow for location to matter less. This concerns the origin of assets: stocks of a given company can be simultaneously traded on exchanges worldwide, whether the stocks themselves or derivatives. Thus the size of the country, a rough measure of the volume of stocks issued in this country, matters little, and will matter less. The same is true regarding the currency. As illustrated in Table 7, London still maintains its two century-old supremacy as financial center of the world (this applies to the foreign exchange market, not to the stock exchange), but sterling has long lost its status of world currency. It has lost it, we have seen, partly because of policy mistakes: deflation policies in the twenties, inflationary policies in the fifties and sixties. Conversely, the DM has emerged as the prime European currency first, and as a major world player despite a fairly repressed financial market. Its strength is stability: guaranteed low inflation and a long-run tendency to appreciate.

Table 7

2.2.3. Summary. This section leaves us some more clues. Size is a necessary condition for a currency to achieve world class status. Size matters because there is not enough portfolio diversification. Both issuers of liabilities and holders of assets prefer the home currency. A favorable environment for financial markets is neither sufficient (*viz.* sterling) nor necessary (*viz.* the DM) for internationalization. Stability-oriented policies are a necessary condition: the DM has emerged as a serious contender as the dollar declined following two decades of lax policies in the US.

2.3. Synergies and inertia

The many clues accumulated so far still do not add up to a complete interpretation. The true story seems to be dynamic: an already widely used currency accumulates the characteristics that make it even more attractive internationally. Put differently, some thing must trigger a virtuous cycle which strengthens a currency's appeal. This interpretation has long been identified and recently more firmly established (Hartmann, 1996a). It links market size and transaction costs.

Section 2.1 has argued that for a currency to be widely used, transaction costs must be low. But what makes transaction costs low? Mostly, size. It is easy to see, then, that if a currency benefits from a large market (exchange market, bond market, stock exchange) with low transaction costs, it will attract traders and investors from elsewhere. The markets grow and transaction costs further decline, which attracts more business. Further synergies come into play. The vehicle currency function leads to large exchange markets where costs are low and encourage using the currency as a vehicle for triangular operations. This interpretation carries a number of important implications.

First, history matters. A currency that has somehow managed to lift itself to world rank has a good chance of staying there, at least for a while. This obviously fit well the case of sterling. Conversely, a currency which might claim world status may be unable to challenge the incumbent. This could apply to the euro.

Second, and a consequence, specific events may be needed to jump-start a change of guard. The two world wars did it for the dollar.

Third, size is even more important than initially noted. To be international, a currency must start from a large home base where transaction costs decline sufficiently for the currency to start moving up the world ladder. The DM has gone quite far due to its intrinsic quality, but it could have not gone much further had EMU not happened. The same applies for the yen. One can of course start wondering about the Chinese yuan or the Indian ruppiah.

Fourth, low and declining costs are a necessary condition. Competition responds to razor-thin differences. Financial market costs partly depend on the uncertainty that underpins financial products. A stable economic and political environment is needed to achieve that extra cost reduction which makes a huge difference.

Fifth, the authorities have a role to play, if they wish. They affect costs through regulation. Regulation matters because, in principle, it reduces uncertainty, but it is costly. The challenge is to find the proper balance between a regulation which is so light that it fails to limit risk and a regulation that becomes too heavy and costly.

Sixth, the authorities also affect the size of markets as they are participants themselves. This applies to just buying and selling for their own needs, but also to the exchange rate regime. More stability may give the currency a competitive hedge, but misguided efforts at defending an exchange rate parity may backfire.

Finally, we are looking at a very slow process. The virtuous cycle of declining costs and growing market size is unlikely to unfold fast. The time scale is measured in decades, not in

months. Yet, because of its inherent inertia, evolution is likely to take the form of leaps, not smooth shifts, a reminder of the Darwinian evolutionary process.

3. The Euro's prospects

We now apply the previous conclusions to investigate the central question: what international role for the euro? We start by looking at Europe's size and find that indeed the euro has a fighting chance. We next look at the stability of the currency and conclude that this is where the euro's main comparative advantage may lie. We then discuss the issue of transaction costs and financial market structure, coming up with a somber assessment. Finally, we consider briefly the euro's potential role as the world's underground currency.

3.1. Size and trade

Europe is big and rather closed, much as the US. Table 8 makes that point. The two first columns present the economic size as measured by GDP in 1991. The first column uses GDPs converted into dollar at the actual exchange rate. The second column corrects for differences in cost of living, using purchasing power parity (PPP)-adjusted exchange rates. On the second measure the European Union and the US each represent about 22% of world GDP. This is big.

The third column shows European exports as a percentage of world exports in 1992. Europe is often described as very open because so far we have looked at intra-European exports of each member countries: on that count, European exports represent 43.2% of world exports.

However in EMU intra-European exports will become intra-euro area transactions, much like trade between Texas and Minnesota. When the transactions are netted out we are left with a significantly lower share of 16.9%.⁵ This is larger than the US share, but not much larger.

Since exports tend to be invoiced in the exporter's currency, the euro will have an advantage over the dollar, but not a significant one.

Table 8

An interesting back-of-the-envelope calculation performed by Hartmann (1996b) assumes that trade patterns and invoicing practices remain unchanged. Using 1992 as a benchmark, he finds that the share of world trade invoicing in dollar will grow from 47.6% to 59.4%. This corresponds to the "elimination" of about 26% of world trade when intra-European trade becomes internal transactions. The share of the euro is 25.2%. These are just indicative numbers, of course, based on specific assumptions. Three corrections are in order.

⁵ For this calculation intra-European exports are not netted out of world exports.

First, not all EU-15 need participate in EMU, at least early on. The UK, Sweden, Denmark, Greece and possibly Italy and Spain may join later. In that case the exports of the euro-area will be larger, of the order 20%.⁶ Paradoxically, therefore, the narrower the initial group of EMU members the larger will be the share of euro-area exports. This advantage should not be overblown, however. It has been noted already that the emergence of a vehicle currency is a very slow process. It is likely that, long before the euro has displaced the dollar, EMU will have expanded to include not only all current 15 EU members, but probably some more countries in the East or the South.

Second, this is a static view. Some areas of the world grow faster than others and such unequal development may affect trade patterns over the next decade or two. In particular, Asia is the growth market of the world, one where Europe is often seen at a comparative disadvantage relative to the US and Japan. This is not quite correct. Between 1980 and 1992, the US share of OECD exports to Asia has declined (from 34.7% to 29.3%), Japan's share has risen slightly from (26.5% to 29.6%), while it is Europe that has most progressed (from 20.6% to 24.6%).⁷ That trend may not continue but, at least, the Asian growth miracle does not require that the previous conclusion be qualified.

⁶ EU exports to the UK, Denmark, Sweden and Greece represent some 10% of total EU15 exports. This figure increases to 15% when Italy is added.

⁷ Europe here corresponds to the 12 EU countries before Austria, Finland and Sweden joined in.

Third, Eastern Europe and possibly the former Soviet Union, are likely to undergo many years of relatively fast growth. This is euro's turf. Already nine countries⁸ have tied, officially or not, their currencies to the DM or to baskets where the DM or the ECU play a significant role.

3.2. Stability and strength

3.2.1. Principles. Stability is seen as a necessary condition for a currency to acquire an international role. What does stability mean exactly? Going back once again to Table 1, it is clear that two characteristics matter: for the unit of account function the amount that one unit of the currency can buy must remain stable, i.e. inflation must be low and predictable. For the medium of exchange and store of value functions, a world currency is used as temporary abode. It may last a few seconds as the vehicle currency is used for exchange between third currencies, but it may last longer as money is stacked away for honest or dishonest reasons. In that case, it matters that the value of the currency not be expected to be eroded. Holders want to know that whenever they sell the world currency to go into a currency of their choice, they will not have to suffer a capital loss. The currency must be "strong", meaning that it is expected to secularly appreciate and not to undergo too important depreciations, even if temporary. Thus necessary conditions are low and predictable inflation as well as an exchange rate tendentially appreciating and rarely depreciating.

Finance theory would add another consideration. Capital asset pricing theories emphasize that an asset is desirable either because it provides high returns or because the returns are not risky. An international currency supports non interest-bearing cash as well as interest-bearing assets.

⁸ Bulgaria, the Czech Republic, Estonia, Hungary, Lithuania, Poland, Slovakia, and Slovenia.

In the former case, inflation means a negative return, so the lower inflation the more attractive the currency. In the latter case, the low interest rates which usually accompany low inflation may seem as a hindrance. In fact these low interest rates due to low inflation become a benchmark against which asset returns in more inflation-prone countries are measured. Active asset managers will often leave the low interest currency to take advantage of better yields elsewhere, but they will always stay on alert and remain ready to return to the safety of low returns. This has been the case for a long time; recently again assets invested in Mexico and the rest of Latin America were suddenly converted back into dollars in 1994-95, and yet again from Thailand and many Asian countries in 1997. Low interest therefore do not prevent a currency from being used as a store of value, a sort of base form which front-line attacks can be carried out. As for risk, it is measured by the degree of correlation with the world portfolio: *ceteris paribus* “contrarian” assets are more desirable. A true world currency, though, is bound to weigh heavily in the world portfolio, so that it is a bad candidate for low risk in the finance theoretical sense. Simply put, one cannot be the benchmark and sit on the fence.

The twin characteristics of low inflation and strong currency are related, and ultimately derive from monetary policy. In addition, low inflation empirically means stable inflation. Lower inflation than in other countries typically translates into a long-run trend of appreciation even if shorter run depreciations cannot be ruled out. The source of price stability and exchange rate strength is monetary policy. A central bank that squarely focuses on a price or inflation target⁹ and is ready to tolerate output and employment fluctuations to achieve its target, is bound to deliver what it seeks. In addition the central bank acquires a reputation which affects the

⁹ Recent work by Fischer (1996) and Svensson (1996) considers the distinction between a price level target and an inflation (rate of growth of the price level) target.

behavior of firms as they set prices for their products, workers and their trade unions as they negotiate over wages, and market traders as they operate on foreign exchange markets.

3.2.2. The European Central Bank: average weight vs. institutions. Can we guess what will the track record of the ECB? Two main views have been advanced, with radically different conclusions. The first view focuses on the governing body of the ECB, the Governing Council. The Council will include the governors of all member central banks (which will lose all independent monetary policy power) as well as the members of the Executive Board, i.e. the President and the vice-president and four appointed members. It is natural to wonder what will be the mix of opinions within this body.

According to Currie et al. (1990), each governor will tend to represent the particular views of her country. For example, German citizens are known to harbor a profound repulsion towards inflation and to be ready to suffer recessions and rising unemployment if that is what it takes to curb inflation. Conversely, Club Med citizens are presumed to be less allergic to inflation and willing to compromise to avoid a recession. In that view, the position of the ECB and the strength of the euro will depend on which countries are part of EMU. At the beginning, the ECB will be an untested authority and will have to establish its own reputation from scratch. The logical conclusion is that only a narrow EMU will stand a chance of producing a currency apt at inheriting the DM's emerging international status. Put differently, the ECB will be the average of its members, and the strength of the euro --and price stability in EMU-- will be the average strength of the currencies which are being replaced by the euro.

This "average weight" view carries considerable support among some central banks and on financial markets. Yet it is not based on solid principles. To start with, it ignores the

constitution of the ECB, a point to which we soon return. Next, it assumes that each governor will represent its public opinion. Governors of the national central banks will enjoy total independence from their authorities. The question therefore is the degree to which they will see it their mandate to represent within the Council views held by public opinions back home. Then there is the question of whether there really exist national preferences. It is unclear why, placed in the same conditions and with the same understanding of the economic mechanism, Italian citizens would be more tolerant towards inflation than German citizens. One possibility is that economic conditions differ, with different incentives. This is precisely what the convergence criteria were meant to homogenize.

The other possibility is that perceptions of the economic mechanism differ across countries, but then scientific humility requires us to admit that no one can say who is right.¹⁰ At least, it is interesting to note what revealed preferences show: according to the recent study by Clarida, Gali and Gertler (1997) the Bundesbank itself targets a combination of inflation and output. They further show that the behavior of the Bundesbank's approach does not differ significantly from that of the Federal Reserve Bank or of the Bank of Japan. This suggests that popular caricatures may be fun, but are seriously misleading. Finally, we need to consider the personal incentives that Governors will face when sitting in the Governing Council. Will their subsequent career depend upon catering to domestic interests or rather upon being influential within the Council? On one side, indeed they may plan to take on other official positions at home which would lead them to use their chair at the Governing Council to trumpet their attachment to the homeland. On the other side, the profession's most coveted job will be to become President of the ECB. This position is more likely to go to a team-player than to a

¹⁰ A very interesting review of existing macroeconomic models led by Bryant *et al.* (1993) reveals profound divergences.

maverick populist. It should also be noted that Governors will certainly be chosen in the future for their skills in becoming influential within the Governing Council, a profile which fit better conservative leanings than national champion zeal.

The second view emphasizes institutions. It notes the unambiguous mission laid out for the ECB in the Maastricht Treaty:

“The primary objective of the ESCB shall be to maintain price stability. Without prejudice to the objective of price stability, the ESCB shall support the general economic policies in the Community.”
art. 105(1).¹¹

The “institutions matter” view also observes that of the two governing bodies, the Executive Board will be in charge of day-to-day operations while the Governing Council will have a broader mission. Without denying that the Governing Council will have a say in setting policy, it is likely that only under exceptional circumstances the Council will be ready to disagree with the six-person Executive Board. This matters because the Executive Board members will not be employed by national central banks, providing them with some “distance” from national purviews.

¹¹ The treaty draws a formal distinction between the ECB and the European System of Central Banks (ESCB). The ESCB is composed of the ECB and national central banks. In fact, the ECB is where decisions will be taken:

“The ESCB shall be governed by the decision-making bodies of the ECB” (art. 8 of the Protocol laying down the statutes of the ESCB).

For this reason we mention ECB where, occasionally, the treaty refers to the ESCB.

Under the “institutions matter” interpretation, the ECB will be even more independent from political pressure than the Bundesbank. Its mandate being the same as the Bundesbank, the presumption is that the ECB will implement policies which will be at least as much geared to price stability as the Bundesbank’s. In addition, it is argued, the ECB will not start without reputation. Its constitution is clearly inspired from the Bundesbank’s, it will be located in Frankfurt, and its first President will undoubtedly bring with him a solid reputation of inflation-fighter.

Critics of the “institutions matter” view note that the formal independence of a central bank is limited by powerful if implicit democratic checks and balances. The Bundesbank always emphasizes that it can pursue tough policies only when it has the support of the German public opinion. The ECB will face a public opinion which can be seen as the average of the national public opinions, an observation which reinforces the “average weight” view. One answer is that, in contrast to national central banks which face one government and one (possibly diverse) public opinion, the ECB will face several governments and public opinions. These pressure groups are unlikely to agree, and especially to forge an alliance to oppose the ECB. Indeed, should the ECB pursue a policy perceived as too strict in some quarters, unless the policy is clearly misguided there will be other governments which will want to support the ECB. Put differently, public opinions will not average out but disagree and the ECB will find it easy to divide and conquer.

3.2.3. External value of the Euro. Low inflation implies a strong currency. Strong currency status, on the other side, does not ensure that the currency will not occasionally depreciate. Strong currencies are known to exhibit long lasting swings which are related to macroeconomic cycles and associated financial swings.

Monetary authorities are not completely powerless in front of these cycles. Much depends on how they carry out policy. More precisely, central banks contemplate a menu of intermediate targets: money growth, interest rates, the exchange rate or (expected) inflation. The choice of an intermediate target is a complex and much studied issue. Most central banks have moved to a fairly flexible approach, opportunistically using all intermediate targets. The creation of EMU is prompting a re-think, concerning in particular the question of what to do with the euro as surveyed in Giavazzi et al. (1997).

In particular, it is asked whether the euro will be more or less stable than the DM. As a major currency, the evolution of the euro will not depend solely on European conditions. The external value of the euro will be sized up against the dollar, possibly the yen too. But one can view the dollar-euro exchange rates as a measure of the external values of the dollar as much as of the euro. There is no absolute benchmark here. The proper question will therefore be: how will the main currencies of the world be managed once the euro is born? At present, there is no unanimous answer.

Benign neglect

It is often believed that volatility among the main currencies will increase because of benign neglect. Exchange rate fluctuations can be dampened by the monetary authorities. Exchange market interventions play a role in smoothing out short term fluctuations, but they lose their effectiveness over the longer run, say, from one month to three years. Over this longer horizon, the one that matters most for trade and non-speculative investment, to exert a dominating influence central banks must put a clear priority on the exchange rate target, at the expense of domestic targets. In a world dominated by three large and relatively closed currency blocks

(dollar, euro and yen) the main central banks will be quite reluctant to sacrifice domestic targets to the exchange rate target since the latter will exert limited effects on the economy. Such benign neglect has often been ascribed to the behavior of the US. Other more open countries, chiefly in Europe, have felt compelled to carry out interventions to bring some degree of stability to their dollar exchange rates. Equipped with the euro, Europe will resemble the US and could well indeed adopt a benign neglect approach to the external value of the euro. This would mean more volatility than the one exhibited by the DM.

Currency substitution

If the dollar and the euro share the role of world currency, they will become alternatives to millions of operators. This may lead to the phenomenon of currency substitution, often described, never seen so far.¹² When two currencies are (perfect) substitute, demand for the sum of the two is well defined, but the breakdown into one or the other is pretty much arbitrary and therefore quite volatile. International currency operators will each tend to prefer using just one currency, but will not care too much which one as long as it performs the same services. Being indifferent, they will be willing to jump ship whenever the breeze tells them to. The proponents of the currency substitution view assert that the result will be unstable demand for the world currencies which will translate into high exchange rate volatility. Indeed, the only way to limit instability would be for supply to promptly respond to demand. Given the uncertainty that is bound to surround these shifts it is highly unlikely that the monetary authorities will stand ready to accommodate such whims.

More stability?

¹² The standard references to the literature on currency substitution are xx, Giovannini and Turtleboom(1991).

Other arguments suggest less volatility. To start with, exchange rates are buffeted by various shocks, some of which are home-made. EMU being large may well suffer from less macroeconomic shocks as the law of large numbers suggests that local (i.e. national or regional) shocks will have a tendency to offset each other. Second, measuring openness as percentage points of GDP may hide the qualitative nature of trade links. Europe will have a number of trade partners that are close neighbors, in contrast with the US which mostly trade with distant partners. This may work against benign neglect. Finally, the US could largely ignore the dollar in part because other monetary authorities were “minding the store”. Either through exchange market intervention or by adapting their monetary policies, central banks in Europe and Japan have shown concern for the dollar value of their currencies. In a bipolar world with two large currencies, the situation is bound to change. Large fluctuations in the euro will sizably affect the value of the dollar. Benign neglect would lead to transatlantic conflicts, and cannot therefore be benign.

Assessment

Given the prospective nature of the question, there is no way of deciding which of these arguments will carry more weight. According to the evidence provided by Martin (1997) there exists a hump-shape relationship between country size and exchange rate volatility. Very small countries tend to be open and thus are very sensitive to exchange rate movements; their monetary authorities actively stabilize the exchange rate, which they view as a more important target than purely nominal variables. At the other end of the spectrum, large countries are too closed to use the exchange rate as a policy tool. This evidence is too preliminary to be taken at face value, but it suggests that the euro could be less volatile vis a vis the dollar than current European currencies.

3.3. Transaction costs and financial markets

Of all the characteristics of an international currency, the existence of wide and deep markets with low transaction costs seems to be the most crucial. Will the existence of the euro provoke the emergence of a market where size and competition are combined to drive down transactions costs below those found on dollar markets? The answer depends essentially on the effects that the euro will have on European banks and financial markets. This is an issue beyond the scope of the present paper. Consequently, we simply offer here a few remarks.

It is generally expected that the euro will trigger a wave of profound changes in Europe. The long-run result should indeed be highly competitive transaction costs. Under that scenario, the euro has a serious chance of challenging the dollar as a world currency. This concerns first the store of value function, but can spread to the other private and public functions as well. Much will depend on direct costs but also on indirect costs such as taxes, regulations and risk. The authorities will have a crucial role to play here. In Section 4 we consider the question whether they should take steps to favor the adoption of the euro as a world currency.

The transition to highly efficient markets may be difficult, however. To start with, banks are not everywhere competitive. A shake-up may be desirable in the long run, but fairly devastating in the shorter run. Similarly, there might not be room for as many financial centers as we currently have. Hopefully the evolution can take the form of a soft landing, but that is not guaranteed. This may have an impact on the international future of the euro.

As noted in Section 2.3.above, the status of a currency is history-dependent. The emergence of a world currency requires a triggering factor. It may be an adverse evolution of the reigning

currency, or it may be a favorable shock on the incumbent. The well publicized and highly dramatized birth of the euro can play the role of favorable shock. Certainly markets are well aware of the impending changes and ready to jump on the band-wagon should it get rolling. If as the euro starts its ascent, a series of serious financial and/or banking crises occur, the band-wagon will turn into a snail retreating inside its shell. Much of the initial favorable effect will have been lost. Even if banks and financial markets eventually emerge considerably strengthened, the initial kick will have been wasted and, pending further major shocks (always possible) the euro will have to climb the ladder one step at a time. As matters go in this area, this could mean several decades.

3.4. A shadowy money?

So far it has implicitly been assumed that cash matters for medium of exchange (transaction and official intervention) purposes while interest-yielding assets matter for the store of value function. Indeed, cash is a very poor asset. Yet, cash is used as a store of value and, in fact, increasingly so. It is the store of value for criminal activities, including tax evasion.

By definition, little is known of the use of cash in the underworld, and on currency holdings in general. Rogoff (1998) presents estimates from a number of studies mainly carried out by monetary authorities. He concludes that the main currencies used in cash form are the dollar (\$250 billion held abroad), the yen (\$80 billion held abroad), the DM (\$50 billion) and the Swiss Franc (\$12 billion).¹³ Table 9 shows that this represents a very sizable proportion of these currencies supply. For the other currencies, the amounts held abroad seem much smaller.

¹³ In the case of the Swiss franc, Rogoff reports beliefs that much of it is held in cash in vaults in banks in Switzerland.

What will be the euro's share of this market? Starting from the DM's share, the euro may be a serious competitor.¹⁴ Presumably, the characteristics that make a currency appealing for this particular function are similar to those that already surveyed. One characteristic is specific to underground demand, though. The availability of large denomination banknotes must be an advantage, for both storage and large "business" transactions.

The estimates reported in Table 9 show that large denomination notes are already, or are becoming, the most popular denomination. Indeed, as transaction technology (and street mugging) has rendered cash an increasingly less attractive vehicle for settling payments, including at the retail level, it may seem surprising to observe that currency holding is growing as fast as GDP throughout the OECD area. The fact that most of the growth in cash lies in large denomination notes suggests that an increasing share of currency is actually held in the underground, both at home or abroad (Rogoff puts the share at 70-80% in the OECD countries).

On this ground, the euro seems to be well poised. While the largest denomination available in dollar is \$100, it has been decided that the ECB will issue notes of euro100, 200 and 500. The euro 500 notes will be in the league of the DM and the Swiss franc, far above the dollar, but still lower than the Canadian \$1000 notes.

Table 9

¹⁴ One interesting question is how will foreign holders of DM and other European banknotes convert them into euros in 2002. Will receipts from tourism temporary swell? Will the authorities keep a watch?

There is a hitch, though. Those in the underground who currently hold European currencies will have to exchange them into euros in 2002. If the amounts are very large, as suggested by the above estimates, underground cash-holders will want to spread this operation over time for obvious reasons. To avoid being trapped in the limited period anticipated for the euro changeover, they will probably want to start selling their cash as soon as EMU is decided. The natural currencies to get into, at that stage when euro notes do not yet exist, will be the dollar and the Swiss franc. Will they then shift back to euros, or will the dollar have received a permanent advantage?

4. Pros and cons of a world currency

Having reviewed the potential for the euro to become a world currency, it is about time to ask whether this is a desirable outcome at all. At the superficial symbolic level, the answer is yes. As economist Mundell (1993) noted “great powers have great currencies.” While some people take pride in seeing the pictures of their national heroes on banknotes, this privilege will be denied to European citizens who will only see carefully de-identified architectural objects. So the euro will not be, per se, the symbol of Europe’s greatness. Of course, the knowledge that the euro is commonly used in remote corners of the planets might make up for this loss of identity. Yet, it is unlikely that national pride will be the main benefit of the single currency. Benefits and costs lie elsewhere.

4.1. Transaction costs

The main benefit from an international currency is that domestic residents enjoy savings on their transaction costs. At the more mundane level, travelling abroad is easier if your currency is widely recognized and accepted. Many payments can be made directly in the vehicle currency; when payments must be made in the local currency, exchange can be direct rather than triangular (through the vehicle currency). This is more comfort than significant cost reduction.

More economically significant is the fact that large transactions in both the foreign exchange and financial markets lead to low transaction costs and the certainty that any deal will be bilateral and not triangular. This direct saving also has an indirect effect on trade in goods and financial instruments. One way or another currency exchange costs affect the price of exports. Lower costs mean lower prices. Similarly financial asset transactions benefit from cost savings. If domestic financial institutions have a comparative advantage in dealing in the domestic currency, they stand to benefit from larger world market shares as the domestic market becomes in fact a significant share of the world market. In addition demand from a very large customer base is likely to be more stable than local demand, leading to lower operation cost which benefit both the financial institutions and their customers.

It is not known how significant this advantage may be. Casual observation is that it cannot be very large. Under proper circumstances, however, it may be of strategic importance. For example, to compete with Boeing, Airbus must sell in dollars while most of its costs are in European currencies. Fluctuations in the dollar translates in profit volatility, which in turn imposes financial costs which are not borne by Boeing. Airbus frequently complains about this effect.

Of course, there is some circularity in the argument. Having a vehicle currency lead to low transaction costs, but low transaction costs are a necessary condition for a currency to assume a world status. So which comes first? As noted above in Section 2.3, there is indeed a virtuous circle, and this is why the status of world currency is subject to considerable inertia.

4.2. Seigniorage

The most frequently quoted benefit is seigniorage. Since misconceptions are frequent in this area, it is worth clarifying what is seigniorage and what is not. Seigniorage accrues when currency (more precisely the money base) is produced at virtually zero cost by the monetary authorities. The private sector provides goods and services (including work by civil servants) in exchange for fresh currency: seigniorage is the value of these goods and services.

This is very different from money held in the form of bank accounts, by far the largest component of the commonly used monetary aggregates (M1, M2, M3, etc.). As the monetary authorities, commercial banks create this form of money “at zero cost”. To do so, however, they need to grant credit, which means attracting customers, taking a commercial risk and providing a range of banking services sometimes below cost. What banks earn on this activity is simply their profits. Crucially, in contrast with the central bank which enjoys a monopoly on the production of currency, the use of which is compulsory for some transactions, money created by banks is the object of competition so that customers get something in return, including interest payments on deposits.

It is also important to note that seigniorage accrues only on cash, because no interest is served. If interest is served at market rate, as is the case of Treasury bills, there is no seigniorage.

Unlike holders of greenbacks, foreign holders of bonds denominated in dollars, for example, get their market value's worth of interest income. This applies *inter alia* to foreign exchange reserves held around the world by central banks. Central banks almost never hold dollars in cash, or only hold trivial amounts of cash for every day's use. The bulk of foreign exchange reserves is held in dollars (Table 3), but this is not a source of seigniorage since most of these reserves are in US Treasury bills on which the US government pays interest. The only gain, maybe, is that the reserve function of the dollar sustains a higher demand for Treasury bills, and therefore lower interest costs, than would be the case otherwise.

Still, the rest of the world holds some \$250 billion worth of greenbacks. This looks like a very good deal for the US. It certainly is. It amounts to a present from the rest of the world to the US worth some 3.3% of US GDP. Yet, these numbers are deceptive because the stock of dollars held abroad has been accumulated over a very long period of time. Rather than a once-off present it is a tiny benefit that trickles down year in and year out. Numbers produced by Alogoskoufis and Portes (1993) and Rogoff (1998) suggest that the annual revenue from seigniorage for the US is worth some 0.2% of GDP.

4.3. Money demand instability

It is often feared that demand for an international currency may be volatile, or at least subject to unpredictable rapid shifts. US residents hold dollars because the dollar is the sole legal tender within the US. Everyday's transactions must be carried out using dollars. Russians and Bolivians hold dollars because they trust more this currency than their own. If, however, the Ruble or the Peso were to become suddenly reliable --not a far-fetched possibility-- Russians and Bolivians would have no reason to keep holding dollars. This example illustrates the deep

difference in the demand for dollars by US residents and by non-residents. Non-resident demand is *potentially* unstable.

This source of instability has long lead monetary authorities in Germany and Japan to discourage an international role for their currencies. They have done so by various means, including at some point (until the early eighties in Japan) restrictions on capital movements. What the Bundesbank fears is a rapid change of fortune, taking the form of large sales of the DM. Either this leads to a depreciation of the DM, with inflationary consequences, or it forces the Bundesbank to intervene and buy back DMs with the risk that foreign exchange reserves be depleted.

There is another, more subtle, risk. All over the world, commercial banks offer accounts, and sometimes loans too, in dollars to their customers. What happens if a major bank collapses, possibly followed by the whole banking system? It is usually understood that central banks stand ready to exercise the lender of last resort function: they prevent bank runs by guaranteeing that deposits will be honored. In effect they stand ready to create whatever amount of currency is needed to pay back anxious depositors. Because bank deposits exceed the money base by a factor of five or ten, the amount of cash that has to be injected in a crisis situation can be truly enormous, possibly larger than the existing stock of currency. The result might be a surge of inflation. As each central bank well understands that it lives under that threat, it faces the right incentives for careful bank regulation and oversight.

Bank regulators, however, only monitor national banks. Foreign banks which deal in dollars in a foreign country are beyond the jurisdiction of US institutions. If a bank fails, the local central bank may not have enough dollars to reimburse depositors. In that case the Federal Reserve

Bank may come under pressure to “do something”, which means to print currency. This implies that the Fed intervenes to guarantee a risk that is not monitored by any US agency. Incentives can be perverse.

4.4. Conclusion

Owning the world currency entails a few benefits and a few costs. Beyond political symbolism --a potent motivation-- the benefits are small. Seigniorage does not amount to very significant amounts. Transaction costs are likely to be lower, providing exporters and financial houses with some comparative advantage. However, the amounts involved are likely to be small. Costs too, are unlikely to be sizable. They mostly take the form of potential risks. The US-led rescue of Mexico in 1994-95 is one instance where dollar assets were involved, but this is a rare event. In balance, therefore, the balance of pros and cons is rather inconclusive, and the stakes limited anyway.

5. The international monetary system

Will the emergence of a second world currency change the operation of the international monetary system? Since 1945 we have been living in a world with one international currency and one economic superpower. The US supremacy may have declined, yet it has not been seriously challenged so far. Can the euro undermine the existing equilibrium. The size of EMU will be similar to that of the US, as will be its size and economic and financial structure. The main difference will be the lack of political unity in Europe. This difference is crucial.

This paper has argued that the euro will not become any time soon the dollar's *alter ego*, and is even less likely to replace it as the world currency. If, however, the euro were to become an international currency, a number of interesting issues emerge.

First comes the question of the stability of the dollar-euro exchange rate matters for the operation of the future international monetary system. The conclusion from Section 3.2.3 is there are as many good reasons to expect more exchange rate volatility as there are reasons to anticipate quite some stability. A key issue is the incentive of the national monetary authorities to give up some of their domestic objectives to seek exchange rate stability. *A priori*, we expect the incentive to be weak. This is where the international monetary system comes into play. Two oxen that pull the same cart need to remain in step. If both currencies are simultaneously used as vehicle for international trade and financial transactions, a high degree of volatility of their bilateral exchange rate could become a serious inconvenience. Pressure will build up on the Federal reserve and the ECB to do something about it.

What are the possibilities for cooperation? Current international institutions with relevant responsibilities include the IMF, OECD ministerial meetings and the G7. All these channels of communication play an important role in exchanging information and sharing views.

Undoubtedly the main official players (central bank and Treasury officials) know each other well and are able, when the need arise, to quickly work out a common approach. This has been the case when the dollar became massively overvalued in 1985 (the Plaza and Louvre agreements), when the Mexican peso collapsed in end-1994 or more recently when Asian currencies have come under attack. In their own cooperative efforts, the Europeans have been

less successful when they first failed to fully recognize the implications of German unification, and then let the EMS be dismantled bit by bit in 1992-93.¹⁵

These institutions are multilateral, however. Cooperation is a gentlemen's club affair, but one where there is a clear leader, the US. Willy-nilly (and here there is a gulf between British approbation and Gallic contrarian efforts) the rich countries turn to the US to broker arrangements. This reflects well the post-WWII status of the dollar. With the euro becoming a more equal partner, the situation might become more complicated. Analyzing the interwar period when the dollar was overtaking Sterling, Eichengreen (1989) argues that international monetary system works well when one country has hegemonic power than when more than one country share leadership. The idea is that, when managing world affairs, each leader country is tempted to look for outcomes which serve its own interests and to let the other leader shoulder the costly parts. In world monetary affairs too many cooks spoil the broth

If this diagnostic is correct, the international monetary system will enter a period of turbulence. In particular, existing institutions will become ill-adapted to a bipolar world. Things could even get more complicated if the yen were to emerge as yet another world currency. One solution that is most likely ruled out is a return to fixed exchange rates *à la* Bretton-Woods. The large and relatively closed blocks which are likely to dominate the international monetary system over the next decades have little interest in committing monetary policy to an external target. Nor would a return to gold be acceptable. Rather, the question will be whether some limits to flexibility should be put in place, in the form of (possibly soft) target zones.

¹⁵ Analyses of this period are, e.g. Eichengreen and Wyplosz (1993) and Buiters *et al.* (1998).

Questions will also arise concerning the IMF and the G7. There are talks, already, of a G3. The loser would be Canada. Anyway, it would have to wait until Italy and the UK both join EMU. Even so, if the yen remains a junior partner, there will be the need for bilateral links between the US and Europe. This could be politically difficult.

6. Conclusion

Thinking ahead what the monetary and financial world will look like with the euro leaves with few certainties, but a number of conclusions seem robust. They are summarized in this section.

The euro will not wash away the dollar over the next decade or two. It has taken decades for the dollar to assume its current dominating status and it does currently suffer from any major weakness. The euro will be born with many of the necessary attributes of a world currency, but it will face stiff competition and will have to climb the ladder one step at a time.

Yet, the euro will possess many of the characteristics which make a currency adopted worldwide for both transactions and savings: size of internal market, share of world trade, size of financial markets, low and steady inflation. Working against the euro will be the dollar domination in the fast growing countries of Asia and South-America.

The European authorities can play a role in promoting the Euro, mainly through the regulation of banks and other financial institutions. Their decisions regarding the exchange rate regime will also matter. More exchange rate stability will help, but misguided efforts at defending an exchange rate parity may backfire.

It is not clear that the ECB will champion the euro. Beyond glamour, there are a few benefits. Seigniorage does not amount to very significant amounts. Transaction costs are likely to be lower, providing exporters and financial houses with some comparative advantage. However, the amounts involved are small. Over the first few years, it is likely that the ECB will focus on internal stability and be, at least, unsupportive of a large external role for its currency.

Independently of the ECB's own objectives, there remains the question of whether the currency of a large entity tends to be more or less stable than the current currencies of medium sized countries. Smaller countries, being usually open, are sensitive to exchange rate movements and typically attempt to achieve some degree of stability. This argument suggests that the euro might follow the same kind of wide and long-lasting swings as those observed for the yen, sterling or the dollar.

Surprisingly maybe, the euro's main competitive advantage may lie in the use of cash, mostly in the underground currency. It will be issued in denominations much larger than the \$100 bills currently widely used for shady operations. The euro 500 notes will be in the league of the DM and the Swiss franc, far above the dollar, but still lower than the Canadian \$1000 notes.

When and if the international monetary system becomes more bipolar, it could well be more turbulent. Things could even get more complicated if the yen were to emerge as yet another world currency. A return to fixed exchange rates *à la* Bretton-Woods will be even more unlikely than now because neither Europe nor the US will wish to commit themselves to an exchange rate target. The most likely effort would consist in agreeing upon limits, possibly in the form of target zones.

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Table 1. Functions of an international currency

Function	Private use	Official use
medium of exchange	vehicle currency	intervention currency
unit of account	quotation currency	pegging currency
store of value	investment currency	reserve currency

Table 2. Exchange Rate Regimes

(Number of countries)

Regime		1975	June 1997
Fixed exchange rate			
pegged to	US dollar	46	21
	French franc	13	14
	Sterling	8	0
	Other	32	31
Limited flexibility		13	51
Freely floating		15	64
Total		127	181

Source: IMF

Table 3. Currency composition of foreign exchange reserves
(percent of total; all countries; end of year)

	1973	1987	1995
US dollar	84.5	80.3	56.4
Sterling	5.9	2.2	3.4
DM	6.7	13.4	13.7
French franc	1.2	0.8	1.8
Swiss franc	1.4	1.5	0.1
Yen	-	7.0	7.1
ECU	-	14.2	6.5
Others		3.4	9.7

Source: Alogoskoufis and Portes (1993); Masson and Turtelboom (1997).

Table 4. Trade invoicing

	% of world trade			% of national exports	
	1980	1987	1992	1980	1987
US dollar	56	48	48	97	92
DM	14	16	15	83	77
Yen	2	4	5	29	40
Sterling	7	6	6	76	62
French franc	6	7	6	61	55

Source: Benassy-Quéré (1996), based on EU Commission estimates

Table 5. Transaction costs in foreign exchange markets
(April 1992)

	Spread	Volume	Volatility
DM/dollar	4.56	87.9	0.31
FF/dollar	3.77	3.0	0.32
FF/DM	1.11	6.7	0.04
guilder/doll	3.65	1.1	0.03
guilder/DM	0.85	8.5	0.00

Source: Hartman (1996a)

Notes: Spread is measured in basis points

Volume is billion dollars, daily average

Volatility is measured in basis points

Table 6. International bonds
(billions of US\$)

Internationally held bonds denominated in:	Gross national public debt of:		Ratio (1)/(2)	
Dollar	1207	USA	4822	0.25
DM	315	Germany	1471	0.24
Yen	519	Japan	1641	0.14

Source: Artus (1997) and *European Economy* 62, 1996.

Table 7. Exchange markets, April 1995

Total average daily market turnover (US\$ billions)								
	London	New York	Tokyo	Singapore	H. Kong	Zurich	Frankfurt	Paris
April 1989	184	115	111	55	49	56	55	23
April 1995	465	244	161	105	90	87	76	58

Use of currency on one side of transaction (total = 200%)								
	Dollar	DM	Yen	Sterling	French franc	Swiss franc	ECU	Other EMS
April 1989	90	27	27	15	2	10	1	3
April 1995	83	37	24	10	8	7	2	13

Source: BIS (1996)

Table 8. The European Union: Size and Openness
(percent of the world)

	GDP at market prices	GDP at PPP	Exports at market prices
EU 15 (external trade)	30.1	22.0	16.9
EU 15 (internal trade)			26.3
USA	24.5	21.7	12.3
Japan	14.6	9.1	9.3
Germany	7.4	5.0	11.8

Source: Hartmann (1996b)

Table 9. Who holds the cash?
(currency held outside banks)

	USA		Germany		Japan		Switzerland	
	1980	1995	1980	1995	1980	1995	1980	1995
Currency ^a (% of GDP)	8.1	9.5	5.7	6.9	7.3	9.7	14.9	9.1
Currency held abroad (% of total)	40	70	-	20	-	25	-	50(?)
Large denomination ^b (% of currency)	40	60	25	45	85	85	60	60

Source: Rogoff (1998)

Notes: a) currency outside banks

b) Large denomination is: \$100 notes in the US; DM 200, 500 and 1000 notes in Germany; yen 10,000 notes in Japan; SFr 500 and 1000 in Switzerland.

Figure 1. Short-term interest rates

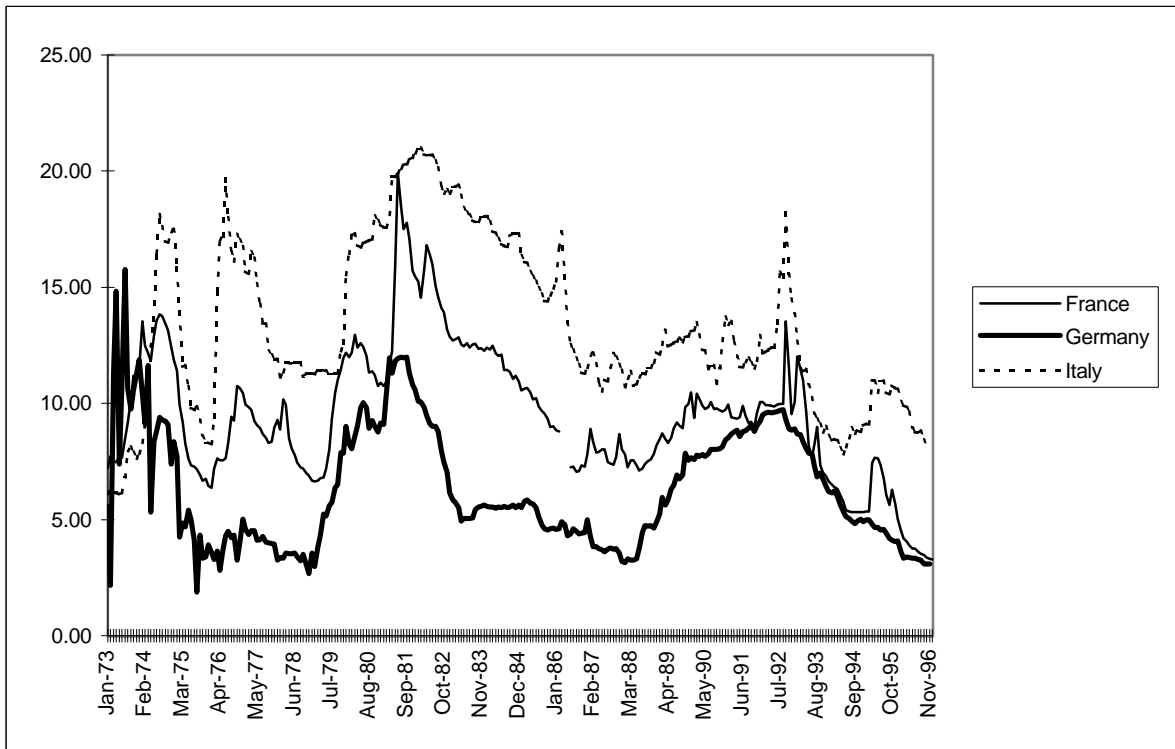
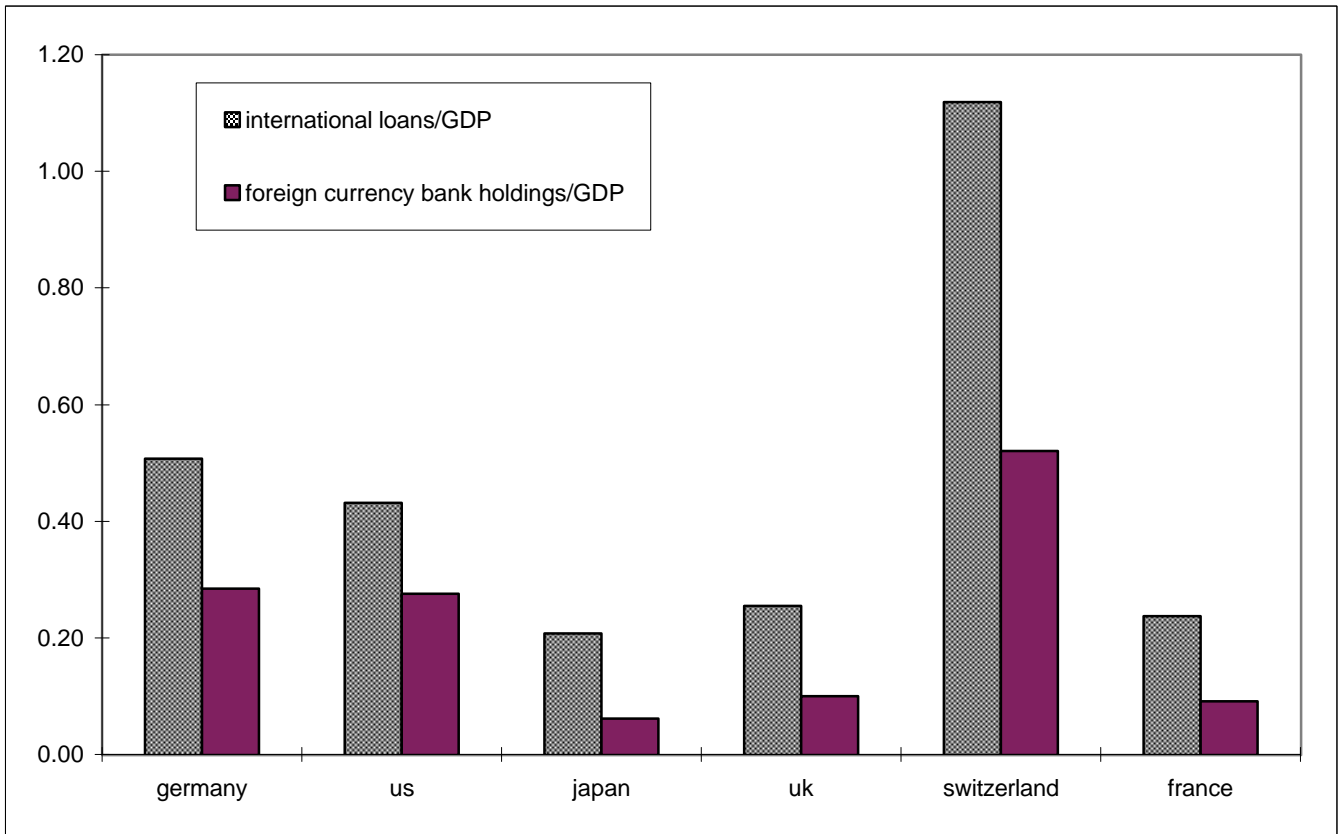


Figure 2. Currency internationalization compared to GDP



Source: Artus (1997), IMF, *European Economy* 62 (1996); and author's calculations.

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