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The International Role of the Euro

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EXECUTIVE SUMMARY

The creation of the euro will be a major change to the International Monetary System, for at least three reasons. Firstly, the euro will be the currency of a large economic zone and will acquire some of the fundamental attributes which characterise an international currency. Secondly, the monetary policy of EMU members will involve a major institutional shift which could affect the behaviour of the trans-Atlantic exchange rate. Finally, the emergence of the euro as an international currency, together with institutional changes and with the strong commitment of the European Central Bank (ECB) to maintain stable prices, should lead to a shift in the practice of international cooperation.

The internationalisation of the euro will be neither automatic, nor rapid

The decline of the dollar as an international currency is already taking place, leaving some room for the euro. However, the extent of this decline varies across the functions of the international currency.

It is generally admitted that an international currency is a means of payment, a store of value and a unit of account both for the private and for the public sectors, totalising six monetary functions. The use of a specific currency for these various functions is characterised by inertia. Inertia stems from transaction costs which fall for larger turnover, favouring the existing international currency. It also stems from various externalities which raise the incentive of using the most widely settled international currency. Finally, the low internationalisation of a currency for one function can slow down its internationalisation for other functions.

Inertia is less determinant for the store of value function than for other functions, which can explain why the decline of the international status of the dollar has been more pronounced for this function than for the vehicle and unit of account functions. However the slow decline for the latter functions may have impeded further decline for the store of value function.

EMU will constitute a huge shock in the sense that it will suddenly create a large zone with deep financial markets, no intra-zone exchange rate risk and an independent central bank. This shock may override inertia and favour the emergence of the euro as an international currency. Size is important because it determines the absolute amounts of private investment and of public deficit, and subsequently the development of financial markets. In addition, the trade partners of a large zone have an incentive to use the currency of that zone for various functions, especially as a unit of account and as a store of value. However, size by itself will not automatically entail the internationalisation of the euro.

Firstly, the potential role of the euro for trade invoicing will be related to the level of transaction costs when using it, and to its variability against other key currencies.

Secondly, a rush of international investors into the euro should not be taken for granted. Diversification out of the euro will also occur, because (i) European institutional investors presently display low currency diversification rates, (ii) it will no longer be possible to diversify currency risk through holding various European currencies

simultaneously, and (iii) international investors may be frightened in the short run by policy uncertainties and by possible large fluctuations of the euro/dollar exchange rate.

Thirdly, the efficiency of the integrated European financial market will be crucial for the emergence of the euro. This efficiency will rise because of (i) increased competition among financial intermediaries, (ii) the rising role of institutional investors, (iii) the currency uniformisation of European securities, and (iv) competition among euro asset issuers. However, EMU by itself will not provide as complete a financial market as the US financial market. For instance, the European Treasury bills market will not be as liquid as that of the US. Consequently, the euro will not emerge as a vehicle currency until the European financial markets catch up those of the US.

Finally, the monetary anchor function is often neglected when dealing with the competition for the international monetary status. However, this function has a strong impact on the use of the international currency for other functions, because defending a peg to a specific currency requires official interventions in that currency, and because it reduces the risk of exchange rate variations when using it. It is shown in this report that Central and Eastern European Countries will have a strong incentive to peg their currencies to the euro, which will favour the internationalisation of the European currency.

In brief, inertia will work against the internationalisation of the euro, but the euro will benefit from size effects and from its attractiveness as a monetary anchor. Confidence in the ECB, limited variations of the euro exchange rate in the short run and quick transformations of the European financial market would favour the emergence of the euro. All this shows that the internationalisation of the euro will be neither automatic, nor rapid.

The euro could be a strong currency

Many factors will determine the external value of the euro. However, a precise forecast of the euro/dollar exchange rate would be hazardous since (i) models of exchange rate determination are very bad at predictions, (ii) the euro does not exist yet, and it will not behave as a simple average of member currencies, (iii) there is no clear benchmark since the present ERM is already influenced by the perspective of EMU. With these limitations in mind, it is possible to give some insights of what could be the level and the variability of the euro/dollar exchange rate.

Because the euro-zone will likely accumulate current account surpluses, and despite the high level of unemployment in Europe, the euro could be a strong currency in the long run, in real as well as in nominal terms. In addition, most arguments lead to the conclusion that the euro/dollar exchange rate may over-shoot its long-run level, i.e. be stronger at the beginning of Stage III than in the long run. But knowledge of these arguments may itself modify the schedule of appreciation: if such overshooting is expected by the markets, then it will be smoother because investors will not be willing to hold a currency that will be expected to depreciate. Besides, they could buy European assets before January 1999 if they expect an appreciation shortly after Stage III is launched. European currencies would appreciate before the euro is created, and then the euro would depreciate towards its long run value.

At the beginning of Stage III, the euro/dollar exchange rate may prove quite unstable, due to portfolio reallocations, as well as various uncertainties which will favour high sensitivity to policy announcements and possible herd behaviour in financial markets.

In the long run, the trans-Atlantic exchange rate could also be more unstable, due to reciprocal benign neglect of the Fed and of the ECB with respect to the exchange rate, or to inefficient macroeconomic adjustments in a world with two international currencies. Alternatively, it could be more stable because less currencies in the world will be pegged to the dollar, or because the ECB will not react to shocks affecting two EMU members in opposite ways. The stochastic simulations prepared for this report show that EMU should *reduce* the variability of the trans-Atlantic exchange rate compared both to the ERM and to a general floating regime.

The euro will transform the practice of international policy coordination

Due to its size and to the removal of intra-European policy inefficiencies, Europeans may have reduced incentives to cooperate at the global level. Conversely, the emergence of the euro as a competitor for the dollar may raise the willingness of the United States to cooperate. However this is a theoretical, economic analysis of cooperation. It considers the EMU-bloc as a single actor. More practically, the future of international cooperation will depend on the way it is organised within EMU.

In fact, international cooperation will not become symmetric across the Atlantic since Europe will not be represented by a single institution or person in the various international, formal and informal organisations - G7, G10, IMF, OECD working parties and committees, or BIS. In addition, EMU statutes contain a bias towards flexible exchange rates. This is because it leaves large *de facto* power to the ECB which will be concerned by price stability rather than external competitiveness.

Exchange rate management and monetary policy co-ordination will almost certainly involve EMU, Japan and the United States in a trilateral scheme. Such a consolidation in a monetary G-3 would tend to dissociate monetary from fiscal discussions, which could raise two difficulties. Firstly, both the ECB and the Council (or the Euro Council) could legitimately be represented in the G-3, with possible conflicts between them. Secondly, coordination between monetary and fiscal policies could become even more difficult than before. Although fiscal policies are often held responsible for exchange rate misalignments, the G-3 would not be able to make commitments to fiscal adjustments, whereas the G-7 would provide coordination with countries outside the euro (the United Kingdom) but not with others inside the euro (the Netherlands).

However, it should be remembered that the finance G-7 never proved effective in co-ordinating fiscal, monetary and exchange rate policies. The difficulties listed above should not be over-stated: concomitant meetings could help to overcome the separation between the G-3 and the G-7, and international co-operation could be strengthened by an appropriate representation of smaller euro countries in the G-7 (towards a finance G-8). But the fact remains that national governments will be unwilling to commit their fiscal policy to an informal international agreement, once it is their only policy instrument left, while the ECB will be incapable of raising resources in case of a large payment crisis, like that of Asia in 1997.

THE INTERNATIONAL ROLE OF THE EURO^{*}

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INTRODUCTION

Since 1973, the International Monetary System (IMS) has been a floating exchange rate system in which the monetary authorities of the big countries have not systematically intervened when parities were under pressure. Such flexibility was expected to help countries to adjust to asymmetric shocks. Unfortunately, the world experience of floating is not convincing. External imbalances have grown despite huge exchange rate fluctuations. Concomitantly, uncertainty has grown. Even if its consequences on trade are ambiguous, we know that uncertainty and misalignments impede an optimal resource allocation all over the world. In this sense, the advantages brought by the liberalisation of capital movements in the eighties have partially been offset by the rise in uncertainty over exchange rates.

This is why, since the Plaza Agreement took place in 1985, the advanced countries - G5, G7- have tried to stabilise parities. But despite co-ordinated interventions, exchange rate fluctuations between the main currencies have remained high (Table 1).

Table 1: The variability of DEM/USD and yen/USD exchange rates

	Monthly variability (%)		Yearly variability (%)	
	DM/\$	Yen/\$	DM/\$	Yen/\$
1974-84	2.57	2.64	11.4	12.1
1985-87	3.18	3.04	16.74	13.55
1988-96	2.96	2.90	13.92	11.50

Standard deviations of one and twelve month variations of the logarithm of the monthly nominal exchange rates.

Source: authors' calculations based on IMF data.

Although the exchange rates between the main currencies have been fluctuating a lot since 1973, some regions have maintained relatively stable bilateral exchange rates, through regional co-operation agreements such as the Exchange Rate Mechanism in

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Europe, or through the use of a foreign currency as an anchor (as the peg to the dollar used by Asian countries).

The creation of the euro will be a major change to the International Monetary System, for at least three reasons. Firstly, the euro will be the currency of a large economic zone and will acquire some of the fundamental attributes which characterise an international currency. Secondly, the monetary policy of EMU members will involve a major institutional shift which could affect the behaviour of the trans-Atlantic exchange rate. Finally, the emergence of the euro as an international currency, together with institutional changes and with the strong commitment of the European Central Bank (ECB) to maintain stable prices, should lead to a shift in the practice of international cooperation.

These shifts may have three implications for the euro:

(a) *The euro may become an international currency*: today, the US dollar remains the major, international currency in the world, although its international status has declined since 1973, especially as a store of value. But the euro may become an important challenger. In Part I of this report, the present status of major currencies is set out in detail, and the main arguments for the emergence of the euro are discussed. Special focus is given to the efficiency of the European financial markets, and to the potential role of the euro as a monetary anchor.

(b) *The external value of the euro may differ from the average value of previous European currencies*: it is very difficult to predict the value of the euro since (i) the theories of exchange rate determination are quite unsuccessful in forecasting, and (ii) the euro does not exist yet, nor is the list of participants known. However, it is possible to provide some benchmarks about both the level and the variability of the euro, as well as about both the long term and the transition period. This is done in Part II of the report.

(c) *International policy co-ordination will also be affected*: international policy co-ordination has not been very successful in the past. The creation of EMU will require a reorganisation of co-operation which is not clearly specified in the Maastricht Treaty. But the incentives of each economic partner will also change. These questions are discussed in Part III.

PART I : THE EURO AS AN INTERNATIONAL CURRENCY

An international currency is one that is used by the residents of countries that are not the country of issue. International currencies as well as national currencies fulfill three functions: as means of payments, as unit of account and as store of value. According to Krugman (1991), these functions can be subdivided into six, when taking into account the use of the currency by private and public sectors.

Table 2: The functions of the international currency

Functions	Private sector	Public sector
Means of payments	Vehicle	Interventions
Unit of account	Denomination	Anchor
Store of value	Portfolio allocation	Official reserves

Source: Krugman (1991).

As a *means of payments*, an international currency is used by non-residents for trade and capital flows. Private non-residents use the international currency as a vehicle, i.e. as an intermediate value in transactions between two smaller currencies. Typically, transactions between Portugal and Thailand are split between escudo/dollar and dollar/baht transactions. The monetary authorities also use international currencies as means of payments, when they intervene in the foreign exchange market.

As a private *unit of account*, an international currency is used to invoice, i.e. to set the price of goods and of assets, as well as when issuing bonds or defining a bank loan. This function is different from the means of payments function, since prices may be set in one currency, and payments in another. National authorities also can use the international currency as a unit of account, when they peg their currency to it.

As a *store of value*, an international currency is used both by the private sector and by the public sector to maintain the value of savings. The motivation of private investors is an optimal trade-off between return and risk diversification. The motivation of the public sector differs across to the exchange rate regimes. It can resemble private holders optimisation, or be devoted to exchange rate management.

The private and public functions of a specific currency can experience unequal developments: one currency can be chosen as a vehicle for transactions and be seldom used for public interventions in the foreign exchange market. A large part of the trade of a country can be invoiced in a specific currency, while the latter is not chosen as a monetary anchor. Finally, official reserves will be denominated in a specific international currency only if monetary authorities want to stabilise the exchange rate against this currency, whatever the composition of private portfolios.

However, there are synergies between the various functions of the international currency. These synergies use various channels (Figure 1):

- Transaction costs (bid-ask spreads): because the market for the international vehicle is large and deep, transaction costs are low, so the monetary authorities will likely use the same currency for their interventions, and private investors will likely hold assets denominated in that currency.

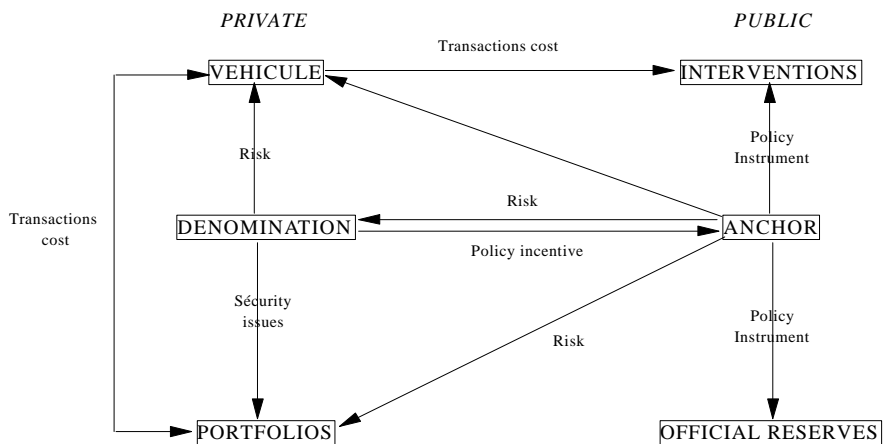
- Security issues: the denomination function determines the supply of securities; the availability of securities in a specific currency is necessary for the currency to expand both as a store of value and as a means of payments.

■ Policy incentives: the monetary authorities will have an incentive to peg their currency to an international currency if a large share of trade and capital flows are denominated in that currency (because this will protect the domestic economy from harmful exchange rate fluctuations).

■ Policy instrument: when an international currency is used as an anchor, it is necessary to hold official reserves and to intervene in the currency in order to defend the peg.

■ Risk: the incentives to denominate trade and capital flows in a specific international currency, as well as to hold assets in this currency either for the store of value purpose or for the vehicle purpose, increase if the currency is used as a monetary anchor. This is because the risk of exchange rate variations is lower, which makes hedging either useless or less costly (¹).

Figure 1: The main synergies between the international monetary functions



¹ Hartmann (1997a) shows that transaction costs are lower the smaller the exchange rate volatility. The role of the risk of exchange rate variations is enhanced by the fact that it cannot be fully hedged. For instance, an exporter cannot hedge the risk borne before a contract is signed. In the same way, there is no hedging for direct investment.

We first outline the present status of international currencies for the various functions mentioned (Section 1). Then, the conditions for an internationalisation of the euro are discussed (Section 2). Although it is a crucial determinant of the risk borne when using the international currency for all private functions, the anchor function is often neglected in the existing literature. Special focus is given to this function in this report, based on original estimations presented in Appendix.

1. THE INTERNATIONAL USE OF MAJOR CURRENCIES SINCE 1974

Since the breakdown of the Bretton Woods regime, the US dollar has no longer been the institutional key currency of the IMS. However, neither European integration nor the affirmation of Japan as a major economic and financial power have entailed the end of the domination of the dollar as an international currency. Both the DM and the yen still play a modest international role compared to their economic and political weights, although their roles vary across the monetary functions.

1.1. Official reserves and interventions: no strong diversification out of the dollar

Over the last twenty years, the share of the dollar in official reserves has been falling. From 76.1% of official foreign exchange reserves held by central banks around the world in 1973, the share of the dollar fell to 58.9% at end-1996 (IMF *Annual Report*, 1997 p. 159). During the same period, the share of the main European countries grew from less than 15% to almost 25%². However, the dollar's share in official reserves was twice as large as that of European currencies in 1996.

Although it has sharply declined, from 76.1% in 1973 and 93.3% in 1976 to 55.5% in 1996 (IMF *Annual Report*, 1997), the share of the dollar in official reserves of industrial countries is still higher than the share of any other single currency, and higher than it was ten years ago (54.8% in 1986). The decline in the dollar has benefited all other currencies, but mostly the DM whose share rose from 7.1% to 16.4% between 1973 and 1997. The share of the yen has risen from almost zero in 1973 to 5.9% of the total of identified official reserves in industrial countries, although it has been declining since 1991 (IMF *Annual Report*, 1997, p159).

The decline in the share of the dollar may partly be explained by the dollar's trend to depreciate. Composition effects are also important. Specifically, US official reserves increased from 0% of world reserves in 1973 to 3.7% in 1994. In addition, the share of other European countries in the official holdings of all the industrial countries rose as an effect of the creation of the European Monetary System. From 52% at the end of 1978, the share of European central banks, excluding the Bundesbank, abruptly increased to 62% at the end of 1979. Thus, the apparent decline of the dollar's share may not reveal a fundamental movement towards more diversified reserves in industrial countries.

As a whole, developing countries did not diversify their reserves out of the dollar. The yen's share increased at the expense of that of European currencies. This phenomenon can be explained by the fact that Asian reserves, which include more yen than other LDCs

² If ECUs issued against dollars are not assumed to be dollars.

reserves, increased more rapidly than total world reserves in the eighties. However, the increase in the yen's share was limited by the persistent use of the dollar as a nominal anchor. In the mid-1990s, some Asian countries started to diversify their official reserves. Indonesia increased the share of the yen in its reserves from 27% to 35% in 1994 and reduced the share of the dollar from 52% to 49%. China announced its willingness to divide its reserves into equal parts between the dollar, the mark and the yen, and recently in September 1997 announced its intention to use the euro. Taiwan reduced the dollar's share. However, the fall in Asian reserves during the 1997 currency crisis, and the subsequent relinquishing of dollar pegs may have lasting effects on the composition of LDCs reserves.

1.2. The dollar still prominent as a vehicle

In the foreign exchange markets, the dollar, in 1995, was used in more than 80% of two-way transactions, the DM in 37%, the French franc in 8%, other EMS currencies in 13%, the pound sterling in 10% and the yen in 24%.

Table 3: Foreign exchange turnover in April 1995 Daily averages for spot, outright forward and foreign exchange swap transactions
(Total: USD 1571.8 billion)

US dollar	83.6 %
yen	23.6 %
Deutsche mark	37.1 %
French franc	8.1 %
Pound Sterling	8.9 %
ECU	2.3 %
Other EMS	13.5 %
Other	22.9 %
Total	200 %

Source: BIS, *Central Bank Survey of Foreign Exchange and Derivatives Market Activity, 1996*, p. 8.

It is interesting to note that if, as expected, the share of the dollar (90%) was higher in 1989, so were the respective shares of the yen (27%) and of the sterling. The DM has gained 10% (27% in 1989), the French franc 6% (2% in 1989).

The overwhelming use of the USD in the foreign exchange market proves that the USD is used not only for transactions between US residents and non-residents, but also as an intermediate currency in transactions between third currencies. This is the strict definition of a vehicle, in the foreign exchange market.

Still, the Deutsche mark is used as a vehicle, but on a regional basis. For instance, a Danish kroner/French franc transaction usually goes through the Deutsche mark (Danmarks Nationalbank, 1992, quoted by Hartmann, 1997b).

1.3. Slow diversification of denominations

The dollar declined as a trade invoicing currency from 56% of total world trade in 1980 to 48% in 1992 (Table 4). This decline was partly due to composition effects (for instance, the OPEC countries' share of world exports fell from 16% in 1980 to 5% in 1992). An increasing part of world exports is invoiced in the importing country's currency.

Only Japan is invoicing a larger share of its exports in its own currency (40% in 1992 compared with 29% in 1980), which can be interpreted as a standardisation of its behaviour. Yet the dollar remains the only currency used as a vehicle, i.e. as an invoicing currency for trade between countries other than the issuing country. Even for intra-EU trade, the DM is hardly used as a vehicle (Ecu Institute, 1995).

Table 4: Denomination of international trade Shares of the major currencies in denominating international trade

	1980		1992	
	Share of each currency	Coeff. of internationalisation*	Share of each currency	Coeff. of internationalisation
US dollar	56	4.5	48	3.6
DM	14	1.4	16	1.4
Yen	2	0.3	5	0.6

* share of the currency in world exports/share of the issuing country in world exports.

Source: Ecu Institute (1995).

As far as the denomination of international bonds and notes is concerned, the dollar is still dominant in floating rate issues (70.3% in 1996), while its share is less than 40% for straight fixed rate issues. (Table 5). Yen and DM issues each only represent 7-8% for floating rate issues and 14-18% for fixed rate issues. Although the dollar's share was smaller for 1995 issues, announced issues displayed stabilisation in 1997.

Table 5: International Bonds and Notes Net Issues in 1996, by type and currency

By currency	USD billions	Percentages
Total issues	498.9	100%
US dollar	248	49.7%
Japanese Yen	76.8	15.7%
Deutsche Mark	54.1	10.8%

Floating rate

Total issues	164.7	100%
US dollar	115.	70.3%
Japanese Yen	13.1	7.9%
Deutsche Mark	12	7.3%

Straight fixed rate

Total issues	319.1	100%
US dollar	121	37.9%
Japanese Yen	56.7	17.9%
Deutsche Mark	43.7	13.8%

Source : BIS (1997).

1.4. The dollar remains the main de facto anchor outside Europe

The use of an international anchor is frequent in LDCs and in transition countries. In these countries, pegging the currency to a foreign one helps achieving disinflation despite the lack of reputation of the monetary authorities. It also reduces uncertainty for foreign investors. Finally, when some flexibility is introduced through a crawling peg, such a policy contributes to maintaining a stable real exchange rate, which is favourable both for promoting exports and for attracting foreign direct investment.

Exchange rate regimes are often classified according to the commitment of the monetary authorities, from no commitment (free float) to a complete commitment (currency board). Intermediate regimes include crawling pegs (the peg moves according to a pre-announced schedule), pegs with fluctuation bands (the exchange rate can fluctuate within some pre-defined margins) and a managed float (the exchange rate is stabilised, but without any specific commitment). Exchange rate regimes are also classified according to the anchor currency(ies) (single currency or basket).

The structure of exchange rate regimes has changed since 1978 (Table 6). Fewer currencies are pegged to the dollar and conversely more and more follow crawling pegs, or managed and independent floats. In 1978, almost one third of the countries had their currencies pegged to the US dollar, and only one fourth opted for independent or managed floats. By 1997 only one tenth of the currencies were pegged to the dollar and more than a half were officially floating.

Table 6 : Exchange rates regimes

Exchange rate regimes	1978	1983	1988	1994	1997
<i>Pegged to a currency</i>					
US dollar	43	34	39	25	21
French franc	14	13	14	14	14
Deutsche mark	0	0	0	1	2
Others	7	5	5	8	9
<i>Pegged to a basket of currencies</i>					
SDR	15	13	8	3	2
Other baskets	21	27	31	21	20
<i>Limited flexibility</i>					
European snake, European ERM	4	7	7	9	12
Other pegs with narrow bands	0	9	4	4	4
<i>Crawling pegs and managed floats</i>	7	29	27	36	47
Independently floating	27	9	17	61	51
Total	138	146	152	181	182

Source: IMF, *Exchange Rate Restrictions and Exchange Rate Arrangements*, various issues.

However, the distinction between a fixed peg and a managed float is not easy when the peg is frequently adjusted. At the same time, a fixed exchange rate is always adjustable, except under a currency board or in a monetary union. It is also possible to have a fixed, pre-announced central rate with discretionary fluctuation bands, as in France, where there is a discretionary, narrow band, inside the wide +/- 15% official fluctuation band.

Indeed, official exchange rate regimes do not always fit the practice of exchange rate management. In Asia, for instance, before the 1997 currency crises, most exchange rate regimes were managed floats, whereas currencies were *de facto* pegged to the USD (Bénassy-Quéré, 1996). More generally, the dollar has remained the main anchor currency outside Europe, which could explain why its weight in LDCs official reserves has not declined.

1.5. Private portfolios: a substantial decline of the dollar

International portfolios of the private, non-banking sector include securities and eurocurrency deposits. Banks also hold bonds and stocks in foreign currencies, together with international loans. The whole private portfolio has experienced a significant diversification out of the dollar since the early 1980s: aggregated assessments made by the Ecu Institute show that, the share of European currencies in the world private portfolio increased from 13.2% to 36.9% between 1981 and 1995, while the share of the yen rose from 2.2% to 11.5%, and the share of the dollar fell from 67.3% to 39.8%. The DM alone contributed 15.6% in 1995.

Table 7 : Share of world private portfolio

	end 1981	end 1992	end 1995
Dollar	67.3	46.0	39.8
European currencies	13.2	35.2	36.9
of which : DM	n.a.	14.7	15.6
Yen	2.2	6.9	11.5

Source: Ecu Institute (1995).

However, the decline of the dollar's share varies across the types of assets.

a. International bonds and notes

In September 1996, the outstanding amount of international debt securities denominated in EU14 currencies or ECUs was \$1,056.3 billion (BIS). The corresponding figures for dollar and yen securities were \$1,139 billion and \$520.8 billion respectively.

The total outstanding amount of international debt securities was \$349.1 billion for the United States, \$1406.1 billion for the EU countries and \$360.4 billion for Japan in September 1996. The ratio of currency shares over country shares (internationalisation coefficient) thus was 0.75 for the European Union, 1.45 for Japan and 3.26 for the US. Thus, European currencies remain under-represented compared to the very high share of European issuers in international bonds and notes markets.

However, the data suggest a substantial decline in the role of the dollar from 62% of the stock of bonds outstanding in 1985 to 39.6% at the end of 1996, with a sharp rise in the share of yen denominated bonds to 16.9% (BIS 1997, *International Banking and Financial Market Developments*, p.41).

b. Bank loans

The share of the dollar in the international cross-border positions of the banks in foreign currencies was still around 50% in March 1997, whether in assets or liabilities, in total positions or in positions *vis-à-vis* non-banks (*BIS Monthly Report*, August 1997, Table 4). This share is 10 points higher than the weight of the dollar in international bonds. Nevertheless, the share of the dollar was 75% in 1977 and 65% in 1985. Thus, there has been a significant decline of the role of the dollar as a store of value for banks (euro-loans) and for non-banks (euro-deposits).

Altogether, the currencies of the European Exchange Rate Mechanism (ERM) altogether represent 23-28% of the total cross border positions in foreign currencies and 29-32% of cross border positions *vis-à-vis* non-banks. This is much more than the shares of the yen (4-6%): the development of yen-denominated international assets seems to be limited to bonds and notes.

The rise of the yen in international bank loans (from almost 0% in 1977 to 6.1% in March 1997) can be explained by the decline, since the eighties, of the share of the dollar in developing country debt *vis-à-vis* the industrial countries' banks (Bénassy 1996). This movement has mainly benefited the yen in Latin America and over all in Asia where the yen's share was already 28% at the end of 1988. Despite this rise, it should be pointed out that the Japanese currency remains under-represented compared to the weight of Japanese banks in total cross-bordering asset positions: the yen represents only 9.4% of total asset positions in all currencies (international and domestic), while banks located in Japan totalise 13.2% of the total (*BIS Monthly Report*, tables 4A and 2A).

1.6. Summary

The decline in the dollar as an international currency is already taking place, leaving some room for the euro. However, this decline is partly due the ERM, which enlarges the regional role of the DM as a monetary anchor and as a reserve currency. In addition, the decline of the dollar is more pronounced for the private store of value function than for the public store of value, vehicle and unit of account functions (Table 8). This discrepancy can be explained by inertia which is less determinant for the store of value function than for other functions. EMU will constitute a huge shock in the sense that it will suddenly create a large zone with deep financial markets, no intra-zone exchange rate risk and an independent central bank. This shock may override inertia and favour the emergence of the euro as an international currency. However, the outcome of the balance between inertia and size effects is uncertain, at least in the short run. The factors of internationalisation are discussed in Section 2.

Table 8 : Summary statistics on the present internationalisation of the main currencies

Market share	USD	Yen	DM	Other Eur.*
Denomination of trade	47.6	4.8	15.3	18.2
Forex turnover (of 200%)	83.3	23.6	37.1	32.8
International bond issues	37.8	17.7	15.6	8.8
World portfolio	39.8	11.5	15.6	21.3
LDCs debt	50.0	18.1		16.1
Official reserves	56.4	7.1	13.7	12.1

* Exact composition depending on the topic, but always including £, FF, NGL, Ecu.

2. THE EURO AS AN INTERNATIONAL CURRENCY

In the past, the internationalisation of a currency usually started with its use as a means of payment for trade, before it was used as a store of value and finally as a unit of account (Bourguinat, 1992). It is believed that the first international currency was Alexander the Great's currency which was widely used in Asia Minor in the 3rd century b.c. Ever since, the vehicle function for trade has been the key determinant of the internationalisation process. In more recent years, the Bretton Woods system of fixed exchange rates against the US dollar was coupled with the Marshall plan which boosted the US as the major goods supplier of Europe.

Today, capital flows are forty times larger than trade flows³. Thus, the use of the international currency for capital flows seems determinant. The emergence of the euro will be slow, and not automatic. It will depend on various factors among which policies aiming at making European financial markets more efficient, and exchange rate policies of non-EMU European countries *vis-à-vis* the euro.

2.1. How strong is inertia ?

The pound sterling remained an international currency for half a century once the United Kingdom had lost its leading position as an economic superpower after World War I. As pointed out by Bourguinat (1992) and Kenen (1993) hysteresis characterises the internationalisation process. Clearly, the currency that is already used as an international currency benefits from a strong inertial bias. All agents – currency traders, lenders and borrowers, exporters and importers, private and public sectors - are more likely to use the currency that everyone else is using. This is because the international currency benefits from economies of scale and from network externalities.

2.1.1. Economies of scale

Economies of scale occur mainly because transaction costs are lower for larger volumes.

³ At the time of the Treaty of Maastricht, in 1992, the world exports amounted to \$10 billion a day and total daily spot trading to \$394 billion.

On foreign exchange markets, transaction costs can be measured as bid-ask spreads⁴. These costs are small for interbank transactions: for a \$10,000 transaction, the typical quoted cost is \$5, which means a 0.05% cost⁵: the equivalent of a big hamburger compared to the value of a regular car. However, bid-ask spreads reflect not only the liquidity of each market, but also the volatility of the exchange rates (they increase with volatility). As exchange rate volatility increases with the turnover, the impact of a larger turnover on transaction costs is ambiguous *a priori*. Nevertheless, Hartmann (1997a) shows that only surprises in the daily turnover are related to increased volatility. Because size effects due to EMU will not be surprising, it can be assessed that EMU should reduce bid-ask spreads.

Alogoskoufis *et al.* (1997) use Hartmann's estimates to compute bid-ask spreads with zero volatility (Table 9). The differences in transaction costs due to differences in liquidity are very small: the largest difference reported in Table 9 is only 55 cents on every \$10,000 transaction. However, for only the spot market, these transaction costs amount to at least \$160 million a day.

Table 9: Spot foreign exchange transaction costs
(\$ for a \$10,000 transaction, assuming zero volatility)

\$/DM	4.06
DM/Yen	4.37
\$/Yen	4.16
FF/\$	4.61
£/\$	4.27

Source: Alogoskoufis, Portes and Rey (1997)

According to Hartmann (1997), a 1% increase in the turnover reduces transaction costs by 0.03% approximately, for a given exchange rate volatility. From Section 1, it can be stated that rebalancing the role of the DM and of the USD in the forex market would entail a rise in the DM/yen turnover by 100% and a fall in the yen/USD turnover by 50% approximately. With such assumptions, the transaction cost for a \$10,000 transaction between the DM and the yen would decline from \$4.37 to \$4.24, whereas the transaction cost for a \$10,000 transaction between the yen and the USD would rise from \$4.16 to \$4.22. Hence, it would become about as cheap, for a Japanese investor, to use the DM or the USD as vehicles in the foreign exchange, i.e. as intermediate currencies when they buy third currencies (See Box 1). However, there is no reason why the DM/yen turnover should suddenly increase and the yen/USD turnover be reduced. Since transaction costs are lower for the transactions involving the dollar, there is a strong incentive to use the dollar for new transactions, which reinforces the cost advantage of the USD. Thus, economies of scale maintain the existing status of currencies as vehicles on the foreign exchange markets.

To a lesser extent, economies of scale on transaction costs also affect the store of value function: when two assets only differ in their associated transaction costs, a liquidity premium has to be paid to the investor to equalize the yield of the two investments. The liquidity premium is low if yields are certain, because the transaction cost is low compared

⁴ The bid-ask spread is the discrepancy between the purchasing price and the selling price.

⁵ Hartmann P. (1997). Effective transaction costs are lower than *quoted* bid-ask spreads. Their typical value is \$3 for a \$10,000 transaction.

to the expected return. However, as exchange rates are volatile, there is much uncertainty about the yields. Thus, international portfolio reallocations are frequent, and transaction costs add up. Alogoskoufis *et al.* (1997) estimate that the USD benefits from a liquidity discount of 25-50 basis points. It means that, other things equal, US interest rates are lower by 25-50 basis points, due to the fact that the dollar market is more liquid⁶. This liquidity discount is based on low transaction costs on the foreign exchange market and also on the domestic, financial market. The latter are important since the store of value function is concerned: when international investors buy and sell US financial assets against US money, they have to pay a transaction cost which can be measured by the bid-ask spread. Due to greater liquidity, this cost is lower for the US market than for any other market.

Table 10: Bid-ask spreads on 10-year government bonds (\$ for a \$10,000 transaction)

United States	1.56
Germany	4
Japan	3.5
United-Kingdom	3.12
France	4

Source: Alogoskoufis *et alii* (1997)

To sum up, persistent differences in transaction costs will likely slow down the internationalisation of the euro as a vehicle and as a store of value, which could in turn limit the internationalisation for other functions in the short run (see Section 2.2.3).

⁶ 10 basis points correspond to 0.1 percentage point.

Box 1: transaction costs

Take a Japanese investor who intends to buy assets denominated in European currencies (later in euros) or in dollars. For the sake of simplicity, we shall use the terms euros for both pre-EMU European currencies and the forthcoming single currency.

To buy euro-denominated assets, he can sell yens directly against euros or prefer indirect exchange through the dollar. In the first case, he will pay transaction costs on the exchange of yen against euros plus domestic euro transaction costs, on the stock exchange for instance. In the second case, he will pay exchange transaction costs when he buys dollars with yens, exchange transaction costs when he converts his dollars into euros, and domestic euro transaction costs. Let us call E_d the cost of direct transaction and E_i the cost of indirect transaction through the dollar. If $E_d > E_i$, the dollar is used as a vehicle as in the present situation (except for Deutsche-mark assets).

To buy dollar denominated assets, he can choose between direct and indirect exchange. In the first instance, the direct transaction, he will pay transaction costs on the exchange of yen against dollars, and the American domestic transaction costs (total cost: D_d). For the indirect transaction, he will pay transaction costs on the exchange of yen against euros, on the exchange of euros against dollars, and the American domestic transaction costs (total cost: D_i). If $D_i > D_d$, the euro is not used as a vehicle to buy dollars, and if $E_d > D_d$, the dollar is preferred as a store of value. Both features apply currently.

EMU may have the following implications:

$E_d < E_i$: the dollar is no longer a vehicle to euros,

$E_d = D_d$: the euro is as good as the dollar as a store of value,

$D_d < D_i$: then the euro is not a vehicle for buying dollars.

Finally, suppose the Japanese investor intends to buy forint-denominated assets.

He can choose direct exchange, and pay the yen/forint transaction costs plus the Hungarian domestic transaction costs (total cost: F_d). Or he can choose indirect exchange through euro (cost: FE_i) or dollar (FD_i).

If $F_d > FE_i > FD_i$, the dollar is used as a vehicle as it is now often the case.

Conversely, EMU may lead to $F_d > FD_i > FE_i$: the euro would then be used as a vehicle.

2.1.2. Network externalities

Money is a network good: the more people are using it, the larger the incentive to use it. Network externalities are different from economies of scale in the sense that they do not work through prices. On the contrary, externalities appear when a market (and thus, a price) is missing. The text-book example for network externalities is that of telephone: the connection price does not rise when more people are connected to the network, although the welfare of being connected increases. This raises the incentive to use the network that is already used extensively, even if it is not the best one.

The case of the international currency is similar: when using the international currency for its various functions, agents do not have to pay an additional price for its international status. Still, the utility is higher when using the international currency, because it reduces uncertainty:

- the financial market of the international currency offers a large range of instruments that better meet the needs for hedging (store of value function).

- the profit uncertainty is lower if the same currency is used for invoicing exports and imports, and external competitiveness is more stable if prices are set in the same currency as those of the competitors (private unit of account function);

- treasury management is easier if only one foreign currency is used. This argument applies to small firms which seldom hedge exchange rate risks (private means of payment function).

2.1.3. Synergies between the various functions

The synergies between the various functions of the international currency have been detailed in the introductory section. The use of the international currency for a specific function (i) reduces the cost and (ii) produces positive externalities to the other functions.

(i) *Reduced cost*: we have already underlined the synergy between the vehicle function and the store of value function. This is because both functions benefit from low transaction costs, and transaction costs are lower the deeper the market. There is also a synergy with the unit of account function, especially with the anchor function, because defending a peg requires official reserves and interventions with transaction costs. In addition, the use of a currency as a unit of account reduces the information costs when using it both as a means of payment and as a store of value, since it is no longer necessary to forecast exchange rate fluctuations.

(ii) *Cross function externalities*: the use of a currency as a unit of account reduces uncertainty when using it both as a means of payment and as a store of value, especially if the international currency is used as a monetary anchor. Conversely, monetary authorities have an incentive to peg their currency to the international anchor if the net foreign asset position and security issues are denominated in that currency, and if trade is largely invoiced in that anchor. Finally, holding official reserves in the international currency is more useful when the domestic currency is pegged to it.

Hence, a low internationalisation in one function may impede the further internationalisation in other functions. This may have happened to the DM, whose internationalisation could have been slowed down by the weakness of the vehicle function. It may also happen to the euro if size effects are less powerful for some functions than for others.

2.2. Although an advantage, size will not automatically trigger internationalisation

Historically, size and currency status have been correlated. First the pound sterling and then the dollar became dominant during the periods when the United Kingdom and the United States were the world's main economies and traders. Nowadays, the only significant international currencies are those of the world's three largest economies and traders: the United States, Germany, and Japan. However, the above analysis shows that the size of the financial markets will be determinant.

Table 11 : Various measures of size

USD billion	US	EU 15	EU 7 ⁽¹⁾	Germany
GDP (1996)	7575	8504	4732	2355
Merchandise exports in 1992 ⁽²⁾	448	616	n.a.	430
Market capitalisation (end 1995)	5655	3627	1529	577
Domestic debt securities (Sept. 1996) ⁽³⁾	11293	7561	4046	1891
International debt securities (Dec. 96) ⁽³⁾	435	1417	754	146

⁽¹⁾ Austria, Benelux, France, Germany and Ireland.

⁽²⁾ The EU15 figure excludes intra-EU trade.

⁽³⁾ Amounts outstanding

Sources: Funke and Kennedy (1997) and Hartmann (1996).

2.2.1. EMU GDP will compare with US GDP

Back-of-envelope estimates of portfolio reallocations made by Bergsten (1997) are based on the size of GDP. The GDP of the monetary union will range between 62 and 112% of US GDP, according to the number of countries involved in EMU, while German GDP is only 31% of that of the US.

GDP is important since the absolute amounts of private investment and of public deficit grow with GDP, leading to a parallel development of financial markets. In addition, a zone with a large GDP is an important trade partner for foreign countries, who have an incentive to use the currency of that zone for various functions, especially as a unit of account and as a store of value.

2.2.2. Large EMU exports will not necessarily entail an internationalisation of the euro

Excluding intra-European flows, the European Union 15 will remain the largest exporting zone in the world (Table 11). According to Grassman's law (Box 2), this should boost the euro as an international invoicing currency and means of payments.

However, the issue is not that simple. Friberg (1997) shows that Grassman's law no longer held for Sweden in 1993, and that invoicing in a third currency was not an uncommon practice.

Box 2: Grassman's law

S. Grassman studied the currency denomination of Swedish exports and imports in 1968, and found that exporters tended to invoice in their own currency: 2/3 of Swedish exports were invoiced in kronas but only 1/4 of Swedish imports, 12% of the exports were invoiced in dollars although only 8% were sold to the United States. Other empirical studies in the 1970s found the same pattern.

In fact, exporters have the choice between (i) pricing in their own currency, which entails certain profit rates and uncertain demand volumes, (ii) pricing in the importer's currency, which leads to certain demand volumes and uncertain profit rates, or (iii) pricing in a third currency, with uncertain profit rates and uncertain demand volumes. The outcome of this choice mainly depends on market structures.

■ *When price competition is tough*, i.e. when demand is reactive to small price variations (as in the energy and raw materials markets), exporters have little incentive to price in their own currency. This is because the world price is given. Thus, exchange rate variations must be fully compensated by domestic price variations. In such markets, pricing in a reduced number of currencies helps reducing information costs for both exporters and importers. Thus, pricing in a third currency is common practice. As forex transaction costs must be supported both by the exporters and by the importer, there is a strong incentive to use the dollar which benefits from low transaction costs. The potential use of the euro in such markets will depend on the transaction costs on the euro.

■ *When the products are differentiated*, small price variations (in the importer's currency) do not have dramatic effects on demand volumes. However, exchange rate variations are all but *small*. Goldberg and Knetter found that in the United States, since the 1970s, dollar prices of foreign products have not responded fully to exchange rates. A price response equal to one half the exchange rate change would be a good estimation. This muted price response (in the importer's currency) can be explained by price discrimination⁷ in a world of global firms. A second explanation is that menu costs lead to lagged price reactions to shocks⁸. A third explanation is that transferring the forex hedging cost from the exporter to the importer needs price compensation from the exporter, which leaves little incentive for the exporter to invoice in his own currency. This could explain why exports tended to be invoiced in the exporter's currency when the variability of exchange rates was low (before 1973), but no longer when it increased: exporters did not want to suffer from demand variability for a small benefit in terms of hedging costs.

⁷ Price discrimination means that the same product is sold at a different price in the various countries.

⁸ Menu costs are the costs which are supported when changing the price of the products. They cover the time spent when calculating the new price and the cost of publicising it (printing commercial documents, etc). Although small, these costs can explain why prices are not adjusted to optimal prices at any time (Akerlof and Yeelen, 1989).

The latter argument shows that the variability of exchange rates matters: those exporters from countries maintaining relatively stable exchange rates against the euro (ERM II countries, Central and Eastern European Countries and African countries) will surely have an incentive to invoice in euro, because this will remove all hedging costs. Friberg (1997) goes further, concluding that pricing in a third currency should be preferred if the variability of the third currency *vis-à-vis* that of the consumers is sufficiently low, relative to the variability of the exporter's currency *vis-à-vis* the consumers' currency. Hence, pricing in euro as a third currency will be chosen if the euro is more stable against the importer's currency than is the exporter's own currency against the that of the importer.

■ *To sum up*, the potential role of the euro for trade invoicing will be related to the level of transaction costs in euro for for goods that are little differentiated (like energy or raw materials), and to its variability against key currencies for differentiated goods (manufactured items). In any case, seeing that capital flows are forty times larger than trade flows, it is obvious that the key factor of the internationalisation of the euro will be the store-of-value and of vehicle functions. Portfolio allocation and domestic financial market's efficiency are pushed in the forefront.

2.2.3. A rush of international investors into the euro should not be taken for granted

In 1999, intra-European debts will become domestic, and international assets will have to be measured net of domestic holdings. Although the Group of Ten members of the EU produce about one third of the world GDP and have, net of their intra-EU trade, a similar share of international trade, the proportion of international assets denominated in European currencies (net of intra-European holdings) can be evaluated only at one-eighth of world GDP (MacCauley & White, 1997). In order to bring the European share of international assets to the level of the EU contribution to world GDP and trade, holdings in euro would have to rise by more than \$700 billion, an amount roughly equivalent to 12% of the outstanding domestic debt of the EU 7 and to 15% of GDP. Most evaluations estimate the portfolio reallocations in a range of \$500 billion to \$1 trillion (Bergsten, 1997), twice to three times the total amount of exchange reserves of the European Union countries at the time of the Maastricht Treaty. These huge figures assess the magnitude of the potential portfolio reallocation. But they do not guarantee that such a reallocation will take place.

a. There will be some diversification out of the euro

Firstly, there will be some diversification out of the euro, for two reasons.

(i) The present diversification of institutional portfolios is low in Europe. Although the EU matching rule (liabilities in a foreign currency must be 80% matched by assets in the same currency) will apply when diversifying outside the euro, this rule will not be binding at least in the short run: EU institutional investors will be able to reach Japanese or British diversification ratios without transgressing the matching rule.

Table 12: Diversification rates of institutional investors portfolios

%	Life insurance	Pension funds
United States	4.0	3.8
Japan	14.2	7.9
United-Kingdom	12.5	16.8
Canada	3.3	5.3
Germany	0.7	0.8
France	2.0	4.0

Source: Artus (1996)

The question is whether institutional investors will need to diversify outside the euro. It can be argued that they will have large opportunities to diversify within the euro, through holdings of private and public securities of various EMU countries, and that the EU matching rule will never be binding within the euro. However, currency diversification will no longer be possible within the EMU zone.

(ii) Currency diversification: when the intra-European exchange rates are definitely fixed, institutional investors of all countries will no longer be able to reduce the exchange rate risk of their portfolios by holding assets in various European currencies. Indeed, the standard portfolio choice model shows that, unless expected returns are higher for the euro than for average European currencies, private holdings in euros should be lower than private holdings in European currencies: risk diversification will entail a higher share of non-euros holdings. However, this argument already applies to the ERM core whose currencies are already very stable relative to each other. Thus, the diversification out of the euro should be limited (Bénassy, Italianer and Pisani-Ferry, 1994; Arias, 1997). It may be larger if monetary unification and the uniformisation of financial markets lead to higher correlations between asset prices and returns.

b. The behaviour of the ECB will be crucial in the short run

The amount of the reallocation will depend on the monetary policy of the European Central Bank, as well as on the confidence investors will have in future policy. The independence of the ECB will favour confidence; but uncertainties about future members or about fiscal cooperation may reduce this confidence. In addition, in the absence of price stability reputation, investors may take the nominal exchange rate of the euro as an indicator of monetary policy. Large fluctuations in the euro/dollar exchange rate may lead to scepticism *vis-à-vis* the euro. At present, this is not the market opinion: a survey reported by Artus⁹ showed that 490 out of 500 Asian investors want to diversify their holdings out of the dollar into the euro. However, the market opinions are volatile, and one can never exclude weak demand for euros.

c. Transaction costs will not automatically be reduced

⁹ Panel discussion, XIVèmes Journées Internationales d'Economie Monétaire et Bancaire, Orléans, June 1997.

A large portfolio shift will not necessarily imply the parallel development of turnover which depends more heavily on transaction costs, the latter relying on the size of the market (see Section 2.1.1).

Finally, currency traders, lenders and borrowers will not change their behaviour if European financial markets are not at least as efficient as American ones. This crucial point is studied below.

2.3. The efficiency of the financial market will be crucial for the emergence of the euro

The achievement of the full potential financial market benefits of EMU cannot be taken for granted, and in any case it will take time. The introduction of the euro is an opportunity to dismantle the barriers between the segmented European financial markets (bank deposits and loans market, securities, financial services, etc). The euro may enhance the impact of EU financial directives, increase transparency in credit evaluation, accelerate the integration of the European financial market and expand Europe's institutional investor base.

After many previous steps, the introduction of the euro is the most significant move towards monetary integration. In the area of financial and monetary integration, the EU Second Banking Directive, the Capital Adequacy, the Investment Services, and other financial directives have been implemented. But European financial markets still remain segmented. Full implementation of the EU Investment Services Directive (which creates a single passport for securities firms, portfolio managers and investment advisories) will enhance the impact of these structural changes.

a. Banking competition and securitisation of the financing is not yet completed

Restructuring through consolidation has largely occurred at the wholesale level in the European banking system, but at the retail level, Europe is overbanked. Cross-border competition will be enhanced. Operational efficiency as well. This will provide additional pressures for consolidation. On the other hand, national barriers still exist and inefficient retail banking systems might call for public support and delay adjustments.

Traditionally, European firms finance their activities mostly through indirect finance, bank loans amounting 54% of all outstanding financial assets in Europe, at the end of 1995. By contrast, in the United States, bank loans amount only 22% of total assets outstanding, because US firms rely more heavily on bond and equity financing. This divergence tends to be more noticeable as the quality of the credit diminishes: small- and medium-size enterprises almost never issue junk bonds and equities in Europe. However, the European market for corporate bonds is roughly 3/4 the size of the U.S. market, but the bulk of these bonds were issued by European financial institutions. Bonds account for a small share of the total liabilities of non-financial firms (less than 1% in Germany¹⁰). Again, in short term financing, European companies rely heavily on banks. By contrast, U.S. firms rely on short-term financing because they have access to a very liquid commercial paper market, which accounts for more than half of the world's outstanding commercial paper. Europe has already started moving (see, for instance, the French

¹⁰ Prati and Schinasi (1997).

banking law of 1984), but European corporate securities markets have remained relatively underdeveloped.

Driven by financial deregulation and disintermediation, European securities markets have become more liquid and integrated. Large sovereign debt issues have developed more efficient secondary bond markets. Concomitantly, economic stability and the convergence of macroeconomic policies have permitted greater capital mobility. As the links between national securities markets tighten, and bond spreads are reduced.

The introduction of the euro will likely foster further securitisation of European finance. Greater uniformity in market practice, more transparency in pricing will increase market integration. The elimination of currency risk, greater uniformity in market practices, the convergence of credit spreads should increase the depth and the liquidity of European securities markets. The design and implementation of monetary-policy operating procedures will be especially important, since EMU financial and monetary policies can be used to encourage or discourage the development of deep and liquid EMU-wide euro securities markets. The proposals of the Giovannini Report (DGII, 1997) aim at favouring financial liquidity through various harmonisation techniques.

Technological progress will enhance the impact of the introduction of the euro, because the location of trading, clearing and settlement will become less and less relevant. Whether technological progress leads to centralize activities in one or two locations, or whether it leads to the development of more locations (national markets), the securities and derivative markets will soon be fully integrated.

b. Small intra-EMU credit spreads may remain

Integration of the private security market in euros could proceed rapidly, at least for major firms. Some analysts say that institutional investors may switch from a country to a sectoral approach, privileging the largest European firms at the expense of the smallest, whatever the country¹¹. However, it is often argued that the government bond market in euros may remain fragmented. There will no longer be any sovereign issuer in EMU, since member countries will not control money creation and the Treaty prohibits the central bank bailing out governments. Ratings will deteriorate for the states showing the highest debt to GDP ratios, compared to the least indebted. Punishment for fiscal laxity may come from the financial markets through significant and persistent credit spreads.

On the other hand, the no-bail-out rule is often said not to be credible since it would be difficult to let an EMU member state go bankrupt. This alternative view is reinforced both by the management of the recent Asian crisis, and by the convergence of European long term interest rates (which already include the EMU regime), at least for the sovereign debt of Spain and Belgium denominated in DM (McCauley and White, 1997). In addition, credit risk will be reduced in Europe by the Growth and Stability Pact.

c. The international money market will likely favour US Treasury bills in the short run

¹¹ See *Financial Times*, January 2nd, 1998.

As far as liquidity is concerned, US Treasury bills will likely be preferred, at least in the short run. The US market operates 24 hours a day, anonymously, and any quantity can be traded. It is deep and liquid. In fact, US Treasury bills are very nearly interest-bearing money. The closest market is that of British pound Treasury bills. Paris *bons du Trésor* market is small, and Germany virtually does not use Treasury bills. After EMU is completed, all members' treasury bills will be denominated in euros, but will still be in national securities. They will bear the same currency risk, and the risk due to interest rate variations will be very similar due to the unified monetary policy. However, the various Treasury bills will not be perfect substitutes, because of fiscal disparities and because few countries will be able to provide a large range of financial products (in terms of maturities, indexation, etc).

On the other hand, there will be a harsh competition between member states' Treasuries to provide sophisticated bills to the markets. Such a competition is already underway. It could lead to a very rapid enlargement of European financial markets. In addition, if the risk of interest rate variation is perceived as equal across European countries, asset holders will be able to use the Treasury bills of any country to hedge a specific risk.

To sum up, the efficiency of the European financial market will rise because of (i) increased competition among financial intermediaries, (ii) the rising role of institutional investors, (iii) the currency uniformisation of European securities, and (iv) competition among euro asset issuers. However, EMU by itself will not provide a market for Treasury bills as liquid as that of US Treasury bills. This may slow down the emergence of the euro as a vehicle currency.

2.4. The euro will be attractive as an anchor currency

The public unit of account function is often neglected when dealing with the competition for international money status. However, this function has a strong impact on the use of the international currency in other functions, for two main reasons:

(i) Defending an international peg requires official reserves (stock) and official interventions (flow) in the foreign exchange market concerned. Thus, the anchor function boosts the public store of value and means of payments functions. Due to increased turnover, transaction costs decline, which gives more incentive to all agents to use the same currency for the two functions.

(ii) The risk and cost of using a specific foreign currency for the various functions is lower when it is used as a monetary anchor, i.e. when the domestic currency is pegged to the foreign one. This is because a stable exchange rate makes hedging either unnecessary or less costly, and because pricing in this international currency (instead of another one) leads to more stable demand and to more stable profits.

However, Asian or Latin American countries will unlikely peg their currencies to the euro alone, at least in the early phases of EMU. This is because the European Union is not their main partner, and because these countries have been used to US dollar peg in the past.

A natural expansion area for the euro would be Central and Eastern European countries (CEECs). In the past, however, these countries have generally not pegged their currencies to core-EMS currencies.

The choice of an international monetary anchor is generally explained by the theory of optimum currency areas (Mundell, 1961; McKinnon, 1963). According to this theory, two countries A and B have an interest in fixing their bilateral exchange rate if they face mostly symmetric shocks (i.e., shocks of the same type at the same time in the same direction), if their bilateral trade is important, and if output factors are mobile between the two countries. This theory can be used to assess whether the anchoring strategies of various countries are optimal. On the basis of cross-section estimations for 36 countries, we show that, the CEECs should have attributed a higher weight to the DM in their implicit basket peg over 1992-1995 (Appendix).

The theory of optimum currency areas assumes that monetary authorities aim at stabilising the output growth rate. However, the development strategies of emerging countries are based on exports and direct investment inflows. Their final target in terms of output growth is dominated by intermediate targets in terms of price competitiveness and indebtedness capacities. This can modify the optimum currency area diagnostic. For instance, the implicit dollar peg of most Asian countries before 1997 crisis cannot be explained by the optimum currency area theory. However, this strategy was a typical non-cooperative strategy for them, given the distribution of their foreign trade (about 25% with the US and another 25% with Asian partners other than Japan)¹². Taking into account the external constraints does not modify the conclusion for CEECs currencies however, because their external trade is mostly carried out with the European union.

Therefore, it can be concluded that there will be a strong incentive for the CEECs to choose the euro as a monetary anchor.

PART II : THE EXTERNAL VALUE OF THE EURO

In September 1997, during the summit of Mondorf-les-Bains, EU finance ministers decided not to use their legal opportunity to formulate general exchange rate policy orientation, except in exceptional circumstances. Thus, euro/dollar fluctuations will be driven by market forces and by ECB interventions aimed at stabilising European prices.

Many factors will determine the external value of the euro. However, three main difficulties impede a precise forecast of the euro/dollar exchange rate.

Firstly, one should be aware of the poor performance of exchange rate theories. Models of exchange rate determination usually fail to outperform the naïve model of using the present exchange rate for the best prediction of the forthcoming rate. International imbalances, growth rates or inflation rates do have an impact on exchange rates, but it is very difficult to measure this impact and to predict its schedule.

Secondly, it is not possible to estimate a model of exchange rate determination for a currency that does not exist yet. Even if there is little uncertainty about the list of the

¹² See Bénassy-Quéré (1997).

participants, the euro will not be equivalent to the average of previous European currencies, not least because monetary policy will be unified.

Finally, it is not clear what monetary regime should be chosen as a benchmark. Markets should be mainly interested in a comparison of the euro/dollar exchange rate to the present average exchange rate of European currencies against the dollar. However, the present regime already includes EMU expectations. Should EMU be postponed, the European Exchange Rate Mechanism (ERM) would encounter serious difficulties due to the removal of stabilising expectations in a world of perfect capital mobility. Hence, EMU is a component of the present regime rather than an alternative. Policy makers should instead compare EMU to a general floating regime which would more likely be the alternative regime to EMU. However, European countries have not experienced a flexible regime for a long time. Even during 1973-1979, intra-European exchange rates were not fully flexible due to the European Snake. European countries just do not know what their economies would look like with flexible, intra-European exchange rates.

With these three limitations in mind, it is possible to give some insights of what could be the level and the variability of the euro/dollar exchange rate.

1. THE LEVEL OF THE EURO

To a large extent, the short run euro level will be driven by private expectations of what will happen later on. Thus, it is necessary to study the long run before looking at transition issues.

1.1. In the long run, the euro could be strong

1.1.1. Neutrality of the international status

It is often argued that either the euro will be strong because it will be an international currency, or that it will emerge as an international currency because it will be strong. Both views do not hold in the long run. This is because there is no reason why the demand for euro-denominated assets should increase faster than their supply in the long run. *De facto*, the huge fluctuations of the dollar since the 1970s have not been related to variations in its international status.

The standard approach to long run exchange rates (Williamson, 1985; Stein, 1995) claims that in the long run, the real, effective exchange rate should return to a level consistent with both internal and external equilibrium.

1.1.2. External equilibrium favours a strong euro

External equilibrium means that the net external position (the cumulated current account) is stabilised at a desired (and sustainable) value. Other things equal (especially concerning the internal equilibrium), the real, effective exchange rate should appreciate in countries accumulating current account surpluses and depreciate in those accumulating deficits. Table 13 provides current account forecasts until 2005. They were made with the Mimoso multinational model based on the assumption that Southern-European countries (but Greece) enter the EMU in 1999.

Table 13 : Macroeconomic forecasts for the EU and the US

	1998	1999	2005
<u>Current account (% of GDP)</u>			
European Union	1.0	1.2	2.0
United States	-2.1	-2.1	-2.7
<u>Unemployment (%)</u>			
European Union	10.8	11.0	11.7
United States	5.2	5.3	6.4
<u>Inflation (%)</u>			
European Union	2.5	2.6	1.6
United States	2.5	2.7	2.8

Source: *Mimosa* (1997).

It is clear from Table 13 that the United States will continue to accumulate external deficits after 1998, while the E.U. as a whole will likely accumulate a positive, net external position. In order to correct for this disequilibrium, the dollar should depreciate in real terms against the euro. An interesting point is that the presence of Italy in EMU would reinforce the real value of the euro against the USD, since the current account of Italy will remain positive (+3% of GDP in 2005 according to *Mimosa*). This analysis is confirmed by Aglietta, Baulant and Coudert (1997), who estimated the real, equilibrium exchange rates of the Deutsche mark, the French franc and the lira against the dollar as functions of foreign imbalances. They then used the three exchange rates to build a proxy of the forthcoming euro/dollar exchange rate. They concluded that the euro would be subject to upwards pressures in the medium run.

Will Europe continue to accumulate current account surpluses after 2005? According to Artus (1997d), “ the [European] current account surplus is probably due to structural causes, and not only cyclical ones, and therefore will persist in the long term ”. Such structural causes are fiscal discipline due to the stability and growth pact, sustained savings rates due to the ageing of the European population, or world development catch-up which will mean that European output (and imports) will grow more slowly than world output (and European exports). In the very long run, however, retired Europeans will have to consume their accumulated savings, and Europe should turn to current account deficits. But that horizon is far beyond that of fundamental equilibrium exchange rate theory.

1.1.3. Internal equilibrium may require a weak euro

The usual approach to internal equilibrium stipulates that the economic activity should be consistent in the long run with the full employment of production factors. Because fixed capital adjusts in the long run to any desired level, this condition is only binding for labour. It means that the rate of unemployment should converge to a level where inflation is constant.

In the standard, neo-classical framework, unemployment should return in the long run to its equilibrium level which is independent from the level of the real exchange rate. A real depreciation can reduce unemployment in the short run because of lags in the indexation of prices and wages. But short run variations in the real exchange rate have no impact on its long run level. Therefore, the internal equilibrium should be neglected when studying the long run value of the real exchange rate.

Alternatively, the Phillips curve theory states that the real exchange rate is stabilised in the long run at a level depending on the path of convergence of the unemployment rate towards its equilibrium level called the non-accelerating inflation rate of unemployment (Nairu). Empirical studies show that the Nairu has increased in Europe since the 1970s, while it has stayed constant in the United States. Current estimates of the Nairu are around 6% in the US, and 6-10% in Europe. These figures should be compared with observed unemployment rates which are of 5.5% in the US and 11% in Europe. The decline of European unemployment towards the Nairu would entail a depreciation in the real exchange rate of the euro. Given the imperfect indexation of wages in the short run, this depreciation would reduce the growth rate of wages purchasing power, allowing unemployment to fall.

To sum up, considering the external equilibrium alone leads to the conclusion that the euro should be a strong currency against the USD, i.e. a currency that tends to appreciate in real terms towards its long run equilibrium level. The analysis of the internal equilibrium leads to less clear-cut predictions: the reduction of unemployment could entail a depreciation of the euro in real terms, but it is not sure whether such depreciation would remain in the long run.

1.1.4. The nominal exchange rate should be strong

The fundamental exchange rate is a real one which depends on real variables like the current account or the unemployment rate. The nominal exchange rate is just the real exchange rate plus the price discrepancy between one country and its partners. Its level depends on the inflation records. Because inflation should remain low in Europe (the forecasted inflation differential between the US and Europe is 1.2% in 2005 according to Table 13), any strength in the real exchange rate should be transmitted into the nominal exchange rate, while a weak euro in real terms would not necessarily mean a weak euro in nominal terms (it could be due to low inflation).

1.2. A possible overshooting during the transition

In the short run, the internationalisation of the euro will likely have an impact on its exchange rate because the demand for euro-denominated assets may increase at a different speed from its supply. Thus, the exchange rate will be driven by the behaviour of private and public asset holders, and by the pattern of debt issues. Monetary policy and market expectations will be at the forefront, together with portfolio reallocations in line with the unification of European capital markets.

1.2.1. Portfolio reallocations towards the euro

The emergence of the euro as a store of value may lead to a transitory appreciation of the euro. This is because asset holders can re-allocate their accumulated wealth very quickly, while the re-denomination of the supply may be rather slow: existing securities and debts are rarely re-denominated (the re-denomination goes through new issues).

It has been mentioned in Part I that the reallocation of the world portfolio may range from \$500 billion to \$ 1 trillion, the standard figure being \$ 700 billion, i.e. 15-20% of the world portfolio (Bergsten, 1997). It is shown in Box 3 that such a reallocation would entail a 15-20% appreciation in the euro against the dollar in the short run, other things equal. However, this figure is a maximum, given that it does not take any supply increase into account. According to some analysts, asset holders may wait until the supply of euro-denominated assets increases before they reallocate their portfolios. But this outcome is quite unlikely. Alogoskoufis *et alii* (1997) report that "a recent survey of 300 major issuers

of securities in the EU found that although almost all expected the euro to arrive on 1 January 1999, 83% had not even decided when they would move to redenominate their issues". Thus, the rise in supply will likely be slow (dependent on the denomination of new issues), while the rise in demand could be quick (concerning all of the existing stock).

Finally, part of the world portfolio shift will come from the official sector (\$75-150 billion according to Henning (1997)). Central banks will probably not sell dollars for euros if there is a risk of putting the exchange rate under pressure. But because the markets will be aware of the existence of excess reserves, they will unlikely expect massive official interventions against the appreciation of the euro.

1.2.2. Monetary policy and exchange rate expectations

According to our first view, the ECB may take the opportunity of a large inflow of foreign capital to allow very low interest rates, which would prevent the euro from appreciating. According to another view, the ECB will try to establish a strong credibility from the beginning of EMU. Given the lack of inflation record, markets may view the strength of the euro as an anti-inflation indicator. Thus, the ECB will unlikely take advantage of the capital inflow to ease the monetary policy. This argument is reinforced by the macroeconomic pattern at the beginning of EMU: Continental Europe will see growth pick in 1998, while the US will be in a decelerating pattern (Figure 2). Assuming labour is not a perfect substitute for capital in the short run (which is a reasonable assumption), inflationary pressure could come from a lack of fixed investment which may restrict potential output in the short run, despite large unemployment.

Box 3 The effect of portfolio re-allocations on the euro/dollar exchange rate

According to the portfolio approach, the euro/dollar exchange rate is the price at which the world demand for euros equals the world supply for euros. Whatever its geographical origin, a rise in the world demand for euros leads to an appreciation of the euro.

Let F be the euro value of the net asset position of European investors in dollars, and F^* the dollar value of the net asset position of US investors in euros. Both positions are the result of portfolio arbitrages, but they must match the pattern of cumulated saving and investment in Europe and in the United States.

The world international portfolio is expressed in euros as: $W = F + S F^*$. Here we consider the effect of a \$700 billion switch from the dollar to the euro, which amounts to approximately 20% of the world portfolio. If pre-EMU portfolios are indexed with 0, and EMU portfolios with 1, we have: $F_1 / F_0 = (1 - j)$ and $S_0 F_1^* / S_0 F_0^* = (1 + j)$ with $j = 0.2$ (we consider that European and American investors will react in the same way to the EMU shock). Call S the euro/dollar exchange rate and B the bilateral current account between Europe and the US. The world asset equilibrium can be written in euros as:

$$F_1 - \frac{S_1}{S_0} F_0 = B + S_1 F_1^* - S_0 F_0^*$$

The left hand-side represents the euro value of the variation of European holdings in dollars. This variation includes the re-valuation of the holdings due to the exchange rate variation. If the current account is balanced ($B=0$), an increase in European holdings in dollars must be compensated for by a similar increase in the euro value of US holdings in euros (right hand-side). This is because there is no excess savings in both countries. Now, if Europe runs a surplus ($B > 0$), the increase of European holdings must exceed the increase in US holdings. The exchange rate can easily be derived:

$$\frac{S_1}{S_0} = \frac{F_1 - B + S_0 F_0^*}{F_0 + S_0 F_1^*}$$

Assume first that $B=0$. Here the exchange rate is normalised so that $S_0=1$. The exchange rate in EMU is then:

$$S_1 = \frac{F_1 + F_0^*}{F_0 + F_1^*} = \frac{(1-j)F_0 + F_0^*}{F_0 + (1+j)F_0^*} < 1$$

The portfolio reallocation leads to an appreciation of the euro against the USD. With $F_0 = F_0^*$ (equal net asset positions in foreign currencies before EMU), we have:

$$S_1 = \frac{2-j}{2+j} \approx 1-j$$

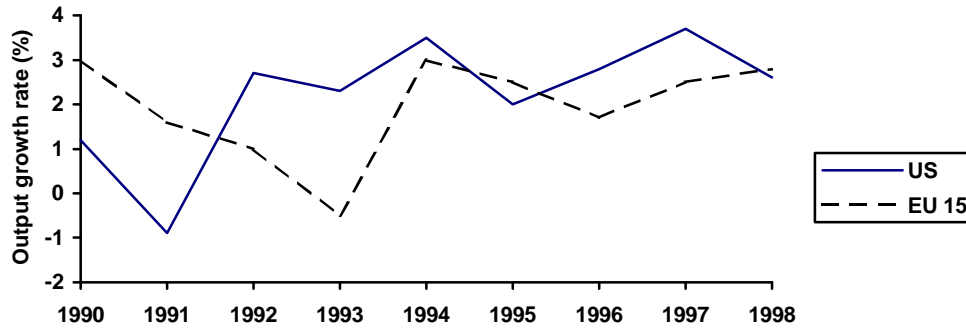
A 20% switch from the USD to the euro leads to a 20% appreciation in the euro against the USD. The result is the same with $F_0^* = 0$, i.e. if the euro is not used as a store of value initially.

This calculation relies on the hypothesis that the net asset position in each currency jumps by 20%, i.e. by the amount of the gross asset position. If 20% of the outstanding amount of bonds and loans is simultaneously re-denominated in euros, then the demand shift is neutralised by a supply shift of the same amount. This re-denomination here can be represented as a change in the available stocks, which are no longer F_0 and F_0^* , but

$F_0' = (1 - j) F_0$ and $F_0'^* = (1 + j) F_0^*$. Now, supply meets demand without any shift in the exchange rate:

$$S_1 = \frac{F_1 + F_0'^*}{F_0' + F_1^*} = \frac{(1-j)F_0 + (1+j)F_0^*}{(1-j)F_0 + (1+j)F_0^*} = 1$$

Figure 2 : The business cycle in Europe and in the United States



Source: IMF, World Economic Outlook, October 1997.

1.2.3. J-curve effects could magnify the euro appreciation in the short run

An appreciation of the euro could increase the European current account surplus in the short run, because imports will immediately become cheaper, while the volumes of exports and of imports will move only slowly. This J-curve effect may magnify the exchange rate appreciation in the long run. In Box 3, a rise in European current account B would accentuate the appreciation of the euro, while the subsequent fall in B would stabilise the exchange rate.

The existence of J-curve effects has been questioned recently, because the large depreciations of the pound sterling and of the Italian lira, after the currency crisis of 1992, were followed by immediate current account improvements. However, UK and Italian experiments can be explained by restrictive policies that accompanied the depreciations. In the EMU case, euro appreciation would unlikely be accompanied by expansive fiscal and wage policies. Thus, no rise in domestic demand could be expected, and the current account would increase with euro appreciation in the short run.

In brief, most arguments lead to the conclusion that the euro/dollar exchange rate may over-shoot its long-run level, i.e. be stronger at the beginning of Stage III than in the long run. But knowledge of these arguments may itself modify the schedule of appreciation: if such overshooting is forecasted by the markets, then it will be smoother because investors will not be willing to hold a currency that will be expected to depreciate. Besides, they could buy European assets before January 1999 if they expect an appreciation shortly after Stage III is launched. European currencies would appreciate before the euro is created, and then the euro would depreciate towards its long run value¹³.

¹³ Although theoretically straightforward, this last scenario is not considered very likely by P. Artus who thinks that international investors will wait until they see the euro before they

2. THE VARIABILITY OF THE EURO

2.1. The euro may fluctuate substantially in the short run

At the beginning of Stage III, the euro/dollar exchange rate may prove quite unstable, for various reasons:

a. Portfolio reallocations: we have seen in Section 1.2 that rapid portfolio reallocations, together with slow redenominations of bonds and loans, tight monetary policy and J-curve effects, may lead to a large appreciation of the euro in the short run.

b. Uncertainties about the monetary policy: because the ESCB will start with no reputation, financial markets will observe closely its public announcements and policies in the first months. Furthermore, they will likely be subject to herd behaviour which generally appear in uncertain contexts. Thus, imitation may lead to large fluctuations of the euro/dollar exchange rate. When the markets get used to the new monetary context in Europe, the uncertainties will be reduced, and so will be the exchange rate fluctuations.

c. Uncertainties about future members (EMS II): an additional uncertainty will concern the enlargement of the EMU, and the involvement of the ECB in the defense of the exchange rate mechanism between EMU currencies and the pre-ins.

2.2. In the long run: more stability at least compared to the ERM regime

These destabilising phenomena mentioned in Section 2.1 will disappear in the long run, i.e. once financial markets have adjusted to the new monetary context. Will the euro/dollar then continue to be an unstable exchange rate?

It is widely believed that the creation of the euro will increase the variability of the dollar against European currencies. The most popular argument estimates that, the euro zone being larger and mechanically less open than the constituting member countries, the ECB could be less interested in achieving exchange rate stability (See Artus (1997a), Cohen (1997) and Bénassy-Quéré, Mojon and Pisani-Ferry (1997)). This *policy preference channel* is challenged by Martin (1997) who argues that large countries (like the forthcoming monetary union) have less incentive to use their exchange rate strategically to stabilise the real economy. It is also qualified by Artus (1997b) who thinks that the Federal Reserve may have more incentive to stabilise the dollar (because the United States will have to offer higher returns to attract foreign investors once there are two major international currencies).

The unification of European financial markets will increase the attractiveness of the euro as an international currency. In terms of the portfolio choice model, this will increase the substitutability between the dollar and the euro as compared to the substitutability with European currencies. According to Artus (1997c), this *asset substitutability channel* should contribute to more instability in the euro/dollar exchange rate, because the exchange rate will become less powerful for adjusting the current account.

buy it (Communication of P. Artus at the Deutsche-Französisches Wirtschaftspolitisches Forum in Bonn, 12-13 January 1998).

A similar view is put forward by Bénassy-Quéré (1996): more symmetry in the International Monetary System will not stabilise the trans-Atlantic exchange rate because the United States is highly indebted *vis-à-vis* the rest of the world; the diversification of its debt into the euro could limit dollar depreciation in the short run, but in the long run such diversification would be destabilising since the US debt would be revalued in case of dollar depreciation.

However, the internationalisation of the euro for trade denomination may reduce the variability of the fundamental euro/dollar exchange rate (Collignon, 1997). In addition, increased substitutability between dollar and euro denominated assets could reduce the size of shocks to the balances of payments. For instance, a deterioration of the US current account would be financed through a small variation in the expected return differential, because asset holders would react more quickly to expected return differentials.

All these studies rely on theoretical models which have some well-known drawbacks. First, only some specific shocks can be analysed with such models, whereas a diagnosis on the likely variability of the euro requires all macroeconomic shocks to be considered simultaneously. This is usually done with stochastic simulations, as in Masson and Turtleboom (1997), who point to an increase in the dollar variability in EMU compared to the European exchange rate mechanism (ERM) regime. However, this increased exchange rate variability is difficult to analyse in a large macroeconomic model (Multimod). Besides, Masson and Turtleboom do not compare EMU with a flexible regime in Europe, which European countries have not experienced since 1979.

Second, European countries are supposed to be identical in most of the theoretical models. This leaves aside one potential source of variability of the euro real exchange rate. If monetary policy has the same impact in the various European economies, then switching from a floating regime towards the European Monetary Union (EMU) has little impact on the variability of the trans-Atlantic exchange rate, except if the single monetary policy differs from the previous national policies due to a size effect, an openness effect or a coordination gain. However, although the Maastricht criteria may have fasten structural convergence, the transmission of the monetary policy differs across countries, as evidenced by Barran, Coudert and Mojon (1996). Hence, the euro/dollar reaction to shocks in Europe may be different from the pre-EMU average reaction of individual currencies against the dollar.

The question of the impact of EMU on the stability of the trans-Atlantic exchange rate raises the more general question of whether the exchange rate is a useful adjustment instrument or an additional source of shocks. The end of the Bretton Woods system was motivated by the hope that flexible exchange rates would isolate the economies from shocks coming from their partners, and help them stabilise their own economy. This hope was largely dismissed by the experience of flexible exchange rates. In particular, flexible exchange rates (after the collapse of the Bretton Woods system) did not reduce the instability of other macroeconomic variables (Flood and Rose, 1995). Hence, fixing the intra-European exchange rates may not lead to more instability elsewhere, and specifically on the trans-Atlantic exchange rate.

In Bénassy-Quéré and Mojon (1998), we compare the role of the intra-European exchange rate as an instrument for economic stabilisation to its role as a source of economic instability, in order to infer the potential impact of EMU on the trans-Atlantic exchange rate

variability. To do this, we estimate a simple, three-country model for the United States, Germany and France, over the 1972-1995 period. Each economy is represented by five behavioural equations: price setting, wage setting, domestic demand, import demand and export demand, and relevant identities. This is the structure of the model which is assumed to be independent of the exchange rate regime.

Three exchange rate regimes are then modelled: a general floating regime, EMU and the European exchange rate mechanism (ERM). Stochastic simulations are performed in order to compare the variability of various macroeconomic variables, including the trans-Atlantic exchange rate, in the three regimes, and to highlight the role of the intra-European exchange rate as a source of shocks or as an adjustment variable.

Our simulations show that EMU should *reduce* the variability of the trans-Atlantic exchange rate compared both to the ERM and to the floating regime.

We show that eliminating the shocks on the intra-European exchange rate is crucial for the stabilisation of the European economies, as suggested by Minford *et al.* (1992). However, EMU stabilises the trans-Atlantic exchange rate even if the elimination of the shocks on the intra-European risk premium is not attributed to the regime shift.

Due to structural asymmetries, the benefits of EMU are smaller for France than for Germany in terms of inflation and of the real, effective exchange rate stability. One reason is the fact that the unified monetary policy is too reactive for the German economy (where prices are relatively sluggish), and too loose for the French economy (where prices are relatively flexible). Another reason is that the DM generally appreciates against the FF when it appreciates against the USD. This asymmetric feature magnifies the variability of the effective German exchange rate, while it dampens fluctuations of the effective French exchange rate¹⁴. Hence, the benefit from EMU in terms of stability is larger for the DM.

Due to asymmetric monetary policies in Europe, the ERM is the regime producing the highest trans-Atlantic exchange rate instability. This is because asymmetric shocks in Europe have a larger impact on the average European interest rate when the French interest rate is more or less pegged to the German one (ERM) than when it is determined on a national basis (floating regime) or at the aggregated European level (EMU). Finally, EMU is the regime producing the largest instability in the US economy, because it eliminates stabilising fluctuations of the trans-Atlantic exchange rate.

More generally, our simulations show that fixing the exchange rate between two countries may destabilise a third economy. This indirect volatility transfer stems from the fact that the unified monetary policy may lead to exchange rate fluctuations that are less stabilising for the third economy.

To sum up, in the long run, the trans-Atlantic exchange rate could be more unstable due to reciprocal benign neglect or to inefficient macroeconomic adjustments in a world with two international currencies. Alternatively, it could be more stable because less currencies in the world will be pegged to the dollar, or because the ECB will not react to shocks affecting two countries in opposite ways. The stochastic simulations prepared for

¹⁴ The effective exchange rate is the average value of the domestic currency against those of the its partners.

this report show that EMU should *reduce* the variability of the trans-Atlantic exchange rate compared both to the ERM and to a general floating regime.

PART III : THE EURO AND INTERNATIONAL POLICY COORDINATION

The conference organised by the International Monetary Fund, in Washington, in March 1997 on *EMU and the International Monetary System* has shown that EMU is now a major concern not only for Europeans, but also for their main partners in the World: the United States, Japan, and the international organisations¹⁵. This concern reacts lately to a popular view stating that, because of its large size, the European monetary union will have a larger weight in international policy forums. In fact, this assessment is rather vague. We try here to identify the impact of EMU on international policy cooperation. Two complementary points of view can be taken. The first one is an economic point of view: it says that the extent of future cooperation will depend on the incentives of the various partners to cooperate. The second point of view is institutional. It deals with the practical organisation of cooperation, given the institutional context of EMU. Both points of view are studied here.

1. THE INCENTIVES TO COOPERATE

In the economic reasoning, the behaviour of an agent is always explained by its search for welfare improvements, given constraints. Thus, the economic approach to cooperation states that cooperation will work only if it improves the welfare of each participating country.

There is an extensive debate on what should be considered as improving the welfare of the public authorities. It is generally assumed that public authorities have an inflation target and an output target (in line with potential output). They aim at stabilising both variables at their target values. Therefore, the variability of the inflation rate and of the output gap (the difference between demand and supply) are considered to *reduce* the welfare of the public authorities.

1.1. Europe less interested in global cooperation

In this standard framework, it can be shown that European countries will be less interested in global cooperation (with the United States for instance) when they have solved their intra-European coordination problem¹⁶. Assume for instance that two European countries and the United States suffer from an inflationary supply shock (which causes prices to increase and output to fall). In a floating regime, the policy response to this symmetric shock is too restrictive, because each partner tries to stabilise its economy through an appreciation of its currency against its two partners. If the policy is the same in the three countries, the exchange rates stay constant, and all three countries suffer from a large fall in output. In this case, global cooperation would consist in giving up stabilisation

¹⁵ See C. F Bergsten, Ph. Maystadt, J.J. Polak and N. Thygesen (1997).

¹⁶ See Emerson *et alii* (1990), and Bénassy, Italianer and Pisani-Ferry (1994), relying on Canzoneri and Henderson (1991).

through exchange rate variations, which would reduce the loss in terms of output variability, with no cost in terms of inflation variability¹⁷.

However, the benefits from cooperation are not evenly distributed across the economic partners. This is because the spillover effects of each European economy on the rest of the world are small compared to the spillover effects of the US economy on each EU member. Therefore, each European country has a larger incentive than the US to cooperate.

In addition, intra-European spillovers are larger than trans-Atlantic spillovers. Hence, in a floating regime, the non-cooperative reactions to a negative supply shock entail more unnecessary restriction in Europe than in the US. Again, it follows that European countries have more incentive than the US to cooperate at the global level.

Once they have solved their intra-European policy inefficiency (i.e. in EMU), the policy reaction to a symmetric shock will be symmetric in Europe and in the US, and both regions will produce the same spillovers on the other region. Thus, Europeans will no longer have more incentive to cooperate than the US. This could either weaken trans-Atlantic cooperation or rebalance the weights of Europe and of the US in the negotiations. The latter outcome is more likely, since Europeans will also acquire greater bargaining power (if they succeed in speaking with one voice).

1.2. The United States more interested in cooperation

A complementary point of view can be driven from the stochastic simulations presented Bénassy-Quéré and Mojon (1998). They show that in EMU, trans-Atlantic exchange rate fluctuations may become less stabilising for the US economy, while European economies would benefit from the regime shift in terms of inflation and output stability. Thus, the United States may be more interested in stabilising the trans-Atlantic exchange rate, while, the Europeans would find less motivation for such cooperation given that the regime shift will already stabilise their economies.

Finally, the emergence of the euro as an international currency may weaken US benign neglect. This is because financing US current account deficits will become more difficult when the US dollar is no longer the main *safe heaven*. In order to attract international investors, US returns would need to be higher, which could have a sizeable impact on the US economy¹⁸.

In brief, EMU will likely reduce the incentives of Europeans to cooperate at the global level, while it may raise the motivations of the United States to do so. However this is a theoretical, economic analysis of cooperation. It considers the EMU-bloc a single actor. More practically, the future of international cooperation will depend on the way it is organised with EMU.

¹⁷ In the case of asymmetric shocks (i.e. shocks hitting unevenly the various economies), global cooperation is more difficult to organise since it entails asymmetric policies.

¹⁸ See Artus (1997b).

2. EUROPEAN INSTITUTIONS AND PROCESSES IN EXTERNAL POLICY MAKING.

The European monetary union will be the largest negotiating partner that the United States has ever faced, and the euro will be, as pointed out in part I, the only currency able to compete with the dollar for international supremacy, since World War II. However, this will happen only if the EMU becomes a single actor in the international system, which implies a reform of European governing institutions. The processes and institutions concerned with external monetary policy making, representing the monetary union and negotiating with non Europeans will be especially significant since internal divisions could hinder Europe from playing its full role in international monetary co-operation.

2.1. EMU institutions result from a compromise

The Maastricht Treaty and the protocol statute of the ESCB contain numerous arrangements enforcing (although incompletely) the capacity of the European Union to act as a full international partner¹⁹. In particular, Article 109 awards competence among the European institutions and member states. In an open economy with capital mobility, domestic monetary policy strongly influences the exchange rate. When independent, the central bank is responsible for domestic monetary policy, while the government has authority for establishing international monetary commitments and only governments are members of the IMF. Except under flexible exchange rate regimes, the government and the central bank must co-operate in setting exchange rate policy. The relationship between the central bank and the government is generally not a matter of legislation. On the contrary, the Treaty attempts to be explicit. Article 109 is the result of harshly negotiated compromise. The supporters of a domestic price stability oriented policy, led by the German negotiators, feared that exchange rate policy could be used as a back door to governmental control over monetary policy. Other governments, led by the French government, who made concessions on the domestic side, feared to lose control on external monetary policy.

The balance of authority between the central bank and the government differs from country to country. In Germany, under exchange rate stabilisation arrangements such as the EMS, the government maintains its predominance. Under the flexible exchange rate regime that prevails *vis-à-vis* the dollar, the Bundesbank enjoys some *de facto* discretion (Henning, 1994). The government must consult with the Buba on exchange rate policy, and the bank is freed from its obligation to intervene when that would undermine domestic price stability. The bank owns all German official reserves and is responsible for conducting foreign exchange interventions. German officials proposed to give the European central bank extensive powers, more important than those now given to the Bundesbank.

At the time of the Maastricht Treaty, the central banks were not independent in the United Kingdom and in France. The whole exchange rate policy was the government's area. Not surprisingly, in its draft treaty, the French government proposed a strong role for

¹⁹ Articles 3a, 70, 72, 73b-g, 105 and 109 of the Maastricht Treaty ; Articles 3, 5.1, 6, 8.3, 12.5, 23, 30 and 31 of the statute of the ESCB ; Declarations 5, 6, 8 and 10. The Treaty of Amsterdam contains the same Articles concerning external policy as the Maastricht Treaty, although with different numbers.

the Council of ministers, and it was followed by a coalition of member states who wanted to strengthen the role of governments in economic policy through this institution.

Compromise solutions based on the different draft treaties were proposed. Finally, the Treaty reflects agreement on some issues, and questions on which agreement could not be reached were postponed.

2.2. The ambiguities of the Treaty may raise the de facto role of the ECB

Article 109 establishes the decision-making mechanisms or, on some matters, sets the parameters within which further agreement could be reached on the decision-making mechanism.

The article contains five paragraphs dealing with:

- The conclusion of "formal agreements on an exchange rate system for the ECU in relation to non-Community currencies",
- The formulation of "general orientations for exchange-rate policy" in the absence of an exchange rate system in relation to one or more non-Community currencies,
- The institutional arrangements "for the negotiation or the conclusion [...] of agreements concerning monetary or foreign exchange regime matters",
- The decision "on the position of the Community at international level as regards issues of particular relevance to economic and monetary union and, acting unanimously, [...] its representation",
- The prerogatives of Member States who "may negotiate in international bodies and conclude international agreements".

The European Commission, the Council of Ministers (and the Euro Council), the European Parliament and the ECB will be involved in the policy-making process. A crucial distinction is made between negotiating agreements with foreign governments and concluding them. The article refers only to the relationship of the Union to organisations, currencies and countries outside the Union and does not apply to countries that decline to join the Union or do not qualify for membership.

2.2.1. Formal Agreements

A formal target zone or any form of a fixed exchange rate system would be included in this procedure. Regarding formal agreements, the Council of Ministers bears the ultimate responsibility, although not an exclusive one. The Council cannot act unless the Commission or the ECB submits a recommendation. In any case, the Council must consult the ECB "in an endeavour to reach a consensus consistent with the objective of price stability". The Parliament must be consulted as well, but its assent is not required. If the Council is willing to take the Union into a formal regime, it should be a unanimous

decision²⁰. This means that after enlargement of the union, a formal agreement would require the unanimity of 15 to 25 members. This is certainly inauspicious for formal currency co-operation.

On the other hand, unanimity would give the national governments operating through the Council a strong position *vis-à-vis* the ECB. Of course the Council is tied by Article 3 of the Treaty: the primary objective of maintaining price stability and, provided that this objective is not jeopardised, of supporting the general economic policies in the Community. But neither Article 3 nor Article 109 specify which institution should determine whether a currency arrangement is inconsistent with monetary stability.

The ECB has no right to veto a formal exchange rate agreement concluded by the Council, but it could probably undermine any agreement it does not accept. Besides, if the ECB objects to fixing a parity, it will not submit such a recommendation in the first place. Then, the Council will find it very hard to gather the necessary unanimity despite the objections of the bank. Finally, what credibility would a formal arrangement have in the foreign exchange markets if the ECB publicly disapproved of it? Hence, the ECB will have a strong *de facto* influence.

2.2.2. General Orientations

According to paragraph 2 of Article 109, the Council may "formulate general orientations for exchange rate policy". Some earlier drafts, instead of "general orientations" used the word "guidelines". The guidelines were weakened into orientations at the insistence of German negotiators²¹. On a recommendation by the Commission or the ECB, the Council would adopt such orientations by a qualified majority. Again the position of the ECB is reinforced by the leitmotiv: "These general orientations shall be without prejudice to the primary objective of the ESCB to maintain price stability". The ECB could consider it has received the right to reject orientations that would place monetary stability at risk, although the agreement on this interpretation is not unanimous among officials involved in the negotiations (Henning, 1997).

This paragraph is very important because it will almost certainly be applied to the relationship with the dollar and the yen, since formal agreements seem unlikely in the near future.

Nevertheless, the paragraph says nothing about the competence to negotiate and conclude informal international monetary agreements. This omission could benefit the ECB. Still, governments usually hold primary authority in exchange rate policy. They are backed by democratic legitimacy, while independent central banks lack accountability. That is why governments and not central banks are members of the IMF. However, the ECB will have a strong position with respect to these general orientations which it could probably

²⁰ Even if such an unanimous decision was taken, EMU would hardly find willing partners totalising the required 85% of the voting power in the International Monetary Fund (see Polak, 1997).

²¹ In September 1997, during the EU15 Finance Ministers meeting of Mondorf-les-Bains, "general orientations" were further weakened into qualitative orientations to be used in exceptional circumstances only.

override legally (Henning 1997). To talk the ECB into exchange rate stabilisation *vis-à-vis* the dollar, national governments would have to act cohesively.

Within the Union, a general power of decision is allotted to the Council on matters of exclusive Community competence, which include the exchange rate policy of the Union. Implementing authority is often delegated to the Commission. According to the Treaty (Art. 73, 73b and 73c), the Council and the Commission are allotted competence on capital flows *vis-à-vis* third countries. It would appear that exchange rate policy could remain a responsibility of governments. At least the negotiators clearly did not intend to transfer primary competence to the ECB. Who will then speak for the European union ?

2.3. European representation will not be unified

2.3.1. EMU representation

Who will speak for the monetary union when broader monetary accords come before the G-7 and IMF? Which officials and which institutions? No consensus could be reached on these crucial matters. The national governments did not want monetary and exchange rate agreements to be concluded the way trade agreements are reached. They agreed to limit the role of the Commission in the monetary area. Governments of the large countries were not comfortable with the small countries holding the Council presidency and negotiating on behalf of the monetary union. Neither would they like to delegate their negotiating authority to the ECB. This is probably why paragraph 3 of Article 109 makes allowance for the procedures by which the negotiating arrangements will be decided later. A negotiating team for monetary union will be decided on a case by case basis. The main provision is that the arrangements should ensure that the Union expresses a single position²². The last sentence of paragraph 3 is particularly interesting. It says that: "Agreements concluded in accordance with this paragraph shall be binding on the institutions of the Community, on the ECB and on Member States". If this paragraph is interpreted to apply to informal agreements, then the ECB is under obligation irrespective of price stability (Kenen 1995). If it only applies to formal agreements, there is no guidance as to the negotiation and conclusion of informal understandings (Henning 1997).

Crisis management

The Council will probably inherit the responsibility of negotiating and concluding informal international monetary agreements, since exchange rate policy commonly falls within the competence of governments. No guidance is given by the Treaty on how the institutions involved – Council, Commission, ECB and Parliament - will work together on exchange rate policy. Difficulties will unavoidably arise when monetary union will have to take action. If a foreign exchange crisis erupts, foreign officials would call on the ECB. To pursue international agreements, the president of the bank needs, according to Article 109, to obtain negotiating authority from the Council. In any case, the president of the bank is not a political authority and is incapable of dealing with a broad range of situations:

- political pressure for trade protection in case of a large misalignment of the dollar,

²² The Luxemburg meeting of December 1997 was a little more precise, since it was decided that the Council would express the position of the EMU.

- a currency or a balance of payment crisis such as the Asian crisis in the autumn 1997,
- or, even worse, a currency or a balance of payment crisis in the CEECs, or in Russia.

Such a situation would need a joint European response, as well as a trans-Atlantic co-ordination, mainly because a safe haven effect in favour of the dollar (or of the euro) could be expected to take place, and because additional fiscal resources would be needed.

2.3.2. EU representation

Paragraph 4 deals with the European Union representation on matters that go beyond monetary and exchange rate issues, such as fiscal, financial and other economic policies (provided the Union shares competence on them). The reason is that these questions frequently arise in G-7 meetings, for instance. Because of a lack of agreement, international representation is left undecided in the Treaty. When needed, the Council will have to decide unanimously on the representation of the Union, and a qualified majority will decide on its position. Note that the Council acts only on the basis of a proposal from the Commission, and after consulting the ECB.

When should paragraph 4 apply instead of paragraph 3? Where is the boundary between “monetary and foreign exchange regime matters” and “issues of particular relevance to economic and monetary union”? What paragraph should be relevant when deciding upon representation within international institutions (paragraph 4) where monetary or foreign exchange matters (paragraph 3) are being discussed? These questions are important because the role of the Commission is different in the two paragraphs and the voting requirements differ as well.

THE GROUP OF SEVEN

How will the Union be represented in the Group of Seven meetings of finance ministers and central bank governors? The G-7 is active in a broad range of issues which are usually the domain of national governments. Finance G-7 deals with fiscal, financial and regulatory policies, it deals with debt management, financial fragility, foreign assistance, or money laundering.

Considering the leadership of the ECB in monetary policy-making, its president should join the group. The NCB governors, at present invited, will probably want to participate in the meetings.

Anyhow, exchange rate management and monetary policy co-ordination will almost certainly involve EMU, Japan and the United States in a trilateral scheme. Such a consolidation in a monetary G-3 would tend to dissociate monetary from fiscal discussions, which could raise two difficulties. Firstly, the question of the EMU representation in the G-3 would remain unsolved. Both the ECB and the Council (or the Euro Council) should legitimately be represented, with possible conflicts between them. Secondly, coordination between monetary and fiscal policies could become even more difficult than before. Although fiscal policies are often held responsible for exchange rate misalignments, the G-3 would not be able to commit its members to fiscal adjustments, whereas the G-7 would

provide coordination with countries outside the euro (the United Kingdom), but not with others inside the euro (Netherlands).

However, it should be remembered that the finance G-7 never proved effective in co-ordinating fiscal, monetary and exchange rate policies. The difficulties listed above should not be over-stated: concomitant meetings could help to overcome the separation between the G-3 and the G-7 (Bergsten and Henning, 1996), and international co-operation could be strengthened by an appropriate representation of smaller euro countries in the G-7 (towards a finance G-8).

But the fact remains that national governments will be unwilling to commit their fiscal policy to an informal international agreement, once it is their only policy instrument left.

2.3.3. The IMF

National governments will remain individual members of the IMF. Still, numerous issues regarding the IMF will be raised by the EMU. A lot of immediate questions are already being discussed between IMF staff and Board and European member states²³. These include: the assessment of the payments position of European members, the counter-parties to the Fund (ECB and/or NCBs), the calculations of future quota increases (inclusion or not of intra-European trade), the composition of the SDR basket after the individual European currencies have disappeared, the management of the pool of currencies of the Fund, the follow-up of its surveillance of the European member states²⁴. The fundamental issue is that of the representation of EMU in the Fund: membership or indirect representation through European member states.

Some of these issues affect operational matters within the Fund, such as the management of its liquid resources. If the Fund accepts to finance the balance of payment of an EMU member state, should it lend to the ECB or to the NCB concerned? Considering that the balance of payments support within the union will disappear, member states might rely more on Fund resources. Symmetrically, when non-European countries will borrow euros, should the reserve position be credited to the NCB or to the ECB?

Representation in the IMF is two-sided: political and banking. It seems clear that the Fund will have connections with the ECB and that this institution will not be willing to be seconded in Washington by national banks officials. In any case, the ECB could not accept an invitation of the IMF to attend its meetings, unless the European Union has decided on its representation.

Should quotas and representation be consolidated? Obviously, as European integration makes headway, the rationale for individual representation of EU members

²³ On the question of consultations between the Fund and central authorities of the EMU, see Polak (1997).

²⁴ Thygesen (1997) compares the surveillance practised in the Fund and the monitoring of policies in EU. He insists on the main weakness of the latter: arrangements for centralised monetary policy with budgetary policies remain a national responsibility. Broader in scope, Fund surveillance would likely focus on aggregate performance in the euro area, and should therefore be welcome. This view is shared by Maystadt (1997).

weakens. One problem is that the consolidated quota of EMU would be much less than the sum of the present individual quotas. The reason for this difference is the way quotas are allocated. Trade and financial flows are the main criteria and that would lead to the exclusion of intra-EU transactions. Voting strength being proportional to quotas, the management of the Bretton-Woods institutions would be strongly affected.

The existing system of constituencies (Box 4) should be rearranged. Austria, Belgium, France, Germany, Luxembourg and the Netherlands, the so-called hard-core, are represented by four different executive directors, and the members of the EU 15 by nine. Some European countries are grouped with non-European countries. This situation is not consistent with the unitary character of European exchange rate policy.

In any case, until the European Union is admitted as a member of the IMF, its member states will have to co-ordinate their positions.

Box 4: 11 first constituencies in the IMF Executive Board

(as of 30 April 1997)

- 1 *United States*
- 2 **Germany**
- 3 *Japan*
- 4 **France**
- 5 **United Kingdom**
- 6 **Belgium, Austria**, Belarus, Czech Republic, Hungary, Kazakstan, **Luxembourg**, Slovak Republic, Slovenia, Turkey
- 7 **Netherlands**, Armenia, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Georgia, Israel, Macedonia (FYROM), Moldova, Romania, Ukraine
- 8 **Spain**, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Venezuela
- 9 **Italy**, Albania, Greece, Malta, Portugal, San Marino
- 10 *Canada*, Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, **Ireland**, Jamaica, ST Kitts and Nevis, St Lucia, St Vincent and the Grenadines
- 11 **Sweden, Denmark**, Estonia, **Finland**, Iceland, Latvia, Lithuania, Norway

Note: Executive directors are from the countries in *italics*. The countries in **bold** are EU members.

Source: IMF Annual Report 1997

2.4. Conclusion

In brief, European incentives for global co-ordination will probably weaken with EMU, while those of the United States may increase. However, international cooperation will not become symmetric since Europe will not be represented by the same institution or

person in the various international, formal and informal organisations - G7, G10, IMF, OECD working parties, BIS, etc. In addition, the EMU statutes contain a bias towards flexible exchange rates. Yet it is difficult to assess the future of international co-ordination as this has proved to be very limited in the past.

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APPENDIX:

THE EURO AS AN ANCHOR FOR CEECS CURRENCIES

Bayoumi and Eichengreen (1997) operationalise the theory of optimum currency areas (OCA) by estimating an equation which explains the instability of each bilateral exchange rate by variables representing the degree of shock asymmetry and the intensity of bilateral trade.

Here, we use the same technique, but we focus on the variability against the three main currencies (USD, DM, yen) only, instead of studying all the combinations of bilateral exchange rate. This choice aims at highlighting the role of these three currencies as potential anchors, whereas observing stable, bilateral exchange rates in a region does not reveal what the anchor is.

The equation estimated is:

$$SD(e_{ij}) = a_0 + a_1^+ SD(y_{ij}) + a_2^- TRADE_{ij} + a_3^- SIM_{ij} + u_{ij}$$

$SD(e_{ij})$ is the standard deviation of the log-variations of the bilateral exchange rate between i and j (j = \$, DM, yen). It measures the variability of the bilateral exchange rate.

$SD(y_{ij})$ is the standard deviation of growth differentials between i and j (j = US, EMS core (G, F, B, NL, Dk), Japan). It measures the asymmetry of the real shocks in i and j countries.

$TRADE_{ij}$ is the average of the share of exports and of imports in i's GDP (j = US, EMS core (G, F, B, NL, Dk), Japan). It measures the role of j as a trade partner of i.

$$SIM_{ij} = 100 \sum_k \text{Min} \left[\frac{X_i^k}{X_i}, \frac{X_j^k}{X_j} \right]$$

is a measure of the similarity of the structure of

exports between i and j. k stands for 70 products (source Cepii-Chelem). This Finger index varies from zero (complete dissimilarity) to 100 (complete similarity). When the Finger index is high, a shock to a specific sector (say, the automobile sector) has a symmetric impact in i and in j.

Cross-section estimations are run on a sample containing 36 currencies against 3 potential anchors. All coefficients, but the Finger index, are significant and correctly signed. The fact that the Finger index is not significant may be related to the importance of intra-industry trade: sectoral shocks may have a differentiated impact in the various countries according to their intra-industry specialisation. The results without the Finger index are reported in the Table below.

Table: results of the estimations

	All countries		OECD		Non-OECD		Emergent countries (1)	
	Without dummies	With dummies	Without dummies	With dummies	Without dummies	With dummies	Without dummies	With dummies
N° observ.	108	108	48	48	60	60	36	36
Constant	-0.28**	-0.40	2.76	2.89**	-4.40*	-3.93*	2.73#	3.44**
SD(y _{ij})	2.60**	2.71**	1.41**	1.40**	3.81**	3.73**	1.18**	1.08**
TRADE _{ij}	-0.22**	-0.24*	-0.11*	-1.12*	-0.36*	-0.35*	-0.23#	-0.22#
DUMW _{ij}	/	1.79	/	-1.11	/	/	/	/
DUMA _{ij}	/	-4.40*	/	/	/	-3.30	/	-3.49**
DUME _{ij}	/	1.31	/	/	/	2.26	/	2.76#
Adj. R ²	0.49	0.52	0.75	0.76	0.55	0.21	0.21	0.44

(1) CEECs + emergent countries of Asia.

** significant at the 99% level. * significant at the 95% level. # significant at the 90% level.

Source: authors' calculations

In a second step, dummies were added to the equation in order to catch regional behaviours:

DUMW_{ij} = 1 if i is a West-European country and j is the DM, 0 if not.

DUMA_{ij} = 1 if i is an Asian country and j is the USD, 0 if not.

DUME_{ij} = 1 if i is a CEEC and j is the DM, 0 if not.

The coefficient for the West-European dummy is never significant, meaning that the anchor strategy of these countries is accounted for by the OCA theory.

The coefficient for the Asian dummy is negative and generally significant: the variability of Asian currencies against the USD is too low, by 3-4 percentage points compared to what would be required by the OCA theory.

Finally, the coefficient on the CEECs dummy is positive. It is significant in the emerging countries sample: the variability of CEECs currencies against the DM is too high, by about 2 percentage points compared to what would be required by the OCA theory.

According to this analysis, the CEECs would be better-off in stabilising their currencies more against the DM, and subsequently against the euro.

LIST OF WORKING PAPERS RELEASED BY THE CEPII²⁵

1998

«The International Role of the Euro» Agnès Bénassy-Quéré, Benoît Mojon and Armand-Denis Schor, *document de travail n° 98-03*, mars.

«EMU and Transatlantic Exchange Rate Stability », Agnès Bénassy-Quéré and Benoit Mojon, *document de travail n°98-02*, avril.

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1997

« Why the euro will be strong: an approach based on equilibrium exchange rate», Michel Aglietta, *document de travail n° 97-18*, décembre.

« Les fonds structurels en Europe», Laurence Nayman, *document de travail n° 97-17*, décembre.

« Cycles de production industrielle : une analyse historique dans le domaine des fréquences », Pierre Villa, *document de travail n° 97-16*, novembre.

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