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**Fundamentals, International Role of the  
Euro and ‘Framing’ of Expectations:  
What are the Determinants of the Dollar/Euro Exchange Rate?\***

**Pompeo Della Posta**

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**FUNDAMENTALS, INTERNATIONAL ROLE OF THE EURO AND 'FRAMING' OF  
EXPECTATIONS: WHAT ARE THE DETERMINANTS OF THE DOLLAR/EURO  
EXCHANGE RATE?\***

**BY**

**POMPEO DELLA POSTA**

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**Abstract:** The predictions made by economists of the value of the euro prior to its introduction were essentially based on the expected portfolio adjustment resulting from the role that it might play as an international currency. As a result, most analysts agreed that the euro would be a strong currency, appreciating against the US dollar. The first years of life of the 'virtual' euro contradicted such a forecast. Economists therefore abandoned predictions based on the euro as a 'global' money and directed their focus almost exclusively towards traditional, 'fundamentals-based' explanations. Among these explanations, several authors mentioned the unsatisfactory structural and institutional set up of the EMU. Nevertheless, later on, when the euro started appreciating, a different set of fundamentals had to be isolated in order to account for such behaviour. It is possible to argue, then, that the EMU economic structure and institutions are, or at least are currently perceived as, capable of supporting a strong euro, which plays the role of international money. 'Framing' of expectations, however, still keeps driving the behaviour of the exchange rate, so that the same structural and institutional set up may be subject to different evaluations, depending on the particular state of expectations of the international currency markets. Finally, since the available evidence suggests that the euro is starting to play an international role, I argue that the 'international money' and the 'framing' of expectations approaches explain the behaviour of the dollar/euro exchange rate better than the 'fundamentals' one.

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## 1. Introduction

“An economist is an expert who will know tomorrow why the things he predicted yesterday didn’t happen today” (Laurence J. Peter) <sup>i</sup>. In the case of the recent behaviour of the euro, this famous aphorism would seem to be apt. As a matter of fact, before the introduction of the euro most analysts agreed that it would be a strong currency, appreciating against the US dollar. The first years of life of the ‘virtual’ euro contradicted such a forecast. Economists therefore abandoned predictions based on the euro as a ‘global’ money and directed their focus almost exclusively towards traditional, ‘fundamentals-based’ explanations. Among these explanations, several authors mentioned the unsatisfactory structural and institutional set up of the Economic and Monetary Union (EMU). Nevertheless, later on when the euro started appreciating, different fundamental variables, like the Euro area - US interest rate differential and the US current account deficit, had to be isolated in order to account for such behaviour. It is possible to argue, then, that EMU economic structure and institutions are, or at least are currently perceived as, capable of supporting a strong euro. ‘Framing’ of expectations, however, also drives the behaviour of the exchange rate, so that the same structural and institutional set up may be subject to different evaluations, depending on the particular state of expectations of the international currency markets. Finally, since the available evidence suggests that the euro is starting to play an international role, I argue that the ‘international money’ and the ‘framing’ of expectations approaches explain the behaviour of the dollar/euro exchange rate better than the ‘fundamentals’ one which is, in my view, inconsistent.

The paper is structured as follows. Section 2 briefly describes the recent behaviour of the dollar/euro exchange rate and defines the three possible categories that explain it. Sections 3.1 and 3.2 summarise the reasons why economists expected respectively a strong and a weak euro. In section 4, I survey the explanations provided in the literature for the initial weakness of the euro, while in section 5, I consider the arguments advanced to account for its current strength, thereby implicitly evaluating the robustness of the explanations previously provided for its weakness. When considering both the predictions and the *ex-post* analyses, I stress in particular the role of the EMU institutional set up, so as to evaluate the role that it plays in determining the behaviour of the dollar/euro exchange rate. Section 6 concludes.

## **2. The behaviour of the dollar/euro exchange rate and its possible determinants**

The international use of a currency assures several benefits to the country issuing it, in particular seigniorage, lower interest rates and a significant economic and political part on the international arena.<sup>ii</sup> After World War II, the US have benefited of such a position, but the advent of the euro might challenge the role of the dollar. As a matter of fact, Mundell (1998) and Salvatore (2002), among others, suggest that the US and the European Union might be involved in a struggle for supremacy.<sup>iii</sup> Feldstein (2000) takes a stronger position, by arguing that the US might become “a politically convenient adversary” capable of unifying the otherwise divergent European countries. Portes and Rey (1998) even quantified in a reduction in growth of up to half percentage point the loss for the US resulting from the introduction of the new currency.

Other authors, however, express a different opinion. According to Bergsten (2002) and Johnson (1994), quoted in Kaikati (1999), the international role of the dollar would not be challenged by the euro, as long as the former assures price stability in the US. Mussa (2000) maintains that while the success of the euro might reduce the role of the dollar, higher European growth would certainly benefit also the US, so as to create an overall positive balance. As a matter of fact, according to Krugman (1998), the euro would imply at most a loss of 0.1 percentage points in the US rate of growth. Reflecting the declarations made by the former US President Bill Clinton (and also the reassuring voices coming from Europe), Larry Summers, former Deputy Secretary of the US Treasury, did not foresee in the advent of the euro any threat to the leadership of the dollar, so as to rule out any struggle for supremacy. The same cautious approach, probably determined by political reasons, seems to be followed by the Maastricht Treaty in designing the international role of the euro. Zimmermann, in this book, analyses in detail the evolution of the European approach towards the euro as an international currency.

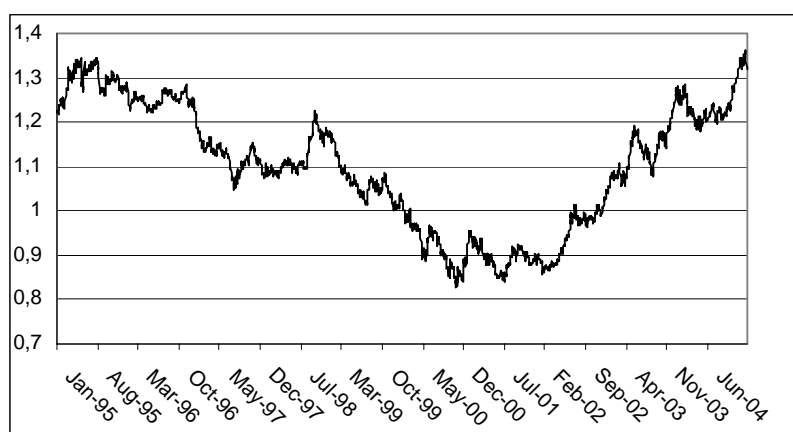
Having defined the scenario within which the conduct of the dollar/euro exchange rate can be analysed, let us describe the different phases that have characterised its recent behaviour.

Before the creation of EMU, the ECU started depreciating against the US dollar in 1995: from a value of 1.3456 on 28 July 1995, it fell to a value of 1.0785 by 6 April 1998. Only after the formal admission of participating countries to EMU, the dollar/ECU exchange rate started increasing and reached the value of 1.2262 on 6 October 1998.

During the first two and half years of its ‘virtual’ life, however, contrary to most predictions, the euro followed the previous depreciation of the ECU against the US dollar and reached its lowest value of 0.8422 on 5 July 2001.

Finally, at the beginning of 2002, in coincidence with its physical introduction, the euro started appreciating against the US dollar and it reached its peak of 1,3633 on 28 December 2004, a few days before 10 January 2005, the last date that I consider in this article (see figure 16).

**Figure 16: The dollar/euro exchange rate (1995-2005)**



Source: 1995 -1998, FED (US\$/ECU);

1999 - 2004, ECB, Monthly Bulletin (various issues)

Many economists and commentators have provided various explanations for the different phases described above. Those explanations refer to three separate categories, a) fundamentals, b) portfolio adjustments due to an increasing international role of the euro and c) ‘framing’ of expectations, as I illustrate below.

a) Different approaches to the determination of exchange rates agree that the strength or weakness of a currency depends on the ‘fundamental’ variables of its underlying economy (gross domestic product (GDP) growth, money growth, interest rates, the inflation rate, the current account, the public deficit, the public debt). Several authors interpret extensively such ‘fundamental’ variables and include among them, as I will do, also the economic structure and institutions.

b) In predicting the value of the euro prior to its introduction, however, most economists referred implicitly to the potential struggle for supremacy between the euro and the US dollar mentioned above; they envisaged that the expected ability of the European currency to fulfil at the international level the functions of means of payment, unit of account and store of value would have caused a high demand for it, so as to cause its appreciation.<sup>iv</sup> This observation suggests that ‘fundamentals-based’ models might well represent the working of a relatively ‘small’ currency, but they might be unsuitable for the analysis of the behaviour of a ‘large’, potentially international currency like the euro.

c) As I will argue more extensively below, however, the behaviour of a currency can also be affected by ‘framing’ of expectations and by unstable perceptions.

In this paper I will try to evaluate which of these exchange rate driving forces is better capable to account for the behaviour of the dollar/euro exchange rate during the first five years of life of the euro. As I will show in section 5, the explanations based on fundamentals are inconsistent over time (sections 5.1 and 5.1.1), so as to lead to the conclusion that portfolio adjustments induced by the international role of the euro (section 5.2) and ‘framing’ of expectations (section 5.3) prove more satisfactory in explaining the strength of the European currency with respect to the US dollar.

### **3. The predictions of the future value of the euro before the launch of the EMU**

Let us report, in the next two paragraphs, the reasons why economists expected the euro to become respectively a strong and a weak currency. In so doing I will distinguish between explanations based on the expected international role of the euro and explanations based on the expected state of fundamentals.

#### *3.1. The reasons why economists expected the euro to be a strong currency*

##### **3.1.1 Expected portfolio adjustments induced by the international role of the euro**

The predictions made by economists of the euro’s future value were based essentially on the expected portfolio adjustment resulting from its role as an international currency. As a result, the majority of them anticipated that the European currency would appreciate over time (Bergsten, 1997, Portes and Rey, 1998, Mundell, 1998, Kaikati, 1999, Frenkel and Sondengard, 1998). In particular, Bergsten (1997), among others, believed that the euro would satisfy the pre-conditions, identified by Kenen (1983) and listed below, for a currency to be

used by both the private and the official sector as an international means of payment, unit of account and store of value:

- a) a large sized economy, with substantial global trade;
- b) a relatively closed geographical area;
- c) lack of exchange controls;
- d) broad, deep and liquid capital markets;
- e) sound macroeconomic policies.

This analysis was substantially correct although, as we will see in section 4.2, it ignored the role played by history and inertia.

### 3.1.2 Expected good state of European fundamentals and expected bad state of US ones

Given the focus on the international role of the euro, traditional ‘fundamental’ variables received little attention. Nevertheless, some authors concurred that the rather persistent current account deficit experienced by the United States, coupled with the European surpluses, suggested a weakening dollar (Alogoskoufis and Portes, 1997, Bergsten, 1997 and Kaikati, 1999).

An additional reason for predicting a strong euro derived from the expected EMU sound economic institutions. In particular, Bergsten (1997) argued that the European Central Bank (ECB) would guarantee internal stability, by establishing early on its anti-inflationary credibility. He believed that the ECB would act in a tougher way than the Bundesbank, precisely in order to show its commitment to price stability at the earliest opportunity. He also anticipated the possibility that fiscal authorities would ‘fudge’ the Maastricht criteria. However, contrary to the arguments of some commentators later on, he posited that such a weakening of the fiscal position would not affect negatively the euro, since the ECB would respond in an even tougher way.

His prediction of a strong euro, therefore, was based on the opinion that: “markets prize stability more than growth, as indicated by the continued dominance of the dollar through extended periods of sluggish US economic performance. Hence the euro should qualify on these grounds as well.” (Bergsten, 1997, p. 91).

As we will see respectively in sections 4.1 and 5.1, while these ‘fundamentals-based’ arguments had to be overlooked during the initial period of life of EMU, characterised by a weak euro, some of them (in particular the US current account deficit) have been readily resurrected in order to account for the current strength of the European currency.

### *3.2 The reasons why economists expected the euro to be a weak currency*

#### 3.2.1 Expected lack of portfolio adjustments in favour of the euro

In considering the possibility for the euro to act as an international money, Fratianni et al. (1998) performed a lucid analyses and concluded that the euro would be weak relative to the US dollar by considering the following aspects: inertia of the dollar in keeping its international monetary leadership; European financial market segmentation; possibility of an excess of euro denominated bond supply;<sup>v</sup> and loss of the reserve status for European currencies (Masson and Turtelboom, 1997 also made this point). As I will argue in section 4.2, these reasons proved correct in explaining the initial weakness of the euro.

#### 3.2.2. Expected bad state of European fundamentals

In considering the ‘fundamental’ variables pointing towards a depreciated euro, some authors stressed what they believed to be serious European structural and institutional weaknesses. Since the ECB was a new institution, for example, it might have lacked credibility with regard to its commitment to price stability, thereby affecting negatively the euro. Moreover, structural rigidities (high social security payments, stringent employment protection and restrictions on working and opening hours), institutional weakness (to be described in more detail below in section 4.1.1), and the fact that the euro zone was not believed to represent an optimum currency area, were the basis on which Feldstein (1997a, 2000) grounded his prediction of a weak euro.

Since Europe is a relatively closed economy, the exchange rate does not affect its economy in a significant way, so that some observers expected the ECB to conduct a policy of ‘benign neglect’ towards the dollar (Eichengreen, 1997), a strategy that might have ended up producing a weak euro.<sup>vi</sup>

While these arguments found many supporters during the period of euro weakness (see section 4.1.1), they proved incorrect in the light of the current phase of the euro strength (see section 5.1.1).



#### **4. 1999-2001: The weakness of the ‘virtual’ euro. Ex-post explanations**

After having presented the reasons why economists expected the euro to be respectively a strong and a weak currency, let us consider the explanations provided ex-post in order to account for its weakness during the period 1999-2001.

##### *4.1 ‘Fundamental’ weaknesses of the Euro area*

In Buiters’ view, (1999) the initial weakness of the euro reflected closely the state of fundamentals.<sup>vii</sup>

Eichengreen (2000) and, with different accents, Bibow (2002a), Salvatore (2002) and Begg (2002b), argue that the weakness of the euro was a mere adjustment to the rise that characterised the final months of 1998, when the final stage of the monetary unification process drove the exchange rate to too high a level.

The role of the actual growth differential between the US and Europe is underlined by Buiters (1999), Neaime and Paschakis (2002), Eichengreen (2000), Corsetti (2000), and even Bergsten (2002). According to this last author, the weakness of the euro was due to the fact that although Europe had achieved price stability, it needed to improve its performance on the growth side. It should be noted that such a statement contradicts his previous position, reported at the end of section 3.1.2, in which he stressed the role of stability as opposed to growth.<sup>viii</sup>

Corsetti (2002) focuses instead on the role played by the *expected* rate of growth differential<sup>ix</sup> and shows that the series produced by the “Consensus Forecast” follow closely the behaviour of the dollar/euro exchange rate.

Neaime and Paschakis (2002), Sylos Labini (2000) and Vlaar (2002) point out the role played by the strong rise in oil prices from the Summer of 1999, implying a higher transfer of euro currency to oil exporting countries.

In section 5.1, when considering the ‘fundamental’ reasons advanced in order to account for the current strength of the euro, I will go back to these explanations and I will show their inconsistency.

##### **4.1.1 European structural and institutional weaknesses**

Among the ‘fundamental’ explanations for the low value of the euro, particular attention has been reserved to the European structural and institutional weaknesses.

In agreement with Feldstein (1997a and 2000) and Eichengreen (2000), Arestis et al. (2002a) point out that the Euro area is not an optimal currency area and that the presence of asymmetries and divergences, first of all relative to the unemployment rate, creates the potential for political and economic conflicts among the Euro area countries, thereby depreciating the euro. They also underline the presence of labour market rigidities.<sup>x</sup>

According to Salvatore (2002) and to Alphandéry (2002), the fact that Europe lacks political unity might have been interpreted as a sign of weakness.<sup>xi</sup>

Uncertainties may have arisen also because of some institutional conflicts between politicians (in particular, the former German finance minister, Mr. Oskar Lafontaine) and the ECB and because of some actions undertaken by the German government to support with public funds some private firms under financial difficulties (Eichengreen, 2000).

Arestis et al. (2002a) believe that the accounting tricks that have accompanied the adhesion of some European countries to EMU reduced the credibility of the Eurosystem. At the same time the safeguards contained in the Stability and Growth Pact have proved unnecessary and above all non credible, as the example of Ireland flouting them, shows.

Buiter (1999) stresses, among others, the lack of clarity in exchange rate orientation, resulting from the fact that the Maastricht Treaty (art. 109) assigns to Finance Ministers the right to determine the exchange rate policy.<sup>xii</sup>

In line with this criticism, Mundell (1998) argues that in order to show coherence between internal and external objectives of monetary policy, the ECB should target exchange rates explicitly.

Buiter (1999) also mentions the lack of accountability, openness and transparency of the ECB as a problem to be solved. Uncertainty arises not only from the lack of clarity as to the transmission mechanism of monetary policy, but also from the inconsistent behaviour shown by the ECB Board members with regard to the exchange rate.

According to Talani (in this book), the initial weakness of the euro and the apparent lack of concern of the ECB with regard to the external value of its currency, would suggest that the European monetary authority followed a 'benign neglect' policy towards the exchange rate. In her view, such a strategy might find a rationale in the economic interests of the large European exporting countries (Germany, Italy and France).

ECB communication problems are identified, among others, by Feldstein (2000), Arestis et al. (2002a), Bibow (2002a) and Organization for Economic Cooperation and Development (OECD) (2001). The first three contributions find that the 'two pillars' strategy generated confusion in the markets. First of all, money growth (the 'first pillar'), overshot systematically the reference value that the ECB had established.<sup>xiii</sup> Second, it was not clear

what was the role of the exchange rate in determining the union's monetary policy. Furthermore, the initial moves of the ECB seemed to show a dependence on the Fed, something that proved that the euro was still dominated by the US dollar.<sup>xiv</sup>

In Bibow's view, the contractionary policy followed systematically by the ECB ("price-stability above all else") is harmful to the exchange rate since it suggests that growth will be penalised. By acting in an excessively restrictive way, then, in his view the ECB would have caused a weak euro (given the assumed link between the rate of growth and the exchange rate).<sup>xv</sup>

Other authors judge the behaviour of the ECB in rather different terms, but still they find it responsible for the weakness of the euro. Favero et al. (2000b), for example, believe that the ECB has followed a rather expansionary stance, especially if compared to the policy that would have been undertaken by the Bundesbank or by the Fed. In particular, in their view the ECB has followed closely the needs of large countries like Germany or Italy, rather than of the whole union, thereby losing credibility with the private sector and causing the weakness of the euro.<sup>xvi</sup>

Hartmann and Issing (2002) find this explanation unconvincing, and I agree with them. After all, the ECB has proved successful in guaranteeing a stable environment: during the initial period of life of the euro, the US inflation rate has been systematically higher than the European one. It is not clear, then, why (unless we accept the position expressed by Bibow, 2002a and, as we will see, by Altavilla and Marani, 2000), the ECB would have proved successful in guaranteeing internal stability, while it should be blamed for the external instability.<sup>xvii</sup> Recent monetary theory has stressed the role of expectations in determining inflation, so that the latter would result from the central bank's lack of credibility and the absence of an anti-inflationary reputation. If expectations have been such as to guarantee low inflation in the Euro area, it is difficult then to understand how the same set of expectations may be held responsible for a depreciated exchange rate.

An overall positive interpretation of the behaviour of the ECB is provided by only a few authors. Begg (2002b) argues that "the ECB has not only operated by consensus rather than majority voting, but also shown no evidence of dissent" and that "this is not a surprising outcome given that central bankers tend to have a common outlook" (Begg, 2002b, p. 27). He points out the success in the launch of the euro, which would be due to the fact that the ECB has been following a rather transparent approach (contrary to the position expressed among others, by Bibow, 2002a or Buiters, 1999).

Hartmann and Issing (2002), stress the fact that the European Central Bank is neutral on the euro's role in the international markets, so that the dollar/euro exchange rate is mainly

determined by developments in financial markets. In their view, the reason why the ECB does not target explicitly the exchange rate has to do with the recognition that currency markets are extremely volatile and might therefore undermine internal stability.<sup>xviii</sup>

Kenen (2002) also criticises the ECB for its behaviour: “I do not want it [the ECB] to practice the art perfected by Chairman Greenspan - saying nothing at length. There is, however, a danger in saying too much too often” (Kenen, 2002, p. 354).<sup>xix</sup> Contrary to many analysts, though, he does not find it responsible for the depreciation of the euro since, in his view, such a weakness was due to the inertia of the dollar in playing its global role, as I will explain in the next section.

Given that the institutional and structural set up of the Euro area has not changed over the last five years, it is easy to conclude, as I will argue in section 5.1.1, that even this ‘fundamental’ variable cannot account for the current phase of euro appreciation. As a result, it cannot be a reliable explanation for its previous weakness either.

#### *4.2. Lack of success of the euro as an international currency*

A different set of explanations for the weakness of the euro focuses on its lack of success as an international means of payment, unit of account and store of value, as Fratianni et al. (1998) had predicted correctly (see section 3.2.1).

Kenen (2002), Frisch (2003), McKinnon (2002), Bergsten (2002), Eichengreen (2000) and Neaime and Paschakis (2002) underline the role played by inertia, so that once a particular currency has taken on the role of global money, “it cannot be readily dislodged, even if another currency could do just as well” (Kenen, 2002, p. 348).

Pollard (2001), Alphan  ry (2002) and Hartmann and Issing (2002) stress instead the negative effect of the high European financial markets segmentation on the use of the euro as a medium of exchange and as a store of value.

McKinnon (2002), De Grauwe (2002a) and Meredith (2001) find that the excess of euro-denominated bonds issued by Extra-European borrowers brought about massive capital outflows, ultimately responsible for the depreciation of the euro.

The most important factor, however, according to Sinn and Westermann (2001a and b), has been the behaviour of criminals and tax evaders, who feared that the conversion to euros of their liquid holdings would have been subject to rigid rules and scrutiny that might have threatened their secrecy. As a result they decided to move out of the currencies that they held (especially German marks) and to buy US dollars so as to convert them to euros later on, in the absence of any stringent regulation. Bergsten (2002) gives credit to this account.

Contrary to the explanations for the euro weakness based on fundamentals, those based on its initial lack of success as an international currency are compatible, as I will discuss in section 5.2, with the current euro strength.

#### 4.3. *'Framing' of expectations, pessimism and misperceptions about European fundamentals*

The initial weakness of the euro can also be attributed to erratic behaviour, pessimism and misperceptions regarding European fundamentals. This view implies that markets on the one hand were excessively optimistic about the US economy, and on the other hand overemphasised European structural weaknesses (for example the need for fiscal, social security and labour market reforms).

Referring to some theoretical contributions by, among others, Tverski and Kahneman (1981) and Kahneman and Tverski (1984), De Grauwe (2000a) argues that since markets are uncertain about the 'fundamental' value of the exchange rate, they refer to the value taken by the exchange rate in order to infer the specific fundamentals on which to focus. As he points out, then, the order of causation gets reversed: it is not the fundamental that affects the exchange rate but rather the latter that indicates what are the fundamentals to be considered in order to justify its value.

De Grauwe's position is further supported by the observation that some well-behaving European fundamentals, like the current account or the inflation rate differential, did not receive any attention during the period in which the euro was depreciating. As a matter of fact, Goldberg and Frydman (2001), quoted in Frisch (2003) show that different sets of fundamentals explain the exchange rate behaviour in different time periods.<sup>xx</sup>

The role of *confidence* and of *market sentiment* is stressed by Altavilla and Marani (2000) too. They show that the dollar/euro exchange rate follows closely some measures of *market sentiment* rather than the usual fundamentals. In particular, the weakness of the euro would result from the negative effects on *market sentiment* produced by the excessively tight monetary stance followed by the ECB. As a matter of fact, too high interest rates would make clear to the private sector that the ECB, rather than following a counter-cyclical Taylor's rule, takes price stability as its first and exclusive objective. Such a lack of attention towards the economic conditions of the Euro area would be responsible for the depreciation of the currency.<sup>xxi</sup>

Salvatore (2002), while providing a whole set of possible explanations based on fundamentals for the weakness of the euro, subscribes to the hypothesis according to which the exchange rate has no connections with fundamentals, but only follows a random walk,

“There is no shortage of explanations for the current strength of the dollar and, as some older explanations are contradicted by emerging facts and evidence, new ones are confidently introduced. Of course, should the dollar begin to depreciate heavily with respect to the euro, all sorts of reasons will be advanced for that. In short, no economic model or theory can consistently and accurately predict exchange rate movements in the short run because fundamental forces at work are easily and frequently overwhelmed by transitory ones and ‘news’.” (Salvatore, 2002, p. 133).

I find the above arguments particularly convincing. I also believe that ‘framing’ of expectations explains satisfactorily both the initial weakness of the euro, and the current behaviour of the dollar/euro exchange rate, as I will discuss in section 5.3.

## **5. 2002-2004: the strength of the ‘tangible’ euro: were the ex-post explanations for the weakness of the euro correct?**

By mid 2001 the euro stopped depreciating against the US dollar and since the beginning of 2002 it has been appreciating against it. This turnaround of the European currency offers a nice opportunity to check the robustness of the explanations listed above, and in particular to verify whether the asserted European structural and institutional weaknesses could really be blamed for its previous low value.

Since several analyses found the euro undervalued during its first years of life (thereby recognising implicitly that the exchange rate had lost connection with the fundamentals of the economy), it would be possible to argue that the current value of the euro is finally in line with economic fundamentals.

Such an interpretation, however, conflicts with the fact that other analyses, as we have seen, found that some of the fundamentals of the European economy could well account for the weakness of the euro. If this was true, its current appreciation should be accompanied by an opposite change of those variables. Since this has not occurred, as I will show in the next section, it can certainly be said that most of the ‘fundamentals-based’ arguments advanced to explain the weakness of the euro proved inappropriate when the latter started strengthening.

### *5.1 ‘Fundamental’ strength of the Euro area (and weakness of the US)*

Let us go back now to the ‘fundamental’ variables considered in section 4.1 in order to account for the weakness of the euro. In so doing, it will be easy to verify that those variables are not capable to explain its current strength.

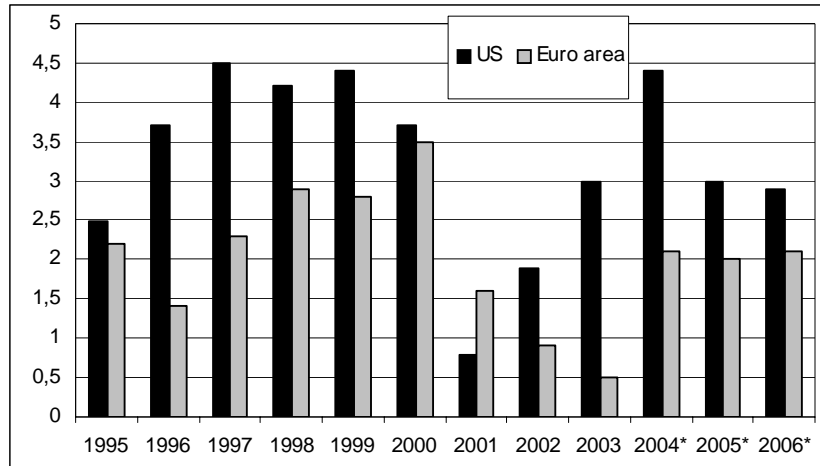
Since there is still a positive rate of growth differential between the US and the Euro area, such a variable cannot explain the current weakness of the US dollar compared to the euro (see figure 17).

As for the expected rate of growth differential, the European Commission (2003), updating the 'Consensus Forecast' series utilised by Corsetti (2002) to explain the appreciation of the dollar vis à vis the euro, shows clearly that the effect of the expected rate of growth differential on the dollar/euro exchange rate has vanished. This contradicts previous findings and interpretations provided by Corsetti (2002).

While the expected growth differential is still in favour of the US, markets and both professional and academic observers seem to point their attention toward the uncertainties surrounding the huge US current account deficit (encountered already in section 3.1.2 when listing the 'fundamental' reasons for expecting a strong euro), especially if measured in terms of GDP (European Central Bank, 2003a, European Commission, 2003, and Monacelli, 2003). *The Economist* also underlines such a dramatic switch of attention: "Over the years, currency theories move in and out of fashion. Growth differentials are, it seems, no longer relevant; currencies are being driven instead by trade imbalances and differences in interest rates. Investors have become less willing to finance America's huge current account deficit and are taking advantage of higher European interest rates." (*The Economist*, 10 May 2003). As a matter of fact currently some analysts see the higher US GDP growth even as a potential source of current account deterioration since it would imply a growing internal absorption!

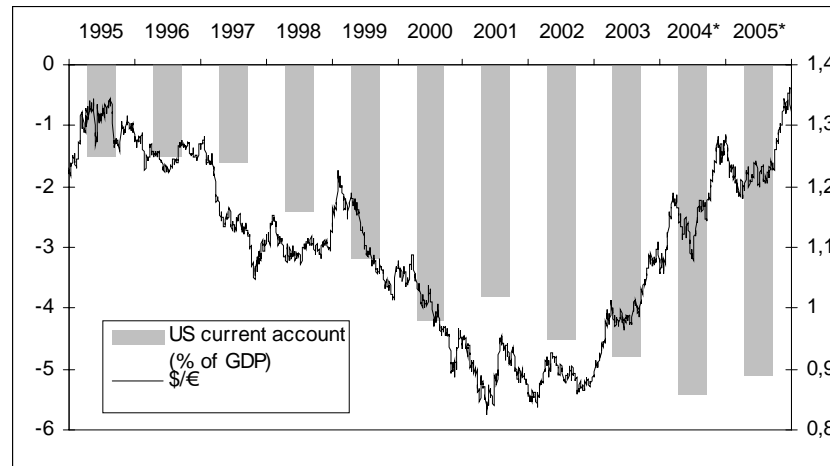
Although the US current account/GDP ratio moved from 4.5% in 2002 to 4.8% in 2003 and is expected to have stepped further up to 5.4% in 2004, figure 18 sheds serious doubts on its effects on the \$/€ exchange rate. It is easy to notice that from 1995 to 2002 a positive, rather than negative correlation seemed to exist between the \$/€ exchange rate and the US current account deficit/GDP ratio (the dollar, for example, kept appreciating even when the ratio jumped from 3.2% in 1999 to 4.2% in 2000). Moreover, it should be noted that although in 1995 the US current account deficit/GDP ratio was 1.5%, the dollar was as depreciated as today, when the ratio is above 5%!

**Figure 17: GDP growth at constant prices (% change t/t-1)**



Source: Eurostat

**Figure 18: US current account (% of GDP) and \$/€ exchange rate**

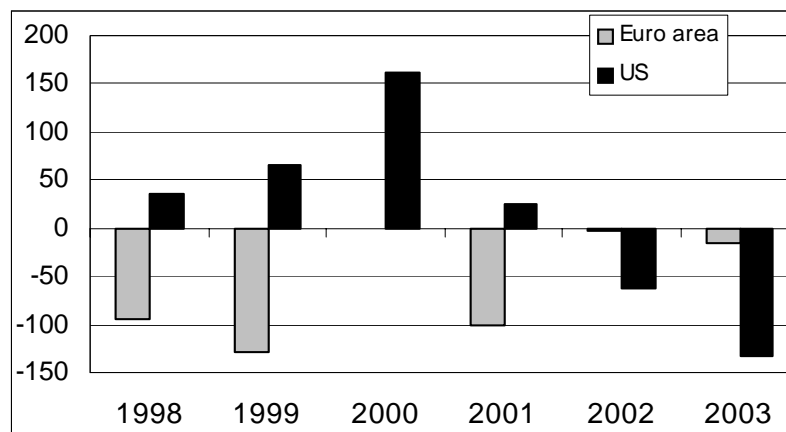


Source: US current account (% of GDP): IMF, World Economic Outlook, various issues; \$/€ see figure 16. \*Forecast

Some analyses also point out that the current depreciation of the dollar is accompanied not only by a worsening in the current account but also by a worsening in the financial account of the balance of payments. More precisely, it turns out that while net portfolio flows are still largely positive, foreign direct investment has turned negative in 2002 and 2003 (see figure 19), reflecting the doubts and uncertainties surrounding US growth but also, and may be more importantly, signalling an end to the process of mergers and acquisitions that began at the end of last century and continued for just a few years (European Commission, 2003).



**Figure 19: US and Euro area direct investment (\$ billions, net flows)**



Source: ECB, Monthly Bulletin (various issues)

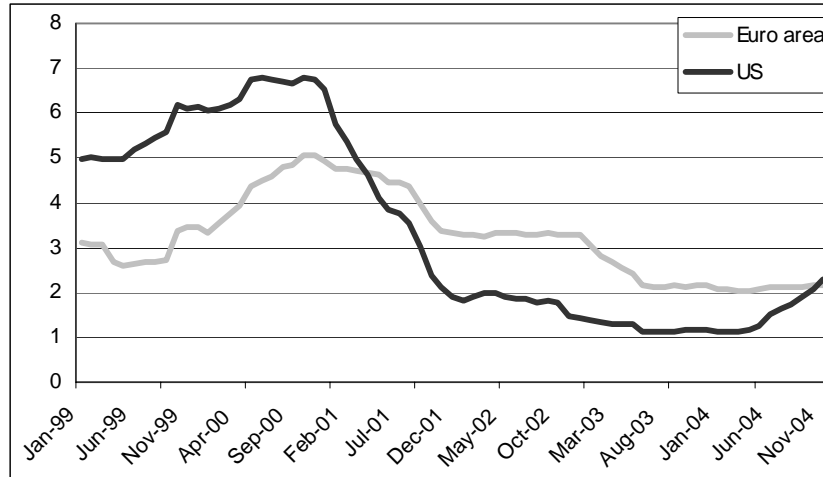
After a short period during which the dollar kept appreciating even if European interest rates were higher than US ones, the Euro area-US interest rate differential seemed to have restored its prominent role in explaining exchange rate behaviour (European Commission, 2003). Recently, however, the euro keeps its strength against the US dollar in spite of the disappearance of any interest rate differential in favour of the new currency (see figure 20).

Finally, contrary to previous findings by Neaime and Paschakis (2002), Sylos Labini (2000) and Vlaar (2002) (see section 4.1), the recent appreciation of the euro has been accompanied by rising oil prices, leading to the conclusion that there is no longer negative correlation among the two variables (see figure 21).

Having concluded that the 'fundamental' variables considered in section 4.1 cannot explain the current strength of the euro, let us verify in the next section whether the European structure and institutions, blamed by some authors for being responsible for its previous weakness, can do that.

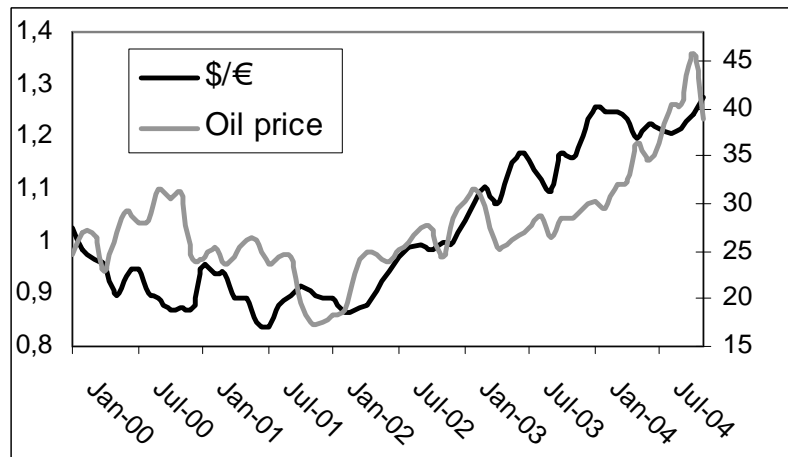
**Figure 20: Euro area 3-month interest rate (Euribor) and US 3-month interbank deposit rate**

(Percentage per annum, monthly data, period averages)



Source: ECB, Monthly Bulletin (various issues) and Board of Governors of the Federal Reserve, Federal Reserve Statistical Release

**Fig. 21: Spot Opec Reference Basket oil price (\$/pbl) and \$/€exchange rate**



Source: OPEC, Annual Statistical Bulletin and Monthly Oil Market Report (various issues)

### 5.1.1. How about the European structural and institutional weaknesses?

As we have seen in section 4.1.1, among the different explanations for the weakness of the euro, several authors referred particularly to the fragility of the structural and institutional aspects of the EMU (Arestis et al., 2002a, Feldstein, 1997a and 2000, and Favero et al., 2000b, among others). If that explanation was correct, the current strengthening of the European currency should result from the solution of at least some of the structural and institutional problems characterising the euro zone. The environment described by the authors mentioned above, however, has not changed in a significant way (although the initial success of the EMU might have led those who feared its failure to revise their point of view). As CER (2003) reports, for example, the ECB has not stopped targeting the needs of a core Europe (notably Germany and France) rather than of the whole monetary union. Such an observation, then, contradicts the conclusion, reached by Favero et al. (2000b) (see section 4.1.1), that the weakness of the euro was caused by a lack of credibility of the ECB.

Also the effects of the recent violation of the Excessive Deficit procedure defined in the Stability and Growth Pact seems to confirm my conclusion: immediately after the European Council of Finance Ministers (Ecofin) expressed its unwillingness to proceed against Germany and France (contrary to the recommendation of the European Commission), surprisingly the dollar/euro exchange rate overtook the psychological threshold of 1.20.

### *5.2 Portfolio adjustments resulting from the international role of the euro*

Having observed that the current appreciation of the euro is not explained by significant changes in the fundamentals of the economy, in this section I argue that it might be due to the growing role of the euro as an international currency.

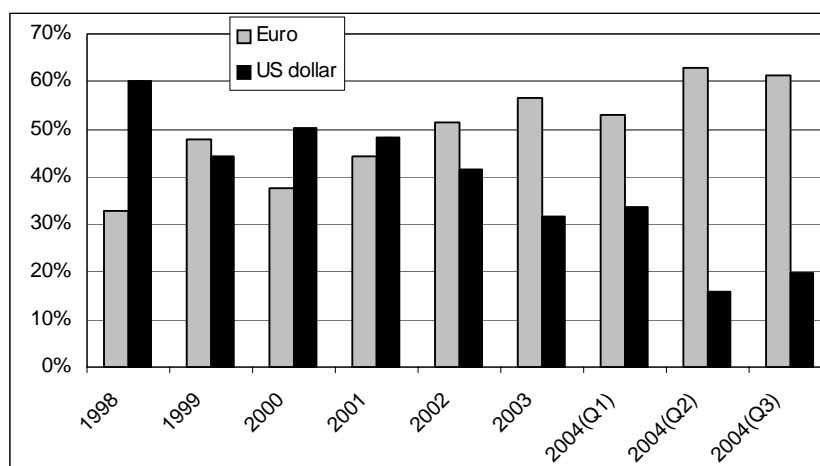
In particular, I believe that the inertia characterising the first years of life of the euro is gradually giving way to portfolio diversification. Two facts, among many other pieces of scattered evidence relative to both the public and the private use of the euro as an international money, point to this direction: first, the composition of both Chinese and Russian foreign reserves has been re-balanced by increasing the weight assigned to the euro as opposed to the US dollar and, in more general terms, the euro has increased its weight as an international reserve currency moving from 13.5% of total official holding of foreign exchange in 1999 to approximately 20% in 2003 (IMF, Annual Report, April 2004); second, Russia, the second world oil exporter, has declared recently that oil will also be quoted in euros. The euro, then, is increasing its international role both as a reserve currency and as a

unit of account. Inevitably, this will also imply a higher role for it as a medium of exchange. The European Central Bank (2003b) provides some more detailed evidence of the growing role of the euro as an international currency.<sup>xxii</sup>

As we have seen in section 4.2, one of the explanations for the weakness of the euro was based on the excess of supply of bonds, so that the current phase of appreciation should be accompanied by a significant slow down in their issuance. Since this does not seem to be the case (see figure 22), the current strength of the euro can only be justified by the fact that both the domestic and the international demand for euro-denominated bonds has increased, so as to match or even exceed the supply<sup>xxiii</sup>.

**Figure 22: Net issuance of international debt securities by currency**

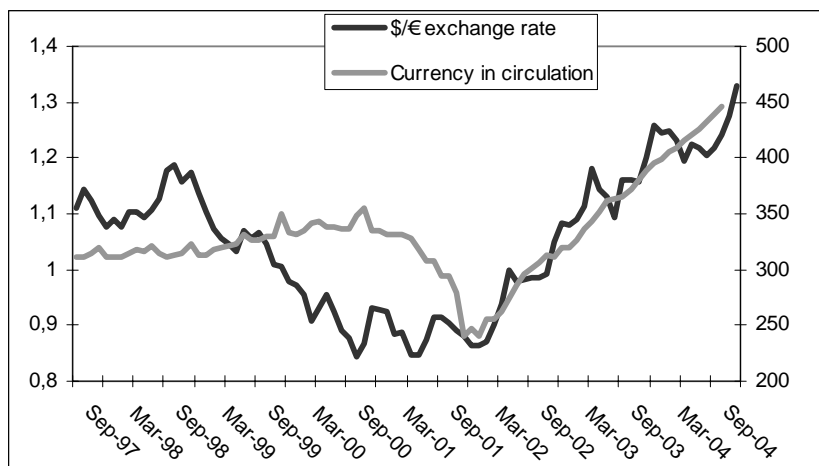
(% of total)



Source: BIS Quarterly Review, various issues, and Kenen (2002)

Furthermore, the currency in circulation, after the fall occurred between November 2000 and January 2002 (and ended exactly after the physical introduction of the euro), is now above its initial level. The fact that the phase of euro depreciation was accompanied by a drop of the currency in circulation, as pointed out by Sinn and Westermann (2001a and 2001b) (see section 4.2), while its current appreciation is associated with a rise of the latter (see figure 23), lends further credit to the hypothesis that the weakness of the euro was due to a low demand for euros, while its current appreciation is driven by a high demand for them, most likely caused by international portfolio adjustments.

**Figure 23: Currency in circulation in the Euro area (€ billions, ECU billions until 12/1998) and \$/€ exchange rate**



Source: ECB, Monthly Bulletin (various issues)

### 5.3. 'Framing' of expectations, optimism and overvaluation of European fundamentals

The worsening of the US current account described in section 5.1, together with some official declarations calling for "more exchange rate flexibility", like the G7 Statement issued on September 20, 2003 in Dubai, might have determined the market expectation of a weak dollar, an event favoured by the American government. As a matter of fact, the economic relationship among the US dollar, the euro, the Chinese Yuan and the Japanese Yen, suggests that the value of the dollar is a "hot political issue" (*The Economist*, 27 September 2003).

Nevertheless, I also believe that since portfolio adjustments have started to occur as a result of the growing international role of the euro, attention might have directed towards both the fundamentals and the pre-conditions validating this fact, as predicted by De Grauwe (2000a).

Whatever rational explanation we embrace (either the one based on fundamentals or the one based on international portfolio adjustments), then, it is difficult to deny the role of (not necessarily rational) expectations and of elements of short run unpredictability in the behaviour of the exchange rate.

The fact that the same institutional set-up or the same level of financial markets segmentation has seen both a weak and a strong euro, suggests that even the institutional aspects might be subject to 'framing' of expectations: the same institution may receive a different evaluation, depending on the mood of the markets. In making forecasts of the

strength or weakness of the euro and above all of the timing of such evolution, for example, nobody seemed to consider the distinction between the ‘virtual’ and the ‘tangible’ new currency, although the current appreciation might well result from its physical introduction: <sup>xxiv</sup> only the presence of actual euro coins and bills would have removed the doubts and uncertainties surrounding the new currency and might have really spurred the adjustment process envisaged by economists before the creation of the EMU.

## **6. Concluding remarks**

Prior to its introduction, the predictions made by economists as to the future value of the euro were based essentially on the portfolio adjustment resulting from the role that it might play as an international currency. As a result, most analysts agreed that the euro would be a strong currency, appreciating against the dollar. The first three years of life of the ‘virtual’ euro contradicted such a forecast. Economists, which with a few exceptions had ignored since then the role played by inertia in the use of an international currency, therefore abandoned the ‘international currency’ view and directed their focus towards traditional, ‘fundamentals-based’ explanations, on which most exchange rate models concentrate. The initial weakness of the euro *vis à vis* the US dollar, then, was explained mainly by considering the actual and expected positive rate of growth differential between the US and the Euro area, and by considering as unsatisfactory and inadequate the European structural and institutional set up. Later on, when the dollar started weakening, though, different ‘fundamental’ variables, like the Euro area - US interest rate differential and the US current account deficit, had to be identified as responsible for the exchange rate behaviour.

While the explanations based on fundamentals prove inconsistent, then, in my view the available evidence suggests that during the initial period of the euro, international portfolio adjustments might have affected the dollar/euro exchange rate more than is generally believed (although in the opposite than expected direction), and that they have now started to operate in the expected direction, leading to an appreciated euro. Such a conclusion is reached by considering, in particular, the still high emission of euro-denominated bonds, the close relationship between the euro currency in circulation and the dollar/euro exchange rate, and various pieces of evidence suggesting a higher presence of the euro in both private and public portfolios, pointing towards an overall growing international role for it.

If the euro is really starting to play an international role, then, it is possible to conclude that the markets are not interpreting (at least currently) the approach of ‘benign neglect’ followed by the European institutions with regard to the external value of its currency, as a

sign of 'fundamental' weakness and that they also believe that the European institutions are assuring the satisfaction of the pre-condition of sound macroeconomic policies required for playing such an international role.

It should be kept in mind, however, that institutional arrangements are subject to market evaluation: 'framing' of expectations certainly affect the behaviour of the exchange rate, and might play a crucial role in the current phase of euro appreciation.

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<sup>i</sup> From JokEc, *Jokes about economists and economics* available at the internet address: <http://www.etla.fi/pkm/JokEc.html>.

<sup>ii</sup> The benefits, however, will have to be weighted against the costs incurred by a country issuing a reserve currency, especially the risk of losing control of money supply (Demertzis and Hughes Hallet, 1999). AlphanDéry (2002) also warns against the fact that holdings of euros by non residents may be subject to sudden reversals that might cause treasury problems. In his view, this is the reason why both Japan and Germany avoided playing a more central role in the international arena.

<sup>iii</sup> The title of the special issue of the *Journal of Policy Modeling*, vol. 24, 2002, gives a clear demonstration of such a possibility: "The euro versus the dollar: will there be a struggle for dominance?"

<sup>iv</sup> De Grauwe (2003) argues instead that the strength or weakness of a currency does not depend on its international role, as the experience of the dollar would suggest. While in a well established situation a currency playing a global role may appreciate or depreciate for various reasons, I believe instead that when such an international position is in the process of formation, the resulting demand for the currency will certainly cause its appreciation.

<sup>v</sup> Fratianni et al. (1998) acknowledge that this position was first taken by McCauley (1997) and by Bank for International Settlements (1997). This point is also made by European Commission (1997).

<sup>vi</sup> It should be noted, however, that such a feature characterises the US dollar too, so that it is not clear why a 'benign neglect' policy of the Fed should produce a strong dollar, while the

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opposite should occur in the case of the ECB. According to the European Commission (1997), however, the ECB does not follow a ‘benign neglect’ policy, since it wants to avoid both the risk of excessive fluctuations and misalignments and the negative effects that an over depreciated euro would have on price stability.

<sup>vii</sup> But, according to Corsetti (2000): “To be honest, it is hard to provide a convincing interpretation of the recent evolution of the euro” (p. 2). The same position is taken by Sartore and Esposito (2002), McKinnon (2002) and European Central Bank (2002).

<sup>viii</sup> Alquist and Chinn (2001) and Vlaar (2002) quoted in Frisch (2003) consider a longer time period, respectively 1985-2001 the former and 1973-2001 the latter, and also find a positive correlation between respectively the difference in productivity and in growth and the dollar/euro exchange rate. Corsetti et al. (2003), obtain similar conclusions by estimating a structural VAR model over the period 1970-2001. In particular, they show that a permanent positive shock to US labour productivity in manufacturing causes both an increase in output and consumption and a real exchange rate appreciation.

<sup>ix</sup> If the expected rather than actual growth differential is considered, an explanation can be found for the appreciation of the yen against the euro in the second half of 1999 (Eichengreen, 2000).

<sup>x</sup> As observed also by De Grauwe (2000a), however, they argue that those rigidities have characterised Europe for quite long time. It would not be clear, then, why the euro, the ECU, or an artificial measure of it, in some instances appreciates and in others depreciates.

<sup>xi</sup> Corsetti (2000) also indicates several uncertainties about the evolution of the European institutional and political setting. However, he finds this conclusion incompatible with the observation that the market in euro-denominated bonds has experienced a massive growth.

<sup>xii</sup> In his view, however, the weakness or the strength of the euro is a ‘non-issue’ since the Euro area is relatively closed.



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<sup>xiii</sup> Arestis et al. (2002a) observe that M3 has been growing at rates higher than 4.5%, while inflation has been higher than 2%, the reference values indicated by the ECB respectively for money growth and inflation rate.

<sup>xiv</sup> See Hartmann and Issing (2002) for an alternative definition of international money, based on the leadership role played in the conduct of monetary and exchange rate policy.

<sup>xv</sup> As we will see, Altavilla and Marani (2000) also underline the possible negative effect of a restrictive monetary policy on exchange rates.

<sup>xvi</sup> Bergsten (1997), Portes and Rey (1998) and Neaime and Paschakis (2002) also agree that the strength or weakness of the euro depends on the reputation of the ECB.

<sup>xvii</sup> With internal (external) stability I refer to the ability of a currency to preserve its purchasing power with respect to internally (externally) produced goods and services. Internal stability is a necessary but by no means sufficient condition for external stability, as demonstrated by the first years of life of the euro. Alphan ery (2002) observes that while the ECB concentrates exclusively on the objective of internal stability – price stability – paradoxically the media (and therefore the broad public) focus on its external value.

<sup>xviii</sup> It should be noted that such a proposition implies the belief that exchange rates are driven by ‘news’ and (not necessarily rational) expectations rather than by fundamentals.

<sup>xix</sup> As a matter of fact, Mr Duisenberg, the former President of the ECB, has often been blamed for his untimely declarations as to the external value of the euro. The credibility of the ECB might also have suffered from the substantial violation of the prescriptions of the Maastricht Treaty relative to the period of appointment of its President: at the time of his election, Mr. Duisenberg agreed to resign after only four years of mandate rather than the eight years indicated in the Maastricht Treaty. As of 1 November 2003, Mr Trichet is the new President of the ECB.

<sup>xx</sup> Some of the current analyses on the temporary failure of the euro to play an international role implicitly support this position: “the gradual depreciation of the euro during the first two years was of course not fostering its international use for investment purposes” (Hartmann

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and Issing, 2002, p. 324). In other words, financial markets looked at the actual behaviour of the euro, rather than at fundamentals (including the creation of a monetary entity that might rival with the dollar), in order to decide the appropriate portfolio composition.

<sup>xxi</sup> Bibow (2002a), as we have seen above, makes the same point.

<sup>xxii</sup> *The Buttonwood Column of The Economist* also considers seriously this hypothesis, as the title of an article published on November 23<sup>rd</sup>, 2004 suggests clearly: "The dollar's demise: Is the dollar's role as the world reserve currency drawing to a close?". According to Cohen (2003) however, the available evidence suggests that the European currency has not gained an international status yet. Moreover, in his view, four different reasons (inertia, high transaction costs for the euro, anti-growth EMU bias, and ambiguous EMU governance structure) lead to conclude that the euro will not play an international role in the future either.

<sup>xxiii</sup> Geis *et al.* (2004) point out that the international role of the euro is better captured by considering only euro-denominated bonds issued by non euro-area residents. They also provide new insights and information on the structure of the euro-denominated international securities market. Moreover, by considering that financial markets make wide use of exchange rate swaps, they raise some doubts as to the correctness of the explanation of the weakness of the euro based on the excess supply of bonds. The same point was risen, at the EUI Conference where I first presented this paper, by Jens Hoiberg-Nielson.

<sup>xxiv</sup> Only after the passage from the virtual to the real euro, Neaime and Paschakis (2002) recognised that credibility might have been negatively affected by the absence of tangible euros, and Bergsten (2002) wondered what the effects of its physical introduction would have been.

## ***References***

Alogoskoufis, G. and R. Portes (1997), The euro, the dollar and the international monetary system, in P. Masson, T. Krueger and B. Turtelboom (eds.), *EMU and the International Monetary System*, (Washington, DC, International Monetary Fund), pp. 58-78.

Alphandéry, E. (2002), Le Futur rôle de l'euro sur la scène internationale, (*Revue d'Economie Financière*, vol. 0, No. 68), pp. 299-305.

---

Alquist, R. and M. Chinn (2001), Tracking the euro progress, (*International Finance*, vol. 4, No. 3), pp.357-73.

Altavilla, C. and U. Marani (2000), Il deprezzamento dell'euro e la confidence dei mercati valutari, (*Studi e note di Economia*, n. 3), pp. 57-87.

Arestis, P., A. Brown, K. Mouratidis and M. Sawyer (2002a), The Euro: Reflections on the First Three Years, (*International Review of Applied Economics*, Vol. 16, No. 1), pp. 1-17.

Bank for International Settlements (BIS), 1997, *67<sup>th</sup> Annual Report*, Basle: BIS

Begg, I. (2002b), The euro: a success against the odds?, (*Eastern Economic Journal*, Vol. 28, No. 1), pp. 25-44.

Bergsten, F. (1997), The dollar and the euro, (*Foreign Affairs*, Vol. 76, No. 4), pp. 83-96.

Bergsten, F. (2002), The euro versus the dollar: will there be a struggle for dominance?, (*Journal of Policy Modeling*, Vol. 24, No. 4), pp. 307-14.

Bibow, J. (2002a), The euro: market failure or central bank failure?, (*Challenge*, Vol. 45, No. 3), pp. 83-99.

Buiter, W. H. (1999), Six months in the life of the euro. What have we learnt?, (Remarks for a seminar held at the Rabobank, Utrecht, 25 June 1999).

Centro Europa Ricerche (CER) (2003), *La politica monetaria in Europa*, Rapporto n. 1, pp. 25-37.

Cohen B. J. (2003), Can the Euro Ever Challenge the Dollar? (*Journal of Common Market Studies*, Vol. 41/4), pp. 575-595.

Corsetti, G. (2000), A Perspective on the euro, paper presented at the CFS research conference The ECB and its watchers II, (Frankfurt, 26 June, 2000).

Corsetti, G. (2002), The Weakness of the Euro: Is it Really a Mystery?, (Report on the European Economy 2002, European Economic Advisory Group at CESIFO), pp. 27-41.

Corsetti, G., L. Dedola and S. Leduc (2003), International risk-sharing and the transmission of productivity shocks, mimeo, available at the internet site: <http://www.econ.yale.edu/~corsetti/euro/codele.pdf>.

De Grauwe, P. (2000a), Exchange Rates in Search of Fundamentals: the Case of the Euro-Dollar Rate, (*International Finance*, Vol. 3, No. 3), pp. 329-356.

De Grauwe, P. (2003), *The Economics of Monetary Union*, 5th Ed., (Oxford: Oxford University Press).

Demertzis, M. and A. H. Hallet (1999), EMU and the External Value of the Euro, (CEPR Discussion Paper, No. 2058).

---

Eichengreen, B. J. (1997), Comments in P. R. Masson, T. H. Krueger and B.G. Turtelboom (eds), *EMU and the International Monetary System* (pp. 49-57). (Washington, DC: International Monetary Fund).

Eichengreen, B. J. (2000), The euro one year on, (*Journal of Policy Modeling*, Vol. 22, No. 3), pp. 355-68.

European Central Bank (2002), Economic fundamentals and the exchange rate of the euro, (*Monthly Bulletin*, January, pp. 41-54), Frankfurt: ECB.

European Central Bank, (2003a), *Annual Report 2002*, Frankfurt: ECB.

European Central Bank (2003b), The international role of the euro: main developments since the inception of Stage Three of Economic and Monetary Union, (*Monthly Bulletin*, November, pp. 71-79), Frankfurt: ECB.

European Commission (1997), External aspects of Economic and Monetary Union, *Commission Staff Working Paper*, 23.04.97, SEC (97) 803.

European Commission (2003), *Quarterly Report on the Euro Area*, No. II 2003

Favero, C., X. Freixas, T. Persson and C. Wyplosz (2000b), *One Money, Many Countries*, Monitoring European Central Bank, Update: *June 2000*, (London: Centre for Economic and Policy Research).

Feldstein, M. (1997a), EMU and international conflict, (*Foreign Affairs*, 76), pp. 70-63.

Feldstein, M. (2000), The European Central Bank and the euro: the first year, (*Journal of Policy Modeling*, Vol. 22, No. 3), pp. 345-354.

Fratianni, M., A. Hauskrecht and A. Maccario (1998), Dominant currencies and the future of the euro, (*Open Economies Review*, Vol. 9, No. 1), pp. 467-491.

Frenkel, M. and J. Sondergaard (1998), The effect of the European Monetary Union on the dollar and the yen as an international reserve and investment currencies, (*International Journal of Business*, Vol. 3, No.1), pp. 15-32.

Frisch, H. (2003), The euro and its consequences: what makes a currency strong?, (*Atlantic Economic Journal*, Vol. 31, No. 1), pp. 15-32.

Geis, A., A. Mehl and S. Wredenburg (2004), The international role of the euro: evidence from bonds issued by non-Euro area residents (*Occasional Paper Series*, No. 18, July).

Goldberg, M. and R. Frydman (2001), Macroeconomic fundamentals and the DM/\$ exchange rate: temporal instability and the monetary model, (*International Journal of Finance and Economics*), vol. 6, No. 4), pp. 421-35.

Hartmann, P. and O. Issing (2002), The international role of the euro, (*Journal of Policy Modeling*, Vol. 24), pp. 315-345.

---

Johnson, K. H. (1994), International dimensions of European monetary unions: implications for the dollar, (*International Financial Discussion Papers*, No. 469).

Kahneman, D. and A. Tversky (1984), Choices, values and frames, (*American Psychologist*, Vol. 39, April), pp. 341-51.

Kaikati, J.G. (1999), The euro versus the US dollar: an overview, (*Journal of World Business*, vol. 34, No. 2), pp. 171-192.

Kenen, P. (1983), The role of the dollar as an international currency, Group of Thirty Occasional Paper No. 13, (New York: Group of Thirty).

Kenen, P. (2002), The euro versus the dollar: will there be a struggle for dominance? (*Journal of Policy Modeling*, Vol. 24), pp. 347-354.

Krugman, P. (1998), Who is afraid of the euro?, (*Fortune*, April, 27).

Masson, P. R. and B.G. Turtelboom (1997), Characteristics of the euro: the demand for reserve and policy co-ordination under EMU, (IMF Working Papers, No. 97/58).

McCauley, R.M. (1997), The euro and the dollar, (BIS Working Paper No. 50).

McKinnon, R. (2002), The euro versus the dollar: resolving a historical puzzle, (*Journal of Policy Modeling*, Vol. 24), pp. 355-59.

Meredith, G. (2001), Why has the euro been so weak?, (IMF Working Paper WP/01/155).

Monacelli, T. (2003), Perché il dollaro è debole, (*La Voce, Moneta e Finanza*, 13-02-2003, available at the internet site: <http://www.lavoceinfo.it>).

Mundell, R. (1998), What the euro means for the dollar and the international monetary system, (*Atlantic Economic Journal*, Vol. 26, No. 3), pp. 227-37.

Mussa, M. (2000), The relationship between the euro and the dollar, (*Journal of Policy Modeling*, Vol. 22, No. 3), pp. 369-77.

Neaime, S. and J. Paschakis (2002), The future of the dollar-euro exchange rate, (*North-American Journal of Economics and Finance*, Vol. 13), pp. 56-71.

Organisation for Economic Co-operation and Development (OECD) (2001), Economic Survey of the Euro Area, 2000-2001, (Paris: OECD).

Pollard, P.S. (2001), The creation of the euro and the role of the dollar in international markets, (*Federal Reserve Bank of St. Louis Review*, September/October 2001), pp. 17-36.

Portes, R. and H. Rey (1998), The Emergence of the Euro as International Currency, (*Economic Policy*, Vol. 26), pp. 307-332.

Salvatore, D. (2002), The euro: expectations and performance, (*Eastern Economic Journal*, Vol. 28, No. 1), pp. 121-136.

---

Sartore, D. and M. Esposito (2002), The euro – what’s in the future?, (Guest editorial, *European Journal of Finance*, Vol. 8, No. 4), pp. 346-351.

Sinn, H. W. and F. Westermann (2001a), *The deutschmark in eastern Europe, black money and the euro: on the size of the effect* (CESifo Forum 2, No. 4).

Sinn, H. W. and F. Westermann (2001b), Why has the euro been falling? (NBER Working Paper, No. 8352).

Sylos Labini, S. (2000), Il cambio dollaro/euro, il prezzo del petrolio e la Banca centrale europea, (*Moneta e Credito*, Vol. 53, No. 211), pp. 343-57.

Tversky, A. and D. Kahneman (1981), The framing of decisions and the psychology of choice, (*Science*, No. 211), 453-458.

Vlaar, P.J.G. (2002), On the strenght of the US dollar: can it be explained by output growth?, (DNB Staff Report, No. 82, De Nederlandsche Bank).