EMU and the Maastricht Treaty

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I HAVE OBSERVED when debating the euro that all this careful economic analysis often counts for nothing. EMU is peddled as a political nostrum to cure all ailments. The Germans want the Union to stop them from falling into Nazi ways. The French want to be cured of an inferiority complex. The Italians want to become a nation. The Spaniards want to bury Franco. The Portuguese want to be French. The Greeks don't want to be Turks... I sometimes think that the Common Market should have been founded not in Rome but in Vienna, on Dr. Freud's couch.
——— Pedro Schwartz (1997)

INTRODUCTION

In Europe, there has long been a stubborn quest for a comprehensive monetary union. Of all the recent attempts,[1] however, the completion of Economic and Monetary Union (EMU) will embody the most ambitious aim of the European Union. The signing of the Maastricht Treaty, which provides the legal and structural framework of EMU, marked a firm commitment of the Member States to the realisation of EMU.

This paper examines the EMU section of the Maastricht Treaty, its historical background and its future implication. Chapter I investigates monetary events leading up to the Maastricht Treaty with strong emphasis on the implications of the European Monetary System. Chapter II investigates three important aspects of EMU that determine its feasibility and sustainability, namely, the provisions regarding the convergence criteria, the European Central Bank (ECB) and the euro. Finally, Chapter III critically assesses the above provisions and studies their impact on the market confidence in EMU, the future decision-making process in the ECB and the stability of the foreign exchange market, respectively.

[1] The first modern attempt to create a monetary union in continental Europe dates back as far as in 1865, when the Latin Monetary Union was established. The original participants of the Latin Monetary Union were Belgium, France, Italy and Switzerland; Austria, Greece, Romania and Spain joined later. The union was based on a mutual agreement on the bimetallic gold-silver standard and it represented a battle against the monometallic gold standard adopted by the UK. Despite numerous and comprehensive economic agreements among the European nations, a treaty of the monetary union has been absent since the effective demise of the Latin Monetary Union in 1878. The quest for economic integration in Europe, however, has been stubborn and sporadic since then.

I. The Precursors to the EMU section of the Maastricht Treaty

1. The Origins of European Monetary System

The drive toward a monetary union has always been prevalent in Europe but the intensity varied according to the rises and falls of the international monetary systems. As Papadia and Saccomanni put it, "it is stronger when the international monetary system is less structured, and weaker when it is stable, but still detectable if the stability is the result of monetary hegemony."[2] With the entry into force of the Bretton Woods System under which all Western European countries were firmly committed to a fixed exchange rate regime, the issue of a monetary union in Europe, at least for the moment, seemed to fade. However, after the war, European nations were confronted by a severe problem of currency inconvertibility and bilateral trade agreements due to the legacy of the 1930s and it was imperative to establish a framework that would bring the war-impaired European economies together.

In this context, the European Payment Union (EPU) was created in 1950 to serve as an administrator of a multilateral clearing system and was considered to be the foundation of European integration. Remarkable achievement of the EPU lay in the ability of the participants to focus on their long-term interests rather than short-term costs, which enabled the rescue of war-devastated Germany which was in an excessive-deficit position in the EPU.[3] The EPU was abolished in 1958 when currency convertibility was established for current account transaction of the balance of payment. The European Economic Community (EEC) was established in 1958 with the Treaty of Rome (1957) and took a more comprehensive approach toward economic integration. It

[2] See Papadia and Saccomanni (1994).

targeted free movement of goods, services, labour and capital within the six original member states.[4] Although the Treaty of Rome did not deal extensively with exchange rates, this issue was not totally forgotten by the EEC. In 1960, the European Monetary Agreement was signed by some 18 European countries to limit the band of exchange rate fluctuations to ±0.75 per cent around the bilateral central parity of each currency against the dollar.[5]

Despite the stability prevailing under the Bretton Woods System in its early years, Europe was never content with the asymmetric nature of the fixed but adjustable exchange rate system based on the US dollar. As a part of the Bretton Woods agreement, the US pegged the price of gold at $35 per ounce and committed itself to trade gold with foreign officials at this price. The US commitment implied the constant purchasing power of the dollar i.e. no inflation in the US. Since other member currencies were pegged to the dollar, this meant no inflation in these countries. On the contrary, inflation in the US would be transmitted to other countries which had no choice but to passively accept the US monetary stance.[6] In other words, the monetary policy of other member countries was determined by US monetary policy.

The equally asymmetric nature of the Bretton Woods System lies in a low risk premium enjoyed by US denominated assets. Because the dollar was considered a "hard currency" which could be used as an international means of payment, which was scarce

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[3] Ironically, as Collignon suggests, "for the next 40 years, Germany's international monetary difficulties were related to current account surpluses and no longer to deficits." See Collignon (1994).

[4] The six member states were Belgium, France, Germany, Italy, Luxembourg and the Netherlands.

[5] Other member countries, under the Bretton Woods System, were allowed a ±1 per cent band of fluctuations around the dollar central parity. This meant a maximum temporal fluctuation of 4 per cent between two non-US currencies. This was considered excessive by the EEC members and other European countries.

[6] Lack of monetary autonomy under the Bretton Woods System was worrisome to Germany which was obsessed with domestic price stability due to its past experience of hyperinflation.

in the early post-war period, foreigners were willing to hold the dollar in their portfolios. The dominance of the dollar as a key currency rendered the dollar its confidence premium which allowed the US to borrow at lower market-determined interest rates than the rates a country with similar economic performance would have had.

International monetary tension was intensified in the 1960s when the US accumulated a worrisome amount of current account deficits that exceeded the value of the US gold holdings at the price of $35/oz. and occasional exchange rate realignments were necessary. Devaluation of the dollar was expected, which, in turn, implied sizeable seigniorage gain by the US at the cost of foreign dollar-holders. The EEC countries, especially Germany and France, started to express their strong dissatisfaction with the disproportionate advantages enjoyed by the US and the experience from the Bretton Woods System drove home the need of an exchange rate system in Europe that could function in a more symmetric manner.

Amid these concerns, the Werner Report was prepared in 1970 as a step forward to the Economic and Monetary Union, characterised by one monetary policy, fiscal policy co-ordination, full convertibility of currencies, elimination of fluctuation in exchange rates, irrevocably fixing of parity rates and the complete liberalisation of movements of goods, services, labour and capital. This was to be achieved in stages, either with or without introducing a single currency. The report appeared at the time when Germany was concerned about the future role of the Deutsche mark (DM) as an international reserve asset. Since the trend at that time showed the shifting market preference for the reserve asset toward the DM from the dollar, the massive capital inflow into Germany was considered to be a potential for inflation, which could lead to

internal and external monetary instability. Although the revaluation of the DM could have been a quick fix for this situation, the long-term solution would be further monetary integration in Europe as expressed in the Werner Report.[7] Unfortunately for Europe, the plan never materialised due to adverse events that shook the foundation of economic and monetary integration, namely, the demise of the Bretton Woods System, the oil shocks and depreciation of the dollar in the 1970s.[8]

During the periods of the exchange rate regime under the Smithsonian agreement in December 1971 and the following flexible exchange rate regime, the prospect of future economic and monetary integration did not appear bright in Europe with first "the snake in the tunnel" and later with simply "the snake."[9] Frustrated by the little progress made in the 1970s, two European leaders, French President Giscard d'Estaing and German Chancellor Helmut Schmidt, agreed to establish a "new monetary stability zone" in the form of the European Monetary System (EMS).

2. The European Monetary System

The EMS, which became operational in March 1979, was a movement toward more economically integrated Europe through policy co-ordination and exchange rate stability.[10] Reflecting the lessons from the Bretton Woods System, the EMS was

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[7] See Collignon (1994).

[8] The oil shocks and the depreciation of the dollar in the 1970s caused an asymmetric impact on each individual countries in Europe according to the structure of the industries and the importance of the capital markets.

[9] "The snake agreement" commenced in 1972 whereby the EEC members were allowed a maximum instantaneous fluctuation of ±2.25 per cent against any EEC member currency. The "tunnel" referred to the Smithsonian Agreement whereby a European currency could fluctuate at most ±2.25% against the US dollar.

[10] In 1979 the nine Community member countries, composed of the six EEC founding countries plus Ireland, Denmark and the UK participated in the EMS. The UK participated in the Exchange Rate Mechanism (ERM) only temporarily between 1990 and 1992. Greece never participated in the ERM. Spain and Portugal both joined the EMS in 1989. Spain participated in the ERM in 1989 while Portugal did not become a participating member until 1992. Austria, Finland and Sweden joined the EMS in 1995, but only Austria and Finland participated in the ERM in 1995 and 1996, respectively.

designed to be more flexible and symmetric in terms of monetary policy formulation and foreign exchange intervention responsibilities. In practice, however, the EMS was an asymmetric system, somewhat similar to the Bretton Woods System, represented by the presence of an anchor currency and German dominance in the system, which frequently generated tensions among participating countries.

2.1 A symmetric system under the EMS

Some participants' desire for a more symmetric monetary system is reflected in the features stipulated in the EMS agreement. Three important arrangements agreed to enhance symmetry in the system are the following: (1) the use of the European Currency Unit (ECU), (2) symmetric intervention obligation, (3) implementation of the realignment rules.

The ECU

The *ECU* is a weighted average, or portfolio, of the Member States' currencies and serves as the monetary reference unit in the EMS. The logic behind the introduction of the ECU is that the use of a common unit of account and common official reserve asset, defined as a basket of currencies Community currencies, within the EMS would facilitate credit arrangements between the Member States without depending on the US dollar and would prevent the emergence of a dominant currency in the system. Two important roles of the ECU consist of a reserve asset in the system and the basis for the divergence indicator.

In relation to the first role of the ECU, in order to promote and facilitate the use of the ECU as a reserve asset, 20 per cent of the dollar and gold reserve assets of the Member States were deposited with the European Monetary Co-operation Fund (EMCF)

to receive an equivalent claim denominated in the ECU. Although the EMCF was originally set up to administer (very) short-term financing facilities that already existed under the snake system, in reality, the EMCF remained as a multilateral bookkeeping body, with each national central bank's account denominated in ECUs. It was also agreed that within two years after the start of the EMS, a European Monetary Fund would be created together with full utilisation of the ECU as a reserve asset, created ex-nihilo, without the need to swap dollar and gold assets.[11]

The ECU was designed to be used as the basis of the divergence indicator, the second role of the ECU. To achieve macroeconomic policy co-ordination under the EMS, it was necessary to formulate "Community macroeconomic policies" which serve as a yardstick for the entire EMS. In order to signal macroeconomic policies divergent from the Community macroeconomic policies, the concept of the Community average[12] was built into the mechanism of the divergence indicator, which is derived from the relationship between a currency's central rate and market rate against the ECU. When the divergence indicator of a country exceeds a certain limit, implying the divergence of its macroeconomic policies from other members (See Appendix A), the country is expected to adjust its economic policy to conform to the Community average.[13]

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[11] However, this arrangement never materialised mainly due to German opposition on the ground that the presence of an additional monetary institution would lead to increased international liquidity that may be contrary to German monetary policy of price stability. Although for the above reason the "official ECU," created by the officials as a reserve asset, was not widely used as intended, it was found as a useful financial instrument in private markets.

[12] France and the UK supported the Community average approach based on the divergence indicator whereas Germany opposed to this approach in fear of conforming to the Community-average monetary stance when inflation is high in the Community.

[13] This mechanism offered a clear indication as to who is misbehaving, however, it was not as straightforward to determine which currency should be used for intervention as in the case of bilateral parity grids. Selection of an intervention currency, which itself is not diverging, to correct the market exchange rate of the diverging country could lead to a destabilised money supply in the non-diverging country. Hence this approach was deemed inappropriate as a signal for intervention and the divergence indicator system was never used in the EMS.

Symmetric intervention obligation

Although some countries, especially the UK and France, advocated the concept of the Community average with the use of the ECU, due to the German's solid determination to pursue its monetary discipline and its reluctance to conforming to potentially lax monetary policy based on the Community average, a bilateral parity-grid system was instead introduced to the ERM. Under this system each ERM participating currency established a central rate with respect to other participating currencies. The bands of fluctuations around the bilateral central parity were set at ±2.25 per cent, with some exceptions,[14] and were maintained until August 1993 when the bands were widened to ±15 per cent, again with an exception.[15] The symmetry of the ERM stems from the *symmetric intervention obligation* in the foreign exchange market. When the currency of one member country reached the upper or lower limit of the band, both the countries of the appreciating and depreciating currencies were forced to intervene. The participating countries were guaranteed access to unlimited very short-term credit facilities of the EMCF when they required the appreciating currency for intervention purposes. In theory, the appreciating country had an obligation to provide the depreciating country with its currency needed to maintain the bilateral rate within the given fluctuation band.

Realignment Rules

Another feature that enhanced symmetry in the ERM is the *realignment rules*. Realignment is inevitable when the pre-assigned nominal bilateral central rates can no longer support the underlying economic fundamentals. When the economic and

[14] The Italian lira was allowed ± 6 per cent margins around its bilateral central parities. The Spanish peseta, the British pound and the Portuguese escudo were also allowed a ±6 per cent range when they joined the ERM in 1989, 1990 and 1992, respectively.

monetary policies of participating countries diverge significantly from each other, it is likely that their inflation rates also depart from each other, causing disequilibrium in relative price levels. Unless correcting the central rate in order to return to the equilibrium, the high-inflation country incurs a loss of competitiveness, balance of payment deficit and/or excessive unemployment.

It is argued that the exchange rate mechanisms prior to the ERM lacked clear and timely realignment rules. Consequently, the exchange rate imbalances tended to accumulate under the Bretton Woods System, whose disruptive ending well illustrates this fact. Similarly, the subsequent "snake agreements" was characterised by realignments based on unilateral decisions or abandonment of the system in extreme cases. Although the ERM did not set clear realignment criteria and therefore realignments rather occurred as a result of a bargaining process between participating governments, a mutual agreement, at least, was necessary when it actually occurred. At the same time, instead of resorting to frequent realignments to accommodate for inflation differentials, the participating countries strove for internal adjustments to be in line with the given central rates.[16]

2.2 An asymmetric system under the EMS

Although the EMS was originally designed to function in a symmetric manner as discussed in Section I-2.1, there was asymmetric nature in its actual working. The presence of asymmetry is represented by the following factors: (1) the existence of an

[15] Although the fluctuation bands were widened to ±15 per cent around the bilateral central parity in 1993, the Deutsche mark and the Dutch guilder kept their ±2.25 per cent band.

[16] The distinct characteristic of the EMS is well described by Collignon: "The success of the EMS can be attributed to the fact that it did not operate as a crawling peg regime, but that nominal exchange rate rigidity was used in different ways to support domestic adjustment policies. This is the essence of the so-called 'disciplining effect of the EMS'." See Collignon (1994).

anchor currency, (2) asymmetric intervention obligation, (3) the use of sterilised intervention.

Anchor currency

The ECU was created to resolve the "n-1" problem in the fixed exchange system but its failure to fulfil its roles gave rise to the DM as an *anchor currency*. In a fixed exchange rate setting "n-1" degrees of freedom implies that only the anchor, the n^{th} country, can determine an independent monetary policy in the long run. The monetary policy of the n^{th} country therefore serves as an anchor that ties down the money supply and the price level in other countries. Important factors that rendered the DM an anchor currency status are its good record of price stability and its superior function as an international reserve asset.

The price stability in Germany is distinguished because of its post-war history of low inflation and the credible commitment of the Bundesbank. This achievement is highly attributable to the stance of the Bundesbank with respect to inflation. Reflecting the bitter history of hyperinflation in the 1920s, the German central bank has always been keen in obtaining a high degree of price stability. Its credibility also stems from the central-bank independence, indicating that the monetary policy can be carried out without government interference. Thus, by eliminating the possibility of monetary accommodation, the Bundesbank's ability to commit itself to the low-inflation policy is significantly improved.[17]

The DM became a preferred reserve asset[18] because it was backed by price stability, full convertibility and sufficient market breadth and depth. Price stability is

[17] See Fratianni, *et al.* (1992).

necessary for a reserve asset since it preserves the value of the currency and reduces the risk of depreciation. Full convertibility, equivalent to the absence of capital control, boosts the holding of a reserve asset since it eliminates uncertainty associated with transaction costs. In Europe, Germany was among the first to adopt full convertibility of its currency. Sufficient market breadth and depth of a currency are pertinent to large assortment of financial instruments and the volume of international transactions, respectively. Germany's sizeable trade volume and financial activities together with its sophisticated financial market enhance the liquidity of the DM and lessen the exchange rate volatility.

Asymmetric intervention Obligation

It is pointed out that despite the design of the ERM in terms of intervention obligation, in practice, the central banks resorted to intramarginal interventions i.e. interventions within the bands, more often than those at the limits. In this case, the very short-term credit facilities were *not* available, which resulted in rather asymmetric intervention responsibilities. A striking contrast can be seen in the rows containing intramarginal interventions conducted by the Bundesbank and the other ERM members in Table I-1. The Bundesbank never intervened unless the DM was at the margin while for its counterparts intramarginal interventions outnumbered those at the margin.

The difference in intervention behaviour lies in Germany's reluctance to voluntary intervention and other central banks' hesitation to intervene at the limits. Bundesbank has always been keen to the impact of foreign exchange interventions on its domestic money

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[18] The use of the DM as a reserve asset also induces its use as a vehicle currency. A vehicle currency serves as a unit of account and means of payment in the form of trade invoicing and quotation of merchandise.

supply. When a bilateral intervention occurs, the depreciating country attempts to appreciate its currency by buying it with the strong currency while the appreciating country sells its currency in exchange for the weak currency. The direct consequence of this operation is the increased money supply in the appreciating country. Since intervention support conflicts with the Bundesbank's primary objective of price stability, the Bundesbank limited interventions only to the occasions when it was obligated by the ERM agreement. Conversely, intramarginal intervention is carried out to prevent a depreciating currency from approaching the lower limit of the fluctuation margin. Since the central banks of weak currencies perceived obligatory intervention as a negative signal to the foreign exchange market and feared consequent capital outflows and reserve losses, they often resorted to intramarginal interventions, which can be explained by psychological reasons.

Table I-1 **FOREIGN EXCHANGE MARKET INTERVENTIONS IN THE EMS**

	79-82	83-85	86-87	88-89
All ERM countries inside EMS				
- at the margin	20.5	15.4	22.3	0.9
- intramarginal	29.2	48.6	113.7	32.4
Bundesbank				
- at the margin	3.1	1.7	3.3	0
- intramarginal	0	0	0	0

Source: Bini-Smaghi and Micossi, and Bundesbank.
Notes: Figures are algebraic sum of purchases and sales and expressed in billions of US dollars.

Moreover, even if intervention was conducted at the limits, the availability of unlimited very short-term credit guaranteed by the ERM, most importantly the availability of the DM, was not fully ensured. This fact was brought to the fore when the president of the Bundesbank, Otmar Emminger, denied the undertaking of open-ended intervention. In his letter, he referred to the support of its partner's currencies and asked the German government to "safeguard the Bundesbank from such a situation, either by a

correction of the exchange rate in the EMS or, if necessary, by discharging the Bundesbank from its intervention obligations."[19] This incident was considered to undermine the symmetric aspects of the ERM and the uneven intervention burden between Germany and its counterparts partly resulted in the currency crises in 1992-3.

Sterilised intervention

Asymmetry in the ERM also appears in the differences in the extent to which the Bundesbank and other central banks sterilised the domestic liquidity impact. A study by Mastropasqua *et al.* reveals that Germany sterilised, on the average, between 60 per cent and 80 per cent of interventions within any quarter for the period 1979-87 while the numbers for Italy, Belgium and France are as low as 30, 31 and 40 per cent, respectively.[20]

The difference in sterilisation behaviour across countries can be explained by the difference in cost associated with sterilised intervention. For a strong currency country it is almost costless to sterilise in the EMS. To keep the liquidity level constant, the Bundesbank, following the intervention, has to retract the domestic money supply. Although this operation partly cancels out the effect of the intervention, the consequences are a constant domestic monetary base and an increase in its foreign reserve in Germany. On the contrary, sterilisation by a weak currency country is very costly since it leads to

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[19] See Kenen (1995).

[20] Drawbacks of this study are: it does not distinguish between EMS and US dollar interventions; it deals with short-run sterilisation and fails to capture the exchange-rate commitment in the long run. See Gros and Thygesen (1992), and Mastropasqua *et al.* (1988).

perpetual depreciation of the currency and a loss of foreign reserve.[21] An asymmetric impact on the foreign exchange reserve is therefore matched by asymmetry in the monetary base adjustment. Given the foreign reserve constraint of the weak currency country, an asymmetric liquidity impact following unilateral sterilisation by the Bundesbank significantly modifies the effectiveness of the intervention.

3. The Effect of the European Monetary System

Despite the substantial monetary constraint on countries with a weak currency, the benefit from "tying one's hands" to the German monetary policy can be seen as a reduced cost of disinflation for inflation-prone countries. This was true especially between the 1983 and the 1992 currency crisis, a period when the EMS was in a relatively calm water. Although extensive econometric studies have not shown that the EMS is a Deutsche mark zone, the DM emerged as an anchor during this period. The reputation of the Bundesbank for price stability, paralleled by the strong commitment of high-inflation countries to a fixed exchange rate, enhanced the credibility of the disinflationary policies throughout the EMS.

In the 1980s, potential problems with the German-dominated EMS were concealed in the EMS-wide policy preference for inflation fighting. However, the circumstance dramatically changed after German unification. Germany faced a budget deficit and rising wage rates and it resorted blindly to restrictive monetary policy while its partners wanted to relax it to recover from the recession. This difference in monetary

[21] Unsterilised intervention in a weak currency country shrinks its domestic liquidity base. Consequent interest rate increases induces the weak currency to appreciate. Conversely, sterilised intervention prevents the interest rates from rising and leads to persistent depreciation. To defend the currency from further depreciation the weak currency country has to borrow the strong currency from the strong country (under the ERM countries were not supposed to hold reserve currencies of member countries to avoid the creation of reserve currency), which will result in reserve depletion in the weak currency country.

policy preference gave rise to a question about whether the indirect co-ordination approach is feasible and desirable in Europe. Unlike direct co-ordination under which the money supply target is set for each member, under indirect co-ordination a strong currency country determines the monetary policy which is transmitted to all members through commitment to a fixed exchange rate. For an economy without full convergence, the monetary policy of the Bundesbank can be overly restrictive, exporting undesirable austerity to other members.

Toward the end of the 1980s, concerns about the future prospect of the EMS started to emerge. A famous quote, "inconsistent quartet," by Padoa-Schioppa precluded mutual existence of free trade, full capital mobility, fixed exchange rate and independent monetary policy, and he argued that a monetary union is the only solution. At the same time, the movement toward the realisation of an economic and monetary union emerged in France. Although France advocated the fixed exchange regime under the EMS framework, its dissatisfaction with the asymmetric nature of the EMS prompted France to take the initiative in the Hanover Summit (1988) to establish a concrete step forward to the Economic and Monetary Union by setting up the Delors Committee.

After eight meetings, the Delors committee hammered out the Delors Report, the forerunner of the EMU section of the Maastricht Treaty. Adopting the general ideas of the Werner Report, the Delors Report listed three necessary conditions for a monetary union: total convertibility of currencies, complete liberalisation of capital flows and full integration of the financial market.[22] Although the Delors Report followed the three-stage approach of the Werner plan, the former was more specific about the institutions to be established and progression needed between different stages. Another contrast between

the two reports lies in the treatment of a single currency. In the Werner Report there was no mention of a single currency and it was rather tacitly implied by the creation of a single economy whereas the Delors Report made clear the generation of a single currency. Moreover, the latter launched "binding rules" regarding the fiscal policy in Stage III, including "effective upper limits on budget deficit" and prohibition of monetary financing of deficit.[23] In 1989, the report and its recommendation were approved at the Madrid European Council, which set the starting date of Stage I on July 1, 1990.

In a subsequent Rome European Council meeting, however, the Member States had to negotiate the points that were left vague in the report, namely, a timetable for the final stage and convergence criteria. Although the British government was opposed to the Delors strategy from the outset and proposed "gradualism and currency competition,"[24] it was never perceived as a serious alternative. Instead, at the end of the bargaining process in Rome the Heads of State or Government spelled out, with British dissent, the Maastricht Treaty, advocating "gradualism and conditionality."[25] After a year of negotiations, the Maastricht EMU was endorsed by the European Council[26] in December 1991 and it came into effect in November 1993.

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[22] See Kenen (1995).
[23] See Taylor (1995).
[24] The British government proposed to introduce a Hard European Currency Unit (HECU) that would compete with national currencies with no risk of devaluation against any Member States' currency. In the long run, the HECU would replace national currencies and would become the common currency of the Community. See Gros and Thygesen (1992) and Kenen (1995).
[25] See Fratianni *et al.* (1992)
[26] At that time the European Council consisted of the Heads of State or Government of the 12 Member States and of the President of the European Commission.

II. The EMU Section of the Maastricht Treaty

The Maastricht Treaty (the Treaty hereafter), whose official title is the "Treaty on European Union," was a benchmark for the realisation of the Economic and Monetary Union (EMU). The Treaty clarified certain areas that were left unspecified in the Delors Report. First, it went on to set the deadline for the commencement of Stage III. Stage III, when participants' exchange rates are irrevocably fixed and the ECU will become a currency on its own right, will start before 1999, if at least a majority of Member States[27] meet the convergence criteria (discussed below). If no date has been set by the end of 1997, Stage III must start on January 1, 1999 with the qualified countries designated by the Heads of State or Government, without the need to designate a majority of the Member States. Second, another important aspect of the Treaty is the clause regarding "opt-outs" and "derogations." "Opt-outs" are granted to Member States which commit themselves to join the first two stages of EMU upon ratification of the Treaty but reserve the right not to move to Stage III even if they qualify.[28] "Derogations" are accepted to Member States that do not qualify for Stage III of EMU and are thus exempted temporarily from participating in the single currency area.

Finally and most importantly, the Treaty provides the legal foundation for a full economic and monetary union and the procedures toward it in three stages. The EMU section of the Treaty stipulates the following provisions: (1) specification of the economic convergence criteria, (2) creation of a single monetary institution, (3)

[27] Member States are Belgium, Denmark, France, Germany, Greece, Italy, Ireland, Luxembourg, the Netherlands, Portugal, Spain and the United Kingdom at the time of the signing of the Treaty. Austria, Finland and Sweden joined in 1995. Currently, the EU counts 15 countries.
[28] Currently, applicable countries are Denmark, Sweden and the United Kingdom.

introduction of a single currency (the euro).[29] Chapter II examines the above three aspects of the Treaty which are critical to the proper functioning of EMU.

1. Convergence criteria

The nominal convergence criteria in the Treaty represent two objectives: EMU should be inclusive in terms of participation so as to promote integrated Europe and not divided Europe; the economic performance of participating countries should conform to a certain standard in order for EMU to play a significant role in the international monetary forums. Given the bipolar situation[30] regarding economic performance at the time of the formulation of the Treaty, the convergence criteria were deemed necessary to narrow the differences in economic characteristics and performance of the Member States before moving on to Stage III.

To qualify for Stage III of EMU, participants must attain *nominal* convergence,[31] which is referred to in Article 109 of the Treaty. The four criteria are with respect to (1) inflation, (2) fiscal position, (3) exchange rate and (4) interest rates. Sections II-1.1 to II-1.4 discuss the essence of these criteria and observe the past convergence performance of the Member States and the prospect of their meeting the convergence criteria.

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[29] The eventual single currency was originally called the ECU, however, it was changed to a more specific name, the euro, at the Madrid European Council of December 1995.

[30] Although the situation changed dramatically in recent years, there was a substantial gap between the so-called core countries including Germany, France, Denmark and Benelux countries, and peripheral countries including Italy and the southern countries.

[31] It is useful to clarify the distinction between nominal, real and institutional convergence. First of all, nominal convergence means filling the international gap between nominal variables, such as prices, costs and exchange rates. In efficient markets, prices reflect all the relevant information, therefore, nominal convergence represents the convergence of underlying real determinants. According to Collignon, " in so far as EMU is based on the 'principle of an open market economy with free competition', nominal convergence is necessary and sufficient condition for EMU." Second, real convergence signifies eliminating divergence in real variables such as productivity, unemployment, and economic growth. Finally, institutional convergence requires the assimilation of economic institutions and practices that assist both nominal and real convergence.

1.1 Inflation

The first criterion requires convergence of the annual rate of inflation of the Member States. Inflation convergence is a necessary condition for the formulation of the single monetary policy. The inflation criterion, according to Article 109j.1 of the Treaty, requires the achievement of price stability. The Treaty reads, "this will be apparent from rate of inflation which is close to that of, at most, the three best performing Member States in terms of price stability." The more specific definition is given in "the Treaty Protocol"[32] ("the Protocol" hereafter) according to which convergence is to be assessed in terms of the annual rate of increase in a country's consumer price index and the rate should not exceed that of the "three best-performing States" in the year before the examination by 1.5 per cent.

Table II-1 **PRICE DEFLATOR OF PRIVATE CONSUMPTION (% change p.a.)**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	Average	Standard Deviation
81-90	4.6	5.8	2.6	18.3	9.3	6.2	7.1	10.0	5.0	2.3	3.6	17.3	6.4	8.2	6.0	7.5	4.7
91	3.3	2.4	3.8	19.8	6.4	3.2	3.0	6.9	2.8	3.2	3.0	12.2	5.6	10.3	7.5	6.2	4.8
92	2.3	2.0	4.8	15.0	6.4	2.4	2.6	5.6	3.4	3.1	3.9	9.1	4.1	2.2	5.0	4.8	3.4
93	3.5	0.6	3.9	13.8	5.6	2.2	1.9	5.4	4.1	2.1	3.3	6.6	4.2	5.7	3.4	4.4	3.1
94	2.8	1.6	2.7	10.8	4.8	2.1	2.7	4.6	2.3	2.8	3.3	5.1	1.4	3.0	2.5	3.5	2.3
95	1.7	2.0	1.9	9.3	4.7	1.6	2.0	5.8	0.7	1.5	1.5	4.2	0.3	2.4	2.6	2.8	2.3
96	2.3	2.1	1.8	8.5	3.4	1.9	1.1	4.3	1.4	1.3	2.5	3.3	1.6	1.2	2.6	2.6	1.9
97	1.7	2.1	2.1	6.0	2.1	1.3	1.4	2.2	1.6	2.1	1.9	2.2	1.3	1.8	2.4	2.1	1.1
98	1.8	2.5	2.2	4.5	2.2	1.5	2.5	2.2	1.7	2.4	2.1	2.1	2.0	2.0	2.4	2.3	0.7
99	1.8	2.7	2.2	3.5	2.3	2.0	3.0	2.0	1.8	2.6	2.2	2.3	2.0	2.3	2.3	2.3	0.5

Source: Eurostat and DGII.
Notes: The numbers for 1997-99 are estimated as of July 1997.

Table II-1 summarises the inflation convergence performance of the EU member countries. The average inflation rate has been downward since 1991 along with decreasing international discrepancies. The speed of disinflation of inflation-prone countries such as Greece, Italy, Portugal and Spain has drastically improved since 1991,

[32] The four criteria in Article 109j (1) are developed further in a Protocol annexed to the Treaty.

which is partly attributable to the reduced cost of disinflation thanks to the reputation gain from tying their hands to the core countries with a credible record of price stability. According to the estimated values for 1997, all countries except Greece are likely to satisfy this criterion.

1.2 Fiscal position

The second criterion requires convergence of the fiscal position. According to Article 109j.1, a robust fiscal position is essential for the proper functioning of EMU in Stage III because a heavily indebted country is likely to monetise its debt/deficit, leading to divergence of the other convergence criteria. The Protocol indicates that sustainability is to be assessed in terms of the government deficit[33] and debt. Specifically, the deficit should not exceed 3 per cent of GDP at market prices and the gross debt should not exceed 60 per cent of GDP at market prices. The Treaty offers a more lax interpretation of the above stringent criterion, which allows exceptional cases if "the ratio has declined substantially and continuously."

Another important provision regarding the fiscal position is the "no bailout" clause in the Treaty. Article 104b rules out the possibility of monetary financing of insolvent governments. There are two forces working in the opposite directions when the government of a county is in an excessively insolvent position. First, the governments of other participating countries attempt to respect the "no bailout" clause in fear that breaking it will enormously weaken the credibility of the entire EMU framework. Second, at the same time, in such a financially integrated area as EMU, financial instability in one country will be inevitably transmitted to others. If the nominal interest

[33] The budget deficit is defined as net borrowing of central and regional government and social security funds.

rate in EMU rises due to the debt financing, no inflation means an increased real interest rate. Since it is costly to all participants, EMU has an incentive to relax its stance with respect to price stability. For this reason, it is necessary that the fiscal criterion serve as a watchdog over members' financial robustness to enhance the credibility of the "no bailout" clause.

Table II-2 **GENERAL GOVERNMENT NET LENDING (as % of GDP)**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	Average
81-90	-8.8	-2.5	-2.0	-10.4	-4.4	-2.3	-8.4	-11.2		-3.5	-3.0	-6.1		-0.8	-1.9	-5.0
91	-6.3	-2.2	-3.3	-11.5	-4.4	-2.2	-2.3	-10.1		-2.9	-2.7	-6.7	-1.5	-1.1	-2.3	-4.3
92	-6.9	-2.9	-2.8	-12.8	-3.5	-4.1	-2.5	-9.6		-3.9	-1.9	-3.6	-5.9	-7.8	-6.2	-5.3
93	-7.1	-2.7	-3.2	-13.8	-6.9	-5.8	-2.4	-9.6	1.7	-3.2	-4.1	-6.1	-8.0	-12.3	-7.9	-6.1
94	-4.9	-2.6	-2.4	-10.3	-6.3	-5.7	-1.7	-9.3	2.6	-3.8	-4.8	-6.0	-6.1	-10.3	-6.8	-5.2
95	-3.9	-2.4	-3.3	-9.8	-7.3	-5.0	-2.1	-8.0	2.0	-4.0	-5.0	-5.8	-5.0	-7.1	-5.5	-4.8
96	-3.2	-0.8	-3.4	-7.6	-4.7	-4.1	-0.4	-6.8	2.6	-2.3	-3.8	-3.2	-3.1	-3.7	-4.9	-3.3
97	-2.1	0.7	-2.7	-4.0	-2.6	-3.0	0.9	-2.7	1.7	-1.4	-2.5	-2.5	-0.9	-0.4	-1.9	-1.6
98	-2.3	1.9	-2.7	-3.0	-2.4	-3.0	1.2	-3.7	1.1	-1.9	-2.6	-2.4	-0.2	-0.2	-0.6	-1.4
99	-2.2	2.4	-1.9	-2.7	-2.2	-2.6	2.1	-3.6	0.5	-1.5	-2.4	-2.2	0.5	0.2	-0.3	-1.1

Table II-3 **GENERAL GOVERNMENT GROSS DEBT (as % of GDP)**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	Average
81-90	118.6				38.2	30.4		81.7		69.5	51.1		15.8	55.8		
91	127.7	65.9	41.5	92.3	45.5	35.8	95.3	1015	4.2	78.8	58.1	68.7	23.0	53.0	35.6	61.8
92	129.2	70.2	44.1	98.8	48.0	39.7	92.3	108.7	5.1	79.6	58.0	60.7	41.5	67.1	41.8	65.7
93	135.1	82.1	48.0	111.6	60.0	45.3	96.3	119.1	6.1	81.2	62.7	63.1	58.0	76.0	48.5	72.9
94	133.5	78.4	50.2	109.6	62.5	48.2	89.1	124.9	5.7	77.9	65.4	63.8	59.6	79.3	50.4	73.2
95	131.2	73.8	58.0	111.3	65.3	52.5	82.2	124.4	5.9	79.1	69.3	66.5	58.1	78.2	53.8	74.0
96	126.9	71.6	60.4	112.6	70.1	55.7	72.7	123.8	6.6	77.2	69.5	65.6	58.0	77.8	54.4	73.5
97	122.2	64.1	61.3	108.7	68.3	58.0	66.3	121.6	6.7	72.1	66.1	62.0	55.8	76.6	53.4	70.9
98	121.3	62.2	61.7	106.4	66.5	58.2	59.2	121.9	6.9	71.5	65.6	60.8	57.3	75.3	51.5	69.8
99	117.7	57.0	60.3	104.2	64.8	58.2	52.3	120	7.6	69.4	64.8	59.5	55.8	71.2	49.8	67.5

Source: Eurostat and DGII.
Notes: The numbers for 1998-99 are estimated as of July 1997.

Table II-2 and 3 display the transition of the annual deficit and debt of the EU member countries. The starting value of the fiscal position differs from country to country and, in a strict sense, the prospect of meeting the debt criterion seems as impossible as it seemed at the time of the signing the Treaty. As for the deficit criterion, however, there is a downward trend since 1993. According to the deficit figures for

1997, all countries except Greece met the threshold value of 3.0 per cent. However, the crucial judgement on qualification for Stage III is likely to depend on whether a country "substantially and continuously" reduced its debt.

1.3 Exchange rate

The third criterion is the observance of nominal exchange rates moving within the normal fluctuation margins in the framework of the ERM. A country, eager to enter Stage III, must demonstrate that its currency has stayed in the ERM without severe tensions for at least the last two years before the examination. The terms, "normal fluctuation margins" and "severe tensions," are somewhat ambiguous and became a target of criticism. At the time of the drafting of the Treaty, the normal exchange rate fluctuation bands were set at ±2.25 per cent around the bilateral central rates under the ERM. As we recall from Chapter I, the bands for most countries were widened to ±15 per cent, in August 1993, to mitigate speculative pressures. Without referring to any specific number the European Commission (the Commission hereafter)[34] equivocally admitted, "it is *de facto* stability it matters."[35] This message was interpreted that currencies must be within the ±15 per cent bands, and must not have experienced "large" fluctuations within it.[36] It seems that, given uncertainty of the foreign exchange market prior to Stage III, the Commission strategically avoided binding themselves in a narrowly defined criterion and therefore there is further possibility that it would relax the definition according to the development of exchange rates.

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[34] The European Commission ensures the smooth functioning and development of the common market and represents Community interests internally and externally.
[35] See Taylor (1995).
[36] See Taylor (1995).

Thanks to realignments of nominal exchange rates that amount to 18 times between March 1979 and November 1996[37] and wide fluctuation margins, all currencies in the ERM have satisfied the exchange rate criterion since August 1993. Especially, since the last realignment in March 1995, in the absence of asymmetric shocks or market disturbing events, the ERM has experienced a stable period. Exchange rate stability is likely to be sustained as other economic variables further converge. However, it may not be guaranteed in the periods when several critical decisions regarding EMU will be announced.

1.4 Interest rate

The last criterion aims convergence of long-term interest rates. According to Article 109j.1 this criterion requires "the durability of convergence achieved by the Member State and of its participation in the ERM of the EMS being reflected in the long-term interest rate levels." Further, the Protocol states that a country must have had an average nominal long term interest rate that does not exceed that of, *at most*, the three best performing states in terms of price stability by more than two percentage points. The distinct characteristic of this criterion is its forward-looking nature. In the absence of capital control and expected exchange rate movement, long-term interest rate differentials are, in part, explained by expected inflation differentials. Moreover, long-term interest rates in most Member States are dominated by the movements in government bond markets, therefore, convergence toward the best-performing countries expresses market confidence in the sustainability of the government's financial position.[38] Apart from the argument that two-percentage-point difference may be too wide to confirm convergence,

[37] This number excludes realignments due to accession of new participants. *Source*: Eurostat and DG II.
[38] See Collignon (1994).

this indicator provides useful information on the market perception of whether inflation and/or fiscal position will converge in the long run. Since there are separate criteria for inflation and fiscal position, the interest rate criterion can be considered as a forward-looking supplementary test for inflation and fiscal convergence.

Table II-4 **NOMINAL LONG-TERM INTEREST RATES**

	B	DK	D	E	F	IRL	I	L	NL	A	P	FIN	S	UK	Average	Standard Deviation
81-90	10.4	13.4	7.6	14.3	11.4	12.6	15.0	8.9	8.3	8.1		12.3	12.3	10.9	11.2	2.4
91	9.3	10.1	8.6	12.4	9.0	9.2	13.0	8.2	8.7	8.6	18.3	11.7	11.8	9.9	10.6	2.7
92	8.6	10.1	8.0	12.2	8.6	9.1	13.7	7.9	8.1	8.3	15.4	12.0	10.0	9.1	10.1	2.4
93	7.2	7.2	6.4	10.1	6.7	7.8	11.1	6.9	6.3	6.6	9.5	8.2	8.6	7.3	7.9	1.5
94	7.8	7.9	6.9	10.1	7.3	8.1	10.4	6.4	6.9	6.7	10.4	8.4	9.5	8.1	8.2	1.4
95	7.5	8.3	6.8	11.3	7.5	8.3	11.9	6.1	6.9	7.2	11.5	8.8	10.2	8.2	8.6	1.9
96	6.6	7.3	6.3	9.0	6.4	7.4	9.5	5.2	6.3	6.4	8.9	7.2	8.2	7.9	7.3	1.2
97 July	5.6	6.1	4.9	5.6	5.4	6.5	6.4	5.5	5.7	5.6	5.6	4.7	6.3	7.0	5.8	0.6

Source: European Economy No.63.

Notes: The definitions of long-term interest rates vary across countries. For detailed definitions see European Economy No.63; The figures for Greece between 1989-93 are not available. The rates for 1994, 1995, 1996 and July 1997 are 19.0, 17.1, 14.9 and 9.6, respectively; The last row shows the interest rates in the month of July 1997 based on EC Economic data pocketbook.

Table II-4 indicates the nominal long-term interest rates of the EU member countries. The average rate was almost halved between 1991 and 1997. The disparities across countries, expressed by the standard deviation, have been shrinking since 1991, except in 1995, when some countries had to defend their currency in the foreign exchange market by increasing the short-term interest rates. As significant convergence has been achieved for the other convergence criteria and as the market expectations on who will participate in the single currency area in the first wave are reaching more or less a consensus, the Community's long-term interest rates are coming down to the level of the core countries. According to the figures for July 1997, all countries, except for Greece (See the note to Table II-4), wishing to enter Stage III in January 1999 are likely to satisfy the interest rate criterion.

2. Single monetary institution

The Treaty stipulates the establishment of a new monetary institution, the European System of Central Banks (ESCB), which will be in charge of the monetary policy of the single currency area. Sections II-2.1 to II-2.3 focus on the following aspects of the ESCB: (1) the design of the ESCB, (2) the objective of the ECSB, (3) independence of the ECSB.

2.1 The design of the ESCB

The Treaty reserves a specific section pertaining to the legal foundation of the monetary policy and the monetary institution of the third stage of EMU. Article 106 defines that the ESCB is composed of the European Central Bank (ECB) and each national central bank (See Appendix B). The ECB has a legal personality and governs, through its decision-making bodies, the ESCB. The monetary policy is formulated by the ECB and implemented by the national central banks under the instruction of the ECB. The ECB also has the exclusive right of currency issuance, foreign exchange intervention and management of foreign exchange reserves of the member central banks. The national central banks are in a subordinate position to the ECB, according to the annexed protocol,[39] and they have to act in accordance with the guidelines and instructions of the ECB.[40]

According to Article 109a the governing bodies of the ESCB are the Governing Council and the Executive Board, of which the former is composed of the members of the Executive Board and the governors of the national central banks, and the latter, the president, the vice president and four other members of "recognised standing and

[39] The annexed protocol is "a Protocol on the Statute of the European System of Central Banks and of the European Central Bank."
[40] See Giovannini (1995).

professional experience in monetary or banking matters." In addition, Article 109l states that the Executive Board may be smaller if there are countries with a derogation but it should not be less than four.

Although the operations of the ECB will not be established until July 1998 and will not be legally binding until the start of Stage III,[41] a transitional institution, the European Monetary Institute (EMI), was instead set up as a forerunner of the ECB. The main functions of the EMI are to administer the operation of the EMS by overseeing the development of the ECU, to strengthen the co-ordination between national monetary policies of the Member States and to make the technical preparation for Stage III. The EMI will be dissolved as soon as the ECB is created.

2.2 The objective of the ESCB

Article 105 explicitly specifies that the primary objective of the ESCB is to maintain price stability. It goes on to state that without prejudice to the objective of price stability, the ESCB shall support the policies of the Community aimed at achieving its general objectives. These objectives are "the promotion of a harmonious and balanced development of economic activities, sustainable and non-inflationary growth respecting the environment, a high degree of convergence of economic performance, a high level of employment and of social protection, the raising of the standard and the quality of living, and economic and social cohesion and solidarity among Member States."[42] The specification of the objective of the ESCB is very strong, even compared with the statute

[41] Originally, the Delors Report addressed concerns over adaptability of monetary authority to a new financial market characterised by the new monetary institution and the single currency. Therefore, the report granted the ECB a learning period (Stage II) and favoured gradualism in transferring monetary responsibilities. However, the Maastricht Treaty precludes this learning period so that the ECB will not carry over political influences, which it might encounter in Stage II, to Stage III.

[42] See Giovannini (1995).

of the Bundesbank whose Act has no specific provision for price stability despite its firm commitment to inflation control and its mandate to safeguard the "stability of the currency."[43]

The rationales for price stability as the primary objective of the ECB seem political as well as economic. The political aspect is seen in the concession between Germany and other Member States regarding the voting scheme in the ECB. Given the diverse sizes of the Member States, the one-country-one-vote principle in the governing body is a remarkable concession for large countries, especially for Germany. This principle has an advantage over the weighted voting scheme since the latter would over-represent the national interests rather than the Community interest. Moreover, a few larger Member States could form a bloc to dominate the decision-making process. To prevent EMU from falling into the hands of a few economic powers, Germany accepted the one-country-one-vote scheme and, in exchange, it ensured the explicit mandate of the ECB to preserve price stability.[44]

The economic rationale stems not only from the positive impact of low inflation on the output growth based on empirical analyses[45] but also from the theoretically-proven beneficial effect of the central bank's firm commitment to price stability on inflation expectations. A concept developed by Barro and Gordon[46] tells that if the ability of monetary authorities to affect real economic activity depends on the extent to which monetary policies surprise the private sector, then their monetary policies will turn out to

[43] See Fratianni *et al.*(1992)
[44] See Gros and Thygesen (1992).
[45] Apart from empirical analyses the superiority of the German record of low inflation and economic growth over the past thirty years under the Bundesbank also prompts wide acceptability of central-bank independence.
[46] See Barro and Gordon (1983).

be ineffective by private expectations, which are best informed by knowledge of the monetary authorities' objectives.

This idea can be well exemplified by the economic outcomes from two different regimes: monetary policy with rule and discretion. Under the first regime the monetary authority is committed to a fixed rule, in which case the monetary policy can be expressed as a function of the rate of inflation and exogenous disturbances.[47] Conversely, monetary policy with discretion can be characterised by the absence of such rule. This regime predicts that monetary authorities would always want to renege on the announced rule. Unexpected inflation induces a level of economic activity higher than the natural level.

However, the discretionary equilibrium is more inflationary than the one under rule because the private sector eventually recognises the incentive of the monetary authority to create surprise inflation and pushes up inflation to a level where the marginal cost of inflation is too high. Consequently, although the equilibrium level of economic activity is the same under both regimes, the inflation is higher under discretion. Therefore, the above example leads to an important theoretical conclusion that the credibility problem will produce an inflationary bias.

The ECB is likely to target money supply and/or inflation rate to maintain price stability.[48] This approach, accompanied by explicit specification of price stability as the central bank's mandate, will help reduce an inflationary bias.

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[47] The presence of the exogenous disturbances may be justified if the monetary authority has an informational advantage over the private sector. Asymmetric information will allow the monetary to respond to the supply shocks more quickly than labour market and to play a stabilising role in the economy.

[48] The British favour an explicit inflation target whereas the Germans prefer a money supply target. In any case, setting a quantitative target is essential for credibility.

2.3 Independence of the ESCB

The previous section discussed the important relationship between the credibility of the central bank and the inflation expectation of the private sector. Another solution to the credibility problem is the independence of the central bank. Strong emphasis on the independence of the ESCB is apparent in various provisions in the Treaty with two of the important factors being institutional and personal independence.

Article 107 prohibits the ESCB from taking any instruction from Community institutions or the government of the Member States. By cutting the communication between them the Treaty attempts to create a clear distinction between the domains of political interests and monetary policy. This legal imposition will facilitate countries with historical tendency of dependency between political and monetary decision-making bodies to adapt to the central-bank independence.[49] Another institutional element to enhance independence is provided by Article 104b which precludes the bailout of insolvent member governments by financing their public debt through increased money supply. In this respect, the fiscal convergence criterion prior to Stage III and the Stability and Growth Pact[50] of Stage III also play a crucial role.

Personal independence is closely related to the appointment process of the members of the Executive Board. Political influence on central bankers is strong when the government reserves the right to appoint and dismiss them according to their performance. Under the ECB, appointees to the Executive Board are selected by the Heads of State or Government without a derogation by common accord and their term

[49] However, to reduce uncertainty over uncoordinated policies arising from the absence of communication, Article 109b allows the president of the Council and a member of the Commission to attend meetings of the ECB Governing Council as nonvoting participants.

lasts for eight years without a possibility of renewal. The governors of the national central banks that make up the Governing Council together with the Executive Board members are appointed by the national governments for renewable terms not less than five years. These Executive Board members can not be removed from office by the instruction of the government for the design and execution of monetary policy. Similarly, the national central bank governors will be as hard to dismiss.

The ECB's increased independence of other decision-making bodies makes it less vulnerable to political manipulation. Since an independent central bank has little incentive to create surprise inflation to temporarily increase the level of economic activity or lower the public debt burden, an inflationary bias will be reduced through increased central-bank credibility.

3. Single currency

Along with the creation of a new central bank, the introduction of a single currency makes EMU distinct from the previous monetary arrangements in Europe.[51] Upon entry into Stage III the currency basket, the ECU, will be replaced by a single currency, the euro. Sections III-3.1 to 3.3 discuss the following aspects of the euro: (1) the rationales for the introduction of the euro, (2) the changeover timetable to the euro, (3) the transition from the ECU to the euro.

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[50] In order to discipline profligate EMU participants Stability and Growth Pact provides sanctions, including fines up to 0.5 per cent of GDP, to be applied on governments whose budget deficit exceeds Maastricht threshold of 3 per cent of GDP with exceptions allowed for periods of severe recession.

[51] The sceptic German pubic feared the changeover of their Deutsche mark to a single currency in a context of monetary union without prospect for political union. On the next day of the signing a leading German newspaper read, "In the Dutch town of Maastricht yesterday could be heard the sound, quite softly, of a funeral bell. It tolled for the symbol of German prosperity, of the German economic miracle. In 1997, or at the latest in 1999, the Deutsche Mark will be abolished.... What would be the great Ludwig Erhard have had to say about that?" See Grabbe (1996).

3.1 The rationales for the euro

Although no economic analysis with respect to whether the benefit from the single currency outweighs the cost wins unanimous support, a study by the Commission underpinned its introduction from the following five perspectives: (1) elimination of nominal exchange-rate variability and uncertainty, (2) establishment of price stability by more concerted and credible monetary policy, (3) savings in currency conversion and other transaction costs, (4) improvements in transparency of prices, (5) development of the European currency as a global transactions and investment medium.[52]

Regarding the first point exchange rate variabilities are considered significant hindrance to international trade. To reduce the exchange rate risk associated with the time lag between the contract and the settlement, risk-averse businesses tend to hedge themselves. Fixing of exchange rates will reduce the hedging cost and allow borrowings at lower real interest rates. The second point is associated with the improved credibility of the central bank in price stability. In an area with free capital movement, a single currency requires a single monetary policy. As discussed in Sections II-2.2 and II-2.3, explicit provisions in the Treaty regarding the central-bank independence will enhance the credibility of the ECB in preserving price stability. Therefore, the cost associated with anticipated and unanticipated inflation is reduced. The third point can be well described by a following extreme example. A traveller in Brussels endowed with 40000 Belgium franc makes a clockwise tour of the Community.[53] If he exchanges his cash into local banknotes in each country, at the end of the journey he will be left with only 53 per

[52] See Emerson *et al.* (1992).
[53] All EU members except Ireland, Luxembourg, Austria, Finland and Sweden, of which the last three countries were not members at the time of the study.

cent of the initial amount.[54] The fixing of exchange rate without commission or a single currency will eliminate this type of transaction cost. The fourth point relates to international price discrimination. A price discrepancy between similar goods across national borders after the transportation cost will no longer be tolerated with a single currency. This information gain induces efficient resource allocation. The last point pertains to increased external demand for the single currency. If the single currency becomes a preferred key currency i.e. a reserve asset and a vehicle currency, its external demand will rise. This may not happen in the short run since the transition from a currency that has been accepted as a key currency to another is lengthy because of structural rigidities. However, in the long run, the euro is likely to play an important role in international financial markets and add economic weight to EMU in global forums.

3.2 The changeover timetable to the euro

There are several important steps to be taken before the euro circulate as EMU's legal tender. In May 1998, the Heads of State or Government will decide, by qualified majority, which countries have satisfied the convergence criteria for participation in Stage III of EMU. Recalling from Chapter II, the convergence criterion regarding exchange rate requires that a currency must have achieved a certain degree of stability within the ERM. On January 1, 1999 the irrevocable conversion rates between the national currencies are announced and become binding according to the relevant decisions made by unanimity by the Euro ECOFIN Council (The EU Council of Ministers of Economics and Finance).[55] Therefore it is up to this body to decide if the

[54] See Bureau Européen des Unions de Consommateurs (1988) and Emerson *et al.* (1992).
[55] This ECOFIN is composed of the ministers of economics and finance of the participants of Stage III of EMU. Its decision regarding conversion rates will reflect the proposal from the Commission and the opinion of the ECB.

conversion rates should accord with the ruling market rates, the corresponding ERM bilateral central rates or new rates after one-last realignment. Moreover, the Treaty does not preclude either a pre-announcement of the conversion rates or a formula to be used for their selection.

Upon entry into Stage III the currency basket, the ECU, ceases to exist and is replaced, one-for one, by the euro. Although the national currencies become sub-units (perfect substitute) of the euro, the former will still remain legal tender in each individual participating country until the issuance of euro banknotes and coins. During this period, the public sector, financial markets, firms and individuals must adapt, at different speeds, to the new currency. With the start of Stage III, the new public debt will have to be issued exclusively in euros, while the private sector will be able to settle their contracts either in euros or national currencies. This comparatively generous leeway granted to economic agents is called the "no compulsion, no prohibition" principle.

Finally, on January 1, 2002 euro notes and coins will be introduced. At the same time, notes and coins denominated in national currencies must be withdrawn. Six months is given for the changeover to the euro and on July 1, 2002, at the latest, the euro will be the only legal tender in EMU.

3.3 The transition from the ECU to the euro

There are provisions in the Treaty that impose certain conditions on the conversion rates and on the transition from the ECU into the euro, namely, freezing of the ECU basket, one-for-one conversion between the ECU and the euro, and the external value of the ECU.

Article 109g of the Treaty states that "the composition of the ECU basket shall not be changed," which is understood that the current composition (effective since 1989) should not be changed.[56] In addition, the Madrid European Council of December 1995 specified one-for-conversion between the ECU and the euro. The purposes of this arrangement are to reduce the uncertainty about holding of the ECU and to encourage the use of the ECU by guaranteeing no capital loss (gain) upon the introduction of the euro.

Further, Article 109l.4 requires that the conversion rates decided upon the fixing of the exchange rates should not modify the external value of the ECU. However, the meaning of the term "external value" was left unclear. *Begg et al.* provide two possible interpretations. The first interpretation is that the "external value" refers to the conversion rates between the ECU and non-participating currencies. For example, the exchange rate between the ECU (euro) and the US dollar on the January 1, 1999 must coincide with that of December 31, 1998. The second interpretation treats the "external value" as the exchange rates of the ECU against any other currency including participating currencies. Therefore, the exchange rate between the ECU and the Deutsche mark can not be changed between these two days as well as the rate between the ECU and the US dollar. Since the bilateral rate between the ECU and a participating currency is fixed during this period, the triangular arbitrage condition requires that the bilateral rate between any two participating currencies is also unchangeable. Since this precludes any capital gain/loss from exchange rate transactions between participating currencies as well as between a participating currency and a non-participating currency, the second interpretation is considered to enhance foreign exchange market stability.

[56] Since the amount of each composite currency can not change, if exchange rate realignment is to occur, it is the weight in the basket, and not the currency composition, which should be adjusted.

III. The Implementation of the EMU Section of the Maastricht Treaty

We saw in the previous chapter that the Treaty provides the legal and structural framework of EMU. In particular, the provisions regarding the convergence criteria, the ECB and the euro are three important provisions that will determine the feasibility and sustainability of EMU. This chapter critically assesses the provisions of the Treaty we saw in Chapter II. In this chapter, however, we focus on the impact of the convergence criteria on the market confidence in EMU, the provision regarding the ECB on its future decision making, and the provisions regarding the euro on the foreign exchange market stability.

In this chapter, we deal only with eleven countries which have a high prospect of participating in the single currency area in 1999, namely, the EU 15 countries excluding Denmark, Sweden and the UK, which wish to out-out, and Greece, which will not meet the convergence criteria.

1. Convergence Criteria

The nominal convergence criteria could be seen as a compromise to the dilemma of postponing Stage III indefinitely or starting a wide EMU prematurely. The weakness of the convergence criteria lies in average-based or relative-based convergence, in little attention paid to the real side of the economy, and in lack of convergence of other relevant variables. Sections III-1.1 to III-1.4 discuss how the deficiency in the convergence criteria affects the market confidence in EMU.

1.1 Inflation

We found in Chapter II that price stability in the Community indicated drastic improvement following the implementation of the inflation convergence criterion.

Nevertheless, accumulated inflation, i.e. cumulative price levels, is far from converging. Given large inflation rate differentials during the 1980s, in order for price levels to converge, inflation-prone countries must either outperform low inflation countries in terms of price stability or devalue their currencies against those of the low inflation countries. The last row of Table III-1 shows that all countries, except the Netherlands, experienced, on the average, higher inflation rates than Germany between 1981 and 1990. Since 1991, only Belgium, France, Ireland, Luxembourg, Austria and Finland have achieved competitive disinflation (a lower average inflation rate than that of Germany). On the contrary, Spain, Italy and Portugal revealed large price level divergence from Germany.

Table III-2 shows the development of the central rates against the DM between 1981 and 1996 (See the notes to Table III-2). Although all currencies depreciated against the DM, after taking account of the inflation rates, the real exchange rates of Belgium, Spain, France, Ireland, Luxembourg and the Netherlands were actually revalued (See Table III-3). Conversely, the devaluation of the nominal exchange rate of Italy and Portugal was outweighed by their high inflation rates.

Table III-1 **CUMULATIVE PRICE DEFLATOR OF PRIVATE CONSUMPTION (%) (1981-1996)**

	B	D	E	F	IRL	I	L	NL	A	P	FIN
81-90	46.0	26.0	93.0	62.0	71.0	100.0	50.0	23.0	36.0	173.0	64.0
91	49.3	29.8	99.4	65.2	74.0	106.9	52.8	26.2	39.0	185.2	69.6
92	51.6	34.6	105.8	67.6	76.6	112.5	56.2	29.3	42.9	194.3	73.7
93	55.1	38.5	111.4	69.8	78.5	117.9	60.3	31.4	46.2	200.9	77.9
94	57.9	41.2	116.2	71.9	81.2	122.5	62.6	34.2	49.5	206.0	79.3
95	59.6	43.1	120.9	73.5	83.2	128.3	63.3	35.7	51.0	210.2	79.6
96	61.9	44.9	124.3	75.4	84.3	132.6	64.7	37.0	53.5	213.5	81.2
Difference From Germany	**17.0**	**0**	**79.4**	**30.5**	**39.4**	**87.7**	**19.8**	**-7.9**	**8.6**	**168.6**	**36.3**

Source: Eurostat and DG II

Table III-2 **BILATERAL CENTRAL RATES AGAINST THE DEUTSCHE MARK †**

	BEF	DEM	ESP	FRF	IRP	ITL	LUF	NLG	ATS	PTE	FIM
81/03/23	16.0307	-	-	2.35568	0.26921	496.232	16.0307	1.10537	-	-	-
89/09/21		-	64.9998						-	83.5961	-
95/01/09		-							7.03550		-
96/10/14		-									3.04000
96/11/25	20.6255	-	85.0722	3.35386	0.41476	990.004	20.6255	1.12674	7.03551	102.506	3.04001
††	**25.07**	**-**	**26.75**	**34.97**	**42.56**	**66.45**	**25.07**	**1.91**	**0**	**20.32**	**0**

Source: Eurostat and DG II.

Notes: †: The central rates of the currency i against the DM is calculated by dividing the ECU central rate of the currency i by the ECU central rate of the DM.

††: The percentage change in the central rates between March 23, 1981 and November 25, 1996 for the countries which joined the ERM in 1979; The percentage change in the central rates between whenever central rates or hypothetical central rates became available and November 25, 1996 for other countries.

Table III-3 **DEVELOPMENT OF REAL EXCHANGE RATES (%) ‡ (1981-1996)**

BEF	DEM	ESP	FRF	IRP	ITL	LUF	NLG	ATS	PTE	FIM
8.07	-	7.05	4.47	3.16	-21.25	5.27	9.81	-	-20.88	-

Notes: The values for Austrian schilling and Finnish markka are not calculated due to their short history of ERM participation.

‡: The percentage changes in real exchange rates against the DM are derived by subtracting the last row of Table III-1 from the last row of Table III-2. In other words, they are the difference between the percentage changes in the nominal exchange rates against the DM and the inflation rate difference from the German inflation rate between 1981 and 1996 (1989 and 1996 for Spain and Portugal). Positive values signify appreciation against the DM while negative values signify depreciation.

If the prevailing bilateral central rate between two participating currencies can not correct for the price level divergence of the two countries and the exchange rate is locked at that rate at Stage III, the prices of a same commodity denominated in euros will be different in these two countries. In other words, purchasing power parity temporarily fails to hold. Since the price of one country is lower than that of the other, the demand will shift from the latter to the former. To compensate for the change in demand, labour (a factor of production) has to move from the high price country to the low price one. Otherwise, the real wage must adjust to narrow the price gap between the two countries.[57] As the Commission admits, however, the labour mobility is low and real-wage rigidity is

strong in Europe.[58] As adjustments of labour migration and wage tend to prolong, it is likely that real variables such as output and unemployment are adversely affected upon entry into Stage III, which would hinder smooth functioning of EMU and would subdue the market confidence in EMU.

1.2 Fiscal position

The logic behind the fiscal criterion is that an unhealthy fiscal position adversely affects the convergence process since a government with excessive debt is likely to monetise its debt so as to reduce its real value. In addition, "no bailout" clause will not be credible if participating governments suffer from unsustainable public debt. However, if the fiscal criterion was designed to stabilise the governments' fiscal positions, the threshold values may not be well grounded. For public debt-to-GDP ratio to stabilise (a zero growth rate) the primary deficit (surplus)-to-GDP ratio must be determined by the real interest rate, the real GDP growth rate and the debt-to-GDP ratio. As shown in Appendix C, to achieve debt stabilisation, the EU countries, on the average, must have achieved an annual primary surplus-to-GDP ratio of 1.8 per cent.

This leads us to wonder why the criteria, the 3 per cent deficit-to-GDP ratio and the 60 per cent debt-to-GDP ratio, were chosen. At the time of signing of the Treaty (in 1991), the majority of the EU-15 countries were already meeting the deficit criterion. The German rate, however, was sitting just above 3 per cent due to the cost of reunification. Therefore, it is likely that the Commission chose the rate that Germany would be able to achieve (there will be no EMU without Germany) while deterring the entry of peripheral countries (the rates were above 10 per cent for Italy and Greece).

[57] The factor price equalisation theory predicts that free trade is a substitute for free mobility of factors of production.

Similarly, the debt criterion is not convincing if it is to improve the fiscal position since the threshold value of 60 per cent is no better than the non-weighted average of the debt-to-GDP ratio of the EU-15 in 1991 (61.8 per cent).

Given the fact that the debt-GDP ratio is not going down as fast as it should be, the presence of sizeable public debt of some countries has a significant impact on the credibility of the EMU economic policy. The primary objective of the ECB being price stability, it is unlikely that debt is monetised in case of default by any Member State. However, "no bailout" clause will not be very credible in a global setting where a fall of a country with a significant economy will induce a ripple effect in other countries. The need of financial aid is more pronounced in the case of a fully integrated monetary union where each economy is closely interrelated to each other. Should bailout take place, however, the credibility of EMU will undoubtedly be impaired.

The question of whether the reference values are respected at all is another important issue. Article 104c of the Treaty offers flexible interpretation of the debt criterion. In the case that a country fails to meet the reference values, an exception would apply if "the ratio has declined substantially and continuously and reached a level that comes close to the reference value" and "the excess over the reference value is only exceptional and temporary and the ratio remains close to the reference value." This will come as a relief to largely indebted countries such as Belgium and Italy. Conversely, core countries may find it inconvenient in blocking peripheral countries from entry into Stage III of EMU. For example, if the debt criterion does not allow any exception, then

[58] See Emerson *et al.* (1992).

Belgium has to be crossed out as well as Italy.[59] However, it will be odd to exclude Belgium not only because it is likely to meet the other criteria but also because it has been the effective capital of the EU. More importantly, it forms a monetary union with Luxembourg which has always fulfilled the convergence criteria. It must be kept in mind, however, that lax interpretation will lead to a union with less convergence and the anticipation of an out-of-step union will adversely affect market confidence in EMU.

1.3 Exchange rate

We saw in Chapter II that the ERM participating countries have been satisfying the exchange rate criterion. It should be pointed out, however, that the ERM has undergone substantial structural changes since its outset. The fluctuation bands were widened to ±15 per cent in 1993 and occasional exchange rate realignments amounted to 18 times between March 1979 and November 1996. When external disequilibrium could not be mended by internal adjustments, nominal exchange rates have to conform. In the absence of nominal rate manoeuvre, however, adjustment mechanism to shocks relies mainly on price and wage flexibility. Therefore even if the nominal exchange rates converge, divergence of price and wage due to their rigidity could make real exchange rates out of line. It is troublesome since, according De Grauwe, full EMU requires real exchange rate convergence whereas the ERM requires nominal exchange rate convergence.[60] As we saw in Section III-1.1, nominal exchange rate realignments could not accommodate the price level divergence of some inflation-prone countries, leading to divergence in the real exchange rates.

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[59] Italy's concern might be that while Belgium's debt-GDP ratio is still slightly higher than that of Italy according to the estimated 1997 numbers by Eurostat Belgium is reducing its debt at a faster speed than Italy. Between 1993 and 1997 Belgium's reduction rate was 10.4 per cent whereas Italy's number increased by 4.1 per cent. In 1999 Italy's debt figure will surpass Belgium's by 2.3 per cent. *Source*: Eurostat.

Another critique with respect to the exchange rate criterion stems from its redundancy. Since money supply (the inflation rate), the exchange rate and interest rates are simultaneously determined, it is impossible to set these targets individually. In this respect, given convergence of the other criteria, this criterion must be satisfied. This criterion is therefore rather considered a supplementary market test of durability of the exchange rate introduced upon request of German precisionists.

1.4 Interest rate

The principal determinants of nominal long-term interest rates include short-term interest rates, inflation rate expectations, the government's fiscal position and real economic activities. The supplementary or redundant nature of this criterion stems from the fact that it is largely affected by the other convergence criteria (See the previous section). Since it is a forward-looking indicator, the prospect of future convergence is important as much as the current market confidence. In other words, if markets judge that a set of countries are likely to qualify for Stage III of EMU, then their long-term interest rates have to converge according to the arbitrage condition.[61]

Conversely, short-term interest rates are set by monetary authorities to affect economic activities. When inflationary pressure is looming, the short-term rate has to increase to cool down the economy. If the exchange rate approaches the lower limit of the fluctuation band, the short-term rate must be raised to attract capital inflow. Given that each country will hand over its monetary control to the ECB, its economic activities must be able to adjust without a monetary response of each individual national central

[60] See Collignon (1994).
[61] However, the rates are not necessarily fully converged since different sizes of government debt (as high as 124.7 per cent of GDP in Belgium in 1997; only 6.7 per cent in Luxembourg) result in a different default risk and different risk premium, which in turn lead to different long term interest rates.

bank. In this respect, nominal short-term interest rate convergence is essential for the feasibility of EMU.

Table III-4 shows that the convergence process of the short-term interest rates is much slower than that of the long-term interest rates that we observed in Chapter II. Although the average rate has come down and the standard deviation has shown drastic improvement in 1997, we still observe bipolar distribution. Regardless of the convergence process, the short-term rate of the participating countries will be identical in Stage III. Since an increase in the short-term interest rate will be costly for the low interest rate countries and a higher short-term rate will subdue market confidence in the future single currency, convergence of the high rates to the low rates is necessary.

Table III-4 **NOMINAL SHORT-TERM INTEREST RATES**

	B	D	E	F	IRL	I	L	NL	A	P	FIN	Average	Standard Deviation
81-90	10.2	6.7	14.9	10.8	12.6	15.0	10.2	7.0	6.9	17.2	12.7	11.3	3.6
91	9.4	9.2	13.2	9.6	10.4	12.2	9.4	9.3	9.1	17.7	13.1	11.1	2.7
92	9.4	9.5	13.3	10.4	12.4	14.0	9.4	9.4	9.3	16.2	13.3	11.5	2.4
93	8.2	7.2	11.7	8.6	9.3	10.2	8.2	6.9	7.2	13.3	7.8	9.0	2.0
94	5.7	5.3	8.0	5.9	5.9	8.5	5.7	5.2	5.0	11.1	5.3	6.5	1.9
95	4.7	4.5	9.4	6.6	6.3	10.3	4.7	4.4	4.5	9.8	5.8	6.5	2.3
96	3.2	3.3	7.6	4.0	5.4	8.9	3.2	2.9	3.3	7.5	3.7	4.8	2.2
97 July	3.6	3.1	5.3	3.4	6.2	6.8	3.6	3.2	3.4	6.8	3.1	4.5	1.5

Source: European Economy No. 63.

However, the crucial test actually lies in the ability of countries with high short-term interest rates to cope with a lower rate without triggering inflation or exchange rate pressure. In this respect, special attention must be paid to Ireland, a booming economy with an annual real growth rate of 8.6 per cent in 1996 and 1997 along with the undervalued currency, which would rather need tight monetary policy. Since even a slight gap in the short-term interest rates would bring about uncertainty over the future rate, less than full convergence is likely to undermine the market confidence in EMU.

2. Single monetary institution

The Treaty authors strove to ensure that the ECB with its high degree of independence will inherit Bundesbank's reputation on price stability. Although the institutional design of central banks promises superior outcomes, Fratianni *et al.* point out that little is known about the empirical link between the constitutions and performances of central banks. The following sections discuss the ECB's difficulty surrounding its decision-making process which is consistent with its primary objective due to the following respects: (1) lack of *real* convergence of participating countries, (2) the structure of the decision-making body, (3) conflict with fiscal policy.

2.1 Lack of real convergence

In Chapter II, we saw that the Member States have demonstrated significant economic convergence in terms of the convergence criteria. The speed of convergence is most impressive for the countries which were deemed impossible to meet the criteria at the time of the Treaty formulation. A certain degree of economic convergence is essential for the decision-making process of single monetary policy because with a single currency the policy must reflect the interest of the Community as a whole. What has been overlooked by the Treaty is the convergence of other target variables, especially real variables, equally indispensable in order for participating countries to speak in one voice. The most pronounced regional disparities appear in the national unemployment rates and, to a lesser extent, in the economic growth.

As we can see in Table III-5, unemployment rates have achieved minimal convergence since the 1980s, ranging in 1997 from 3.0 per cent in Luxembourg to 21.5 per cent in Spain. The standard deviation has come down since 1994, but the number for 1997 is higher than that for 1991. The fact that the average rate has been sitting around

10 per cent since 1993 indicates that the improvement of international disparities was not achieved by downward convergence of the high-unemployment countries to the low ones but rather by convergence toward the community average. Another salient fact is that countries with a low unemployment rate such as Luxembourg and Austria have high estimated GDP per capita in 1997 whereas those with a high rate such as Spain and Finland are relatively less endowed in terms of per capita national income.[62] Therefore a single monetary policy, solely aiming price stability without incorporating the economic standing of various regions, would have a destabilising effect in the convergence process of the Community standard of living. Regional unemployment rate differences seem to be still at a problematic level and the bigger the difference, the more difficult for the ECB to determine optimal monetary actions.

Table III-5 **UNEMPLOYMENT RATES (%)**

	B	D	E	F	IRL	I	L	NL	A	P	FIN	Average	Standard Deviation
81-90	9.7	6.0	18.5	9.3	14.7	8.8	2.5	8.5	3.4	7.0	5.4	8.5	4.5
91	6.6	5.6	16.4	9.5	14.8	8.8	1.7	5.8	3.5	4.0	7.6	7.7	4.3
92	7.3	6.6	18.5	10.4	15.4	9.0	2.1	5.6	3.6	4.2	13.1	8.7	4.9
93	8.9	7.9	22.8	11.7	15.6	10.3	2.7	6.6	4.1	5.7	17.9	10.4	5.9
94	10.0	8.4	24.1	12.3	14.3	11.4	3.2	7.2	3.8	7.0	18.4	10.9	6.0
95	9.9	8.2	22.9	11.5	12.4	11.9	2.9	7.3	3.8	7.3	17.2	10.5	5.5
96	9.9	9.0	22.0	12.3	12.5	12.1	3.1	6.8	4.1	7.3	16.0	10.5	5.2
97	9.9	9.1	21.5	12.4	12.0	12.3	3.0	6.3	4.3	7.1	14.9	10.3	5.0

Source: European Economy No. 63.
Note: The figures for 1997 are as of July 1997.

Another equally important target variable for the ECB is the Community output. Monetary policy must aim stable economic growth as well as its primary objective of inflation control. A similar pattern of economic growth in participating countries is a

[62] Of all the EU 15 countries except for Denmark, Greece, Sweden and UK, Luxembourg has the highest estimated per capita GDP in 1997 followed by Belgium and Austria while Portugal is the lowest followed by Spain and, with a wide gap, Finland. *Source*: European Economy No.63.

necessary condition for the formulation of appropriate monetary policy. It is often cited, however, that the business cycle has still not been fully synchronised in Europe.

Table III-6 shows that Germany and France demonstrated a high degree of convergence in real economic growth in recent years. Since 1993 the difference in the growth rate between the two countries have never exceeded 0.2 per cent. To a lesser extent this is true for the entire Community. Output fluctuation of each country showed a similar trend and the regional gap in growth rate, expressed by the standard deviation, ameliorated, although it is not impressive compared with the 1990 level. However, the difference in the growth rate between the highest and lowest countries is much higher in the 1990s than those in the 1970s and the 1980s. The gap has come down since 1995 but the question is whether 7 per cent difference is excessive divergence or not.

Table III-6 **GDP: REAL GROWTH (% change p.a.)**

	B	D	E	F	IRL	I	L	NL	A	P	FIN	Average	Standard Deviation	Max	Min	Max-Min
71-80	3.2	2.7	3.5	3.3	4.7	3.6	2.6	3.0	3.6	4.7	3.4	3.5	0.7	4.7	2.6	2.1
81-90	1.9	2.2	3.0	2.4	3.6	2.2	4.5	2.2	2.3	2.9	3.1	2.8	0.8	4.5	2.2	2.3
91	1.6	5.0	2.3	0.8	2.4	1.1	6.1	2.3	3.4	2.3	-7.1	1.8	3.4	6.1	-7.1	13.2
92	1.5	2.2	0.7	1.2	4.6	0.6	4.5	2.0	1.3	1.8	-3.6	1.5	2.2	4.6	-3.6	8.2
93	-1.5	-1.1	-1.2	-1.3	3.6	-1.2	8.7	0.8	0.5	0.3	-1.2	0.6	3.1	8.7	-1.3	10.0
94	2.4	2.9	2.1	2.8	7.8	2.2	4.2	3.2	2.5	0.7	4.5	3.2	1.8	7.8	0.7	7.1
95	2.1	1.9	2.8	2.1	11.1	2.9	3.8	2.3	2.1	1.9	5.1	3.5	2.7	11.1	1.9	9.2
96	1.5	1.4	2.3	1.5	8.6	0.7	3.0	3.3	1.6	3.3	3.3	2.8	2.1	8.6	0.7	7.9
97	2.4	2.5	3.3	2.3	8.6	1.4	3.4	3.1	1.9	3.5	4.6	3.4	1.9	8.6	1.4	7.2

Source: European Economy No. 63.
Note: The figures for 1997 are as of July 1997.

Another worrisome phenomenon is the presence of outliers. Ireland has been experiencing a growth level at least 3 per cent higher than the average since 1992 and the disparity increased in the last three years. Luxembourg defied the 1993 slump in Europe and always kept a higher-than-average growth. Portugal followed a somewhat distinct

path while Finland has conformed to the Community trend since 1993 but moved with a much higher magnitude.

Under the circumstances where there are income inequality and various growth patterns, the task of the ECB in formulating output stabilising policy while embracing the growth of the have-nots will be troublesome and challenging.

2.2 Structure of the decision-making body

Given the lack of real convergence in the Community, the composition of the Governing Council becomes very relevant in predicting the decision-making process. As mentioned in Chapter II the two governing bodies of the ECB are the Executive Board and the Governing Council. Although the former takes on certain operational responsibilities, the main authority in formulating monetary policy is given to the latter. The Governing Council is composed of the Executive Board and the governors of the national central banks. The crucial aspect to be examined here is the central and regional representation in the Governing Council. The Executive Board members will not necessarily be chosen among the central bankers but rather selected afresh among those with recognised experience in the banking sector to represent the Community interest. On the other hand, the governors of the central banks are those who would be pursuing the national monetary objectives in the absence of the ECB. Although they should act for the interests of the Community as a whole, compared with the Executive Board members, it is more likely that they are burdened with national problems and objectives.

An interesting study that well illustrates the conflict between central and regional interests was done by Fratianni *et al.*[63] They analysed the structure of the Federal Reserve and observed that the district-bank presidents are generally less inclined to active

stabilisation policies than the members of the Federal Reserve Board of Governors. Because of this concern, the German government insisted that the federal representation be increased, at the revising of the central bank act in the mid-1950, to pursue monetary policy aiming price stability. The study examines the proportion of the central and regional representation of the ECB and that of the Bundesbank by comparing the number of the Executive Board members with that of the central (for the ECB) or regional (for the Bundesbank) bankers. At the time of their writing, they made a pessimistic assumption that only 7 or less members would qualify for Stage III in the first wave and they concluded that the central representation is higher for the ECB Executive Board than for the Bundesbank. Currently, however, the most likely scenario is the commencement of Stage III with 11 countries. In this case, the weight of the Executive Board (4 to 6 members) in the Governing Council (15 to 17 members) ranges from 27 per cent to 33 per cent for the ECB compared with between 35 per cent and 39 per cent for the Bundesbank. It should be noted that because of the opt-out decision by the UK there is a speculation that one seat would be reserved in the Executive Board so that the UK can send their representative upon joining the single currency area sometime later than 1999. In any case, the central representation will be lower for the ECB than for the Bundesbank.

The difference in policy preference between the Executive Board members and the governors of the national central banks would not be a serious concern as long as the target variables in the Community indicate a similar behaviour from country to country. However, as we have seen, this is not the case. Unemployment rates observe a large regional gap across the Community and the economic growth of the Member States has

[63] See Fratianni *et al.* (1992)

not fully synchronised. Under the weighted voting scheme, convergence of large countries is necessary since they can form a majority which is required for operational decisions.[64] However, under the one-country-one-vote scheme as in the case of the ECB, given the small central representation, outlier countries could strategically form a bloc to prevent the Governing Council from reaching an optimal decision for the Community. Therefore, the presence of out-of step countries, no matter how small they are, is a potential threat to the ECB's decision-making process and credibility in the objective of price stability.

2.3 Conflict with fiscal policy

In Chapter II we highlighted the provisions in the Treaty that are designed to enhance the independence of the ECB. Although the Bundesbank enjoys distinguished reputation of the independence, not a few central banks in Europe are considered responsive to the demand of the government. In Britain, for example, the Chancellor of the Exchequer is ultimately responsible for monetary policy.

Table III-7 **CENTRAL BANK INDEPENDENCE**

Index of central-bank independence[65]	Country
13, 12	*Germany*, Switzerland, USA
11, 10	Canada, *Netherlands*
9, 8	Australia, *Austria*, Denmark
7, 6	*Belgium, France, Ireland,* Japan, UK
5, 4	Greece, *Italy, Spain*
3	New Zealand, *Portugal*

Source: Fischer (1994); Countries in Italics are likely to join Stage III of EMU in 1999; The data for Finland are not available.

[64] Weighted voting is necessary for decisions regarding subscription to ECB capital, transfer of foreign reserve assets to the ECB, allocation of monetary income of national central banks and allocation of net profits and losses of the ECB. Weighted voting only applies to the governors of central banks and not to the Executive Board members.

[65] The index of central bank independence is based on the definition developed by Grilli, *et al.* (1991). The higher the index, the more independent a central bank.

According to Table III-7 not many countries achieve a comparable degree of central-bank independence to Germany and relatively strong ties between the central banks and the government are seen in the Mediterranean countries. Central bankers are likely to come under political pressure when there is a disparity between the national and Community interests, possibly resulting from inadequate convergence of target variables or regional supply shocks, and especially when fiscal manoeuvre is limited.

Needless to say co-ordinated fiscal and monetary policy is indispensable for a desirable economic outcome. In the absence of a monetary response of each individual central bank under EMU, however, the fiscal policy has to respond to regional discrepancies and shocks. An interesting question is whether the participating countries will have luxury of fiscal policy manipulation. Table II-2 and II-3 showed the difficulty of some Member States in meeting the fiscal criterion. The figures for 1997 indicate that out of the eleven countries, six countries had a deficit-to-GDP ratio of 2.5 per cent or higher. Even in 1999, when the deficit situation is expected to improve, six countries are still above the 2.0 per cent level. Given the Stability and Growth Pact, it will be politically painful to resort to expansionary fiscal policy beyond the 3 per cent threshold value. Under these circumstances there is a possibility that the past conduct of the central bank with political influence emanating from the national government returns and the regional interests prevail in the ECB decision-making process. Combined effect of divergent real variables discussed in Section III-2.1, limited fiscal policy reliance and presence of countries with history of weak central independence could become a threatening force that may hinder smooth decision-making process in the ECB and may override the Community interest of price stability.

3. The euro

There are at least two benchmark dates for the introduction of Europe's future single currency: May 1-3, 1998 at which time the special EU summit will take place in Brussels to choose the countries that will adopt the euro and to pre-announce the bilateral conversion rates between them that will come into force at the start of Stage III of EMU; the first working day of January 1999 (for simplicity, we assume January 1, 1999) when the introduction of scriptural euro will actually take place. Favourable development of the foreign exchange markets between these two dates is crucial for the smooth entry to Stage III of EMU.

However, unless the Commission clarifies in advance the legal provisions of the Treaty regarding the single currency and provides the market with guidelines about conversion rates, uncertainty about the future direction of the euro would generate unnecessary foreign exchange market anxiety, similar to the one that struck the European currencies in the early 1990s. The following sections discuss the impacts of the following respects on foreign exchange markets during the transition period from May 1998 to January 1999: (1) euro conversion rates indeterminacy created by the presence of non-participating currencies in the definition of the ECU, (2) credibility of pre-announced bilateral conversion rates, (3) discontinuity between the ECU and the euro.

3.1 Presence of non-participating currencies in the definition of ECU

Article 109g of the Treaty requires that the composition of the ECU basket, defined in 1989 (See below), composed of the fixed amount of currencies of the twelve Member States be frozen upon the entry into force of the Treaty.

Composition of 1 ECU since September 1989

Currency	Amount	Currency	Amount
Deutsche mark	0.6242	Irish pound	0.008552
French franc	1.332	Portuguese escudo	1.393
Dutch guilder	0.2198	Spanish peseta	6.885
Belgium franc	3.301	*Pound sterling*	*0.08784*
Luxembourg franc	0.130	*Danish krone*	*0.1976*
Italian Lira	151.8	*Greek drachma*	*1.440*

Notes: The currencies in Italics will not participate in Stage III of EMU as of January 1, 1999.

Article 109l.4, supplemented by EC Regulation 1103/97, guarantees one-for-one conversion between the ECU and the euro:

1ECU = 1euro

Pre-announcement of the bilateral conversion rates together with the above conditions will determine the conversion rates between national currencies and the euro. For example, the euro conversion rate for the Deutsche mark will be:

$$\begin{aligned} ECU_{DM}^{*} &= 0.6242\ DM + 1.332\frac{FF}{DM}^{*} + 0.2198\frac{HFL}{DM}^{*} + 3.301\frac{BFR}{DM}^{*} \\ &+ 0.130\frac{LFR}{DM}^{*} + 151.8\frac{LIT}{DM}^{*} + 0.008552\frac{IRL}{DM}^{*} + 1.393\frac{ESC}{DM}^{*} \\ &+ 6.885\frac{PTA}{DM}^{*} + 0.008784\frac{GPB}{DM}^{*} + 0.1976\frac{DKR}{DM}^{*} + 1.440\frac{DR}{DM}^{*} \\ &= ECU_{DM} \end{aligned}$$

Where ECU_{DM}^{*} is the *pre-announced* euro bilateral conversion rate for the DM;
ECU_{DM} is the euro bilateral conversion rate for the DM *on December 31, 1998*;
$\frac{Ci}{DM}^{*}$ is the pre-announced bilateral conversion rate between the DM and the currency i;

However, the problem of euro conversion rates indeterminacy arises from the fact that the ECU is the composition of the currencies of the "Outs" (non-participating countries) as well as the "Ins" (participating countries). Although it is possible to predetermine bilateral rates between the currencies of the "Ins," it is not true for the rate between the currencies of the "Ins" and the "Outs" because of the refusal of the "Opt-

outs" to commit themselves to such predetermined rates (that is why they opted out) and the reluctance of the "Ins" to peg to "Outs" which are judged unfit for Stage III of EMU. Assuming that the first nine currencies of the above equation are "Ins" and the last three, "Outs," and the "Ins" commit themselves to pre-announced bilateral conversion rates between their currencies, we observe the following relationships:

$$\frac{C_i}{DM}^* = \frac{C_i}{DM} \quad \text{for "Ins" currencies}$$

$$\frac{C_j}{DM}^* \leq \text{or} \geq \frac{C_j}{DM} \quad \text{for "Outs" currencies}$$

Where $\frac{Ci}{DM}$ is the bilateral conversion rate between the DM and the currency i on December 31, 1998;

Therefore,

$$ECU_{DM}^* \leq \text{or} \geq ECU_{DM}$$

Since this arrangement does not require the "Ins" to peg their currencies to those of the "Outs" to maintain the pre-announced conversion rate of national currencies to the euro and the rate prevailing on December 31, 1998, the uncertainty over the euro conversion rates will not be eliminated until January 1, 1999. Indeterminacy of the euro conversion rates is problematic since it leaves room for speculative attacks. Unless there is a consensus on the euro conversion rates on January 1, 1999, foreign exchange market stability will not be ensured especially during the transition period.

3.2 Credibility of pre-announced bilateral conversion rates

Begg *et al.* argue that the benefit of pre-announcing bilateral conversion rates between the currency of the Member States that will participate in the single currency area will provide markets with an anchor to base their expectations on. Moreover, pre-announcement of the bilateral conversion rates for the participating currencies is important since uncertainty over the conversion rates is subject to manipulation of the

exchange rate by participating governments between the time of the announcement of the "Ins" and the start of Stage III for the following reasons. First, governments may engage in competitive devaluation toward the end of Stage II, since a country with its currency locked at an undervalued rate will win a temporary competitive advantage over other participants. The incentive is especially strong in the environment where the government had no choice but to resort to fiscal austerity to make its way into the single currency area and where there is high unemployment. Second, governments would attempt to move the exchange rate in a favourable direction to increase the value of national wealth. Begg *et al.* argue that the conversion rates affect the participating countries' public and private financial wealth. If a government holds external debts denominated in the national currency, then its devaluation will reduce the debt burden of the government.[66]

However, for the pre-announcement to work to stabilise exchange markets it is imperative that the bilateral conversion rates fully reflect the underlying economic fundamentals, that there will be no asymmetric shock that changes the equilibrium exchange rate in the transition period and that the pre-announced rates must be defended. Some researchers argue that the current central rates under the ERM are in line with economic fundamentals. It may be true for the core countries which experienced few realignments and maintained very small exchange rate fluctuations against one another. On the contrary, for countries which resorted to occasional and sizeable realignments the equilibrium exchange rates are less obvious. Recall that for countries such as Italy and Portugal the nominal exchange rate changes failed to fully accommodate for price level divergence. Even though the pre-announced conversion rates are credible, the possibility of exchange rate misalignment can not be ruled out should asymmetric shocks affect

[66] See Begg *et al.* (1997).

participating countries differently. Finally, since the pre-announced rates are not legally binding until the start of Stage III, national central banks may not have incentive to intervene to defend these rates. Interventions will be less likely in an environment where the national central banks have achieved certain independence from the government and commit themselves to price stability.

Although the pre-announcement of the conversion rates potentially provide market guidance as to what the conversion rates of national currencies to the euro will be, the success of the pre-announcement depends largely on how markets perceive these rates. If the rates fail to convince markets, self-fulfilling speculation can not be precluded in the expectation that sizeable enough speculations will force the government to change the course of its policy. Discredited pre-announcement is likely to destabilise exchange markets rather than to assure smooth entry into Stage III.

3.3 Discontinuity between the ECU and the euro

Although the Treaty, combined with secondary legislation, guarantees one-for-one conversion between the ECU and the euro, there are several possibilities that would cause discontinuity which leads to destabilising foreign exchange markets. First, even though the bilateral conversion rates between the "Ins" are established, the possibility of realignment of the "Outs" currencies is not ruled out. Unlike the UK and Greece whose currencies do not participate in the ERM, Denmark has been an ERM member and bound by its bilateral central rate with its 15 per cent fluctuation margins. Although the weight of the Danish krone in the ECU basket is fairly small and it is a relatively well behaving currency, it calls for attention since its realignment on December 31, 1998 engenders a possible shock to the euro against the "In" currencies on January 1, 1999.

Second, even though the British pound and the Greek drachma are not in the ERM and are not bound by fluctuation bands, it is possible that a phenomenon similar to a realignment occurs because the Treaty fails to clearly indicate the precise time of day when the bilateral conversion rates between these currencies and the participating currencies should be calculated. It could be the rate quoted at 2:15 p.m. Brussels time when a relevant central bank usually records the ECU central rate of the day or the rate quoted for the last transaction of the day. If there is no consensus in the market, there would be discontinuity between the value of the ECU that certain markets perceive as the rate for December 31, 1998 and the euro on January 1, 1999.

Third, despite the guaranteed one-for-one conversion by the Treaty, there will be discontinuity between the ECU and the euro in terms of the rate of return. The ECU is a composition of 12 currencies, each of which bears a different interest rate. Thanks to the convergence criteria, both the long- and short-term interest rates, at different speeds, are converging toward the rate of the core countries. However, this does not apply to the UK which is not committed to qualifying in the first wave of Stage III of EMU, and to Greece whose interest rate was too high to start with to fully converge. Since the ECU reflects the interest rates of all component currencies whereas the euro interest rates will only depend on those of the "Ins," the weighted average rate of nominal short-term interest rates for the ECU component currencies excluding the "Outs" was 3.75 per cent in July 1997, lower than the average 4.10 per cent for the rate including the "Outs" (the rates were 7 per cent for the UK, 11.6 per cent for Greece and 3.1 per cent for Denmark). This signifies the overnight hardening of the ECU, which makes the ECU a more attractive investment, given the one-for-one conversion between the ECU and the euro, than the

euro. This discontinuity leaves uncertainty over the development of the foreign exchange market toward the end of the transition period.

As long as the time path of exchange rates is continuous there is little likelihood of capital gain or loss. However, even slight discontinuity would bring about speculative opportunities since a one-way bet becomes possible. Even a well-regarded currency such as the Danish krone may not be able to defy sizeable attacks, given the wide varieties of currencies that were under pressure during the currency crises in 1992-3.

CONCLUSION

Due to the asymmetric nature of the monetary arrangements prior to the Maastricht Treaty, Europe has striven for an economic and monetary union within Europe that can exercise greater symmetry. In pursuit of full economic integration the Maastricht Treaty was signed in 1991 to create EMU with its distinct features being the introduction of a single monetary institution and a single currency. Although the Maastricht Treaty provides the legal foundation of EMU, it has fundamental flaws which may undermine the smooth functioning of EMU.

In this paper, the provisions on the convergence criteria, the ECB and the euro are critically examined. The market confidence in EMU is likely to be adversely affected by the convergence criteria, which take somewhat a middle course between full convergence and an average-based approach with little attention paid to the real side of the economy and other relevant variables. Further, the decision-making process of the ECB is likely to be impaired since lack of convergence of real economic variables together with low central representation in its governing body and limited ability of fiscal manoeuvre of the Member States may induce the national central bankers to defend their national interests. Finally, indeterminacy of the euro conversion rates created by the presence of the non-participating currencies in the ECU basket, lack of credibility of pre-announced bilateral conversion rates and discontinuity between the ECU and the euro are a potential to destabilising the foreign exchange market.

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APPENDICES

Appendix A

Table A: **Calculation of the divergence indicator: September 1997 (monthly average)**

	ECU composition	Weight of currency in ECU	ECU central rates	ECU theoretical rates	% change from central rate	% spread vs. weakest narrow band currency	Adjusted market divergence	Maximum divergence	Divergence indicator
ERM									
DEM	0.6242	0.3241	1.92573	1.968	2.20	0.23	2.11	-	-
FRF	1.332	0.2062	6.45863	6.615	2.42	0.00	2.33	11.9065	-19.5902
NLG	0.2198	0.1013	2.16979	2.216	2.13	0.29	2.04	-	-
BEF	3.301	0.0831	39.7191	40.62	2.27	0.15	2.18	13.7534	-15.8476
LUF	0.13	0.0033	39.7191	40.62	2.27	0.15	2.18	14.9509	-14.5782
ITL	151.8	0.0796	1906.48	1920.4	0.73	1.69	0.64	13.8057	-4.6469
DKK	0.1976	0.0269	7.34555	7.492	1.99	0.43	1.91	14.5965	-13.0519
IEP	0.008552	0.0107	0.798709	0.743	-6.97	9.40	-7.06	14.8394	47.6003
ESP	6.885	0.0420	163.826	166.04	1.35	1.07	1.26	14.3696	-8.7882
PTE	1.393	0.0071	197.398	199.90	1.27	1.15	1.18	14.8941	-7.9151
ATS	0.0000	0.0000	13.5485	13.85	2.23	0.20	2.14	15.0000	-14.2449
FIM	0.0000	0.0000	5.85424	5.891	0.63	1.79	0.54	15.0000	-3.5954
Non-ERM									
GBP	0.08784	0.1108	0.793103	0.687	-13.38	15.80		13.3387	-
GRD	0.1976	0.0007	295.269	310.32	5.10	-2.68		14.9900	-

Source: Eurostat.
Note: The divergence indicator was not calculated for the Deutsche mark and Dutch guilder because Germany and the Netherlands chose to retain the original ±2.25 per cent margins with respect to each other but ±15 per cent margins with respect to other ERM currencies.

The Divergence Indicator

The *divergence indicator* expresses divergence of a currency's ECU market value from its ECU central rate. If a currency's *divergence indicator* approaches the threshold of *maximum divergence*, the country is expected to adjust its macro-economic policies to conform to the community average.

Calculating the Market Divergence

If the percentage spread change of the weakest currency against any currency composing the ECU basket does not exceed 15 per cent, *market divergence* is equivalent to the percentage movement of a currency from its ECU central rate:

$$\text{Market Divergence} = \{(\text{ECU market rate}/\text{ECU central rate}) - 1\} \times 100$$

However, if the percentage spread between the weakest currency and any currency exceeds 15 per cent from its bilateral central rate, the value of an *adjustment factor* must be calculated and subtracted from the market divergence:

$$\text{Adjusted Market Divergence} = \text{Market Divergence} - \text{Adjustment Factor}$$

In our example, the percentage spread between the French franc and the British pound exceeds 15 per cent, therefore the adjustment factor is:

$$\text{Adjustment Factor} = (d_i - 15) \times w_i$$
$$= (15.80 - 15) \times 0.110755 = 0.088604$$

where d_i = currency i's divergence from the weakest currency

w_i = the weight of currency i in the ECU = $\frac{\text{ECU composition of } i^{\text{th}} \text{ currency}}{\text{ECU central rate of } i^{\text{th}} \text{ currency}}$

Calculating the Maximum Divergence

Under the bilateral parity grid, a currency in the ERM is allowed to diverge ±15 per cent from other currencies since August 1993. In the case of the divergence indicator system, however, a currency's divergence is made by reference to its ECU central rate, which includes the currency itself. Since a currency can not diverge against itself, *maximum divergence* must be adjusted for the weight of a currency in the ECU:

$$\text{Maximum Divergence of j}^{\text{th}} \text{ currency} = \pm 0.15 \times (1 - w_j)$$

Calculating the Divergence Indicator

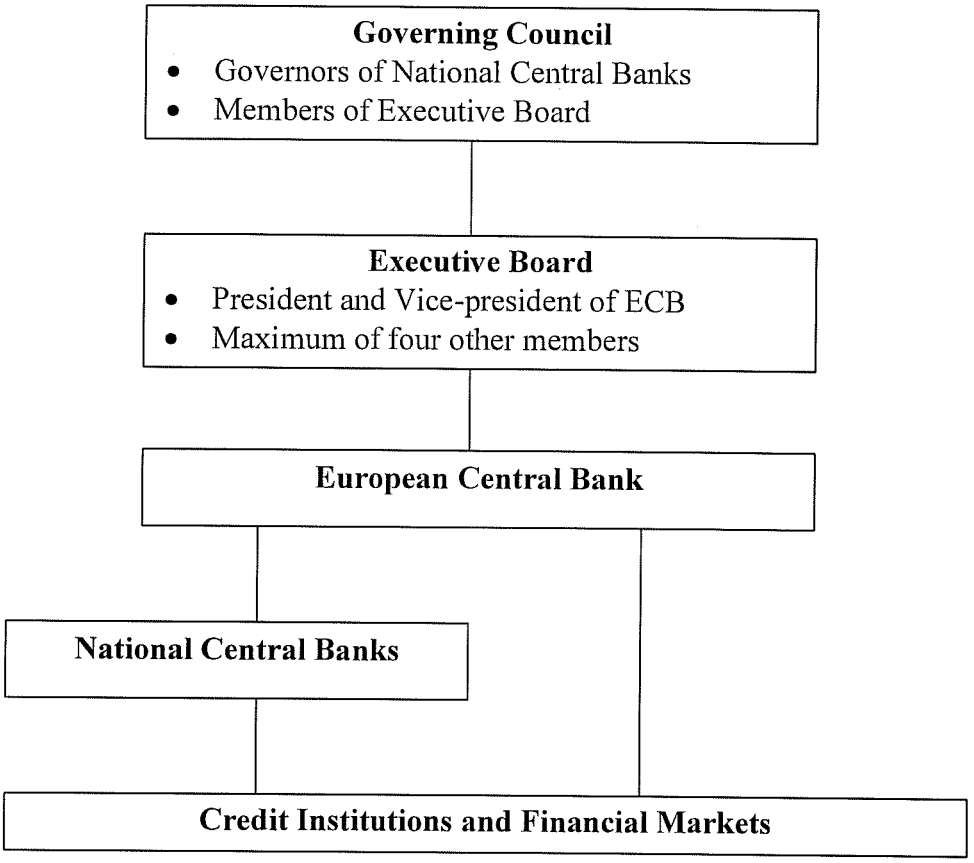
The *divergence indicator* can be expressed as:

$$\text{Divergence Indicator of j}^{\text{th}} \text{ currency} = \frac{\text{Adjusted Market Divergence}}{\text{Maximum Divergence}} \times -100$$

If the divergence indicator of currency j exceeds ±100 (in practice, ±75 and is called the threshold of maximum divergence), the currency either appreciated (+) or depreciated (-) too much and remedial actions are required to conform to the community average. The calculated divergence indicators (the last column of Table A) reveal that all currencies moderately depreciated except for the Irish punt which, within the limit, appreciated significantly.

Appendix B

The European System of Central Banks



Source: Kenen (1995)
Note: The figure was slightly modified.

Appendix C

A stabilised (a zero growth rate) public debt-to-GDP ratio could be expressed as:

$$\frac{db}{dt} = -s + (r-y) \times b = 0$$

Where s is primary budgetary surplus-to-GDP ratio
r is the real interest rate
y is the real growth rate of GDP
b is the debt-to-GDP ratio

To achieve this, the following relationship must hold:

$$s = (r-y) \times b$$

Based on the EU average in 1991 at the time when the provisions of the Treaty were negotiated, the following value of the primary budgetary surplus-to-GDP ratio should have prevailed to stabilise the debt-to-GDP ratio:

$$s = (0.045 - 0.015) \times 0.618 = 0.019$$

Therefore, an annual ratio of primary surplus-to-GDP ratio equal to 1.9 per cent was necessary to stabilise the debt-to-GDP ratio of the Community.