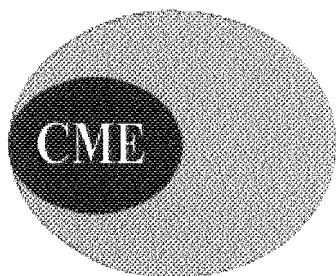


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## **The Design of the European Central Bank**

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## INTRODUCTION

In this article we analyse issues relating to the design of the future European Central Bank. This design is very much influenced by the differences in incentives to join EMU by its prospective members. We, therefore, start by highlighting these differences using the well-known Barro-Gordon model. We then analyse further issues relating to political independence and accountability of central banks.

### 1. THE POTENTIAL INFLATION BIAS IN A MONETARY UNION

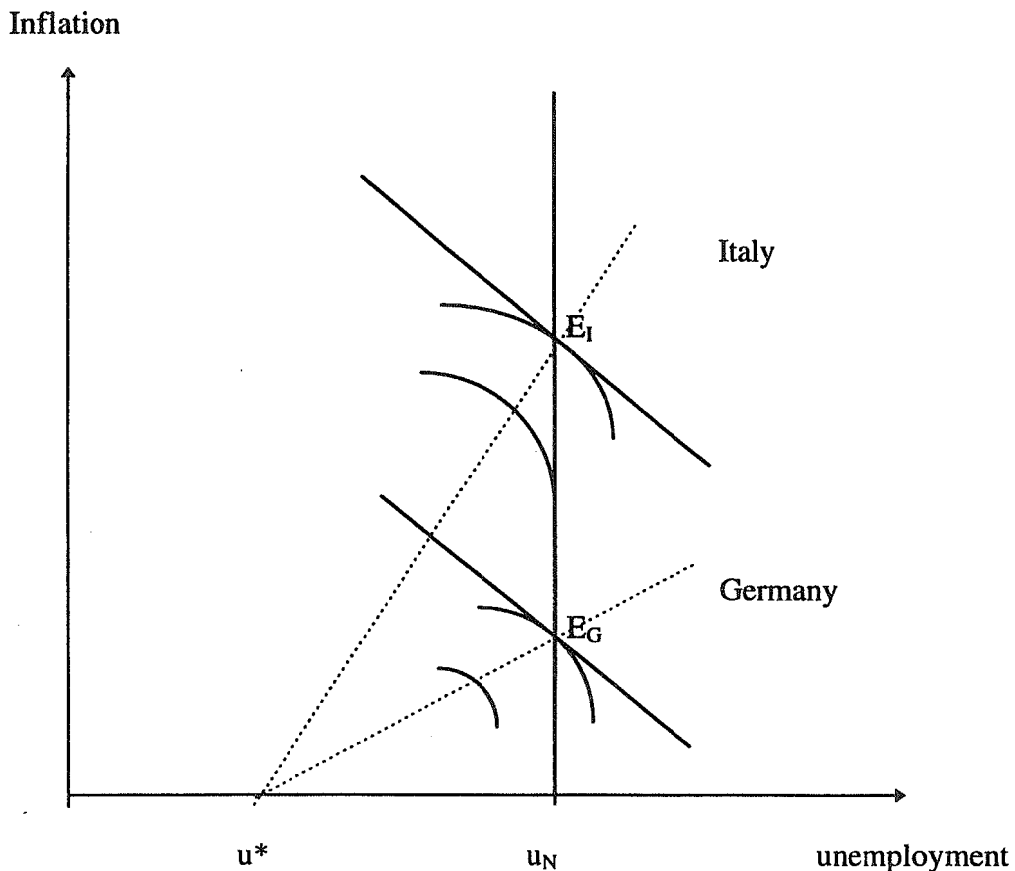
The design of the future European central bank is very much influenced by the fear in the low inflation country that the future monetary union would have an inflationary bias. In order to understand this concern it is useful to use the Barro-Gordon model which we represent in figure 1. We assume two countries, called Germany and Italy. The two countries are assumed to be identical except for the preferences of the authorities (We do not really need this assumption. We do this only to be able to put both countries in the same figure). The German authorities give a high weight to reducing inflation, the Italian authorities a low weight. This is shown by flat indifference curves for the German authorities and steep ones for the Italian authorities. The natural unemployment rate,  $u_N$ , is the same in the two countries, and so is the target unemployment rate of the authorities,  $u^*$ . Inflation equilibrium is achieved in  $E_G$  in Germany and  $E_I$  in Italy. Thus, inflation is on average higher in Italy than in Germany without any gain in unemployment for Italy.

A monetary union between the two countries implies that a common central bank takes over, so that the preferences of the authorities become identical. Two propositions can now easily be established. First, the low inflation country (Germany) always reduces its welfare by forming a monetary union with the high inflation country. This is so because the union central bank is likely to reflect the average preferences of the participating countries. As a result, the union inflation rate increases and will be located between  $E_G$  and  $E_I$ . (There are of course other sources of gains of a monetary union for Germany, e.g. lower transactions costs, lower risk, less market segmentation. These efficiency gains must then be compared with the welfare losses resulting from a higher inflation. If the latter exceed the former, Germany will not want to join in a monetary union with Italy).

The second proposition follows from the first one: since the low inflation country, Germany, loses when it joins the union with Italy, it will not want to do so except if it can impose conditions. It follows from the analysis of figure 1 that this condition must be that the union central bank should have the same preferences as the German central bank. This can be achieved by making sure that the future European central bank is a close copy of the Bundesbank. What this means will be analysed in the next section.

This condition may, however, not be sufficient from the point of view of Germany. For, the European Central Bank will be composed of representatives of the participating countries. Even if the ECB is made a close copy of the Bundesbank, these representatives may still have different inflation preferences. Majority voting in the Board may then put the German representative in a minority position, so that the equilibrium inflation rate in the union would exceed the German one. In order to avoid this outcome Germany will want to control the entry into the union, so that only those countries with the same preferences join the union (see Morales and Padilla (1994)).

*Figure 1: The inflation bias in a monetary union*



## 2. THE DESIGN OF THE EUROPEAN CENTRAL BANK

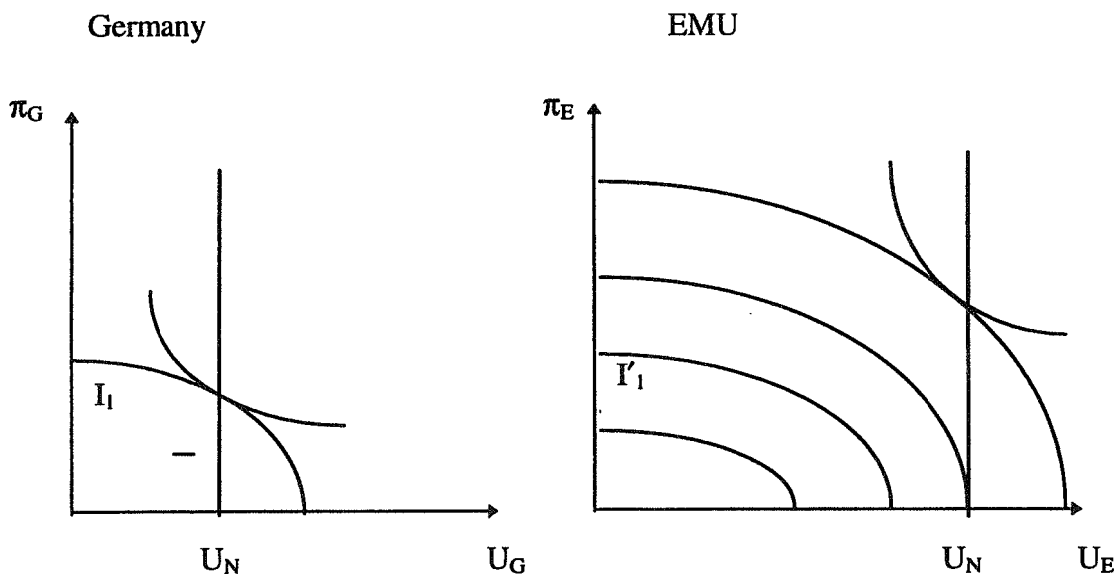
The strong asymmetry in incentives towards entering EMU of high- and low-inflation countries is very important in the design of the European central bank. It means that there is only one way for the low inflation country to agree to move to the final stage. The condition is that the European central bank is as "hard-nosed" about inflation as the low inflation country's own central bank. Failure to devise such an institutional copy of the low-inflation central bank leads to a situation where the low-inflation country refuses to make the final step to EMU.

In fact, the problem is probably worse in the present context of European monetary union. Even if the future European central bank has the same preferences regarding inflation and unemployment as the central bank of the low-inflation country, it is quite possible that the inflation equilibrium in the EMU will be higher than the one which prevails in the low-inflation country prior to EMU. The reason has to do with structural differences between union-members, which may give incentives to the ECB policy-makers to inflate more, even if they are as hard-nosed as the policy makers in the low-inflation country. We illustrate this case in figure 2, where Germany is the low-inflation and Italy the high-inflation country. We assume that the natural unemployment rate (NAIRU) in Italy is higher than in Germany. As a result, the NAIRU in the union as a whole is higher than in Germany. The ECB-policy-makers are assumed to be as hard-nosed as the German policy-makers. We represent this by drawing identical indifference curves for the ECB-authorities as for the German monetary authorities. The left hand panel represents Germany prior to the EMU. The right-hand panel represents EMU. Given our assumption that the NAIRU is higher in the EMU than in Germany, the inflation equilibrium will be higher in the EMU. It is obtained in point F. The EMU has an inflationary bias, not because the ECB-authorities are softer on inflation than the German authorities, but because the higher natural unemployment rate in the EMU forces them on a higher inflation path which is consistent with economic agents' expectations of how a higher NAIRU affects the authorities' behaviour<sup>1</sup>.

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<sup>1</sup> Note that we assume here that the EMU-authorities do not re-scale their preferences. With re-scaling, the EMU-authorities, realising that the natural unemployment rate has increased, attach the same utility loss to a deviation of the observed unemployment rate from the new NAIRU, as the utility loss from the same deviation relative to the lower NAIRU. Graphically this implies that the indifference curve I1 corresponds to the same utility level as I'1.

Figure 2: Inflation equilibrium in Germany and EMU (same policy preferences of Bundesbank and ECB)



The previous theoretical discussion assumes that the natural rate of unemployment is lower in Germany than in the other EMS-countries. Is there evidence for this? Table 1 presents some rough indicators of the natural rate of unemployment in the EMS-countries. We take a fifteen-year average of the unemployment rates in these countries (1981-95) as our measure of the natural rate of unemployment. Admittedly, this can only be considered an approximation. It is striking, however, that Germany has the lowest unemployment rate of all the EMS-countries. If the numbers in table 1 are good measures of the natural unemployment rates, there is reason to believe that a ECB, even if it consisted of individuals as "hard-nosed" as the German authorities today, would have an incentive to produce more inflation.

The conclusion we arrive at here is that the incentives of the low inflation country to join EMU are likely to be poor. There is one way, however, in which the incentives of the German monetary authorities to join EMU can be improved. That is to ensure that the individuals who will run the ECB are even more "hard-nosed" about inflation than the German authorities themselves. (This can also be seen in figure 2. If the European authorities have flatter indifference curves, then a lower inflation equilibrium will result). Put differently, if the German monetary authorities are forced to accept EMU, they will probably insist on having a ECB that gives an even higher weight to price stability than the Bundesbank does today.

**Table 1: Average unemployment rates during 1981-95**

Germany	6,4
Belgium	9,3
Denmark	8,1
France	10,0
Ireland	14,8
Italy	8,9
Netherlands	7,9
Portugal	6,5
Spain	19,4
UK	9,7

Source: EC-Commission, European Economy, no. 60, 1995.

The striking fact is that the Maastricht Treaty has gone a long way in this direction. The statutes of the ECB are such that even more emphasis on price stability is given than in the Bundesbank statutes. In devising these statutes the Treaty has implemented two important principles (that also form the basis of the Bundesbank statutes). The first principle is that the primary objective of the central bank should be the maintenance of price stability.

The second principle is political independence. This second principle is seen as a necessary condition to ensure that budget deficits of the national and European governments will not be financed by printing money. In an institutional environment where the central bank is an appendix of the ministry of finance (as is the case in many, if not most, countries in the world) it is inevitable that the central bank will be forced to finance the budget deficits. This is the surest way to produce inflation. Thus, it can be said that this second principle of political independence is the necessary condition to make the achievement of the first principle (price stability) possible.

It is useful to quote the Treaty explicitly to realise how careful it has formulated this principle of political independence:

*'When exercising the powers and carrying out the tasks and duties conferred upon them by this Treaty (..), neither the ECB nor a national central bank, nor any member of their decision-making bodies shall seek or take instructions from Community institutions or bodies, from any Government of a Member State or from any other body.'*

In addition, the Treaty has the following sentence :

*'The Treaty prohibits overdraft facilities or any other type of credit facility with the European Central Bank or with the national central banks to Community institutions or bodies, Central Governments, regional or local authorities, public authorities, (...) and the purchase directly from them of debt instruments'.*

This seems to confirm that the drafters of the statutes of the ECB have understood the basic asymmetry in the incentives of countries to join the EMU. As a result, they have taken pains to ensure that the ECB, at least on paper, will be an institution akin to the Bundesbank. In fact, the language used by the drafters of the statutes of the ECB is tougher on inflation and political independence than the statutes of the Bundesbank. Political independence of the ECB will probably be greater than the one of the Bundesbank. The reason is that a simple majority in the German parliament can change the statutes of the Bundesbank if the German politicians would be dissatisfied about the record of the Bundesbank. Changes in the statutes of the ECB are going to be much more difficult. Such changes can only occur by a revision of the Maastricht Treaty, a much more complex affair. (This feature has in fact led some to criticise the absence of democratic accountability of the future ECB. We will come back to this issue).

The fact that the ECB has incorporated the two principles that form the basis of the Bundesbank statutes may have convinced Germany to join EMU, it does not necessarily mean that these principles are desirable. There is, however, a large amount of theoretical analysis and empirical evidence that has convinced many economist that these principles are desirable as well (see Bade and Parkin (1985), Demopoulos and more recently by Cukierman (1992), Alesina and Summers (1993) and Eiffinger and Schaling (1993)).

### **3. THE DESIGN OF THE ECB : FURTHER ISSUES**

Whereas there is a broad consensus today on the need for political independence of the ECB there are still many unresolved issues concerning the detail of the design of the ECB and concerning the conduct of monetary policies. In this section we discuss some of these issues.

#### **3.1. Is political independence sufficient to guarantee price stability?**

The question that arises here is whether the explicit recognition in the statutes of the ECB of political independence and of price stability as the primary objective of monetary policy is sufficient to guarantee an inflation-proof ECB. One can express doubts about this. Certainly, the German politicians have doubts, otherwise they would not insist so much on the convergence criteria as additional guarantees for price stability in the future EMU.

There are good reasons to believe that the actual practice of monetary policy-making may deviate from the principles embodied in the Treaty. The reason is that the individuals who are going to conduct monetary policy, are subject to social and cultural influences. Some come from countries where abhorrence towards inflation is not as intense as in Germany. They may, therefore act differently than the individuals sitting on the board of the Bundesbank, even if the statutes of the ECB have been copied from the Bundesbank statutes. In addition, as was mentioned earlier, differences in the natural rate of unemployment may make them more prone than the representatives of Germany to be soft on inflation.

In this connection, Posen (1993) has performed interesting research about the link between political independence and inflation. His main conclusion is that both political independence and inflation are the result of deeper social and economic interests. Some countries have strong pressure groups against inflation (e.g. financial institutions). In these countries we observe that the central bank tends to be politically independent and that inflation is low. In other countries the major pressure groups are less opposed to inflation. In these countries central banks will be less independent and inflation will be higher. This research teaches us that central banks' behaviour is very much influenced by the underlying social and economic forces, so that a mere change of the statutes of the central bank will not by itself change behaviour.



One should, however, not go too far in a neo-Marxian interpretation of the issue. In this interpretation economic forces drive the institutions. A more balanced view recognises that institutions (and incentives) can also change behaviour. Thus, the incorporation in the statutes of the central banks of political independence as a means to guarantee price stability can help in influencing behaviour and in changing society's view about the role of monetary policy. In addition, there is scope for strengthening of these institutions so that the risk of inflation is reduced. How can this be done? Several proposals have been made in this connection.

One proposal foresees that countries who fail to satisfy the budgetary norms would not obtain a voting power on the board of directors of the ECB<sup>2</sup>. Thus, countries like Italy, Belgium, Sweden, and others would be accepted into the union. However, as long as their budgetary house is not in order, these countries would not be allowed to take part in the decision process of the ECB. As a result, there should be less fear that heavily indebted countries may push the ECB to pursue too expansionary monetary policies.

A second institutional strengthening consists in defining and enforcing a procedure for removal of the board of directors of the ECB should it fail to maintain price stability. In this connection, alternative incentives schemes have been proposed whereby the salaries of the ECB-policy-makers would be reduced if the inflation rate exceeds some level<sup>3</sup>. Such incentive schemes would do more to ensure price stability in the union in, say, the year 2010 than the insistence that countries reduce their inflation rates and their budget deficits in the second half of the 1990s, before the union starts. Such a reform also goes some way in making the future European Central Bank more accountable (We return to this issue of accountability in section ).

Thirdly, the budgetary process in the different EMU-countries should be reformed so as to make it more transparent, and less prone to lead to unsustainable budget deficits. Recently, Eichengreen and von Hagen (1995) have formulated proposals aimed at making the budgetary process more streamlined in the European Union. In addition, they have proposed to institute National Debt Boards in each country, whose responsibility it would be to monitor the evolution of the national debt and to propose remedial action when particular targets are not met.

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<sup>2</sup> See Gros (1995) for a similar proposal.

<sup>3</sup> See e.g. Manfred Neumann (1990) and Roland Vaubel (1989). Recently, Walsh (1995) has formalised this idea in the context of a Barro-Gordon model. We analyse this model in box .

### 3.2. Which inflation target?

The social acceptability of the future policies of the European Central Bank will be very much influenced by the inflation target the ECB will be pursuing and by its willingness to compromise when economic activity is negatively affected. Thus, two issues arise. One is the level of inflation the ECB aims at; the other is the variability it will allow around the targeted level.

#### *The optimal inflation rate*

In the 1950s Milton Friedman formulated the view that the optimal inflation rate is zero. The basic reason for this conclusion is that a zero inflation rate maximises the total utility of holding money. Two other factors, that recently have been much researched, cast doubts on this conclusion.

First, there is increasing evidence that because of rapid technological change the conventional measures of inflation (the rate of change of the consumption price index) tend to overestimate the true inflation rate by 0.6 to 1.5% a year (see Shapiro and Wilcox (1996)). The reason is that the conventional measures of inflation do not take into account quality improvements.

Second, there are theoretical arguments to be made for a rate of inflation a little higher than 0%. The main one is that sectoral or micro-economic shocks require adjustments in relative real wages. In particular, sometimes a sector or a firm is confronted by a negative shock necessitating a decline in the real wage level. If the rate of inflation is zero, such a decline in the real wage can only come about by a decline in the nominal wage rate. If, however, inflation is positive one can achieve a decline in the real wage by keeping the nominal wage increases below the rate of inflation. There is a lot of evidence that the resistance against nominal wage reductions is high, thereby limiting real wage adjustments when the rate of inflation is zero. Put differently, in a environment of zero inflation, there is likely to be more real wage rigidity making adjustments to asymmetric sectoral shocks more difficult to achieve. In a recent article Akerlof, et al., (1996) come to the conclusion that this effect may require the monetary authorities to target an inflation rate close to 2% per year.

The previous analysis then leads to the conclusion that the optimal inflation rate may be of the order of 2.5 to 3.5% per year (0.6 to 1.5% on account of the measurement bias, and 2%

on account of the real wage effect). The policies pursued by the European central banks in the 1990s suggest that they target an inflation rate below that level. The central banks that are generally hailed for their anti-inflationary success have lowered inflation below 2% per year. There is a great likelihood that the ECB will equally want to keep the annual inflation rate below 2% per year. Thus, the risk exists that the ECB will be pursuing a target inflation rate which may be too low compared to the optimal one, thereby increasing the risk of protracted deflationary monetary policies and a reduction of real wage flexibility.

The previous discussion raises the issue of who should determine the inflation target. The Treaty has not really settled this issue. It only stipulates that the ECB should pursue price stability. Given the lack of precision of this formulation it is likely that the ECB will be quite autonomous in deciding what this means. If there is a significant difference between the target pursued by the ECB and the one which society finds optimal the legitimacy of the ECB may be called into question. We return to this issue when we analyse the accountability of the ECB.

### *Short-run fluctuations of inflation*

A second problem that arises has to do with the degree of compromise the ECB will accept for short-term fluctuations of the inflation rate around the targeted one. In this connection the Treaty stipulates that the ECB should take into account other objectives of economic policy (provided they do not interfere with price stability). Thus, the Treaty recognises the need for pursuing other objectives by the ECB (e.g. the stabilisation of the business cycle). One may debate whether the ECB should do this. The point, however, is that most modern societies expect that the central bank should not completely abandon the ambition to stabilise the economy. With each recession, social pressure will accumulate pushing the ECB to relax its monetary policy stance. The problem that arises here is that the ECB will determine in a sovereign way whether and to what extent it is willing to allow for short-term deviations of inflation from its target level and whether it will be willing to accommodate its monetary policies in a recession. This raises the issue of the accountability of the ECB

### 3.3. The accountability of the ECB

Whereas the Treaty is quite explicit in formulating the principle of political independence, it has very little to say on the issue of accountability<sup>4</sup>. The latter can be formulated as follows. When society delegates the task of running monetary policy to an independent institution, this delegation should really be interpreted as a contract. In this contract the objectives to be pursued by the central banks are formulated (e.g. price stability, however defined). In addition, society may wish to make the central bank politically independent because it feels that this is the best way to achieve the ultimate objectives of monetary policy. Any contract, however, implies that there must be some procedure by which society evaluates the performance of the central bank in achieving the chosen objectives (i.e. objectives chosen by society).

The problem arises at different levels. First, society must choose the objectives for the central bank (and not the other way around). As argued earlier, the Treaty is so vague about the objectives that it is quite likely that the ECB will in fact fix the objectives. This may lead to tension between the ECB when it pursues objectives that are not shared by the rest of society. We mentioned the possibility that the ECB may choose a target level of inflation that is too low for the welfare of society. Or, the ECB may accord too little importance to short-term output stabilisation (too little in comparison with the expectations about this in the rest of society). In all these cases, the tensions may lead to a feeling of a lack of legitimacy of the ECB, which may endanger the long-term survival of the monetary union.

A second problem has to do with accountability in the narrow sense. Once the objectives have been determined, there should be a procedure that allows society to evaluate how well these objectives have been achieved. If there is a feeling of a systematic failure a sanctioning mechanism should exist that allows society to put sufficient pressure to redress the situation.

It must be said that the Treaty fails in setting up such a procedure of accountability. True, there is a provision in the Treaty requiring the ECB to present a report to the European Parliament every year. However, it must be admitted that this does not yet make the ECB accountable. The absence of accountability of the ECB could endanger the long-run survival of the ECB. It is interesting to note here that the Bundesbank, which served as the

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<sup>4</sup> For a discussion of independence and accountability of central banks see Roll, et al., (1993).

role model for the ECB, can be said to be more accountable than the ECB. As mentioned earlier, the reason is that the law which describes the responsibilities and the duties of the Bundesbank can be changed by a simple majority in the German parliament. This is a very indirect way in which society can pressure the Bundesbank to pursue society's interests. This is not the case with the ECB the statutes of which are part of the Maastrich Treaty, and therefore can only be changed by unanimity. There is very little society will be able to do, to change the behaviour of the ECB if that institution would fail to achieve the objectives society has entrusted her to pursue.

In a previous section we have argued that a sanctioning mechanism should be set up. We proposed that this should take the form of a procedure to remove the Board of Directors should these systematically fail to achieve particular objectives. Other mechanisms can be developed. The important thing is that they exist.

It is clear that a balance must be struck between political independence and accountability. This can be achieved by making the contract that exists between the ECB and the rest of society more explicit than is the case now. If this is done, the explicit recognition of political independence (e.g. the prohibition of finance government budget deficits) becomes part of the contract. Political independence and accountability can be made consistent. In the next section we elaborate on this theme using a formal model.

### **3.4. Independence and accountability: a formal analysis**

In this section we analyse issues of political independence and accountability of the ECB using the Barro-Gordon model and recent theoretical discussions of these issues. Suppose society has a particular target for inflation and for unemployment. In addition it wants to minimise the deviations from these targets. We can represent these preferences by the following loss function:

$$L = (\pi - \pi^*)^2 + b(u - u^*)^2 \quad (1)$$

where  $\pi$  is the rate of inflation and  $\pi^*$  the rate of inflation desired by society;  $u$  is the unemployment rate  $u^*$  is the desired one;  $b$  is the weight given to the stabilisation of the unemployment rate around the target level. This loss function can be given a geometric interpretation as indifference curves around the targets  $\pi^*$  and  $u^*$  as we did in figure 1.

Society cannot run monetary policies itself. It must delegate the job to an institution, the central bank. Let us assume it appoints a central bank with the same preferences as given by equation (1). Using the Phillips curve analysis, as we did in previous chapters, we can find the rational expectations solution as the point on the vertical Phillips curve where a short-term Phillips curve is tangent to a difference curve of the central bank. We represent this in figure 3. (Note that we have normalised the targets  $\pi^*$  and  $u^*$  so that they coincide with the origin. This does not mean that the targets are equal to zero. We only do this for graphical convenience).

We know from our previous discussion of the Barro-Gordon model that the greater is the weight given to unemployment stabilisation,  $b$ , the higher will be the inflation bias. Graphically, a high  $b$  implies a steep “expansion path” (the dotted line through the origin in figure 3).

In figure 3 we also assume that there are unpredictable disturbances in output and employment so that the short-term Phillips curve shifts up and down. We show this by the curves  $P_L$  and  $P_U$  which represent the range between which the short-term Phillips curves can shift. Given the authorities (and society’s ) preferences, as represented by the “expansion path” they will aim for the unemployment points as given by  $U_L$  and  $U_U$ .

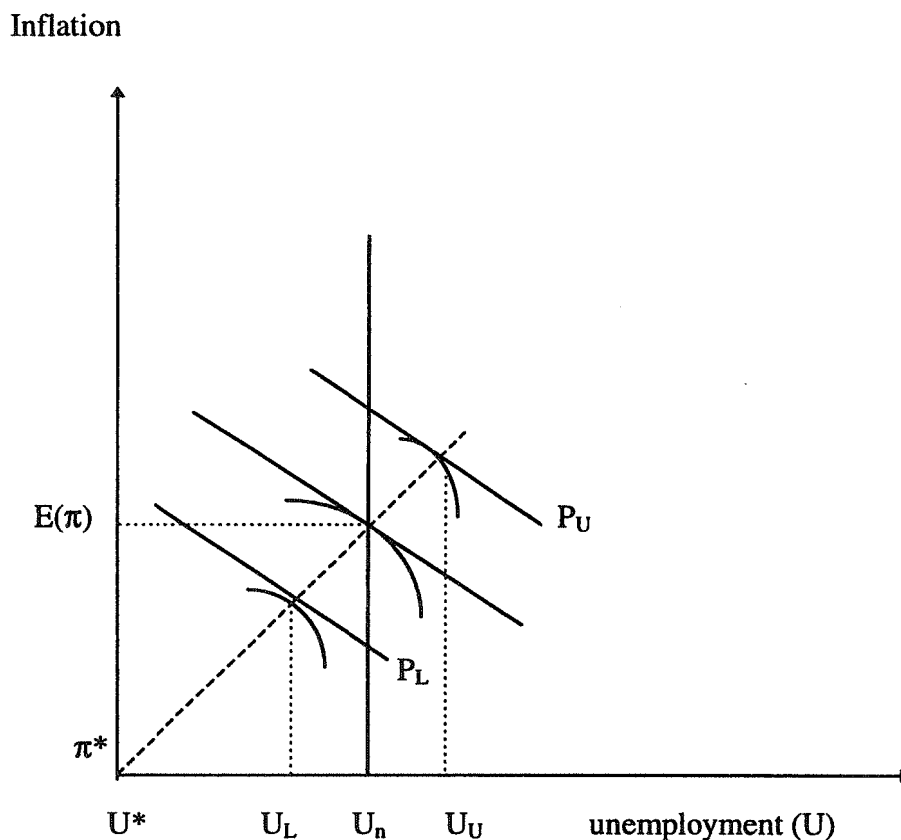
As was discussed earlier, this stabilisation effort is also the source of the inflation bias which is equal to the distance between the average inflation rate,  $E(\pi)$ , and the target inflation rate,  $\pi^*$ .

How can society improve this situation so that the average inflation comes closer to the target rate of inflation? One possibility has been suggested by Rogoff(1985) and is also implicit in the Maastricht Treaty. This consists in appointing an independent and “conservative” central banker. Conservative here means someone who is willing to attach a lower weight than society to the stabilisation effort. Thus, we can represent the loss function of this conservative central banker by

$$L = (\pi - \pi^*)^2 + b_C(u - u^*)^2 \quad (2)$$

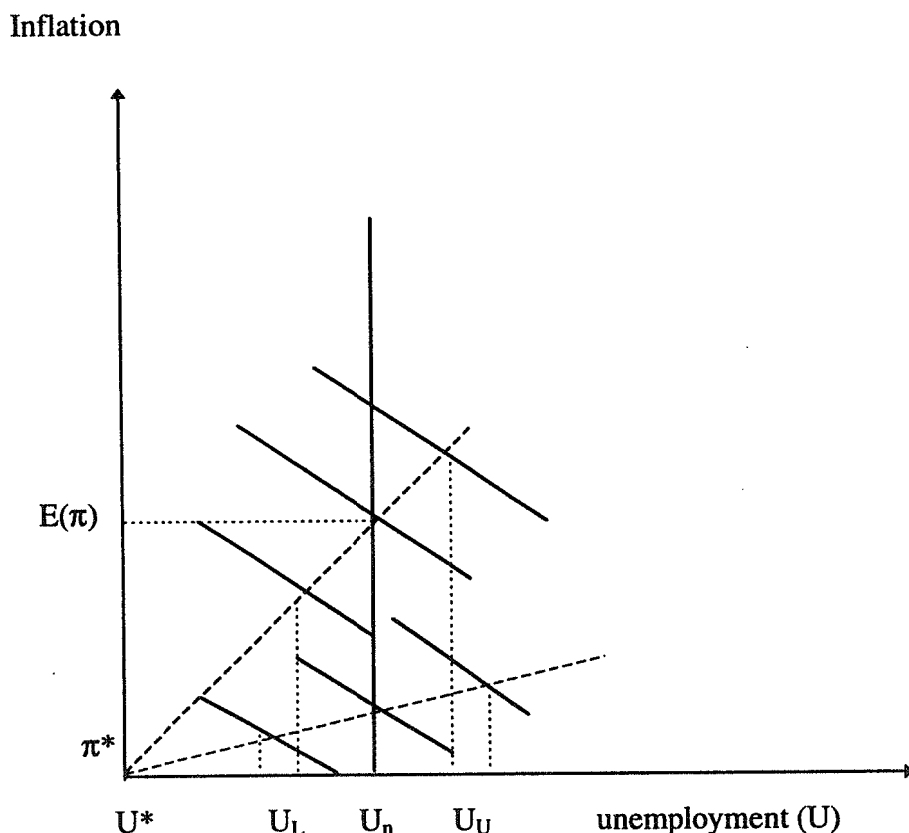
where  $b_C$  is the weight given by the conservative central banker to the stabilisation effort, and  $b_C < b$ .

Figure 3: Inflation bias and stabilisation



We now contrast the solution obtained when the conservative central banker is appointed with the previous solution when the central bank faithfully reflects society's preferences in figure 4. The conservative central banker operates along the flatter expansion path. As a result the inflation rate will on average be lower than when the central banker carefully applies society's preferences. Thus, it appears that society gains from appointing this conservative central banker. This is not necessarily true, however. For the conservative central banker applies less stabilisation effort than society desires. Thus, unemployment will fluctuate more. (We have assumed the same horizontal displacements of the short-term Phillips curves in the two regimes). For example, if there is a recession, the conservative central banker will use less stimulus so that unemployment increases more than in the case where the central bank pursues the same stabilisation objectives as society.

Figure 4: A conservative central banker



This situation may lead to a problem of legitimacy of the central banker if society thinks that the gain in terms of a lower average inflation does not compensate for the loss in terms of a sub-optimal stabilisation of the business cycle. The problem with the conservative central banker also is that there is no procedure for evaluating his performance. Put differently, the conservative central banker is not accountable.

How can this problem be solved? Recently, Walsh (1995) has shown that it can be solved by designing a performance contract with the central banker in which the latter bears a penalty if inflation is too high. Walsh has shown that a simple linear penalty rule will do the trick. We now have the following loss function

$$L = (\pi - \pi^*)^2 + b(u - u^*)^2 + c(\pi - \pi^*) \quad (3)$$

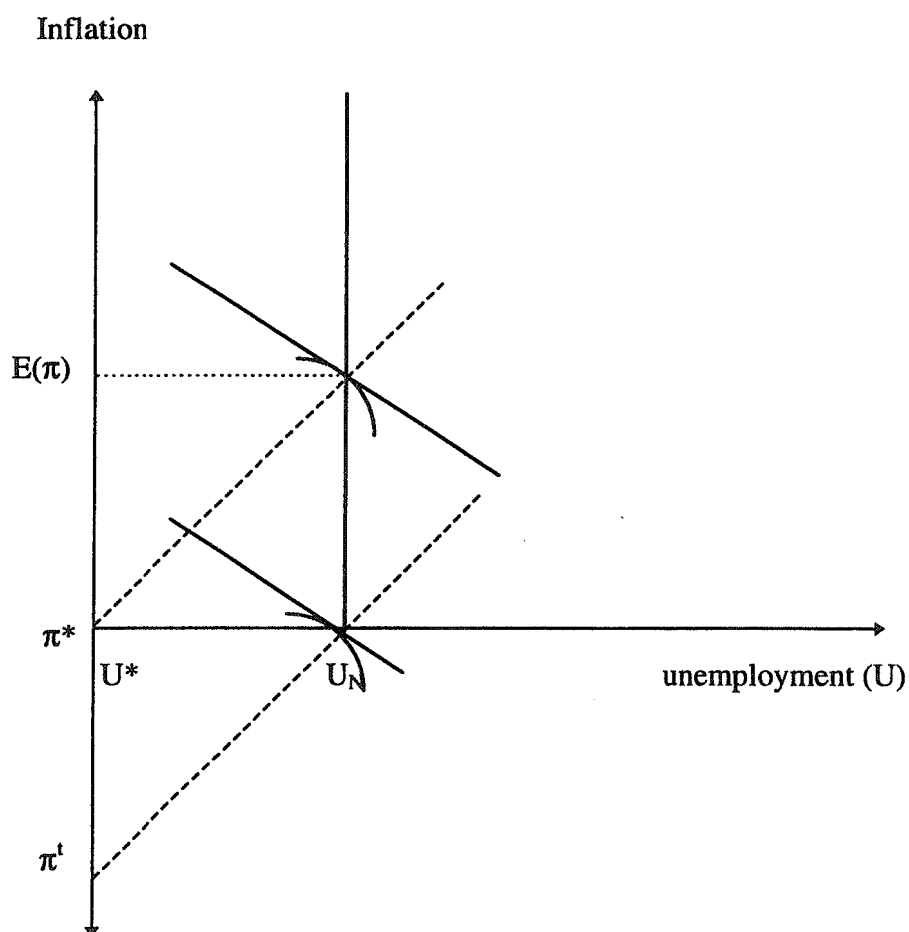
where we have added the term  $c(\pi - \pi^*)$ . This expresses the penalty if inflation exceeds the target inflation rate  $\pi^*$ . The parameter  $c$  represents the amounts of dollars deducted from the central bankers salary for every point of inflation exceeding the target level. An



alternative interpretation of the term  $c(\pi - \pi^*)$  is the probability of being fired, whereby this probability is a linear function of the deviation of inflation from its target level.

We show the solution in figure 5. The effect of the linear penalty rule is to shift the expansion path along which the central banker operates downwards. The intuition is that this penalty scheme has the same effect as reducing the inflation target. We can now find an optimal penalty. This will be obtained when the downward shift of the expansion path is such that a new equilibrium is reached in the point  $U_N$  where the target inflation rate is reached. In other words the penalty must be high enough so that the central banker is induced to set a target inflation rate that will exactly offset the inflation bias  $(E(\pi) - \pi^*)$ .

*Figure 5: An accountable central banker*



The nice thing about this solution is that the central banker pursues exactly the same stabilisation effort as society desires. This can be seen graphically by the fact that the central banker operates along an expansion path which has the same slope as society's. Thus, the long-term legitimacy of this central banker is likely to be stronger than in the case of the conservative central banker. In addition, this solution combines independence with accountability. The central banker has a contract with society to achieve certain objectives and is evaluated *ex post* on his performance. Apart from this, he is independent. This independence has also been called instrument independence: given the central bank's target, as it is fixed by society, the central bank is free to use the instruments needed to achieve the target.

A performance contract as proposed by Walsh (1995) is not the only way to eliminate the inflation bias while maintaining society's desire for stabilisation. Recently Svensson (1995) has shown that inflation targeting can be made equivalent to Walsh's linear penalty rule. This can easily be seen in figure 5. Society now makes a contract with the central bank in which it sets the inflation target at the level  $\pi^t$ . The central bank pursues this target and will on average achieve  $\pi^*$  (which is the socially desired rate of inflation). In this inflation target contract the central bank attaches the same weight to stabilisation as society. Thus, in this contract we do not need to impose a penalty on non-performance. The problem with this kind of contract, however, has to do with its lack of credibility. As can be seen, the central bank announces a target  $\pi^t$  which it misses systematically. This may in the end undermine the credibility of the contract.

### **3.5. How to conduct monetary policies?**

In the previous sections we discussed the fundamental issues relating to the design of the ECB. Once these issues are solved, other issues of a technical nature relating to the conduct of monetary policies of the future ECB, must be tackled. One such issue has to do with the question of whether the ECB should target the money stock as a way to achieve its inflation objective.

As is well-known, the Bundesbank has been using money supply targeting as its favoured approach to achieve its inflation objectives. During the preliminary technical discussions in the European Monetary Institute, the representatives of the Bundesbank have insisted that the ECB should follow the same approach. There is, therefore, a good chance that the ECB will use money supply targeting as its main procedure to conduct monetary policies.

Money supply targeting became popular at the end of the 1970s, when some major central banks (the US Fed and the Bank of England) switched to this method of conducting monetary policy. Since then, enthusiasm about this way of setting monetary policies has waned. The reasons are the following.

First, the concept of money stock is very elusive. Should one use M1, M2, or a broader concept of money stock? Quite often these different concepts of money stock have moved in opposite direction, giving very different signals to the monetary authorities.

Second, money stock figures are released with a delay and are often of poor quality (so that they have to be revised later). This problem does not exist with interest rates that are known almost instantaneously and are more reliable.

Third, and more importantly, the money stock is an intermediate target (inflation being the ultimate target). The precision with which targeting the money stock will bring us close to the ultimate target depends on the precision with which output growth and velocity growth can be forecast. Major problems have arisen with forecasting velocity growth. This is due to the fast speed of financial innovation which has led to much unpredictable behaviour of velocity.

The result of all this is that most central banks that attempted to apply money supply targeting, have been quite unsuccessful, and have missed their announced targets most often and by wide margins. As a result, these central banks have returned to a more eclectic approach in which other intermediate targets like the interest rate play a role together with the money supply.

The only major central bank which continues to use money supply targeting is the Bundesbank. The evidence is certainly not that the Bundesbank has been very successful in hitting its money supply target. On the contrary it has missed the target by wide margins in many cases. The surprising thing is that this has not reduced its reputation. The reason may be that this failure to hit its money supply target has not prevented the Bundesbank from achieving its inflation target much better.

Should the ECB copy the Bundesbank and use money supply targeting as its main operational procedure? An argument in favour of doing this is the following. Since the Bundesbank has been so successful in keeping inflation low and since it has done this

within the framework of money supply targeting, the ECB will gain from the reputation that this combination has produced by doing exactly the same thing.

The arguments against this view are quite strong. First, it is not clear that the ECB can afford to miss the target most of the time. This is likely to happen if we can extrapolate the experience of many central banks that have used this procedure. The Bundesbank with its strong reputation of inflation-fighter may get away with making large errors in reaching its money stock target. It is unclear that the ECB, at least initially will get an equally benevolent treatment by the market.

Second, the monetary institutions in the EMU will be in great flux initially. This is likely to lead to large and unpredictable shifts between the different concepts of the money stock. It will also lead to large fluctuations in velocity. Since the ECB will be targeting the money stock these large and unpredictable fluctuations in velocity will necessarily lead to large and unpredictable movements in the interest rates. These movements in the interest rate are likely to feed back into the goods market, producing undesirable fluctuations in output and employment<sup>5</sup>. All this suggests that it would be quite unwise to use money supply targeting as the main operating procedure, at least during the initial stages of EMU. It may, therefore, be better, at least initially, to take an eclectic view and to use both the money stock and the interest rate as intermediate targets to achieve a given inflation target.

### **3.6. Monetary policy and the exchange rate**

A final issue we should discuss has to do with the link between the monetary policies of the ECB and the exchange rate of the Euro vis a vis outside currencies.

The Treaty stipulates that, although the ECB will independently decide about the conduct of monetary policies, it will not independently decide about the Euro exchange rate with non-Community currencies. In fact in Article 109, the Treaty states that the Council of Ministers (i.e. politicians) shall decide whether the Euro can enter into formal exchange rate arrangements with third currencies, and if so, it will be the Council who decides to devalue or revalue the Euro. In the absence of a formal agreement (which is the most likely

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<sup>5</sup> This result can be shown using the IS-LM framework. During the early phase of EMU the shocks in the LM curve are likely to dominate the shocks in the IS-curve. As a result, pegging the interest rate is likely to lead to less variability in the output level than pegging the money stock.

future situation) the “Council may formulate general orientations for exchange rate policy in relation to these currencies” (art. 109, 2). The Treaty adds, however, that these general orientations “shall be without prejudice to the primary objective of the ECB to maintain price stability”.

Some observers have argued that the power of the Council to determine the exchange rate policies in relation to third currencies undermines the political independence of the ECB and may lead to conflicts about the desirable monetary policies.

It is clear that if the Council would decide to maintain a formal exchange rate arrangement with, say, the dollar, this would severely constrain the ECB to pursue independent monetary policies. For, we know that if the exchange rate is fixed, the monetary authorities lose their power to influence the domestic money stock and the domestic interest rate (at least in a situation of free capital mobility). In a fixed exchange rate environment between the Euro and, say, the dollar, there would be very little scope for the ECB to fix a target for the EMU-money stock (or the interest rate). As a result, a target for the inflation rate would also have to be abandoned. Thus, if the Council would exercise its power to fix the Euro exchange rate with, say, the dollar, the political independence of the ECB would exist only on paper. One can, therefore, only hope that the Council will not exercise this power.

There are good chances that the Council will not try to fix the Euro-exchange rate with outside currencies, and that the exchange rate regime with third currencies will be flexible (like it has been during the last 20 years). In such an exchange rate regime, there is very little the Council will be able to do. True, according to the Treaty it can “formulate general orientations for exchange rate policy”. However, the experiences with exchange market interventions in the major foreign exchange markets is that they are quite ineffective (see Dominguez and Frankel (1993)). This will make it possible for the ECB to claim that it is trying hard but that it is unsuccessful to influence the exchange rate. In addition, the ECB will be able to claim that according to the Treaty its main responsibility is price stability, so that foreign exchange market interventions should not interfere with its monetary policy stance.

We conclude that as long as the Euro exchange rate with outside currencies remains flexible, there is little to be feared about inconsistencies between the monetary policies of the ECB and the exchange rate policy.

#### 4. CONCLUSION

In this article we analysed issues relating to the design of the future European central bank. We argued that the political independence granted to that institution is quite important in creating the condition for price stability. We also argued that although necessary, political independence is not sufficient to guarantee price stability. We therefore formulated proposals to strengthen the European Central Bank, thereby improving the incentives of Germany to accept the creation of an EMU which also includes EU-countries with a history of high inflation. These proposals also make it possible to avoid that the European Union will be split apart for a long period of time..

A major problem in the design of the European central banks concerns the balance between independence and accountability. It must be said that, while the Maastricht Treaty is very explicit in guaranteeing political independence, it is silent on the need for an accountable central bank. This is quite unfortunate. For it is essential that the central bank should be held accountable for failures in its monetary policies. After all, the individuals managing the central bank may be motivated by objectives that do not coincide with society's interest (e.g. the prestige of the institution). Like any other government institution the ECB must, therefore, be subject to outside evaluation to see whether it achieves the objectives society has contracted her to pursue. We argued that a control mechanism should be instituted to avoid that the ECB loses its legitimacy. We also argued that this can be done without compromising on the independence of the ECB.

Finally, we studied technical issues of monetary control by the future ECB. Our main conclusion here is that, at least initially, the ECB should not use money supply targeting as its sole procedure of control. Instead, it should take an eclectic stance, allowing both the money stock and the interest rate to be used as intermediate targets for achieving price stability.

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