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THE EUROPEAN CENTRAL BANK: RESHAPING MONETARY POLITICS IN EUROPE

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ABSTRACT

This paper studies how the creation of a European Central Bank (ECB) will change the political economy of monetary policy in Europe. The twelve governors of the national Central Banks of the EEC have recently proposed a statute for the ECB which delineates its institutional structure. In this paper, we discuss the likely consequences of this statute on the conduct of monetary policy at the European level, particularly from the point of view of the trade-off between inflation and stabilization. We analyze the role of political independence of the ECB and the effect of voting rules for the appointments of the ECB board members on policy choices.

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1. Introduction

One of the most challenging tasks in the process of European integration, is the creation of new institutions, such as the European Central Bank (ECB). Important and difficult questions need to be addressed in this process, such as: How independent should the European Central Bank be from political institutions? Which voting rules should be adopted by the governing board of the ECB, when deciding about European monetary policy? How do we insure that the preferences of European citizens will be reflected in the choice of policies of the ECB?

The governors of the twelve Central Banks of the EEC countries have recently proposed a statute for the ECB which provides some answers to these questions. The purpose of this paper is to address these issues and evaluate the proposed statute from the point of view offered by recent politico—economic models of monetary policy. In particular, we focus upon the trade—off between the objectives of low inflation and output stabilization.[1]

We begin by considering, as a benchmark, the situation in which the political integration of Europe has been completed, so that one can think of a "country—Europe" with its legislature and executive. Following Rogoff (1985), we show that the legislature (universally elected in this new "country—Europe"), have an incentive to set up an

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[1] We do not intend to examine all the many macroeconomic issues relevant for the process of European monetary integration. For instance, we do not address the important problem of fiscal convergence. We believe that the simple model focusing on inflation and output stabilization is sufficiently rich to highlight our basic message.

independent Central Bank, and to appoint a governor who is more "inflation averse" than the European median voter.

The proposed statute does indeed guarantee a very high level of independence to the ECB. Using the index of independence recently developed by Grilli, Masciandaro and Tabellini (1991), we show that the ECB, according to this statute, would be as independent as the Bundesbank currently is from the German government. In fact, the proposed institutional structure of the ECB, will be very similar to the current one of the Bundesbank.

We then proceed to consider the more realistic situation in which the political integration of Europe is not complete. Different country members of the union and different groups within each country, may have substantially different preferences over the conduct of monetary policy. We analyze how different voting rules for the appointment of the ECB board may lead to different policy outcomes. The proposed statute takes as given the fact that political integration in Europe is not complete. In fact, according to the statute, the executive committee of the ECB, including the president, will be appointed by the European Council, i.e by the committee of the twelve Prime Ministers, and not by the European Parliament, i.e. a truly "European" legislative body. Different voting rules, assigning different weights to the member countries may lead to very different outcomes. We suggest that it is not at all clear that the proposed rules to appoint the board of the ECB and the voting rules within the board, will accurately represent the preferences of the European median voter.

The paper is organized as follows. In Section 2 we consider the choice of a Central Banker in a completely integrated, (politically and economically) Europe; we review Rogoff (1985) argument which

highlights the benefits of an "independent" and "conservative" Central Bank. In Section 3 we analyze in detail the proposed institutional structure of the ECB and, in particular, her degree of independence. In Section 4, we consider the situation in which Europe is not completely integrated economically and politically, so that different countries have different preferences over the conduct of monetary policy. In Section 5 we analyze how these different views of the EEC members can be aggregated in various voting schemes; we argue that the preferences of the European median voter may not be well captured by the decision process leading to the formulation of monetary policy, as proposed in the statute. The last section offers concluding comments.

2. The ECB in a Politically Unified Europe

2.1 Monetary Policies in a Political Union

We first consider the situation in which Europe has achieved political unity so that the European Central Bank can be considered like the national central bank of a country called "Europe". Thus, this central bank will pursue goals and implement policies which are truly "European" in nature. In this section we ignore issues such as the voting rules within the ECB board and the procedures to appoint the latter. We simply assume, for the moment, that in this hypothetical "country—Europe", the legislature has appointed a board and a president of the ECB with preferences given below in equation [1]. In specifying the economic framework and the Central Bank preferences we follow closely the analysis of Kydland and Prescott (1977), Barro and Gordon (1983) and Rogoff (1985). The preferences of the ECB president and board are given by:

$$[1] \qquad \mathcal{L}_E = \frac{1}{2}\ \mathcal{E}[\pi_E^2 + b(x_E - \bar{x}_E)^2]$$

where $\mathcal{L}_E$ is the loss function, which depends upon the European inflation rate, π_E, and of the deviation of European output, x_E, from a given level, $\bar{x}_E$. $\mathcal{E}$ (.) is the expectation operator. Output is determined according to the standard expectational Phillips curve relation:

$$[2] \qquad x_E = (\pi_E - \pi_E^e) + \epsilon$$

where π_E^e is the expected rate of European inflation. In [2] we have assumed, without loss of generality, that the "natural" level of output is zero, and we have set equal to 1 the partial derivative of output with respect to unexpected inflation. ϵ is a random shock with mean zero and variance equal to σ_ϵ^2. It is important to emphasize that the ECB, as well as society, has a target level of output $\bar{x}_E$ which is greater than what would be achieved by the economy without any unexpected inflationary shocks. This wedge between the market generated, "natural", level of output (i.e. zero), and the target level $\bar{x}_E$ can be Justified by the existence of various distortions in the labor market, such as income taxation or workers unions. These distortions keep the level of employment and output below the level which would be achieved in a non—distorted economy. Thus, the policy—makers have an incentive to circumvent these distortions by generating unexpected inflation which

raises the level of economic activity.[2]

The timing of events in this model is follows: at the beginning of each period, wage contracts are set and, more generally, expectations about inflation are formed. Then, the shock ϵ is realized and observed by the ECB which sets the inflation rate based upon this information.[3] By assumption, wage contracts cannot be contingent on the realization of the shock, nor can they be indexed. Henceforth, to simplify notation, we drop the time subscripts. The time consistent inflation policy in this set—up is given by:

$$[3] \qquad \pi_E = b\bar{x}_E - \frac{b}{1+b}\epsilon$$

and the corresponding output level is:

$$[4] \qquad x_E = \frac{1}{1+b}\epsilon$$

Equation [3] is obtained by substituting [2] into [1], taking the first order conditions with respect to π_E and then imposing the condition of rationality of expectations.

Equations [3] and [4] highlight the well known time consistency

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[2] See Persson and Tabellini (1990a) for an in depth discussion of this model and for a survey of the relevant litetature.

[3] We could assume, more realistically, that the ECB controls money supply rather than inflation, and add a "quantity equation" to close the model. This more general specification complicates the algebra without any additional insights.

problem in this model. The term $b\bar{x}_E$ in [3] implies that the average inflation rate is above zero — its target value according to [1] — without any benefits in terms of average or variance of output.

The first best policy, which would eliminate the inflation bias introduced by the term $b\bar{x}_E$, without reducing the extent of output stabilization, would instead be:

$$[3'] \qquad \pi'_E = -\frac{b}{1+b}\,\epsilon$$

This is the inflation rule that the ECB would follow if it could make an irrevocable, and thus credible, commitment. The problem is, of course, that such a policy is time inconsistent, thus not credible, because of the bank's incentive to generate unexpected inflation in an attempt to increase the average level of output.[4]

The crucial parameter which characterizes this trade—off between average inflation and variance of output is b. The lower this parameter in the Central Banker objectives, the lower is the average rate of inflation, but the higher is the variance of output, which is given by $\sigma_x^2 = \frac{\sigma_\epsilon^2}{(1+b)^2}$.

If b = 0 the inflation bias is completely eliminated, but no

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[4] In fact, if the ECB "announces" the rule [3'] and the public believes such an announcement and expects $\pi^e = E(\pi'_E) = 0$, than the ECB has an incentive to deviate from [3'] and implement a policy with a positive average inflation rate.

stabilization is achieved. In this case, in fact, $\sigma_x = \sigma_\epsilon$, i.e. the variance of the shock is completely transmitted to output. A very important question is, then, which "b" should "society" choose for the Central Bank. It is worthwhile to emphasize that throughout our discussion we disregard as unrealistic the possibility of making the first best rule, [3'], credible, thus implementable. One important point that our stylized model captures is that the first best rule may be reasonably complicated, i.e. it may go beyond a simple monetarist rule with a constant rate of money growth. For example, in our model the first best rule is contingent upon the realization of a random shock; in reality more than one contingency might be relevant. One way of making a rule like [3'] credible is to write it into the Central Bank's statute or, perhaps, in the country constitution. However, it is not realistic to assume that a contingent, reasonably complex monetary rule can be inserted in an unchangeable statute. Obvious problems of supervision and enforcement, particularly if the economic shocks on which the rule is contingent are not easily observable, would make such an institutional arrangement ineffective, if not counterproductive.[5] In what follows we pursue, instead, the idea of choosing an agent with appropriate preferences, to whom the conduct of monetary policy is delegated.

2.2 The Optimal ECB in a Political Union

Suppose now that European citizens vote upon which "governor" to appoint. By assumption, each possible governor is associated with a different "b" in his objective function. Thus, the voters in fact vote on

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[5] See Canzoneri (1985) for a discussion of monetary rules with asymmetric information over the realization of shocks.

which "b" the Central Bank should have in her objective function. After this parameter (i.e. a governor) is chosen, the Central Bank is independent, that is, the governor can freely implement his desired policy; there is no possibility of recall, or of replacing the governor.[6] The voters differ only with respect to the relative weight which they assign to inflation and stabilization. For example, individual j has preferences given by:

$$[5] \qquad \mathcal{L}_E^j = \frac{1}{2}\, \mathcal{E}[\pi_E^2 + b^j(x_E - \bar{x}_E)^2]$$

We assume that the voters will choose by majority rule the central banker, i.e. b. The chosen central banker, b, is such that there are no other individuals, b^i, preferred to b by a majority of voters in a pair—wise comparison. In this set up, majority voting on pair—wise comparisons results in the selection of the governor most preferred by the voter with the median b in his utility function, i.e. b^m.[7]

Let's determine, therefore, which is the governor most preferred by the median voter. The median voter will prefer the governor who will implement the policy which minimizes his loss. Therefore the

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[6] A similar problem in the context of capital taxation is studied in Persson and Tabellini (1990b).

[7] This is because the preferences which we have postulated are of the "intermediate" type as defined by Grandmont (1978). That is, even though two issues are considered (inflation and output stabilization) voters' preferences differ only in one parameter, b. As a result preferences are single peaked.

governor preferred by the median voter is obtained by solving the following problem:

$$\min_{b} \frac{1}{2} \mathcal{E}[\pi_E^2 + b^m(x_E - \bar{x}_E)^2]$$

If a Central Banker of "type b" is appointed, he follows the policy rule given in [3] which leads to output level given in [4]. Thus, using [3] and [4], we obtain:

$$[6] \qquad \min_{b} \frac{1}{2} \mathcal{E}[(b\bar{x}_E - \frac{b}{1+b}\epsilon)^2 + b^m(\frac{1}{1+b}\epsilon - \bar{x}_E)^2]$$

The first order condition implicitly defining the choice of b is given by:

$$[7] \qquad b\bar{x}_E^2 - \frac{\sigma_\epsilon^2}{(1+b)^3}(b^m - b) = 0$$

From this condition we notice that, since at $b = b^m$ the left hand side of [7] is positive, b must be less than b^m. Similarly, since at $b = 0$ the left hand side of [7] is negative, the optimal b must be positive. Therefore, the appointed ECB governor will be more "conservative" than the median European voter, (i.e. he will value fighting inflation more than the median voter) but not a totally conservative one, i.e. $b>0$. This argument generalizes to an explicit voting model a point originally made by Rogoff (1985); he showed that society's welfare is maximized if the conduct of monetary policy is delegated to an independent and

"moderately conservative" Central Banker.[8] By taking the total differential of [7] we can also show that:

$$[8] \qquad \frac{\partial b}{\partial \sigma_\epsilon^2} = \frac{(b^m - b)}{(1+b)^3 \{\bar{x}^{-2} + \sigma_\epsilon^2 \frac{[1+b^m+2(b^m-b)]}{(1+b)^4}\}} > 0$$

since $b^m > b$, and

$$[9] \qquad \frac{\partial b}{\partial b^m} = \frac{\sigma_\epsilon^2}{(1+b)^3 \{\bar{x}^{-2} + \sigma_\epsilon^2 \frac{[1+b^m+2(b^m-b)]}{(1+b)^4}\}} > 0$$

Thus, the more the median voter is concerned with output (i.e. the higher is b^m) and the more volatile is output (i.e. the higher is σ_ϵ^2) the less conservative is the Central Banker which would be chosen in equilibrium by majority rule.

Finally, it should be stressed that in order to delegate monetary policy to an agent with preferences which are different from those of the majority of the voters, the agent must be independent. Otherwise, the

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[8] Lohmann (1991) has recently extended Rogoff's framework by showing that it is optimal to set a high but finite costs of "firing" the governor. By choosing a finite cost of "firing" the governor, society can insure that in case of "really bad" realizations of the output shock, the governor will take into account society's preferences for more "accommodation" for fear of being fired. This argument is not pursued here.

median voter would want to "recall" the Central Banker when the latter is trying to implement the conservative monetary rule. Therefore, it is important the delegation to the Central Bank is credible. Thus, we now turn to an analysis of the degree of independence of the ECB, according to the proposed statute.

3. The Independence of the ECB

The measure of the degree of autonomy of a Central Bank is far from straightforward, since there does not exist a single indicator that can properly take into account all the different aspects which are relevant in this respect. We have chosen to follow the criteria proposed by Grilli, Masciandaro and Tabellini (1991), where a distinction is introduced between political independence and economic independence of a monetary institution.[9]

3.1 Political Independence of the ECB

Political independence is defined as the ability of a Central Bank to autonomously choose her economic policy objectives without constraints or influence from the government. First, an important element protecting the autonomy of a Central Bank is the guarantee for the governor and for the board of directors of a sufficiently long term of office. Short terms of office could make the directorate of the bank more vulnerable to political opportunistic pressures because of the almost

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[9] The classification proposed by Grilli et al. (1990) extends and improves upon earlier work by Bade and Parkin (1982).

constant uncertainty about their reappointment.[10] In addition, short appointments increase the likelihood that every government (even a short lived one) appoints a new Central Banker; this would increase the volatility in the conduct of monetary policy (Alesina (1989)). The proposed statue of the ECB sets to eight years the term of office for the President (Art. 11.2), the same as the one of the Bundesbank. For all the other Central Banks with a specific duration of the President's office, the term is shorter; for example, in the UK is five years and in Spain is four years. In Italy, France and Denmark, the governor's mandate does not have an explicit duration. This, however, does not imply a life appointment. To the contrary, as has happened in the past, this could facilitate sudden dismissals of the governor.

Turning now to the board of the ECB, we first notice that the statue of the ECB envisages the creation of two different decision making bodies: the Council and the Executive Committee, which is a subset of the Council. The Executive Board is supposed to be elected by the European Council of Prime Ministers for an eight year term. The other member of the Council are the twelve governors of the EEC national central banks. The duration of their mandate, therefore, will depend on the various national regulations. However, the ECB statute prescribes (Art. 14) a minimum term of five years for all the Council's members. This will require changes in the statutes of the banks of Greece and Spain for which the current term of the governor is four years. The eight year term of the ECB board is identical to the term of the board of the Bundesbank, and it is longer than that of any other

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[10] For an insightful discussion of the effects of "reappointment incentive for governors of central banks, see Alt (1991).

European country. For example, in France it is six years, four in the UK and three in Italy.

A second important factor determining the autonomy of a central bank from political pressures is whether the statute of the bank prescribes an explicit participation of the government in the monetary policy decisions. This participation could be in the form of the requirement of a formal approval by the government of monetary policy and/or in the form of the presence of government officials in the central bank board. The proposed statute of the ECB explicitly forbids representative of the European Council to be part of the ECB's Council (Art. 15.1). The statute only allows the passive presence, i.e without vote, of a small number of EEC officials to the Board meetings. Moreover, the statute does not require approval of monetary policy neither by the EEC institutions, nor by national governments. In fact, it explicitly forbids (Art. 7) the members of the ECB's Board to receive any instructions from either community or national political institutions. These regulations are very similar to those of the Bundesbank, and are much stricter than most of the other EEC Central Banks. For example, both in France and in the UK, government representatives are part of the respective Central Bank boards, and monetary policy must be explicitly approved by the government.

In addition, the ability of a Central Bank to pursue without political interference, her own objectives is enhanced if these objectives are explicitly stated in the Central Bank statute and, thus, cannot be easily and arbitrarily changed by the particular government in power. Article 2.1 of the ECB statute states that the main objective of the ECB is price stability. Again, the similarity between the proposed ECB and the Bundesbank is evident. Amongst the EEC countries, only the

Central Banks of Denmark and the Netherlands, in addition to the Bundesbank, have the objective of price stability explicitly stated in their statutes. The statement of general price stability objective in the statue of the ECB, although important, is far from a guarantee that the first best, i.e. the zero average inflation policy given in [3'], becomes enforceable. In our opinion, the statement of price stability as a "main objective" should be interpreted simply as measure to protect the ECB board against the unavoidable political pressures to pursue short run expansionary policies, particularly in times of economic distress. It is therefore a way of increasing the independence of the ECB but, by itself, cannot eliminate the time consistency problem. If credibility problems could be avoided, and first best policies implemented, by simply writing general objectives in the Central Bank statutes, we would not observe so much discussion on monetary institutions and monetary controls.

3.2 Economic Independence of the ECB

The second dimension of autonomy of a Central Bank is its economic independence, that is, the ability to use, without restrictions monetary policy instruments to pursue monetary policy goals. Specifically, the most important and common constraint to the daily management of monetary policy derives from the Central Bank's obligations to finance public deficits. This constraint is particularly important for countries with high levels of public debt, like Belgium, Ireland and Italy. The similarity between the ECB and the Bundesbank, also in this case, is quite striking. In particular, Article 21.1 forbids the ECB to open lines of credit to community or national public institutions, not even on a temporary basis. The same article bans the ECB from participating on the primary market for national

government bonds. The ECB is allowed to participate only in the secondary markets for government bonds to implement "open market operations." This arrangement is very different from the situation in France and Italy, for example, where the Central Banks are allowed to grant credit facilities to their Finance Ministries.

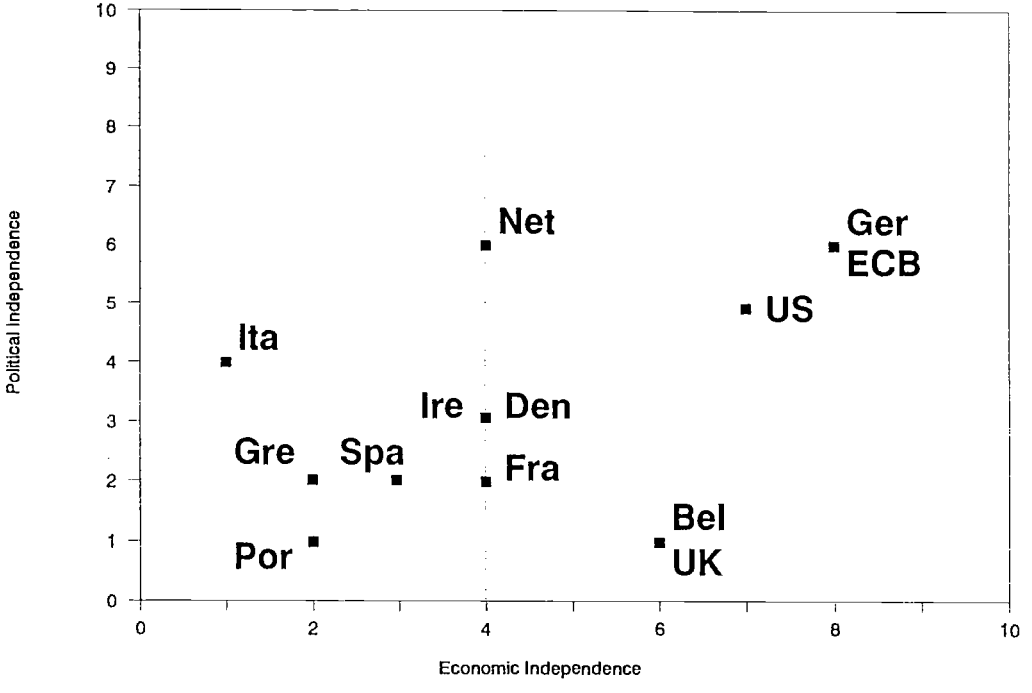
Tables A—1 and A—2 in Appendix summarize the political and economic independence of the ECB and compare it to the one of the other EEC central banks and the U.S. Federal Reserve. The results of these tables are plotted in Figure 1. As we already mentioned at the beginning of this section, these indexes must be interpreted with caution. For example, while from the tables the Bundesbank and the Federal Reserve may appear to be highly independent, they are still subject to political interference. As it should be clear from the discussion above, howevr, the similarities between ECB and Bundesbank are pervasive. In fact, according to our classification, they practically coincide, and they are far more independent than any other EEC central bank.

In conclusion, if the ECB will be created according to this proposed statute, its level of independence will be very high and, thus, its ability to credibly pursue its objectives should be guaranteed.

Empirical results presented in Bade and Parkin (1982), Alesina (1989), Alesina and Summers (1990) and Grilli, Masciandaro and Tabellini (1991), suggest that independent Central Banks have out—performed more dependent ones. In particular, independent Central Banks appear to have been quite successful in maintaining a low inflation rate without high costs in terms of output stabilization or growth.

Figure 1

CENTRAL BANK AUTONOMY IN EUROPE



4. The ECB without a Political Union

4.1 Evaluating Common Monetary Policy without a Political Union

Up to this point we have considered the choice of a common monetary policy in the context of a politically unified Europe. In fact, we have assumed that both the policy decisions and their welfare evaluation were based on an "European" loss function, given in equation [1]. However, in the transition phase before a political union, different countries will still have strong national and political identity and it is therefore likely that the effects of common monetary policies will be also assessed on the basis of national welfare and preferences. In other words, while monetary policy will be set at the European level, thus following [1] and [2], each country will evaluate the consequence of the policy according to its national welfare function, which can be represented by:

$$[10] \qquad \mathcal{L}^i = \frac{1}{2}\,\mathcal{E}[\pi_E^2 + \beta_i(y_i - \bar{y}_i)^2]$$

where

$$[11] \qquad y_i = (\pi_E - \pi_E^e) + \mu_i$$

y_i is the output level of country i and μ_i is a country–specific stochastic shock. Notice that, being in a common currency world, we have assumed that inflation is the same in all countries, equal to the

European level π_E[11]. Substituting the ECB time consistent policy given by [3] into [11] and [10] we obtain:

$$[12] \qquad \mathcal{L}^i = \frac{1}{2}\,\mathcal{E}[(b\bar{x}_E - \frac{b}{1+b}\,\epsilon)^2 + \beta_i(\mu_i - \frac{b}{1+b}\,\epsilon - \bar{y}_i)^2]$$

which represents the welfare level achieved by country i when monetary policy are decided at the European level, according to the rule given in [3]. We can compare [12] with the loss that would be suffered if, instead, monetary policies were to remain under national control. Following a procedure identical to the one employed to derive [3], we obtain that, in this case, the time consistent inflation policy for country i is:

$$[13] \qquad \pi_i = \beta_i\bar{y}_i - \frac{\beta_i}{1+\beta_i}\,\mu_i$$

Output would then be given by:

$$[14] \qquad y_i = \frac{1}{1+\beta_i}\,\mu_i$$

Therefore, the loss in this scenario is given by:

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11 In the appendix we analyze the case in which inflation is not equalize across the member countries of the monetary union. The results, however, are not qualitatively different from the one discussed above.

$$[15] \qquad \mathcal{L}_N^i = \frac{1}{2}\,\mathcal{E}\left[\left(\beta_i \bar{y}_i - \frac{\beta_i}{1+\beta_i}\,\mu_i\right)^2 + \beta_i\left(\frac{1}{1+\beta_i}\,\mu_i - \bar{y}_i\right)^2\right]$$

Subtracting [15] from [12] we obtain the difference in welfare between a monetary union and a world in which monetary policies are set at the national level:[12]

$$[16] \qquad \mathcal{L}^i - \mathcal{L}_N^i = \frac{1}{2}\left[\bar{x}^2(b^2-\beta_i^2) + (1+\beta_i)\left\{\left(\frac{b}{1+b}\right)^2\sigma_\epsilon^2 - \left(\frac{\beta_i}{1+\beta_i}\right)^2\sigma_\mu^2\right\}\right.$$

$$\left. - 2\beta_i\left\{\left(\frac{b}{1+b}\right)\sigma_{\epsilon\mu} - \left(\frac{\beta_i}{1+\beta_i}\right)\sigma_\mu^2\right\}\right]$$

where σ_μ^2 is the variance of μ_i and $\sigma_{\epsilon\mu}$ the covariance between μ_i and ϵ. Notice that, to economize notation, we dropped the subscript i on σ_μ. For simplicity, we have also assumed $\bar{x}_E = \bar{y}_i \equiv \bar{x}$.

4.2 Country Specific Costs of Common Monetary Policies

Equation [16] highlights two distinct components of the difference in welfare under a monetary union instead of deciding monetary policy independently. The first component depends on political divergencies, i.e. differences in preferences as represented by

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[12] In pursuing this comparison we are assuming, somewhat unrealistically that the country shocks (μ_i) are the same under independent policy making and monetary union.

differences between b and β_i. The second component depends on economic dissimilarities as summarized by σ_ϵ, σ_μ and $\sigma_{\epsilon\mu}$.

Consider first the political differences, and to better focus on them let's eliminate the economic differences by assuming $\mu_i = \epsilon$ in all states of the world, so that $\sigma_\mu^2 = \sigma_\epsilon^2 = \sigma_{\epsilon\mu} \equiv \sigma^2$. Then [16] becomes:

$$[17] \qquad \mathcal{L}^i - \mathcal{L}_N^i = \frac{1}{2}\left[\bar{x}^2(b^2-\beta_i^2) + \sigma^2\left(\frac{b}{1+b} - \frac{\beta_i}{1+\beta_i}\right)\left(\frac{1+\beta_i}{1+b}\, b - \beta_i\right)\right]$$

Equation [17] reveals that the participation to a monetary union can improve welfare if the ECB preference are more conservative than the national preferences, i.e. $b < \beta_i$. This is a restatement of the result of section 2. A monetary union can be beneficial if it allows to "buy" credibility for anti—inflationary policies. Therefore, the countries that have more to gain from a monetary union, in this respect, are the one with higher inflation biases.

We now turn to the economic differences. Assume, therefore, the absence of political differences, i.e. $\beta_i = b$ (and $\bar{x}_E = \bar{y}_i$ as before). Then, [16] reduces to:

$$[18] \qquad \mathcal{L}^i - \mathcal{L}_N^i = \frac{1}{2}\left[\frac{b^2}{1+b}\left(\sigma_\epsilon^2 + \sigma_\mu^2 - 2\rho_i\sigma_\epsilon\sigma_\mu\right)\right]$$

where ρ_i is the correlation coefficient between μ_i and ϵ. Consider first the case in which the two shocks are perfectly positively correlated, i.e. $\rho_i = 1$. Then [18] becomes

$$[19] \qquad \mathcal{L}^i - \mathcal{L}^i_N = \frac{1}{2}\left[\frac{b^2}{1+b}(\sigma_\epsilon - \sigma_\mu)^2\right]$$

Therefore, if there are differences between the variance of national and European output, the welfare of the country will be lower in a monetary union. The intuition is clear; if $\sigma_\epsilon > \sigma_\mu$ then the ECB will be stabilizing too much from the perspective of country i, while if $\sigma_\epsilon < \sigma_\mu$ the ECB will not be stabilizing enough.

Consider now the case in which European and national output have the same variability, but are not necessarily perfectly correlated, i.e. $\sigma^2_\mu = \sigma^2_\epsilon = \sigma^2$, but $\rho_i \neq 1$. In this case, [18] reduces to:

$$[20] \qquad \mathcal{L}^i - \mathcal{L}^i_N = \frac{1}{2}\left[\frac{b^2}{1+b}\sigma^2_\epsilon(1-\rho_i)\right]$$

Therefore, the smaller is the correlation between μ_i and ϵ the worse off country i is made by its participation in the monetary union. This is because, if ρ_i is low, the ECB will be constantly either over or under stabilizing from the point of view of country i. For example, in the extreme case of perfect negative correlation the ECB would be contracting when country i experiences a recession, and expanding when country i experiences a boom.

Summarizing, the costs of joining a monetary union depend on the differences in behavior between national and European output. The larger the differences in output variances and the lower the correlation between domestic and European output, the higher is the potential cost

of being part of a monetary union.

Following this line of argument, in Figure 2 we measure the "economic distance" from the EEC of the twelve EEC countries according to the standard deviations and the correlation coefficients of the growth rate of their outputs.

Some caution is necessary when inspecting Figure 2, since the output series that we observe are the result of national monetary policy which should be excluded from the analysis. In fact, output variances and correlations reflect the type and degree of intervention that the national monetary authorities have exerted over the last 20 years.

Figure 2 shows that the countries which have more to loose from a monetary union, from a stabilization point of view, are the countries at the periphery of Europe: Greece, Portugal and Ireland, while the least affected will be France, Germany and the Netherlands.

This conclusion, however, does not take into account the "credibility gains," discussed above, that can result from a participation in the union, which could compensate for the "economic distance" from the EEC.[13] In Table 1 we report, for each country, our index of "economic distance" from the EEC, together with the degree of independence of its central bank and its inflation performance during the 1980's. From this table emerges the interesting fact that the countries that have more to loose from the stabilization point of view are also the ones that could gain more in terms of credibility of their monetary policies. For example, Portugal, Greece, Ireland and Spain are among the countries with the largest distance from the EEC and, at the same

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[13] For a discussion of the "credibility" gains of joining a common currenc area see Giavazzi and Giovannini (1989).

Figure 2

ECONOMIC DISTANCE FROM EEC

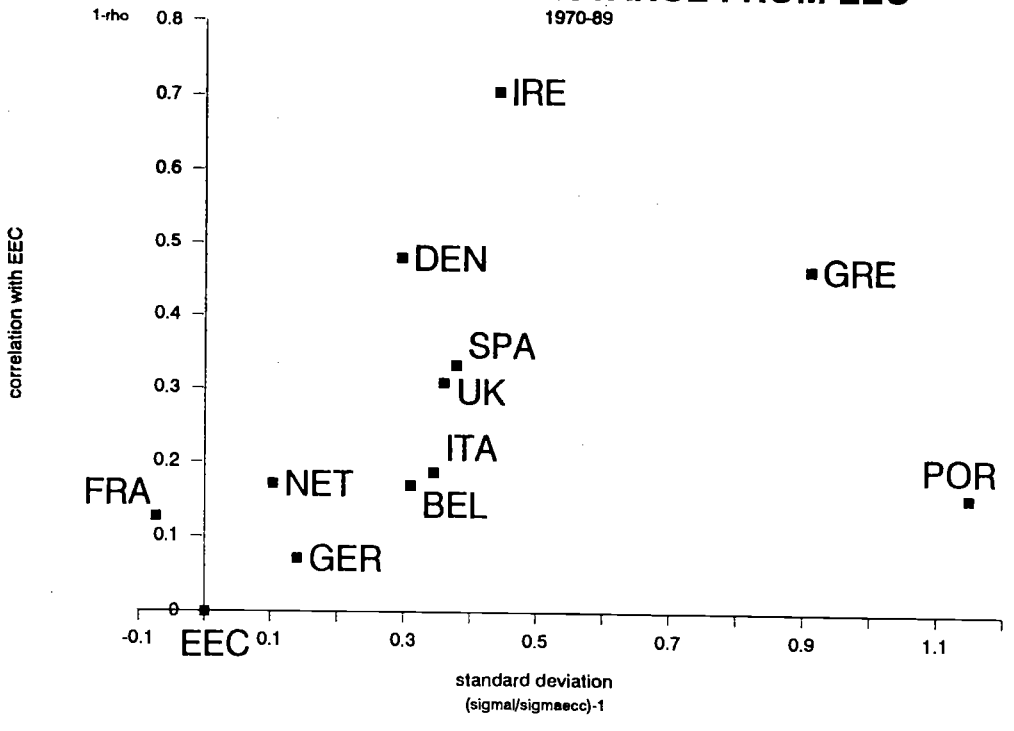

TABLE 1

	Absolute Distance from EEC†	Inflation Rate 80s	Central Bank Independence Political + Economic
EEC			14
France	0.15	8.40	6
Germany	0.16	3.11	14
Netherlands	0.20	3.35	10
Belgium	0.35	5.58	7
Italy	0.39	12.80	5
UK	0.47	7.71	7
Spain	0.50	11.36	5
Denmark	0.56	7.47	7
Ireland	0.83	10.90	7
Greece	1.02	20.96	4
Portugal	1.16	19.27	3

	Simple Correlation Coefficient	Rank Correlation Coefficient
Distance, Inflation	0.86	0.69
Distance, Independence	-0.66	-0.66
Inflation, Independence	-0.82	-0.93

† Computed as: $[(\frac{\sigma_i}{\sigma_{EEC}})^2 + (1-\rho_i)^2]^{1/2}$

time, the countries with the most dependent central banks and highest inflation. The simple correlation coefficient between distance and inflation is 0.86, and between distance and central bank independence is —0.66. An important question which can be raised regarding this "credibility gains" explanation of the monetary union is why the countries who do not need credibility, i.e. the "low β" countries, would want to join the union. Even though, according to Table 1, the low β" are also those more correlated with Europe, thus have less to loose, it is not clear why they would want to engage in this process. The answer has to be that they gain on other grounds, such as the reduction of transaction costs and monetary uncertainty (see Casella (1991)) or the gain from cooperation of monetary policy, which are not explicitly modelled here. More generally, a widely shared view (see Krugman (1989) for instance) of the process of European economic integration, is that the economic gains are only one part of the story and, perhaps, not the most important. Long run political gains resulting from the creation of a "european nation" may be important considerations.

4.3 Appointing the ECB Council without a Political Union

In the analysis above we have assumed that the characteristic of the ECB (i.e. b) are exogenously given. However, the ECB policy will be decided by a Council that is composed by the national central bank governors. Therefore, each country has the opportunity to participate and affect the policy choice through its central bank governor. Through the choice of the central bank governor, therefore, each country has the opportunity to compensate for its "economic distance" from the EEC by appointing a governor with appropriate preferences. Given that the ECB Council decisions are taken under majority rule, the policy that

will be implemented is the one that is (ex—post) preferred by the "median" Council member. Therefore, the intensity of preference of each governor does not matter for the policy decision and, thus, a country does not have any strategic incentive to misrepresent its own preferences (in addition to the reasons discussed above). Consequently, the optimal appointment of governor for country i is formally obtained by selecting a governor with a b that minimize [12]. The first order condition determining this choice is given by:

$$[21] \qquad b\bar{x}_E^2 + (1+\beta_i)\frac{b}{(1+b)^3}\sigma_\epsilon^2 - \frac{\beta_i}{(1+b)^2}\sigma_{\epsilon\mu} = 0$$

Taking the total differential of [21] it can be shown that:

$$[22] \qquad \frac{db}{d\sigma_\mu} = \frac{\beta_i \rho_i \sigma_\epsilon}{(1+b)\{(1+3b)\bar{x}^2 + (1+\beta_i)\sigma_\epsilon^2/(1+b)^3\}} > 0$$

$$[23] \qquad \frac{db}{d\rho_i} = \frac{\beta_i \sigma_\epsilon \sigma_\mu}{(1+b)\{(1+3b)\bar{x}^2 + (1+\beta_i)\sigma_\epsilon^2/(1+b)^3\}} > 0$$

Therefore, the smaller is the variance of domestic output, and the smaller is the correlation between domestic and European output, and more conservative representative will be chosen for the ECB Council. This is because, if the correlation is low, country i would prefer a ECB which does not stabilize much, since the latter would stabilize in the wrong direction from the point of view of country i.

We now turn to examine how the objective function of the ECB will be determined, according to the proposed procedures.

5. Voting on the European Monetary Policy

The proposed rules concerning the appointment and voting procedures of the board of the ECB are as follows. The Board is composed of 18 members: the 12 governors of the national central banks plus six members, including the Governor of the ECB, who are appointed by the European Council. These six members also form the Executive Committee of the ECB. The Board votes by majority rule, one person one vote. The governor's vote has a tie breaking power. The only exception to the "one person one vote" rule concerns decisions over the allocation of the seigniorage across countries.

The draft of the statute (at least the version which has been made public), does not specify explicitly the voting rule which has to be adopted by the European Council in choosing the six members which form the Executive Committee of the ECB. Presumably, this voting rule will reflect the relative size of the countries' members of the EEC.[14] The European Council usually deliberates using a qualified majority rule, in which a proposal needs about 70 percent of the votes to be approved. The weights are designed so that the four biggest countries alone (Germany, France, United Kingdom and Italy) do not have the required 70 percent majority.

The proposed composition of board clearly reflects that the authors of the statute had two goals in mind. On one hand, they

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[14] The weights usually adopted in the European Council are as follows: 10 votes for Germany, France, Italy and the United Kingdom; 8 votes for Spain; 5 votes for Belgium, Greece, the Netherlands and Portugal; 3 votes for Denmark and Ireland and 2 votes for Luxembourg.

intended to guarantee a "voice" to every country, even the smallest ones, by including every governor of the national central banks. On the other hand, if the board were composed only by these 12 central bankers, the smaller countries would be overrepresented. The six members, including the Governor, reequilibrate the weights.

An important question can then be asked: how successful will this system of appointments and voting rules be in representing the views of the European voters? The following simple example suggests that such rules may be quite unsuccessful in reflecting the preferences of the European voters. Suppose, for the sake of simplicity, and no loss of generality, that the twelve countries were of equal size. Suppose that in each country there were two parties, "left" (L) and "right" (R). In seven countries R has a 51% plurality and holds the position of Prime Minister. In five countries L has a 55% plurality and the Prime Minister. In this case, in a politically unified Europe, L would have a majority. With the proposed rules, instead, the governor and the executive board would be elected by an R majority in the European Council of Prime Ministers. This is of course, a well known problem in the context of election of legislatures with a district system.[15]

In order to emphasize how different outcomes may result from different voting rules, we have considered, as an example, the results of the last general elections in the twelve EEC countries. We proceeded as follows. In each country we have divided the political parties in five

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[15] For an excellent overview of the issues on the theory of elections of legislatures in a district system see Austen–Smith (1987) and the references cited therein.

groups: 1) "extreme left" (EL) which includes communists parties, other minor extremists groups and radical "green" parties; 2) "left" (L) which includes socialists and social democratic parties; 3) "Christian Democrats" (CD) which includes Christian Democratic parties and other center parties; 4) "right" (R) which includes conservative parties; and 5) extreme right, which includes all the right wing extremist groups.

An important assumption in the discussion which follows, is that parties can be "aggregated" across nations; that is, for instance, we assume that all the socialist parties in the twelve countries are relatively similar to each other. It should be emphasized that parties aggregate themselves in groups in the European Parliament. In our classification we followed, whenever applicable, this European Parliament grouping.

Clearly, some "judgment call" are needed to make our classification, but none of these judgment calls affect the qualitative nature of the issues which we raise. In Table A—3 in the Appendix we illustrate our classification for the twelve countries, and we report the percentage of votes and of seats obtained in the last election.

Consider for example the case of Italy, in which the last general elections were held in June 1987. These were the results:

		Shares	Seats
EL:	Communists, DP, Greens	30.8	138
L:	Socialists, Radical Party, Social Democratic Party,Republican Party	23.6	143
CD:	Christian Democrats, Sud Tirol Party	35.7	237
R:	Liberal Party	2.1	11
ER:	MSI	5.9	35

We then identify the "median voter". In terms of shares, the median is such that on the left of the median we have EL + 82% of L; on the right of the median we have 18% of L + CD + R + ER. We indicate this median in terms of shares (m(sh)) with L19, which indicates that the median lies within the L group with 19 percent of it on the right of the median. The analogous procedure applied to seats leads to a median in seats (m(seats)) equal to L20. The fact that the two median are basically identical underlies the high degree of proportionality of the Italian electoral system.

The first two columns of Table 2 report our computations of m(sh) and m(seats) for the twelve countries. These calculations are derived from the information provided in Table A—3 in the Appendix. The third column identifies the political orientation of the Prime Minister of the twelve countries. The last column reports the share, in percentage, of the population. As an illustration consider m(sh) of Denmark and the Netherlands. The former is CD57, indicating that 57 percent of CD parties are on the right of the median. This indicates a more right wing median than that of the Netherlands in which 66 percent of CD parties are on the right of the median.

The last line of the Table reports the European median in shares, obtained by computing (using the population weights given in the last column of the Table) the shares of different parties; the third column in this line report the median for the case of a "one person one vote" rule in the European Council of the Prime Ministers, and for the

Table 2

"Median Voters" in Europe

	m(sh)[1]	m(seat)[2]	PM[3]	Population Weights[4]
Belgium	CD 48	CD 35	CD	3.1
Denmark	CD 57	CD 66	R	1.6
France	L 4	L 23	L	17.2
Germany	CD 90	CD 91	CD	18.8
Greece	L 5	R 100	R	3.1
Ireland	R 78	R 89	R	1.1
Italy	L 19	L 20	CD	17.7
Luxembourg	CD 70	CD 69	CD	0.1
Netherlands	CD 66	CD 66	CD	4.5
Portugal	CD 91	CD 84	CD	3.2
Spain	L 20	L 20	L	12.0
UK	CD 15	R 85	R	17.6
EU	CD 80		CD 56† CD 33/15‡	

Notes

[1] m(sh) = median in shares. See text for the definition.

[2] m(seats) = median in seats. See text for the definition.

[3] PM = political orientation of the current (March 1991) Prime Minister

[4] Pop. Weights = percentage shares of the population of each country in 1988. Source: IMF, IFS. We do not consider former East Germany since the electoral results considered are pre-German unification.

† Weighted median

‡ Unweighted median. Since there are an even number of members the median is given by the fourth and fifth CD members, counting from the left.

case of a vote weighted by the population shares.[16]

The picture emerging from Table 1 is quite interesting. The European median in vote shares, m(sh) ,is significantly on the left of the median of the European council, particularly for the case of unweighted votes. The median in terms of shares is close to the extreme left of the CD group, while the weighted median of the council of Prime Minister is around the middle of the CD group and the unweighted median is on the right of the CD group. In different words, the EL and L combined have about 44 percent of European votes (see Table A3) but less than 30 percent in a weighted vote of the Prime Ministers and 15 percent in an unweighted vote in the European Council.

Let us now consider the Board of the ECB, and let us assume (with a wisp of faith) that the governors of the national Central Banks somehow reflects the preferences of the Prime Minister of their countries. Since this Council vote with a "one man one vote" rule, the share of the "left" will be somewhere in between the 15 percent unweighted share

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[16] In computing the "European median" we ignored, on purpose, the results for the election of the European Parliament. At least until now, this legislative body has been virtually powerless. There is evidence that European voters have used European elections to send "signals" to their national governments or expressed "protest votes." It is very likely that the allocation of seats and shares in the European Parliament could be substantially different if such a body had a legislative authority. Note that the proposed statute of the ECB completely ignores the European Parliament by not granting to this body any role in the appointment or supervision of the board.

and the 30 percent weighted share. It would be 15 percent if only national governors were in the Board; 30 percent if all the members of the board were appointed by a weighted vote in the European Council.

The possibility of large discrepancies between medians is even more emphasized by the following hypothetical example. Suppose that an election were is held in France and the Socialists fell from the current 49 to say, 43 percent of the vote, leading to a victory of the conservative bloc, which gains the Prime Minister position.[17] With everything else unchanged, this would imply that the European Left (EL and L) would now have about 42 of the popular vote, less than 12 percent of a weighted vote, and less then 10 percent in an unweighted vote of the European Council, since only Spain would have a "L" prime minister. With this change in France the last line of Table 1 would read: CD 77; CD 18 and CD 15 respectively. This difference is remarkable: in terms of shares only one fifth of CD would be needed to achieve a left wing majority, in terms of Prime Ministers only a sixth of the CD votes would be needed to achieve a right wing majority.[18] In any way one looks at this situation, it is clear that the almost 50 percent of left voters would be vastly underrepresented in the Board of the ECB.

Two important caveats, however, mitigate the extent of these observations. First, the strong Socialist minorities in countries where the

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[17] In what follows, we classify as R the Prime Minister emerging from thi hypothetical Socialist loss in France.

[18] To be precise, with a "one person one vote rule" one sixth of CD (i.e. one vote) would lead to a tie, since there would be 5R, 1CD against 1L, 5CD.

Prime Minister is non Socialist, have some influence on policy making. In one country (Italy) the Socialists are a powerful member of the coalition government and clearly influence the Prime Minister behavior in the European Council. More generally, governing parties cannot completely ignore the opposition views, particularly if the opposition is strong.

Second, the ideological distance between parties, say Socialists and Conservatives, may be declining, and may be less important then "national" differences of interests regarding monetary policy. If this is the case, what really matters is the allocation of voting rights between countries, regardless of who is the Prime Minister. However, results by Alesina and Roubini (1990) suggest that partisan differences on economic policies remains significant in several OECD economies.[19]

In summary, this section has highlighted a very simple but important point. The current decision making rules for the European Community, including the appointments of the executive committee of the ECB, are such that the allocation of "power" between parties may depart substantially from the relative plurality at the European level of the same parties. This is a feature which is not uncommon in district systems, but the specific nature of the European Council composed in a sense by only 12 "districts," is more likely to create large discrepancies between the division of "seats" in the board of the ECB and the shares of popular votes in Europe. In the example which we examined based on current electoral results, the left was disadvantaged. This does not mean at all, that there is an anti–left bias in the rules. In fact, we

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[19] These results are consistent with earlier findings by Alt (1985), Paldam (1989a,b) and Alesina (1989).

would have found the opposite bias, if we had looked at the situation in the late seventies. Thus, it would be incorrect to argue that these voting rules achieve the "conservative bias" which may be desirable for monetary policies.

This problem occurs, obviously, because the political integration of Europe is far from complete, so that a "European" government is not formed within a European Parliament with a true legislative function and elected in universal European ballots. Note that we are not necessarily advocating that the truly empowered European Parliament should be elected with a proportional system, in which case the above mentioned discrepancies between medians would disappear by definition. However, even if, say, an English style district system were to be adopted, one certainly would not choose to have 12 districts coinciding with the current twelve countries members of the EEC. In other words, there is a tension between a completely unified monetary policy and voting rules over monetary policy which appear dictated by the present European reality of politically independent member states.

6. Conclusions

In this paper we have examined the structure of the ECB as described by the proposed statute. We can summarize our argument in three basic points.

First, the proposed statute will guarantee a substantial amount of political independence to the ECB. We concluded that the ECB, according to this statute, will be as independent from national and European political institution as the Bundesbank. In fact, the proposed statute is in many respects quite similar to that of Bundesbank. Certainly, it is much more similar to the latter than to any other

Central Bank in EEC countries.

Second, we emphasized that in a situation in which the EEC is not completely unified economically and politically, different member countries may have substantially different preferences over the conduct of monetary policy. For example, we argued that countries at the periphery of Europe, such as Greece, Ireland and Portugal may have to pay the highest costs by giving up their monetary independence. However, these are also countries which will obtain high benefits in terms of "credibility" of anti–inflationary policies. In addition, different parties within each country, in general will disagree over the conduct of the European monetary policy.

Third, we argued that the proposed system of appointment of the ECB Board and the voting rules within the Board, may lead to decisions which could be quite far from the preferences of the European median voter. For example, using the last election results in the twelve countries, we showed that the European left would be vastly under represented in the ECB Board, relative to the proportion of votes received by the left in national elections. These discrepancies, which can be quite substantial, occur because the Board is not appointed by a legislative body elected in European elections. Instead, according to the proposed statute, the monetary policy decisions will be taken using a certain system of weights attributed to the representatives of each country. The reason why the proposed statute of the ECB ignores the European Parliament is, of course, that this body does not have any real legislative power, since a politically united "country Europe" does not exist. However these voting rules based on a "non–politically–unified–Europe" may misrepresent the preferences of the European voters.

It has been argued with good reasons (see Krugman (1989) for

instance) that a complete monetary union in Europe is an important intermediate step toward political union. In this paper, on the other hand, we highlighted several reasons why the working of a monetary union will depend crucially on the future political structure the European Community.

Appendix

It is likely that, even if a monetary union is implemented, the rate of inflation will not be equalized across the member countries. Consider, therefore, the case in which inflation in country i is given by::

[A.1] $$\pi_i = \pi_E + \delta_i$$

where δ_i is a random shock with mean zero and variance σ^2_δ. In this case, equations [10] and [11] in the text become:

[A.2] $$\mathcal{L}^{i'} = \frac{1}{2} E [\pi_i^2 + \beta_i(y_i - \bar{y}_i)^2]$$

and

[A.3] $$y_i = (\pi_i - \pi_i^e) + \mu_i$$

respectively. Consequently, the expected welfare of country i in the union is now given by:

[A.4] $$\mathcal{L}^{i'} = \frac{1}{2} \mathcal{E}[(b\bar{x}_E - \frac{b}{1+b} \epsilon + \delta_i)^2 + \beta_i(\mu_i + \delta_i - \frac{b}{1+b} \epsilon - \bar{y}_i)^2]$$

Subtracting from [A.4] equation [15], we obtain:

[A.5] $$\mathcal{L}^{i'} - \mathcal{L}_N^i = \frac{1}{2}\left[\bar{x}^2(b^2-\beta_i^2) + (1+\beta_i)\left\{\left(\frac{b}{1+b}\right)^2\sigma_\epsilon^2 - \left(\frac{\beta_i}{1+\beta_i}\right)^2\sigma_\mu^2\right\}\right.$$

$$\left. - 2\beta_i\left\{\left(\frac{b}{1+b}\right)\sigma_{\epsilon\mu} - \left(\frac{\beta_i}{1+\beta_i}\right)\sigma_\mu^2\right\} + \beta_i\{\sigma_\delta^2 + 2\,\rho_{\delta\mu}\sigma_\delta\sigma_\mu\}\right]$$

$$= \left[\mathcal{L}^i - \mathcal{L}_N^i\right] + \beta_i\{\sigma_\delta^2 + 2\,\rho_{\delta\mu}\sigma_\delta\sigma_\mu\}$$

where $\rho_{\delta\mu}$ is the correlation coefficient between δ_i and μ_i, and we have assumed that δ_i and ϵ are independent. Therefore, unless $\rho_{\delta\mu}$ is sufficiently negative to compensate for σ_δ^2, the results are now less favorable to a monetary union than in the case discussed in the text. The rest of the analysis of Section 4, however, remains unchanged.

Table A-1

Political Independence of Central Banks†

Countries	Appointments				Relationship with Government		Constitution		Index of Political Independence
	1	2	3	4	5	6	7	8	9
Belgium				*					1
Denmark		*					*	*	3
France		*		*					2
Germany		*		*	*	*	*	*	6
Greece			*					*	2
Ireland		*				*		*	3
Italy	*	*	*		*				4
Netherlands		*		*	*	*	*	*	6
Portugal					*				1
Spain				*	*				2
U.K.					*				1
U.S.				*	*	*	*	*	5
ECB		*		*	*	*	*	*	6

† Data for the eleven national Central Banks are from Grilli, Masciandaro and Tabellini (1991)

Notes:

1 = Governor not appointed by government
2 = Governor appointed for > 5 years
3 = Board not appointed by government
4 = Board appointed for > 5 years
5 = No mandatory participation of government representative in the Board
6 = No government approval of monetary policy is required
7 = Statutory requirements that central bank pursues monetary stability
8 = Explicit conflicts between bank and government are possible
9 = Overall index of political independence, constructed as the sum of the asterisks in each row

Comments on the European Central Bank

1 = President appointed by European Council (Art. 11.2)

2 = President appointed for 8 years (Art. 11.2)

3 = Council members:
- 6 Members of Executive Board: appointed by European Council (Art. 11.3)
- 12 Governor of National Central Banks: appointed according to their national rule, thus mostly by national governments

4 = Council members:
- 6 Members of Executive Board: appointed for 8 years (Art. 11.3)
- 12 Governor of National Central Banks: appointed for at least 5 years (Art. 14)

5 = Council of European Communities representative and/or European Commission representative may attend meetings of the council, but they are not part of the Council itself, and thus they cannot vote (Art. 15.1)

6 = Nor the ECB, nor the national central banks , nor the other members of the Council may seek or take any instruction from Community institutions, governments of Member States or any other body (Art 7)

7 = The primary objective of the System shall be to maintain price stability (Art. 2.1)

8 = Explicit conflicts between bank and government are possible (Art. 2.2 & Art. 7)

Table A-2

Economic Independence of Central Banks†

Countries	Monetary Financing of Budget Deficit					Monetary Instruments			Index of Economic Independence
	1	2	3	4	5	6	7	8	9
Belgium		*	*	*	*	*		*	6
Denmark		*			*	*	*		4
France				*	*	*	*		4
Germany	*	*	*	*	*	*	*	*	8
Greece				*		*			2
Ireland		*	*	*		*			4
Italy				*					1
Netherlands				*	*	*	*		4
Portugal				*		*			2
Spain				*	*			*	3
U.K.	*	*	*	*		*	*		6
U.S.	*	*	*	*		*	*	*	7
ECB	*	*	*	*	*	*	*	*	8

† Data for the eleven national Central Banks are from Grilli, Masciandaro and Tabellini (1991)

Notes:

1 = Direct credit facility: not automatic
2 = " " " : market interest rate
3 = " " " : temporary
4 = " " " : limited amount
5 = Central bank does not participate in primary market for public debt
6 = Discount rate set by central bank
7 = No portfolio constraints in place since 1980
8 = No bank loan ceilings in place since 1980
9 = Overall index of economic independence (being the sum of the asterisks in columns 1-7)

Table A-2 con't

Comments on the European Central Bank

1 = No Direct credit facility (Art. 21.1)

2 = Purchase of Treasury bonds only on secondary market, thus at market rate (Art. 21.1)

3 = Credit facility never allowed, not even on a temporary base (Art. 21.1)

4 = Zero amount (art. 21.1)

5 = Central bank does not participate in primary market for public debt (Art. 21.1)

6 = The Council shall formulate decision relating to intermediate monetary objective, key interest rates and supply of reserves (Art. 12.1)

7 = Portfolio constraints are not part of the list of function the ECB can take (Art. 18 & Commentary page 10)

8 = No bank loan ceilings are not part of the list of function the ECB can take (Art. 18 & Commentary page 10)

Table A-3

Electoral Data

		Shares	Seats
Belgium: Election date 12/87.			
EL:	Communist Parties;	0.6	0
L:	Socialists (SP and PS);	30.6	72
CD:	Christian Democrats (CSP and PSC);	35.5	79
R:	Party for freedom and progress (PVV); Liberal Reformists (PRL)	20.9	48
ER:	Flemish Bloc.	1.9	1
Denmark: Election date 5/88.			
EL:	Communist Party, Left Socialist Party;	1.4	0
L:	Socialist People's Party, Social Democratic Party;	42.9	79
CD:	Christian Democrats, Radical Liberal;	12.3	23
R:	Conservative Party, Liberal Party;	31.1	57
ER:	Progress Party.	10.9	16
France: Election date 6/88.*			
EL:	Communist Party;	3.43	27
L:	Socialist Party and various affiliates;	48.7	276
CD:	Rally for the Republic;		
R:	Union for French Democracy; various conservative groups;	46.8**	178
ER:	National Front	1.1	1

* Second Ballot

** In the computations we classified this center/right coalition of parties as R. This is, however, inessential for our results since the median is within L.

Table A-3 con't

		Shares	Seats
Germany: Election date 1/87.			
EL:	Greens;	8.3	42
L:	Social Democrats;	37.0	186
CD:	Christian Democrats (CDU/CSU);	44.3	223
R:	FDP;	9.1	42
Greece: Election date 11/89.			
EL:	Communist Parties and various left wing affiliates;	12.5	21
L:	Socialists (PASOK);	40.7	128
CD:			
R:	New Democracy.	46.2	148
Ireland: Election date 6/83.			
EL:	Workers' Party;	5.0	7
L:	Labor Party;	9.5	15
CD:	Fine GAEL;	27.1	51
R:	Fianna Fail, Progressive Democrats.	56.0	95
Italy: Election date 6/87.			
EL:	Communists, DP, Greens;	30.8	198
L:	Socialists, Social Democrats, Republicans; Radicals.	23.6	145
CD:	Christian Democrats, SUD Tirol Party;	35.7	237
R:	Liberals;	2.1	11
ER:	Social Movement.	5.9	35

Table A-3 con't

		Shares	Seats
Luxembourg: Election date 6/89.			
EL:	Communist Party; Green Parties.	13.4	4
L:	Socialists;	27.2	18
CD:	Christian Democrats;	31.7	22
R:	Democratic Party (PD).	16.2	11
ER:			
Netherlands: Election date 3/89.			
EL:	Left wing group (Groen Links);	4.1	6
L:	Socialists;	34.2	52
CD:	Christian Democrats;	37.6	54
R:	People's Party for Freedom and Progress, Democrat 66.	20.8	31
Portugal: Election date 7/87.			
EL:	Communist Party;	12.1	31
L:	Socialist Party, Democratic Renewal Party;	27.1	67
CD:	Social Democratic Party;	50.2	148
R:	Democratic Social Culture.	4.4	4

Table A-3 con't

		Shares	Seats
Spain: Election date 6/86*.			
EL:	Communists, Bascs;	6.1	13
L:	Socialists;	44.3	184
CD:	Center Parties (PP, CIV, CDS).**	40.5	142
United Kingdom: Election date 6/87.			
L:	Labor Party;	30.8	229
CD:	Liberals;	22.6	22
R:	Conservatives.	42.3	375

* An election was held in October 1989 followed by disputes about allocations of seats due to alleged irregularities. Since complete results for the 1989 elections were not immediately available in this draft we used the 1986 election results.

** Since the median is within the Socialist Party, it is irrelevant for our analysis how we classify this group of parties in the R or CD categories.

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