Are Small Countries Too Powerful Within the ECB?

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Abstract

This paper analyzes the possible consequences of diverging economic developments within the euro area, given the current decision-making process of the European Central Bank (ECB). For the German Bundesbank, the role model of the ECB, there is evidence that differences in the economic situation in the various states affected voting behavior in the Governing Council. For the euro area countries, the paper finds that, despite convergence, important differences in terms of economic performance and preferences remain. As all national central banks have one vote within the Governing Council of the ECB, there is a risk that national considerations may prevail over EMU-wide considerations. (JEL D72, E58); Atlantic Econ. J., 30(3): pp. 263-82, Sept. 02. ©*All Rights Reserved.*

Introduction

For the first time since the Roman Empire, a large portion of Europe shares a common currency since the beginning of 1999. After 50 years the Deutsche Bundesbank, the central bank that ruled European monetary affairs, stepped down to entrust monetary policy to the European Central Bank (ECB). Since the start of the Economic and Monetary Union (EMU) in Europe, the ECB has determined monetary policy in Europe. Like the other 11 national central banks in the euro area, the Bundesbank is part of the European System of Central Banks (ESCB).

Various critics of EMU raised concerns that a common monetary policy may be undermined due to diverging economic developments in the countries in the euro zone. For instance, *The Economist* [1998] stated that:

> "The Governing Council (of the ECB) is supposed to set interest rates according to conditions in the euro area as a whole, but there is a risk that national governors will be unduly influenced by conditions in their home country. Small countries may also carry undue weight in the system.... A weak center, combined with strong national interests, could create conflicts that undermine the whole system's credibility."

Likewise, Hans-Werner Sinn [Sinn, 2001] argues:

> "The European Central Bank's failure to lower interest rates at its last meeting, although U.S. rates are now below those in Europe, was very disappointing. Is the boom in Ireland and Finland so important for Europe that it prevents battling

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> recession in the heart of the Continent? Where is the much-touted responsibility of every individual member of the Central Bank for the whole, for the sake of which Germany contented itself with only half of the voting strength of these two countries even though it is nine times as large?"

The purpose of this paper is to analyze to what extent the institutional setup of the ECB may lead to policies which are not (fully) in line with the ECB's primary objective of price stability in the euro area. For this purpose, a very simple model is developed broadly following De Grauwe [2000]. The paper then turns to the experience of the Bundesbank, the role model of the ECB. There is evidence that differences in the economic situation in the various German states affected voting behavior in the Governing Council. As important differences in terms of economic performance and preferences remain in the euro area countries, it is argued that there is a risk that national considerations may prevail over EMU-wide considerations, as long as all national central banks have one vote within the Governing Council of the ECB.

The remainder of this paper is organized as follows. The second section compares the institutional setup of the ECB with that of the Bundesbank and the Federal Reserve Board. The third section presents the model, while the fourth section focuses on the German experience. The fifth and sixth sections discuss differences in economics and preferences in the euro area. The final section of this paper goes into the policy conclusions.

The ECB's Institutional Setup

The primary objective of the ESCB as prescribed in the Maastricht Treaty is to maintain price stability in the euro zone.[1] The Governing Council of the ECB is the most important decision making body of the ECB. It is, for instance, responsible for monetary policy, including decisions about intermediate objectives and interest rates. The Governing Council consists of the Executive Board of the ECB and the governors of the national central banks of the countries in the euro area. When making monetary policy decisions, the members of the Governing Council of the ECB should not act as national representatives, but in a fully independent personal capacity. This is reflected in the principle of "one person, one vote" [Eijffinger and De Haan, 2000].

Table 1 compares the ECB with the Federal Reserve and the Bundesbank in terms of economic size of the central banks concerned. It follows that in the U.S., the regional central banks are of similar size, whereas in EMU, the distribution of economic size is quite uneven. Note that for at least seven out of the 12 EMU countries their political weight (1/18, or about six percent of all votes in the Governing Council) exceeds their economic weight (0-5 percent of EMU GDP).[2] Germany is in between: the central banks of Nordrhein-Westfalen (22 percent) and Bavaria (17 percent) have substantially more economic power than most of the other banks.

TABLE 1
Share in Total GDP of Central Banks (Distribution), 1999

Share in GDP (%)	Germany[a]	U.S.	EMU
0 - 5	0	1	7
5 - 10	5	10	2
10 - 15	2	0	0
15 - 20	1	1	1
20 - 30	1	0	1
> 30	0	0	1
Total	9	12	12

[a]Germany: 1998. Source: Fase and Vanthoor [2000] and own calculations.

Table 2 compares the ECB with the German and American central banks in terms of the power of the regional central banks. Also from this perspective, the decision-making structure of the ECB is quite different from those of comparable central banks. The national central banks have a very important say in European monetary policy making.

TABLE 2
Distribution of Voting Power: Central vs. Regional

Bank	Central	Regional	Central/Regional
Buba before 1957	1	9	0.11
Buba before 1992	7	11	0.64
Buba before 1999	8	9	0.89
FED	7	5	1.40
ECB 1999	6	11	0.55
ECB 2001	6	12	0.50

An important question is whether this institutional setup may lead to conflicts. For instance, if inflation in Germany and France (most of the euro area) is in line with the objective of price stability, while in some small countries inflation is increasing, will the governors of the central banks of the latter countries favor a reduction in interest rates? According to many observers, it is possible that economic differences across countries may affect the voting behavior of national central bank governors within the ESCB, despite the ECB's mandate for price stability in the euro area as a whole. Indeed, the experience of the Federal Open Market Committee (FOMC) of the U.S. Federal Reserve suggests that the votes of regional central bank presidents have been influenced by the economic situation in the Federal Reserve Districts [Meade and Sheets, 2001]. It is crucial to what extent inflation differentials and differences in business cycles exist in the EMU and whether they will remain. But even if inflation and business cycles were very similar, there could be conflicts in the ECB Governing Council due to differences in preferences.

A Simple Model

The model presented in this section is a variant of the model of De Grauwe [2000].[3] It is assumed that the monetary union consists of two countries, R and F, and that the monetary authority in the monetary union has the following loss function:

$$L_E = \gamma L_R + (1-\gamma) L_F \quad , \tag{1}$$

where L_R and L_F are the loss functions of the countries R and F, and γ is the share of country R. The parameter γ can be interpreted as the weight given to country R in the political decision process. In other words, it is assumed that monetary policy is a weighted function of the loss functions of the individual countries. A possible perspective on (1) is that individual representatives of the countries in the ECB Council aim to influence monetary policy in the direction of their national policy targets as embedded in their respective loss functions. While clearly not in line with the objectives laid down in the formal ECB framework (see below), this scenario might well be a good description of the actual behavior of Governing Council members. The loss function of each individual country is written as:

$$L_R = \pi^2 + b_R (Y_R - Y_R^*)^2 \quad , \tag{2}$$

$$L_F = \pi^2 + b_F (Y_F - Y_F^*)^2 \quad , \tag{3}$$

where π is the common inflation rate, Y_R and Y_F are output in countries R and F; $(Y_R - Y_R^*)$ and $(Y_F - Y_F^*)$ are the output gaps that the authorities wish to minimize; and b denotes the weight given to output stabilization. The ratio $1/b$ is often interpreted as a measure of conservativeness (that is, inflation aversion). Output in the two countries is determined according to the Lucas supply curve:

$$Y_R = Y_R^* - \alpha(\pi - \pi^e) + \varepsilon_R \quad , \tag{4}$$

$$Y_F = Y_F^* - \alpha(\pi - \pi^e) + \varepsilon_F \quad , \tag{5}$$

where ε_R and ε_F represent stochastic disturbances with a mean of 0 and a known variance in the two countries. Inflation π is, for simplicity purposes only, interpreted as policy instrument. Next, assume that the transmission of monetary impulses, that is, differences between π and expected inflation, π^e, in the two countries is the same (see De Grauwe [2000] and Gros and Hefeker [2000] for the analysis with differences in transmission). Thus, asymmetries can appear in two forms in this model. One is an asymmetry in the disturbances ($\varepsilon_R \neq \varepsilon_F$), and the other is an asymmetry in preferences ($b_R \neq b_F$).

To determine the optimal inflation rate, substitute (4) into (2) and (5) into (3). Then substitute both equations in (1) and minimize this function with respect to π . Under rational expectations, inflation will then be:

$$\bar{\pi}_{(1)} = \frac{\alpha\gamma b_R \varepsilon_R + \alpha(1-\gamma) b_F \varepsilon_F}{1 + \alpha^2(\gamma b_R + (1-\gamma) b_F)} \quad , \tag{6}$$

where the index "(1)" marks the case in which inflation in the euro zone is set in line with the loss function described in equation (1).

Alternatively, assume that the monetary authority in the monetary union has the following loss function:

$$L_E = \pi^2 + b_E[\lambda(Y_R - Y_R^*) + (1-\lambda)(Y_F - Y_F^*)]^2 \quad , \tag{7}$$

where λ denotes the economic weight of country R. This situation is more or less what the architects of the ECB system had in mind when specifying the normative standards that should be guiding monetary policy in the euro area. After all, the primary objective of all Council members should be price stability in the euro area as a whole, and not the implied welfare in an individual, country as in loss function (1). Instead, loss function (7) implies that the ECB minimizes deviations of euro zone averages of inflation and output from their targets. Consequently, the effective weight given to an individual country in the underlying policy decision process is defined by its economic size λ, rather than its political weight as in (1).[4] Using (7), but otherwise following the same steps as above:

$$\bar{\pi}_{(7)} = \frac{\alpha b_E(\lambda\varepsilon_R + (1-\lambda)\varepsilon_F)}{1 + \alpha^2 b_E} \quad . \tag{8}$$

The index "(7)" marks the scenario in which monetary policy is found based on loss function (7).

To evaluate the effect of asymmetric shocks, different preferences, and the two loss functions, one has to calculate the expected variance of the loss function of each country:

$$E(L_R) = \text{var}\,\pi^2 + b_R\ \text{var}\,Y^2 \quad , \tag{9}$$

where it is assumed that Y_R^* is constant. Calculating the variance of (6) yields:

$$\text{var}\,\bar{\pi}_{(1)} = \left(\frac{\alpha}{1 + \alpha^2(\gamma b_R + (1-\gamma)b_F)}\right)^2 \cdot(\gamma^2 b_R^2\ \text{var}\,\varepsilon_R + (1-\gamma)^2 b_F^2\ \text{var}\,\varepsilon_F + 2(\gamma - \gamma^2)b_R b_F\,\text{cov}\,\varepsilon_R\varepsilon_F) \quad , \tag{10}$$

while the variance of (8) is:

$$\text{var}\,\bar{\pi}_{(7)} = \left(\frac{\alpha b_E}{1 + \alpha^2 b_E}\right)^2 [\lambda^2\,\text{var}\,\varepsilon_R + (1-\lambda)^2\,\text{var}\,\varepsilon_F + 2(\lambda - \lambda^2)\,\text{cov}\,\varepsilon_R\varepsilon_F] \quad . \tag{11}$$

In (10) and (11), the effects of asymmetric shocks are clear. If the covariance between ε_R and ε_F is large, then inflation will have a larger variance. In other words, if both countries are hit by symmetric shocks, the monetary authorities can stabilize output in both economies simultaneously by increasing inflation. If the shocks are largely asymmetric, then monetary authorities will not be able to react effectively to either shock.

So, what is the effect of differences in the political and economic weight of a country? To simplify, assume that $b_R = b_F = b_E$, that is, that there are no differences in preferences between countries R and F. In this case, (10) would change to

$$\text{var}\,\bar{\pi}_{(1)} = \left(\frac{\alpha b_E}{1 + \alpha^2 b_E}\right)^2 [\gamma^2\,\text{var}\,\varepsilon_R + (1-\gamma)^2\,\text{var}\,\varepsilon_F + 2(\gamma - \gamma^2)\,\text{cov}\,\varepsilon_R\varepsilon_F] \quad . \tag{10a}$$

Obviously, then, from the perspective of country R, the variance of inflation would be higher in regime (1) if $\gamma > \lambda$. This follows straight from a comparison of (10a) and (11). Note, however, that this implies a welfare gain rather than a welfare loss from the perspective of country R. Indeed, for $\gamma \to 1 > \lambda$, the euro area's monetary policy under regime (1) approaches country R's first best response to shocks ε_R.[5] Consequently, if the political weight of a country is larger than its economic weight, then it is more likely to prefer a monetary policy regime based on (1).

Yet another perspective which can be introduced is to look at the differences in preferences. To shed light on this issue, assume that countries are similar in political and economic size, that is, $\gamma = \lambda = 1/2$. Under this symmetry assumption, one can rewrite (10) and (11) as:

$$\text{var}\,\bar{\pi}_{(1)} = \left(\frac{\alpha}{1 + \alpha^2(b_R + b_F)/2}\right)^2 \frac{1}{4}(b_R^2\ \text{var}\,\varepsilon_R + b_F^2\ \text{var}\,\varepsilon_F) \quad , \tag{10b}$$

and

$$\text{var}\,\bar{\pi}_{(7)} = \left(\frac{\alpha}{1 + \alpha^2 b_E}\right)^2 \frac{1}{4}(b_E^2\,\text{var}\,\varepsilon_R + b_E^2\,\text{var}\,\varepsilon_F) \quad . \tag{11b}$$

A comparison of (10b) and (11b) reveals that unless the output preference governing monetary policy under regime (7), b_E, is identical to country R's preference, b_R, country R is likely to be further away from its desired outcome under (7) than under (1). This will

always be the case, if, for instance, the foreign loss function shares the conservative output preference with the ECB, that is, if $b_F = b_E < b_R$.

How will these differences in monetary policy under both regimes influence output? In general, the variance of output is:

$$\text{var } Y_R = \text{var}(\varepsilon_R - \alpha\pi) = \alpha^2 \text{var}\,\pi + \text{var}\,\varepsilon_R - 2\,\text{cov}\,\varepsilon_R\pi \quad , \tag{12}$$

as both the natural output, Y^*, and the expected inflation, π^e, are fixed variables. As the characteristics of the variance of inflation have been described already, the paper restricts itself to discussing the covariance between the countries' shocks and inflation. This covariance will determine the extent to which the common monetary policy in the euro zone will stabilize a country's economy. Since the model is symmetric in this respect, one can focus on country R without a loss of generality. It was found that:

$$\text{cov}\,\varepsilon_R\bar{\pi}_{(1)} = \frac{\alpha}{1 + \alpha^2(\gamma b_R + (1-\gamma)b_F)}\,(\gamma b_R\,\text{var}\,\varepsilon_R + (1-\gamma)b_F\,\text{cov}\,\varepsilon_R\varepsilon_F) \quad , \tag{13}$$

$$\text{cov}\,\varepsilon_R\bar{\pi}_{(7)} = \frac{\alpha b_E}{1 + \alpha^2 b_E}\,(\lambda\,\text{var}\,\varepsilon_R + (1-\lambda)\,\text{cov}\,\varepsilon_R\varepsilon_F) \quad . \tag{14}$$

Equation (13) is the covariance for inflation given by (6), implied by regime (1), while (14) is the covariance for inflation given by (8) implied by regime (7). Both results show that the covariance will be higher if the shocks in both countries are highly correlated (a result also found by De Grauwe [2000]).

Furthermore, an increased weight in the monetary policy decision process, given by a higher γ or a higher λ, also results in a higher covariance. More importantly, countries that are endowed with a larger political than economic influence will, in general, favor a monetary policy regime characterized by (1). To illustrate, assume again that $b_R = b_F = b_E$. Then (13) can be rewritten as:

$$\text{cov}\,\varepsilon_R\bar{\pi}_{(1)} = \frac{\alpha b_E}{1 + \alpha^2 b_E}\,(\gamma\,\text{var}\,\varepsilon_R + (1-\gamma)\,\text{cov}\,\varepsilon_R\varepsilon_F). \tag{13a}$$

Comparing (13a) with (14), it can be seen that countries with $\gamma > \lambda$ will enjoy a higher covariance of ε_R and π and thus, a lower variance of output under policy regime (1) than under (7). Since, as argued above, the increase in inflation variance will be optimal in the sense that the welfare gain from lower output volatility dominates the welfare loss from more volatile inflation, in this example, countries with $\gamma > \lambda$ will also enjoy higher welfare in regime (1) than (7).

Similarly, following the discussion on preferences above, one can also state that under symmetry in weights, that is, $\gamma = \lambda = 1/2$, (13) and (14) become:

$$\text{cov}\,\varepsilon_R\bar{\pi}_{(1)} = \frac{\alpha}{1 + \alpha^2(\gamma b_R + (1-\gamma)b_F)}\,\frac{1}{2}(b_R\,\text{var}\,\varepsilon_R + b_F\,\text{cov}\,\varepsilon_R\varepsilon_F) \quad , \tag{13b}$$

$$\text{cov}\,\varepsilon_R\bar{\pi}_{(7)} = \frac{\alpha b_E}{1 + \alpha^2 b_E}\,\frac{1}{2}\,(\text{var}\,\varepsilon_R + \text{cov}\,\varepsilon_R\varepsilon_F) \quad . \tag{14b}$$

Using the example introduced above, if $b_F = b_E < b_R$, that is, if the foreign loss function shares the conservative output preference of the ECB, then the covariance under (1) is unambiguously larger (and output variance lower) than under (7).

There are two basic messages to be drawn from this theoretical exercise. First, the common monetary policy will be more active (and output volatility will be lower) if country shocks are highly correlated. The reason is that if the covariance between ε_R and ε_F is positive and high, a strong reaction of the euro zone's stabilization policy to an output shock in a particular country will be more or less in line with the stabilization needs of other members of the euro area. In that sense, the ECB could be too decentralized if business cycle synchronicity in the euro area would be low or not converging.

Second, the distribution of political preferences and the asymmetry between political and economic weights of euro zone member countries in the decision making process could have an important influence on their behavior in the Governing Council. If the political weight (or voting power) a given country enjoys in the Council is larger than its economic weight (as applied in the computation of, for example, euro area inflation or rate of output growth), then a country's welfare is larger in a regime in which the ECB decision process maximizes the weighted sum of national welfare functions, rather than following the norms laid down in the ECB statute. Interestingly, as the second section has revealed, the political power of the majority of member countries in the euro area exceeds their economic size. Consequently, if the representatives of these politically over-represented countries in the ECB Governing Council let their national welfare perspective govern their behavior in the decision making process, the ECB might not behave in line with its statute. In fact, the ECB might behave as if implementing a political equilibrium based on voting power, rather than maximizing the welfare of the euro zone as measured by the deviation of area-wide economic aggregates. Since the political weight of individual members is a function of the strength of national central bank representatives relative to the centralized appointed members of the Executive Board, the ECB might be too decentralized.

A similar conclusion might be drawn from the occurrence of political differences between national central bank representatives. A possible scenario is, for instance, that a majority of representatives has less conservative preferences on the inflation-output-volatility trade-off than what the ECB statute demands. Then, again, the aforementioned asymmetry between political and economic clout could cause the ECB to behave as if being governed by a political equilibrium determined by national interests, rather than following the targets specified in its statute.

What would be the policy implications of an overly decentralized monetary policy in the euro zone? There is certainly no quick fix to the observed asymmetry between the political and economic weights of ECB member countries. One obvious solution would be to strengthen the voting power of the Executive Board. This could help to mitigate incentives to translate differences in economic development and policy preferences into undesired ECB behavior based on a national rather than a unified euro zone perspective. The sixth section will further discuss implications of an overly decentralized ECB policy. But first, the paper examines how relevant the overall issue is empirically. For instance, how important or persistent are the problems of diverging economies in the euro area today? And, is there evidence that differences in the economic situation will actually translate into a nationally-centered behavior of Council members? Is there actually a problem of diverging degrees of conservativeness among the representatives of the national central banks in the ECB?

The German Experience

As the model in the previous section has shown, diverging economic developments may induce national central bankers to dissent. The German experience with a federal central bank structure may be relevant to examine how likely such an outcome is.[6] The paper

first analyzes economic developments in the various states and then presents some results on voting in the Zentralbankrat, that is, the Governing Council of the Bundesbank.

Inflation and Business Cycles in the German States

First, look at the inflation differentials between the German Länder, or states. The sample period is 1950-61.[7] Table 3 shows the deviation of inflation in the individual states from the average German inflation. The last column, as well as the last line, relay the standard deviation (Std) of the respective line or column. The main message conveyed by this data is that there was considerable volatility of inflation across states, despite the fact that, since late 1948, the D-mark circulated in all states under the sole rule of the Bundesbank. It is also interesting to note that despite an early trend towards convergence that lasted until the mid 1950s, inflation differentials continued to exist during the entire sample period. Behind these differences were, among other things, continued local and state autonomy in fiscal matters, as well as considerable variation in the underlying economic structure. The question is whether these differences also translated into different views on how monetary policy was to be conducted. After all, all German state central banks held voting rights in the Bundesbank Council.

Table 4 shows the deviations from average of the growth rates of real GDP in the German states between 1951-61. It follows that differences between states were both significant and in line with the behavior of the inflation data, rather persistent. At times, the growth rates of real GDP span more than 10 percentage points.

Voting Behavior in the Zentralbankrat, 1948-61

This study uses data on individual voting behavior on discount rate changes in the period 1948-61, as reported in Berger [1997, Appendix].[8] The discount rate is the interest rate charged by the central bank for refinancing through the discount window—by far the most important source of bank refinancing at the time. The discount rate is widely viewed as an excellent indicator for the German central bank's monetary policy stance during the 1950s and 1960s. As a rule, other policy instruments (for example, minimum reserve requirements and open market activities) moved in line with changes of the discount rate. The data is not without problems, though. Actual voting records are not always complete, and some results had to be meticulously gathered from Council discussions. Another caveat is that voting results are available only for actual policy decisions, and almost no information is available about votes on decisions not to change policy.

All in all, there are 180 observations available on voting by nine regional representatives in the Governing Council, that is, the presidents of the local Landeszentralbanken: Bavaria (BY), Bremen (HB), Hamburg (HH), Hesse (HS), Lower Saxony (NS), Nordrhein-Westfalen (NRW), Rheinland-Pfalz (RP), Baden-Württemberg (BW), and Schleswig-Holstein (SH). There are 151 yes votes and 29 no or abstain votes in the sample.

The paper first analyzes whether the probability to deviate from a majority vote on a discount rate change was influenced by regional economic developments. Table 5 reports results of a pooled ML probit regression of $DISVO$, a binary variable that is 1 if a regional representative did not vote yes on a discount rate change favored by the majority of votes in the council and 0 otherwise, on a number of explanatory variables. $D\_INF\text{^}2$ is the squared deviation of regional inflation from the inflation average of the nine regions contained in the sample. $D\_GROWTH\text{^}2$ is the squared deviation of regional real GDP growth from the sample average. $(D\_DISKONT\ /\ DISKONT)\text{^}2$ is the squared change of the discount rate weighted by the pre-change level of the rate. $BY, ..., BW$ are regional dummies (the dummy for SH has been omitted).

TABLE 3
Inflation in German States: Deviation from Average, 1951-61

	Baden-Württemberg	Bavaria	Bremen	Hamburg	Hesse	Lower Saxonia	Nordrhein-Westphalen	Rheinland-Pfalz	Schleswig-Holstein	Std
1951	1.25	-0.35	-0.02	-0.09	0.80	-0.39	-0.01	-0.56	-0.62	0.63
1952	-1.05	-1.35	3.26	0.95	-1.05	0.97	0.05	-3.36	1.61	1.95
1953	-0.76	0.21	0.46	-0.95	-0.16	0.98	0.46	-0.30	0.06	0.62
1954	-0.48	-0.36	0.14	0.21	0.56	-0.04	-0.38	0.65	-0.33	0.42
1955	0.15	-0.28	0.98	1.54	-0.32	-0.71	-0.32	-0.15	-0.92	0.79
1956	-0.41	-0.02	-0.07	0.09	0.51	-0.87	0.14	-0.18	0.84	0.49
1957	0.62	0.18	0.85	-0.08	-0.39	-0.67	0.24	-0.46	-0.30	0.51
1958	-0.25	2.12	0.26	0.41	-0.46	-0.25	-0.51	0.09	-1.38	0.95
1959	-0.16	-2.90	0.63	1.76	0.50	-0.05	-0.03	0.35	-0.07	1.24
1960	-0.05	-1.03	-0.48	-1.72	1.48	2.86	-1.14	-1.20	1.24	1.54
1961	0.76	0.21	-0.91	-0.12	0.20	-0.34	-0.18	-0.48	0.86	0.57
Average	-0.03	-0.32	0.46	0.18	0.15	0.14	-0.15	-0.51	0.09	0.29
Std	0.69	1.23	1.08	1.00	0.71	1.09	0.43	1.07	0.94	

Source: Statistical Office of Baden-Württemberg and own calculations.

Figure 1:

TABLE 4
Growth Rates in German States: Deviation from Average, 1951-61

	Baden-Württemberg	Bavaria	Bremen	Hamburg	Hesse	Lower Saxonia	Nordrhein-Westphalen	Rheinland-Pfalz	Schleswig-Holstein	Std
1951	3.17	-0.87	-3.95	-3.52	1.75	-1.45	3.29	6.08	-4.48	3.74
1952	0.94	-2.49	2.09	-0.75	-0.76	-1.68	1.91	4.25	-3.50	2.49
1953	0.90	-0.76	-1.98	-0.81	0.46	0.09	1.82	1.27	-0.99	1.23
1954	2.79	1.16	-0.76	-1.02	1.53	-0.10	-1.10	-0.60	-1.90	1.51
1955	0.67	-0.07	3.23	-0.06	0.24	-0.85	1.23	-1.29	-3.10	1.75
1956	0.44	-1.49	1.72	3.37	-1.70	-1.13	0.88	-1.98	-0.11	1.79
1957	0.36	-0.26	1.49	2.41	-1.15	-1.31	-0.23	-3.53	2.22	1.90
1958	1.16	0.53	-2.17	-0.23	1.33	1.79	-3.52	-2.35	3.46	2.27
1959	1.09	1.87	-1.01	-1.94	0.88	0.73	-0.54	0.12	-1.20	1.25
1960	1.86	1.81	-2.46	1.24	0.44	-3.31	1.80	1.24	-2.62	2.15
1961	2.49	1.53	-2.65	-0.42	1.14	-0.29	-1.90	-0.64	0.74	1.65
Average	1.44	0.09	-0.59	-0.16	0.38	-0.68	0.33	0.23	-1.04	0.74
Std	0.98	1.43	2.35	1.93	1.14	1.35	1.99	2.86	2.46	

Source: Statistical Office of Baden-Württemberg and own calculations.

Figure 2:

TABLE 5
Dissenting Voting Behavior in the Zentralbankrat
(Dependent Variable: $DISVO$)

Variable	Coefficient	Std. Error	z-Statistic	Probability
Constant	-1.865	0.602	-3.099	0.002
$D\_INF\text{^}2$	0.122	0.051	2.374	0.018
$D\_GROWTH\text{^}2$	-0.050	0.033	-1.505	0.132
$(D\_DISKONT/DISKONT)\text{^}2$	10.581	3.831	2.762	0.006
BY	0.698	0.632	1.105	0.269
HB	0.259	0.693	0.373	0.709
HH	0.438	0.617	0.709	0.478
HS	1.312	0.625	2.098	0.036
NS	-0.154	0.753	-0.204	0.838
NRW	0.757	0.611	1.239	0.215
RP	0.446	0.591	0.754	0.451
BW	0.267	0.662	0.403	0.687
Mean Dependent variable	0.161	S.D. dependent variable		0.369
LR statistic (11 d.f.)	25.250	McFadden R-squared		0.159
Probability (LR statistic)	0.008	Number of observations		180

The results are to be interpreted carefully, as the sample by its very nature is somewhat unbalanced. Still, it turns out that regional differences do indeed play a role in dissent voting. In particular, the findings indicate that the probability of dissent voting significantly increases in the size of the policy change. This is not surprising, as one would expect opinions in the Council to deviate more when greater policy changes were contemplated. Furthermore, there is some impact of differences between regional and average real growth. It would seem that such differences lowered the probability to cast a dissent vote. Note, however, that the estimated coefficient is only significant at the 13 percent level. At the same time, the probability of a regional representative not to vote yes on a policy change was significantly larger when the differences between regional and average inflation were larger. The coefficient is significant at the 5 percent level.[9]

The direction of dissent voting is evaluated in more detail. To evaluate the direction of dissent voting by regional representatives in the Council, the hypothetical time-path of the preferred discount rates, $r^*_{i,t}$, was constructed for every region i at time t. Time refers to the time of the actual discount rate decisions. The preferred rate is defined as:

$$r^*_{i,t} = r^*_{i,t-1} + (1 - DISVO_t) \cdot D\_DISKONT_t \quad , \tag{15}$$

that is, $r^*_{i,t}$ is the discount rate that would have prevailed, had only discount rate changes ($D\_DISKONT$) been allowed that region i approved by voting yes in the Council ($DISVO = 1$) at time t. The starting value of $r^*_{i,t}$ at time $t = 0$ has been set to the actual discount rate in the first sample period for all regions. Then, the deviation of the preferred discount rate to the actual discount rate, r_t, was regressed on the deviation of regional inflation from the inflation average of the nine regions contained in the sample (D_INF) and the deviation of regional real GDP growth from the sample average (D_GROWTH). The estimated panel OLS-model also allows for fixed effects and region specific time trends (not reported in Table 6):

$$r^*_{i,t} - r_t = \alpha_i + \beta_i \cdot TREND + \gamma \cdot D\_INF_i + \delta \cdot D\_GROWTH_i + u_{i,t} \quad . \tag{16}$$

It was found that the difference between a region's preferred discount rate and the actual discount rate was a positive function of the differences between regional and average inflation. That is, a region with above average rates of inflation, as a rule would have preferred a higher discount rate than the Council majority (7 percent significance level). At the same time, the difference between a region's preferred and actual discount rate was a negative function of the differences between regional and average real growth (1 percent level of significance). This seems to imply that, while above average inflation caused regions to be relatively hawkish judged by their preferred discount rate, they turned into doves relative to the Council majority when it came to real growth. This is probably best interpreted as evidence that regions with above average growth rates hoped to extent their relative prosperity, unless this growth experience caused relative inflation to rise also.

TABLE 6
Direction of Dissent Voting in the Zentralbankrat
(Dependent Variable: $r^*_{i,t} - r_t$)

Variable	Coefficient	Std. Error	t-Statistic	Probability
D_INF_I	0.077	0.042	1.847	0.067
D_GROWTH_i	-0.055	0.019	-2.982	0.003
$\_BY - TIME$	-0.265	0.041	-6.494	0.000
$\_HB - TIME$	0.107	0.015	7.053	0.000
$\_HH - TIME$	-0.162	0.045	-3.625	0.000
$\_HS - TIME$	0.120	0.034	3.536	0.001
$\_NS - TIME$	0.076	0.012	6.235	0.000
$\_NRW - TIME$	-0.295	0.049	-5.981	0.000
$\_RP - TIME$	-0.224	0.042	-5.411	0.000
$\_SH - TIME$	0.050	0.010	5.043	0.000
$\_BW - TIME$	-0.097	0.026	-3.764	0.000
Fixed Effects				
$\_BY - C$	-1.908			
$\_HB - C$	-2.814			
$\_HH - C$	0.075			
$\_HS - C$	1.362			
$\_NS - C$	-2.713			
$\_NRW - C$	-0.975			
$\_RP - C$	-0.628			
$\_SH - C$	-0.751			
$\_BW - C$	-0.561			
S.D. Dependent variable	1.657	Mean Dependent variable		-1.435
F-Statistic	266.93	F-Statistic		266.93
Prob (F-Statistic)	0.000	Adjusted R-squared		0.937
Number of Observations	180	Number of Observations		180

Note: White Heteroskedasticity-Consistent Standard Errors & Covariance

In related work, Berger and Woitek [1999] have shown that dissent voting in the early Bundesbank Council was also correlated with political preferences. Following Vaubel [1997], they categorized council members according to the political color of their nominating state or federal government.[10] Using the same data set as above, they report that left-wing council members nominated by social democratic governments showed a significant tendency to resist (or not to support) interest rate increases. Moreover, Berger and Woitek [1999] also report

a systematic influence of the degree of conservatism in the Bundesbank council on German monetary policy from 1950-94. As a rule, more conservative Bundesbank Councils (councils with a majority of members appointed by conservative governments) tended to be more active in their reaction to both output (or demand) and inflation (or supply) shocks.[11] The present study therefore concludes that the German experience suggests that not only divergence in regional economic development, but also differences in political preferences seem to influence actual central bank behavior.

Diverging Economic Developments in EMU?

This section reports on deviations of inflation (Table 7) and economic growth rates (Table 8) from their average in the euro area since 1990.[12] First turn to inflation. It is not surprising that before the EMU, the differences in inflation where quite substantial and, as a rule, much larger than towards the end of the decade, when the euro established a common currency for all countries. But still, significant volatility of inflation across the member states of the euro zone persists.

Interestingly, the standard deviation of inflation rates across countries after the 1998 introduction of the euro is not much different from the levels reported among German states after the introduction of the D-mark. In 1999-2001, the average standard deviation of inflation rates in the euro zone as reported in Table 7 was 0.87. This closely matches the 1950-61 average standard deviation of inflation rates across German states of 0.88 as reported in Table 3.

Much of the same can be said about the differences of real GDP growth rates from their euro area average reported in Table 8. As in Germany in the 1950s, growth rates still differ widely (and on a comparable level) across the countries of the euro zone. The average standard deviation in the euro area 1999-2000 is 2.28 and thus, of the same order of magnitude as the average figure for Germany in 1950-51 (1.97).

It can be concluded that the heterogeneity of inflation and real growth rates across EMU member countries since the advent of the euro closely resembles the pattern observed among German *Länder* after the introduction of the D-mark. While it is too early to say just how persistent this phenomenon in the euro zone will actually be, the similarity in behavior appears to be striking. This might have consequences for the way monetary policy decisions are made within the ECB. Indeed, if the reaction of the representatives of the state central banks in the early German Bundesbank to inflation and growth differentials of this magnitude is any guide to the behavior of the national central bank governors in the ECB Council, there is a possibility that these differences will have a notable effect on their voting behavior. As a consequence, ECB decisions might lack the truly European perspective envisioned by the Maastricht treaty.

Different Preferences in the Eurozone?

The simple model of ECB decision making discussed in the third section stresses the importance not only of economic, but also the relevance of political differences across countries in the euro zone. However, despite the fact relative inflation aversion (or conservativeness) plays a crucial role in the theoretical literature on monetary policy (see Berger et al. [2001] for a survey), there is only scant empirical evidence on this issue. Basically, two different approaches have been suggested in the literature to come up with empirical proxies for the preferences of monetary policymakers.

First, whether the statute of a central bank defines price stability as the primary policy goal can be considered as a proxy for the conservative bias of the central bank as embodied

TABLE 7
Inflation in the Euro Area: Deviation from Average, 1990-2001

	Austria	Belgium	Finland	France	Germany	Greece	Ireland	Italy	Lux.	Netherl.	Portugal	Spain	Std
1990	-3.01	-2.82	-0.17	-2.90	-3.58	14.13	-3.00	0.22	-2.57	-3.82	7.09	0.44	5.38
1991	-2.34	-2.46	-1.56	-2.46	-3.98	13.80	-2.48	0.63	-2.55	-2.54	5.68	0.26	5.03
1992	-1.12	-2.72	-2.55	-2.78	-0.08	10.72	-2.03	-0.07	-1.99	-1.96	3.79	0.78	3.87
1993	-0.78	-1.65	-2.30	-2.30	0.03	10.01	-2.99	0.07	-0.83	-1.82	2.39	0.16	3.47
1994	-0.61	-1.19	-2.48	-1.91	-0.81	7.36	-1.20	0.46	-1.36	-0.77	1.35	1.15	2.59
1995	-0.88	-1.66	-2.14	-1.35	-1.41	5.81	-0.61	2.12	-1.21	-1.21	0.99	1.55	2.27
1996	-0.82	-0.60	-2.04	-0.65	-1.24	5.53	-0.92	1.30	-1.27	-0.64	0.46	0.90	1.99
1997	-0.67	-0.36	-0.80	-0.79	-0.09	3.55	-0.59	0.05	-0.62	0.17	0.17	-0.02	1.18
1998	-0.89	-0.84	-0.40	-1.12	-0.87	2.96	0.63	0.16	-0.84	0.19	0.98	0.04	1.15
1999	-0.92	-0.36	-0.32	-0.95	-0.90	1.16	0.16	0.18	-0.47	0.73	0.86	0.83	0.76
2000	-0.96	-0.06	0.04	-1.16	-0.86	0.04	2.24	-0.36	0.74	-0.36	0.04	0.64	0.92
2001 (Jan)	-0.87	-0.27	-0.17	-1.68	-0.87	0.13	0.83	-0.37	-0.17	1.43	1.33	0.73	0.94
Average	-1.16	-1.25	-1.24	-1.67	-1.22	6.27	-0.83	0.37	-1.10	-0.88	2.09	0.62	2.25
Std	0.74	1.00	1.03	0.79	1.28	5.00	1.63	0.71	0.96	1.48	2.27	0.47	

Source: 1990-99: *IFS*; 2000-January 2001: Eurostat, and own calculations.

Figure 3:

TABLE 8
Growth Rates in the Euro Area: Deviation from Average, 1990-2000

	Austria	Belgium	Finland	France	Germany	Greece	Ireland	Italy	Netherl.	Portugal	Spain	Std
1990	1.07	0.24	-3.18	-0.79	0.52	-4.24	4.75	-1.05	0.92	1.19	0.56	2.38
1991	2.03	0.21	-8.46	-0.61	1.53	1.69	1.15	-0.25	0.88	0.95	0.88	2.92
1992	0.09	0.24	-4.80	-0.19	0.87	-0.53	3.52	-0.68	0.78	1.27	-0.56	1.99
1993	1.00	-0.97	-0.69	-0.80	-0.87	-1.15	4.19	-0.67	1.25	-0.62	-0.67	1.60
1994	-0.63	-0.60	1.37	-0.50	-0.59	-1.13	4.90	-1.01	0.05	-0.94	-0.92	1.77
1995	-1.40	-1.12	1.61	-1.30	-1.72	-1.37	8.34	-0.51	-1.20	-0.60	-0.74	2.91
1996	-1.02	-1.37	0.90	-1.25	-1.29	-0.28	5.59	-2.00	0.46	0.52	-0.24	2.07
1997	-1.29	-0.84	2.17	-1.56	-1.62	-0.67	6.81	-2.33	-0.20	-0.16	-0.31	2.54
1998	-0.88	-0.85	1.28	-0.42	-1.61	-0.10	5.17	-2.42	-0.10	-0.26	0.20	1.97
1999	-1.43	-0.83	0.47	-0.63	-1.93	-0.13	6.27	-2.13	0.37	-0.53	0.47	2.27
2000	-0.83	-0.63	0.97	-1.13	-1.43	-0.43	6.57	-1.63	0.07	-1.23	-0.33	2.30
Average	-0.30	-0.59	-0.76	-0.84	-0.74	-0.76	5.21	-1.33	0.30	-0.04	-0.15	1.78
Std	1.18	0.57	3.34	0.42	1.19	1.42	1.90	0.79	0.68	0.88	0.59	

Source: University of Groningen/The Conference Board, GGDC Total Economy Database, 2001:1, www.eco.rug.nl/ggdc, and own calculations.

Figure 4:

in the law [Cukierman, 1992]. Following this line of reasoning, De Haan and Kooi [1997] and Kilponen [1999] have decomposed indicators of central bank independence (CBI), which are based on central bank laws during the 1980s, into an indicator for the conservativeness of the central bank as embodied in the law and an indicator for independence proper. Table 9 shows the outcomes for the Grilli-Masciandaro-Tabellini (GMT) and Cukierman CBI indicators (see Grilli et al. [1991] and Cukierman [1992]). It follows that the laws of the central banks in the countries that are currently in the euro zone differed substantially as far as the objectives of monetary policy is concerned.[13]

TABLE 9
Conservativeness as Embodied in the Central Bank Laws During the 1980s

Country	GMT Index[a]	Cukierman Index[b]
Austria	1	0.60
Belgium/Luxembourg	0	0.00
Finland	N/A	0.80
France	0	0.00
Germany	1	1.00
Greece	0	0.80
Ireland	1	0.80
Italy	0	0.20
Netherlands	1	0.80
Portugal	0	N/A
Spain	0	0.60

Note: [a]Score is 1 (monetary stability is amongst the goals of central bank) or 0. [b]Scores range from 0 (stated objectives for central bank do not include price stability) to 1 (price stability is the only objective). Source: De Haan and Kooi [1997].

As already discussed, Berger and Woitek [1999] follow a very different approach. They find that German monetary policy was significantly influenced by the political preferences of its members. As a rule, members of the Governing Council of the Bundesbank appointed by governments dominated by the conservative party were more inflation averse in the sense that they, for instance, reacted more aggressively to inflation shocks than those nominated by governments dominated by social democrats. In a similar vein, Table 10 lists the current presidents of the various national central banks in the EU, their political background, and the political color of the government that appointed the governor. While the available indicators are certainly not without problems, it is concluded that there still seems to be ample differences between the degree of conservativeness in the euro zone. An open question remains, however, whether these differences in preferences are in decline, that is, whether there is convergence in preferences comparable to the convergence in business cycle movements described earlier.

Finally, the paper reports the outcomes of a latent variables model to estimate conservativeness of the policymakers in the euro area. Most theoretical models (including the model in the third section) define the concept in terms of differences in priority with respect to inflation and output stabilization. A problem in dealing with the degree of conservativeness is that it is a variable that cannot be observed directly. Therefore, Leertouwer et al. [2001] have used a latent variables approach. For the 1980s and the 1990s, they have constructed an indicator for 14 OECD countries using inflation, the standard deviation of inflation, the standard deviation of output growth (corrected for terms of trade shocks), and the conservativeness as embodied in the central bank law (see Table 9; the Cukierman index has been used) as determinants of conservativeness.[14] The country scores as reported in Table 11 have

been calculated using the results of a factor analysis. This approach yields a variable which has, by definition, an average of 0 and a standard deviation of 1. In other words, the absolute values are of little interest. Still, it is interesting to examine whether EMU countries have changed positions over time and to analyze their relative positions.

TABLE 10
Governors of National Central Banks and their Political Background

Country	Governor	Political Background	Government Responsible for Appointment
Austria	K. Liebscher	C	S+C
Belgium	G. Quaden	S	L+S+
Finland	M. Vanhala	C	S+C+L
France	J-C. Trichet	C	C
Germany	E. Welteke	S	S+
Greece	L. D. Papademos	S	S
Ireland	M. O'Connell	?	L
Italy	A. Fazio	C	S+C
Luxembourg	Y. Mersch	C	C+L
Netherlands	N. Wellink	C	S+L
Portugal	V. M. Ribeiro Constâncio	S	S
Spain	V. Caruana	C	C

Notes: S: Socialist or Social Democrat; C: Conservative or Christian Democrat; L: Liberal.
Source: ECB homepage, Vaubel [1999].

TABLE 11
Conservatiness of Policymakers in 14 OECD Countries

Country	Score 1980s	(ranking)	Score 1990s	(rankings)
Austria	-1.139	(1)	-0.392	(7)
Germany	-1.049	(2)	-0.428	(5)
Belgium	-0.954	(3)	-0.504	(3)
Netherlands	-0.883	(4)	-0.378	(8)
France	-0.522	(5)	-0.607	(1)
Sweden	-0.505	(6)	-0.016	(10)
Denmark	-0.484	(7)	-0.513	(2)
Finland	-0.248	(8)	-0.504	(4)
Norway	-0.225	(9)	-0.373	(9)
UK	0.711	(10)	0.156	(11)
Ireland	1.135	(11)	-0.427	(6)
Italy	1.210	(12)	0.332	(12)
Spain	1.327	(13)	0.370	(13)
Greece	1.626	(14)	3.283	(14)

A number of conclusions can be drawn. First, some EMU countries have become more conservative. This group of new conservatives, encompassing France, Denmark, Finland, and Ireland, has gained rank at the cost of the old conservatives, namely Germany, Austria, the Netherlands, and Sweden. No doubt, this development has been influenced by the requirements of the Maastricht Treaty. One message is that although some observers have argued that differences in preferences in countries such as France and Germany could pose a problem

for the ECB, the results in Table 11 do not lend support to this view. Second, some EMU countries, perhaps best summarized as the South, do show both a significant lack of dynamics and a continued ranking at the low end of the spectrum. The group consists of Italy, Spain, and notably, Greece. They all held positions both in the 1980s and 1990s which were rather far away from the rest of the euro zone. In other words, these results suggest that within the ECB, the main border line in terms of preferences is still between the northern and southern European countries.

Policy Conclusions

In comparison to the Bundesbank after the 1950s and the modern day FED, the ECB is very decentralized. Decentralized implementation of monetary policy may be useful, given the knowledge national central banks have of the own national financial markets and local institutional circumstances. However, an important question is whether the relatively large influence of national central banks in the decision making process is warranted. This institutional set up may become worrisome if the economies of the euro zone countries diverge or if there are large differences in terms of preferences across policymakers.[15]

This paper shows that substantial differences between the economies of the euro area countries still exist. The cases of the early German Bundesbank and the U.S. FOMC [Meade and Sheets, 2001] illustrate that differences in national economic development might indeed lead to differences in voting behavior in the Governing Council. This suggests that current practices in the ECB to reach policy decisions by consensus may not last. These worries will only increase if, in the near future, the euro zone will be enlarged. Of course, one could conjecture that national central bank governors in the ECB Governing Council are appointed in their personal capacity, and not as national representatives and are supposed to make interest rate decisions on the basis of euro zone-wide considerations. Still, the U.S. and German experience suggests that these regulations may not suffice.

Various options come to mind to reduce the power of national central banks. As already pointed out, the Executive Board could, for example, be increased. Alternatively, the Board could have a say in appointing central bank presidents. Presently, the ECB has no role in the selection of national central bank governors, which is a prerogative of the governments of the individual member states. In contrast, the Board of Governors of the Federal Reserve System has to give its approval to nominations of reserve bank presidents. The most far reaching option is, of course, to introduce a system of weighted votes, where the weights reflect the economic importance of the countries. Perhaps the experience of the Fed may be helpful. One could introduce a rotating voting system like the FOMC has in the U.S. All presidents of the central banks in the euro area could participate in the policy discussions, but only a limited and rotating number of them has the right to cast a vote.

Footnotes

[1]This mandate is much stricter than the mandate of the Bundesbank (before EMU), although in practice, the Bundesbank also aimed at low levels of inflation. As a secondary objective, the ECB is supposed to support general economic policies in the Union. This is often interpreted as providing some leeway for pursuing stabilization policies.

[2]The political weight carried by individual central bank representatives relative to the sum of national representatives is higher (1/12 or about eight percent). The difference is due to the six members of the Executive Board. Consequently, the political weight of a given country representative is decreasing in the number of members in the Executive Board that hold voting rights in the Governing Council.

[3]A related model that focuses on differences in the monetary transmission mechanism is Gros and Hefeker [2000].

[4]The simple model used only has two countries. In a model with more countries, it would probably be the median voter in the Governing Council who would determine the common monetary policy. The results for a single country would then depend on how close it's preferences are to those of the median voter.

[5]Based on equations (2) and (4), following the same steps as described for the euro zone's monetary policy, country R's first best policy response would be $\pi_R = \frac{\alpha b_R \varepsilon_R}{1+\alpha^2 b_R}$. In other words, the country would react to its domestic output shocks alone. For $b_R = b_E$, this is just what is found in the limit $\gamma \longrightarrow 1$ in (8).

[6]Meade and Sheets [2001] find evidence that the voting in the FOMC of the Fed has been influenced by labor market developments in the Federal Reserve Districts.

[7]All economic data employed in this section has been provided by the statistical office of Baden-Württemberg and is available from the authors on request. Until 1957, the Bundesbank was named Bank deutscher Länder.

[8]The authors also looked at Council minutes over the period 1962-69, but found their information content too poor to extend the database.

[9]It is difficult to interpret differences in the reaction of regions to real and nominal deviations from average as the model only refers to absolute region-to-average differences. The authors return to this question below, however, where they investigate the direction of the dissent voting.

[10]Presidents of regional central banks were nominated by the government of the land concerned, while members of the Executive Board of the Bundesbank were nominated by the federal government.

[11]This empirical finding is in line, for instance, with the theoretical predictions of New-Keynesian models such as laid out in Svensson [1998] or the Coricelli, Cukierman, and Dalmazzo [2002] model with endogenous trade union behavior.

[12]There is a debate whether business cycles in the EMU countries have synchronised over time due to monetary integration and trade relationships. See Artis and Zhang [1997, 1999], Fatas [1997], Inklaar and De Haan [2001], and Frankel and Rose [1998].

[13]Clausen en Hayo [2002] report that the Bundesbank is more conservative than the Banque de France and the Banca d'Italia. Their conclusion is based on reaction functions for the monetary authorities within the framework of a semi-structured VAR model.

[14]For the inflation, its standard deviation and the adjusted standard deviation of output growth both the average of the decade under consideration, as well as the average of the previous decade were used.

[15]One may conjecture that many small countries in the EMU had in the past policies clearly aiming at price stability, so that national central bank governors from these countries may have the primary objective of the ECB very much in mind, thereby reducing the risk that is described. Whether this also holds in an (extended) EMU remains to be seen, however.

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