

On the Role of Conflicting National Interests in the ECB Council*

Hans Peter GRÜNER[†]

University of Mannheim, IZA, Bonn, and CEPR, London

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[†]Correspondence address: Hans Peter Grüner, University of Mannheim, Department of Economics, Seminargebäude A5, D-68131 Mannheim, Germany; email: hgruener@rumms.uni-mannheim.de.

Abstract The paper studies the strategic interaction of Euroland's national macroeconomic players and the ECB council under two alternative assumptions on central bank behavior: (i) all members of the ECB council are concerned about Euroland's macroeconomic aggregates and (ii) the ECB council is composed of national central bankers who are only concerned about domestic macroeconomic conditions. Under the former assumption monetary policy can be used to impose some discipline on national macroeconomic players at the cost of higher inflation. Under the predominance of national interests however, this trade-off disappears. The persistence of national perspectives in the ECB council has an adverse impact on the relationship between key macroeconomic variables such as inflation and unemployment or inflation and the level of government debt.

Keywords: EMU, wage/fiscal discipline, central bank council.

JEL N.: E24, E50, E62, E63, F15, F33.

1 Introduction

This paper investigates how conflicting national interests in the central bank council affect the strategic interaction between the European Central Bank (ECB) and other major macroeconomic players in Euroland. It has recently been argued that the members of the ECB council might primarily be concerned about their domestic macroeconomic situation rather than about the macroeconomic development in Europe as a whole¹ [c.f. von Hagen and Süppel, 1994 and Begg, De Grauwe, Giavazzi, Uhlig, Wyplosz, 1998]. In this paper I show that the persistence of national perspectives in the ECB council may have an adverse impact on the relationship between key macroeconomic variables such as inflation and unemployment and inflation and the level of government debt.

The present analysis is closely related to recent work on the interaction of trade unions and a central bank by Cukierman and Lippi (1999). In their model both inflation and unemployment are affected by a central bank's degree of inflation aversion. In particular the delegation to a more conservative central bank may lower equilibrium inflation at the cost of more unemployment. Hence, there is a trade-off between inflation and unemployment that may emerge at the institutional stage². The intuition for this result is the following: An inflation-averse central bank credibly secures price stability. When confronted with such a central bank, unions demand high nominal wages which leads to a high rate of unemployment. A central bank that does not care about inflation instead imposes some discipline on wage setters. When wage

¹This may in particular be the case in countries where reappointment procedures give national governments some control over their central bank governor's decisions [c.f. Neumann, 1991].

²The fact that a central bank which credibly threatens to inflate away nominal wage claims may be able to reduce unemployment has first - and independently - been established by Cukierman and Lippi (1999) and Velasco and Guzzo (1999).

setters internalize the ensuing cost of price inflation they raise nominal wages up to the point where the marginal utility from further real wage gains equals the marginal cost arising from unemployment and inflation. Hence, lower real wages and higher employment can be obtained at the cost of higher inflation if a government chooses to appoint a weak central bank.

In this paper I show that this fundamental trade-off disappears in a monetary union when central bankers only care about domestic macroeconomic conditions. In the present analysis I shall assume (i) that national central bankers only care about domestic employment and European inflation and (ii) that decisions in the central bank council are taken by majority vote³. The game I study has two types of equilibria, one with symmetric and one with asymmetric wage claims across countries. In the symmetric equilibrium the disciplinary effect of inflation on union behavior vanishes in all countries. The intuition for this result goes as follows: In a symmetric equilibrium no national central bank governor in the ECB council may potentially be pivotal in the decision process. Hence, each trade union knows that its off-equilibrium play will leave central bank policies unaffected. This is why real wages are not affected by expectations about the central bank's reaction. Consequently, the delegation of monetary policymaking to a weak central bank does not raise the level of employment. I will show that only inflation is increased. When central bankers have a national perspective, the trade-off between inflation and unemployment on the institutional stage disappears.

The paper is also related to recent work by Cukierman and Lippi (1998) and Grüner and Hefeker (1999) on the effects of EMU on labor markets⁴. Both papers

³This assumption has previously been made in von Hagen and Süppel (1994). Von Hagen and Süppel study how the ECB reacts to stochastic shocks in the participating countries. The present paper instead studies the strategic interaction between the ECB and other macroeconomic players.

⁴See also Calmfors (1998).

have shown that EMU may adversely affect the set of combinations of inflation and unemployment that can be obtained. In a monetary union more trade unions are in the same currency area. Euroland's monetary authority therefore pays less attention to single wage setters than in the case of autonomous national monetary policy. Trade unions that care about inflation internalize the inflationary consequences of their actions to a smaller extent. This is why a reduction of unemployment comes at a larger cost of inflation. In this paper I show that this problem may be severely aggravated when national perspectives dominate in the ECB's decision process.

The analysis is based on a simplified version of the model in Cukierman and Lippi (1999). Section 2 introduces this model for the case where the ECB is a homogeneous body that pursues targets of Euroland's macroeconomic aggregates. I show how the optimal delegation decision is affected by an increase of the degree of decentralization of wage setting. In section 3 I consider the case where the central bank council is composed of national central bankers who take care of domestic conditions. Section 4 concludes.

2 The Trade-Off Between Inflation and Unemployment

2.1 Players and Timing of Events

Consider a monetary union of $k = 1..N$ identical countries. In each country there is a single monopoly union⁵. At stage one of the game, all N country-wide trade

⁵Allowing for more than one union inside each country or for differences in country size would not affect the main result of this paper on the role of national objectives. However, with EU-objectives country size and centralization within countries are important, as has been shown by Cukierman and Lippi (1998).

unions simultaneously and unilaterally fix (the logarithm of) their nominal wage $w_k = \log(W_k)$. At stage two the central bank unilaterally fixes the inflation rate π for the entire currency area. The total labor force in the currency area is denoted by L . Labor demand in country k is given by:

$$L_k^d = (1 - \alpha\omega_k) \frac{L}{N}, \quad (1)$$

where $\omega_k = \log(W_k/P)$ denotes the logarithm of the real wage of country k . Normalizing the last year's price level to one, one may write $\omega_k = \log\left(\frac{W_k}{(1+\pi)^{P-1}}\right) \approx w_k - \pi$. The monetary union's total labor demand is

$$L^d = \sum_{k=1}^K (1 - \alpha\omega_k) \frac{L}{N}, \quad (2)$$

and total employment is given by $\min\{L, L^d\}$. The aggregate unemployment rate is denoted by:

$$u = \max\left\{\frac{L - L^d}{L}, 0\right\} = \max\{\alpha\bar{\omega}, 0\}, \quad (3)$$

where $\bar{\omega}$ denotes the monetary union's average (log) real wage. Throughout the paper I shall refer to w and as ω the nominal and real wage actually meaning the logarithm of these variables. All trade unions care about real wages, employment and inflation. Moreover, I shall assume that unions are aggressive in the following sense: in absence of an inflation reaction of the central bank, each union would choose a real wage $\omega^* > 0$ that leads to a positive unemployment rate in its country. I write union utility as $U_k = 2\omega_k - Au_k^2 - B\pi^2$, where $u_k = \max\{\alpha\omega_k, 0\}$ is country k 's unemployment rate. This yields the following utility function:

$$U_k(w_k, \pi) = 2(w_k - \pi) - \max\{A(\alpha(w_k - \pi))^2, 0\} - B\pi^2. \quad (4)$$

Maximization of (4) yields that a union would choose a real wage:

$$\omega^* = \frac{1}{A\alpha^2} > 0, \quad (5)$$

when it takes inflation as given. The corresponding unemployment rate is $u^* = 1/A\alpha > 0$. The central bank cares about inflation and employment, not about real wages. Its utility function is:

$$C(u, \pi) = -u^2 - I\pi^2. \quad (6)$$

The parameter I measures both the central-bank's independence and inflation-aversion.

2.2 The Long-Run Trade-off

Given the average nominal wage in the monetary union \bar{w} , the central bank reaction is:

$$\pi = \frac{\alpha^2}{\alpha^2 + I} \bar{w} = \beta \bar{w}. \quad (7)$$

Inflation is a fraction $\beta \in [0, 1]$ of the average wage. The value of β increases if the central bank is less inflation-averse. The first proposition characterizes the equilibrium and presents some comparative static results.

Proposition 1 *(i) The game has a unique subgame perfect symmetric equilibrium characterized by the following values of nominal wages, inflation and real wages:*

$$w = \bar{w} = \frac{N - \beta}{\Gamma}, \quad (8)$$

$$\pi = \beta \frac{N - \beta}{\Gamma}, \quad (9)$$

$$\omega = (1 - \beta) \frac{N - \beta}{\Gamma}, \quad (10)$$

with

$$\Gamma = A\alpha^2 (N(1 - \beta) - \beta + \beta^2) + B\beta^2. \quad (11)$$

- (ii) $\frac{d\bar{w}}{d\beta} = B\beta\frac{\beta-N(2-\beta)}{\Gamma^2} < 0$.
- (iii) $d\pi/d\beta = \frac{A\alpha^2(N-\beta)^2-NB\beta^2}{\Gamma^2} < 0$ for $N > 1$ and B sufficiently small.
- (iv) $dw_i/d\beta = \frac{A\alpha^2(N-\beta)^2-B\beta(2N-\beta)}{\Gamma^2} < 0$ for $N > 1$ and B sufficiently small.
- (v) $\pi = \frac{N-1}{B}$ for $I = 0$.
- (vi) $d\bar{w}/dN = \frac{\beta^2 B}{\Gamma^2} > 0$.

Proof: see Appendix.

According to Proposition 1 (ii) and (iii), a government that delegates monetary policy to a central bank faces a trade-off between inflation and unemployment when there is more than one country ($N > 1$) and when trade unions are not too inflation-averse. Note that, unlike the underlying short-run Phillips curve, the relation between inflation and unemployment that emerges from this model is a stable long-run relationship. A government that perceives unemployment as particularly costly may therefore choose to delegate monetary policy to a weak central bank.

2.3 The Optimal Degree of Conservativeness

Assuming quadratic government preferences of the form $-(u^2 + K\pi^2)$ one can show that the optimal degree of central bank inflation aversion increases when the currency area is enlarged.

Proposition 2 *Let $N \geq 3$. The optimal value of β decreases with N .*

Proof: see Appendix.

Proposition 2 states that governments with quadratic preferences should delegate monetary policy to a more conservative central bank when the currency area is enlarged. However, a trade-off between inflation and unemployment prevails and it may still be beneficial to delegate monetary policy to a weak central bank if unemployment is considered to be very costly.

3 National Interests in the ECB Council

So far I have assumed that the European central bank is a homogeneous body with one single objective function. In this section I turn to the case where national perspectives persist in the ECB. Each of the $k = 1..N$ countries has one representative in the ECB council. Moreover, there are E members of the executive board in the council. For simplicity I shall assume that $N + E$ is an odd number. Following von Hagen and Süppel (1994) I assume that each council member has preferences over domestic employment and Euroland's inflation while executive board members care about European aggregates. The preferences of country k 's central banker are represented by the loss function:

$$C_k(u_k, \pi) = -u_k^2 - I\pi^2, \quad (12)$$

where u_k is country k 's rate of unemployment. I shall assume that I (and therefore β) takes the same value for all national central bankers. Modifications of this assumption are briefly discussed later. Decisions in the central bank council are taken by majority rule. I do not explicitly model the voting procedure as part of the game. Instead I directly assume that the inflation rate which is preferred by the median voter in the central bank council is implemented.⁶ The game therefore becomes a simultaneous move game among the trade unions in the different countries. This game has two sorts of equilibria. One, where wage claims in all countries are identical (the symmetric equilibrium), and one where there is wage discipline in a group of countries. I begin by analyzing the symmetric equilibrium.

Proposition 3 *Suppose that $E < N - 2$. The game has a unique symmetric Nash*

⁶Note that central bankers' preferences on inflation rates are single peaked.

equilibrium if $I > 0$. The equilibrium is characterized by a nominal wage

$$\hat{w} = \frac{\omega^*}{1 - \beta} \quad (13)$$

in all countries and by a rate of inflation of $\beta\hat{w}$. The real wage is ω^* in all countries. The equilibrium employment level is independent of the central bank's degree of inflation aversion. The equilibrium inflation rate decreases with I .

PROOF Consider a strategy profile where nominal wage claims in all countries take the same value \hat{w} . In this situation all N national central bankers agree upon the choice of the inflation rate and fix $\pi = \beta\hat{w}$. Any other choice of its wage w_k by a single union does not affect the median of the inflation targets in the central bank council since $E + 1 < N - 1$. Maximization of (4) for a given inflation rate ($\beta\hat{w}$) yields that deviations of a single union from w_k do not pay if and only if the nominal wage satisfies $w_k = \beta\hat{w} + \omega^*$. Hence, a symmetric equilibrium exists if and only if \hat{w} satisfies $\hat{w} = \beta\hat{w} + \omega^* \Leftrightarrow \hat{w} = \omega^*/(1 - \beta)$. Q.E.D.

In the symmetric equilibrium all unions add the premium ω^* to the actual inflation rate. No union wants to deviate from its action because deviations would not affect the rate of inflation. In this equilibrium, wages, inflation and unemployment are higher than in the case where all central bankers share a European perspective. The trade-off between inflation and unemployment vanishes. Central bankers who take a national perspective should therefore be as conservative as possible.

Besides the symmetric equilibrium, there is a second class of equilibria where wage claims differ among countries. I restrict the analysis of these equilibria to the most simple case where all executive board members are fully conservative. In this situation some countries exhibit wage discipline. In these countries the wage claim is the same as under national monetary autonomy. This wage claim can be calculated by inserting $N = 1$ into (8). It is $w^{nat} = \left(A\alpha^2 / (1 - \beta) + \frac{B\beta^2}{(1 - \beta)} \right)^{-1}$. We have:

Proposition 4 *Suppose that all executive board members are fully conservative. There is a local Nash equilibrium. In this equilibrium unions in $(N - E + 1) / 2$ countries choose the same wage as in the case of autonomous national monetary policy w^{nat} . Inflation is $\pi = \beta w^{nat}$. Unions in the remaining countries choose $\tilde{w} = \beta w^{nat} + \omega^*$.*

PROOF Suppose that all unions behave in the way described above and consider a unilateral change of union behavior in a single country k in the low-wage group. A reduction of w_k does not change the median of the desired inflation rates in the central bank council since position $(N + E + 1) / 2$ remains at βw^{nat} . An increase of w_k instead increases inflation to βw_k . This is so because country k 's central banker is now at the median position $(N + E + 1) / 2$. Increases of w_k beyond \tilde{w} do not lead to an inflation increase above $\pi = \beta \tilde{w}$. Hence, unions in the low wage group face the following piecewise linear central bank reaction function:

$$\pi = \begin{cases} \beta w^{nat} & w_k \leq w^{nat} \\ \beta w_k & \text{if } w^{nat} < w_k < \tilde{w} . \\ \beta \tilde{w} & w_k \geq \tilde{w} \end{cases} \quad (14)$$

Any downward deviation of a union in the low-wage group to $w_k < w^{nat}$ does not change inflation. But it reduces the real wage further below ω^* , the real wage with fixed inflation. This is why a downward deviation does not pay.

An upward deviation in this group changes inflation in the interval $w^{nat} < w_k < \tilde{w}$. It does not pay because otherwise w^{nat} would not be the equilibrium wage under national monetary autonomy. This is so because, on the interval considered, the central bank reaction coincides with the reaction of a national central bank in the case of autonomous national monetary policy: $\pi = \beta w_k$.

The choice of a single union in the high-wage countries does not affect the rate of inflation. This is so because the median voter in the central bank council still

prefers $\pi = \beta w^{nat}$. Maximization of (4) for a given inflation rate (βw^{nat}) yields $w = \beta w^{nat} + \omega^*$. Q.E.D.

Some additional algebra yields that - for β small enough - deviations in the low wage group to any $w_k > \tilde{w}$ do not pay either. In this case, the local equilibrium extends to a global one. In the asymmetric equilibrium wage discipline can be enforced in a fraction of all countries. The reason is that a single deviation of a trade union in a low wage country would trigger a move of the median voter in the central bank council.⁷

Which of the two types of equilibria is the most obvious way to play the game? Two opposing arguments can be made. On one hand, one can show that all unions are better off in the asymmetric equilibrium. This is so because unions in low- and high-wage countries benefit from lower inflation in the second equilibrium. This would speak in favor of the asymmetric equilibrium. On the other hand the symmetric equilibrium does not rely on the coordination on a particular way to raise wages asymmetrically in different countries. I consider this to be a very strong argument in favor of the symmetric equilibrium as the most obvious way to play the game.⁸

4 Conclusion

This paper contributes to the recent debate on the role of central bank conservatism in a unionized economy that has been initiated by Cukierman and Lippi (1999) and

⁷Interestingly, in this equilibrium a larger conservative executive board does not reduce inflation but increases unemployment in a number of countries. This result differs from an earlier result in Cukierman (1991). Cukierman studies the role of the executive board in a setting where central bankers react to economic shocks. He finds that a strong executive board may lower average inflation.

⁸In Grüner (1999) we show that both types of equilibria exist in situations where either central bankers differ in their degree of inflation aversion or unions differ in their degree of aggressiveness.

Guzzo and Velasco (1999). Their paradox result is that a weak monetary authority achieves a maximum degree of wage discipline *and* price stability when it credibly threatens to inflate away nominal wage increases. While this result only holds for fully centralized wage bargaining, I show that under less than fully centralized bargaining there still is a trade-off between inflation and unemployment at the institutional stage. Accordingly, one might still want to delegate monetary policy to a weak central bank when unemployment is perceived as sufficiently costly. The present paper shows that such a policy is likely to fail when conflicting national interests dominate in the ECB council's decisions.^{9 10}

¿From a mechanism design perspective, one may want to ask which central bank reaction function would lead to full employment and zero inflation in a monetary union. It is obvious that a central bank reaction that offsets the wage claim of any single trade union in the currency area would do this job. Although theoretically optimal such a central bank could hardly be generated through delegation of the monetary authority to any individual with reasonable preferences over macroeconomic aggregates.

Differences in country size and of centralization within countries have been ne-

⁹Note that a more fundamental critical remark with respect to this recent debate is in order. From a politico-economic point of view, it is likely that the same forces that prevent a direct reduction of real wages will prevent any indirect reduction via the central bank constitution. However, the indirect approach may come at the cost of high inflation. Hence, a direct approach to the reduction of unemployment should dominate any indirect approach that is based on the institution of a weak or government-dependent central bank.

¹⁰Similar forms of strategic interaction to the one between a central bank and trade unions may emerge between the central bank and national governments when the latter fix their level of sovereign debt. On one hand a central bank that cares about the governments' financial position may inflate away part of the outstanding debt, on the other hand governments may internalize part of the inflationary costs that are generated by excessive deficits. See Grüner (1999) for a first discussion.

glected in the present analysis. Such differences play a role in the case where the central bank cares about European aggregates (see Cukierman and Lippi (1998)). However, the main argument for the case with national objectives is robust with respect to these modifications.

The analysis in this paper also provides some new insights in the possible consequences of an enlargement of Euroland. With an enlargement of Euroland the number of national central bankers in the ECB council will increase. Such an enlargement worsens the trade-off between inflation and unemployment in Europe if central bankers care for European aggregates. If central bankers care for domestic aggregates instead, the enlargement will neither affect inflation nor unemployment. The same holds for a reduction of the number of central bankers in the council that one might want to consider. In the deterministic framework that I studied, such a reduction would have no impact unless ECB council members take a broader European perspective in their decisions. The size of the ECB council may instead play a role when council member's preferences are not perfectly observable for national players. In this case a small disciplinary effect may arise because it is no longer sure whether a particular central banker will be pivotal in the council or not. The study of different voting procedures is particularly interesting in that case and should be the subject of further research.

5 Appendix

PROOF OF PROPOSITION 1 Substitution of the central bank's reaction function (7) into union utility (4), derivation with respect to sectoral wages and solving for the symmetric equilibrium yields (9) - (12). One can exclude equilibria where there is aggregate excess demand because in a situation of excess demand all unions would raise wages. Moreover, if there was an asymmetric equilibrium then at least one union

would not behave optimally. Hence, the equilibrium is unique. Q.E.D.

PROOF OF PROPOSITION 2 In equilibrium a central bank with given β generates the same ratio $\frac{\pi}{u}$ for all N . This follows from $\pi = \beta\bar{w}$ and from $u = \alpha(1 - \beta)\bar{w}$. For $\frac{\pi}{u}$ constant the government's indifference curves have the same slope. If, for given β the slope of the curve $\pi(u)$ becomes steeper as N increases, the optimum must be at a lower value of β . The slope is:

$$\frac{d\pi}{du} = \frac{\frac{d\pi}{d\beta}}{\frac{du}{d\beta}} = \frac{1}{\beta B} \frac{A\alpha^2 N^2 - 2A\alpha^2 N\beta + A\alpha^2 \beta^2 - NB\beta^2}{(\beta - 2N + N\beta)}, \quad (15)$$

and the derivative:

$$\frac{d\left(\frac{d\pi}{du} \mid \beta \text{ const.}\right)}{dN} = \frac{2A\alpha^2 N\beta - 2A\alpha^2 N^2 + A\alpha^2 N^2\beta - B\beta^3 - A\alpha^2 \beta^3}{(\beta - 2N + N\beta)^2}. \quad (16)$$

This is negative if

$$A\alpha^2 (2N\beta - 2N^2 + N^2\beta - \beta^3) - B\beta^3 < 0 \Leftrightarrow \quad (17)$$

$$A\alpha^2 (-(2 - \beta)N^2 + 2N\beta - \beta^3) - B\beta^3 < 0 \Leftrightarrow N \geq 3. \quad (18)$$

Q.E.D.

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