

Pressure on the Bundesbank?

By Philipp Maier, Groningen*

I. Introduction

One of the main reasons why central banks are made independent is to prevent politicians from easily printing money to further political or opportunistic aims.¹ Looking at statutory independence, the German Bundesbank ranks amongst the most independent central banks in the world.² Therefore, one would not expect the Bundesbank to respond to political pressure.³

This paper examines monetary policy in two ways: First, the rhetoric of the Bundesbank is measured by a monetary policy index. This permits the study of the desired policy stance without relying on a single instrument. Second, we look at the actual Bundesbank policy, namely the day-to-day rate which shows how the sum of the policy instruments becomes effective. Both indicators have not been used before in the case of Germany.⁴

While we can reject the impact of conflicts with the government on the Bundesbank's policy, we find a significant impact of elections on the announced Bundesbank policy. The effective monetary policy does not react to elections since the day-to-day rate remains unaffected. Our conclusion is that while the Bundesbank rhetoric seem to respond to pressure, the aim is merely to calm down politicians before elections. The

* Valuable comments from Helge Berger, Jakob de Haan and an anonymous referee are gratefully acknowledged.

¹ See Beck (1991), p. 26.

² See Eijffinger/de Haan (1996) for an overview.

³ Still, several authors claim to have found a significant political impact on German monetary policy. Maier/de Haan (1999) provide a survey.

⁴ Johnson/Siklos (1994) have used a market-based interest rate to estimate a VAR model. They find significant partisan and electoral effects. However, they cover 16 OECD countries and it remains unclear which interest rate they have chosen for Germany. Eijffinger et al. (1996), in a panel data approach, use the money market rate to estimate a reaction function for ten industrial countries. They find country-specific effects which are interpreted as sign of *actual* central bank independence.

central bank does not change the policy stance substantially enough to allow political interference have an impact on the day-to-day rate.

The paper is organized as follows: In the next section, we explain our motivation for the choice of the Bundesbank index and the day-to-day rate and evaluate their properties. In section III. various hypotheses about political interference in monetary policy are tested. The final section summarizes our results.

II. Measuring Monetary Policy

1. *Intended and Effective Monetary Policy*

Usually, empirical studies measure the monetary policy stance by one of the following possibilities: Either one tries to identify a single 'key' monetary instruments whose variations perfectly indicate the policy stance, or the development of a monetary aggregate is closely analysed.⁵ Both ways to approximate the monetary policy stance are not thoroughly satisfying for a number of reasons.

- Germany's monetary policy used monetary targeting since 1975.⁶ While the monetary target seems to be the perfect choice at first glance, the Bundesbank has not been very successful in meeting the targets as they were missed in nearly 50% of the cases.⁷ Moreover, it has been stressed repeatedly that other economic variables are also taken into account.
- Monetary aggregates are subject to internal and external shocks and might therefore not mirror the intended policy sufficiently. A cycle in, say, M3 need not imply that the Bundesbank also *actively* manipulates monetary policy for electoral purposes since it does not directly control M3, it might also just *tolerate* the cycle.⁸
- Different researchers have identified different 'key' instruments which are all supposed to perfectly measure the monetary policy stance. The

⁵ Monetary aggregates have been used in studies for instance by *Alesina/Cohen/Roubini* (1992), *Berger/Woitek* (1997a), *Lang/Welzel* (1992) and *Lohmann* (1998). Monetary instruments have been investigated by *Baum* (1983) or *Berger* (1997).

⁶ See *Deutsche Bundesbank* (1995), *Issing* (1996) or *Mishkin/Posen* (1997) for an extensive treatment of the German monetary policy.

⁷ See *Bofinger/Reischle/Schächter* (1996), p. 271.

⁸ *Berger/Woitek* (1997b) claim that political business cycles are visible in monetary aggregates because money *demand* shows electoral signs.

problem becomes apparent when realizing that the use of monetary instruments has changed considerably over time.⁹

The period before the Bretton Woods system finally collapsed can illustrate the pitfalls in measuring monetary policy: In an attempt to fight imported inflation various monetary instruments were used in different directions due to the external constraints of the fixed exchange rate regime.

An alternative approach has been suggested by *Dominguez* (1997) who has developed a monetary policy index for Germany on a monthly basis for the years 1977 until 1993. It is based on developments of several instruments and official statements of the Bundesbank in the 'Monthly Reports'.¹⁰ In *Maier* (1999) this 'Bundesbank index' (as we will call it) is extended to 1969:01–1998:02 and recoded between the values 0 (very expansive) and 4 (very contractional), such that the higher the value of the index, the more contractionary the monetary policy. This enables direct comparison with interest rates.¹¹

The Bundesbank monetary policy index describes the variation of instruments, but cannot measure how monetary policy becomes effective. Therefore we focus on two indicators for monetary policy, each representing a different approach.

Bundesbank Rhetoric: We will try to capture the rhetoric of the Bundesbank by the Bundesbank index. This index characterizes the *intended* or *publicly* announced policy stance, since variations of the instruments are closely measured. In a second step we examine whether the rhetoric translates into lower (market) interest rates.

Effective Bundesbank Policy: We will measure the *actual* or *effective* monetary policy by the day-to-day rate. This variable shows how the sum of policy measures becomes effective and is considered as an important indicator.¹²

We will run the same regressions for the rhetoric of the Bundesbank (the Bundesbank index) and the effective policy stance (the day-to-day

⁹ Securities repurchase agreements for instance, which are today the most powerful tool of the Bundesbank, became fully effective only in the mid 80s. See *Schultes* (1996) for details.

¹⁰ *Boschen/Mills* (1995) were the first to develop such an index and the work of *Dominguez* is based on this approach.

¹¹ The estimation of an ordered logit model requires that the index starts with 0. Therefore it is impossible to assign 0 to neutral monetary policy, as it has been done in previous studies.

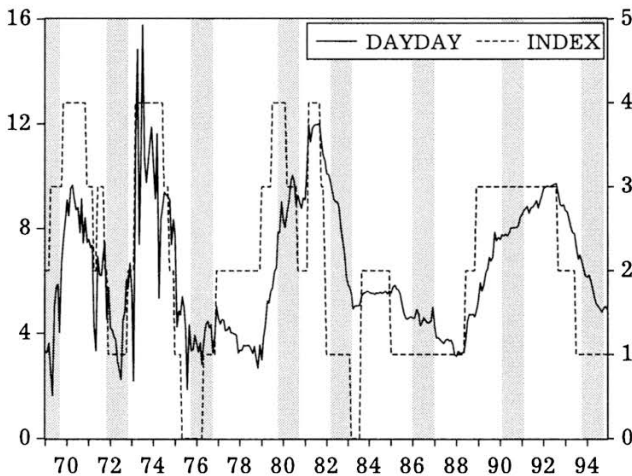
¹² In the context of indirect monetary targeting, the day-to-day money market rate is 'the key variable for the Bundesbank, which it influences direct by means of interest rate policy measures' (see *Deutsche Bundesbank*, 1995, p. 46). Similar statements can be found in *von Hagen* (1998), p. 453.

rate). Obviously, the Bundesbank index mirrors to a certain extent the behavior of other economic variables. Therefore we first look at the relationship between the announced and effective monetary policy and variables that have been used in previous studies.

2. Properties of the Bundesbank Index and the Day-To-Day Rate

A plot of the Bundesbank index and the day-to-day rate shows that the latter fluctuates much more (see figure 1). This is no surprise, since the index measures the intended policy stance and intentions of a central bank will not change very frequently between expansive and contractionary monetary policy. The day-to-day rate, on the other hand, is closely controlled and smoothed by the Bundesbank, but still inhibits many external influences.

We see that neutral monetary policy (the Bundesbank index has the value +2) is compatible with very different levels of the day-to-day rate. In the early 80s and 90s, the Bundesbank index seems to precede the reduction of the day-to-day rate, while in the early 70s the rhetoric of the Bundesbank is more restrictive than the actual policy. This is due to the external constraint of the Bretton Woods system, when the Bundesbank tried to fight imported inflation, but could not effectively use its instruments in the fixed exchange rate system.



*Figure 1: Bundesbank index and the day-to-day rate
(Preelection periods are marked in grey)*

We did a Granger causality test to check whether past values of the day-to-day rate can explain the Bundesbank index or vice versa.¹³ The impression that the Bundesbank index seems to precede the day-to-day rate is indeed confirmed by the Granger test, since the causality runs one way from the Bundesbank index to the day-to-day rate (see table 1).

Table 1
Granger causality tests (12 lags)

Granger Causality Tests (1969:01–1998:02) Null Hypothesis (12 lags)	Obs.	F-Stat.	Prob.
Day-to-day does not Granger Cause Buba Index	338	1.25	0.25
Buba Index does not Granger Cause day-to-day		4.49	0.0
CPI does not Granger Cause Buba Index	338	0.92	0.53
Buba Index does not Granger Cause CPI		3.26	0.00
M3 does not Granger Cause BubaIndex	338	1.66	0.07
Buba Index does not Granger Cause M3		1.20	0.28

Figure 2 compares the Bundesbank index to the rate of discount which has frequently been used as ‘key instrument’ to characterize monetary policy. We see that although both series match roughly, there are differences in the 80s and the early 90s. In 1976/77 the Bundesbank’s rhetoric switched from very expansive to mildly contractionary, while the rate of discount did not change and the day-to-day rate remained at a relatively low level (see figure 1). This shows that the rhetoric of the Bundesbank need not always translate in changes of the actual use of policy instruments.

Figure 3 compares the Bundesbank index to the detrended growth rate of M3.¹⁴ Apparently, changes in the announced policy stance translate slowly into changes in M3 (for instance in the early 70s). The mid 80s show that constant Bundesbank rhetoric does not lead to constant mone-

¹³ As we are working with monthly data, we use a Granger causality test with 12 lags. Tests with other lag specifications confirmed our results.

¹⁴ We have corrected the jump in the growth rate of M3 after the German reunification by adding a dummy variable when detrending the series.

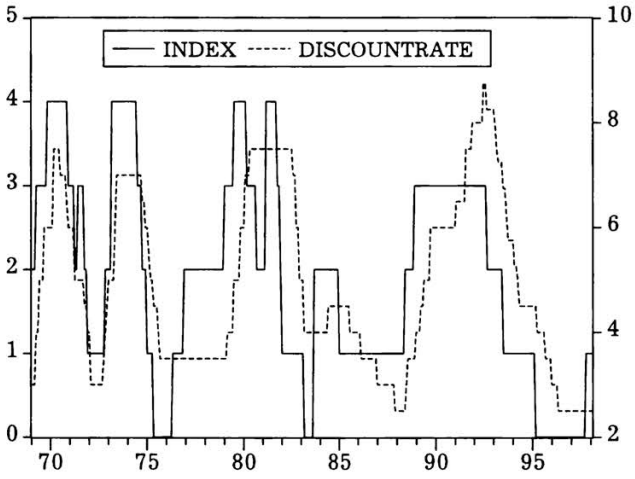


Figure 2: Bundesbank index and rate of discount

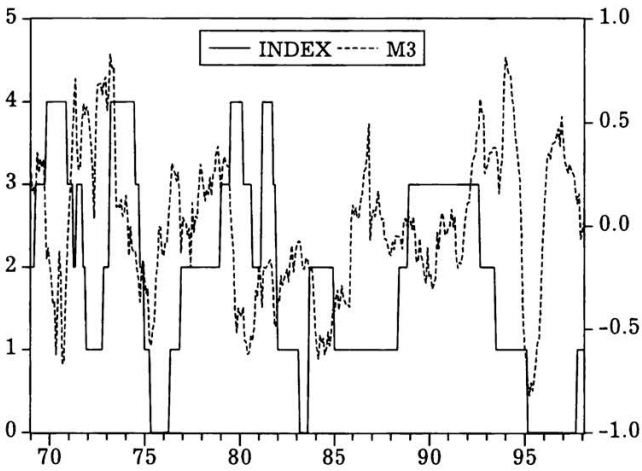


Figure 3: Bundesbank index and detrended annual growth rates of M3

tary growth rates, which may indicate external influences or may be a sign for differences between announced and implemented policy. The Granger causality test reveals that while the Bundesbank index does not Granger cause M3, M3 has explanatory power for the Bundesbank index. Thus the Bundesbank rhetoric reacts to changes in M3, which seems plausible, since M3 is the monetary target of the Bundesbank.

Finally, we compare the Bundesbank index to the detrended growth rate of the consumer price index (Figure 4) to verify that the Bundesbank index indeed translates into changes of the inflation rate. We see that over a large part of the sample the CPI seems to follow the Bundesbank's rhetoric with a considerable lag. This is also confirmed by the Granger causality test, which shows that causality runs one way from the index to the inflation rate.

We have seen in this section that the rhetoric or announced monetary policy and the actually implemented or effective monetary policy may differ. This may be due to economic constraints, namely during the Bretton Woods period, but this may also be due to pressure on the central bank, which leads to approval on the surface (in the rhetoric), but disagreement in the actual use of monetary policy. To check whether this holds, we test models of political pressure on the Bundesbank for both the rhetoric and the effective policy stance.

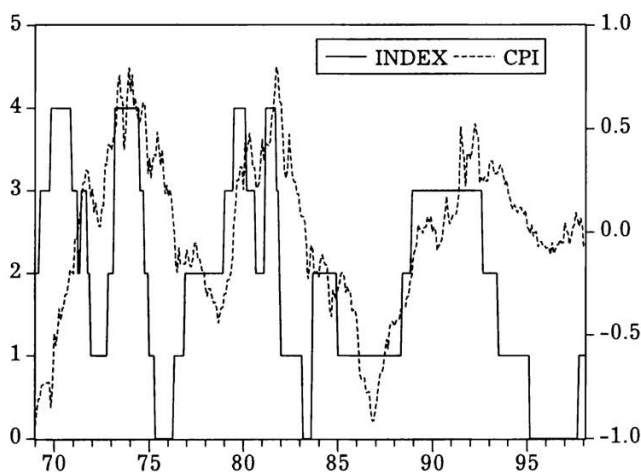


Figure 4: Bundesbank index and detrended growth rate of the price index

III. Testing for Political Influence

1. The Basic Model

We start with the assumption that the Bundesbank cares about inflation, but also about industrial production and – perhaps to a lesser extent – about unemployment. This is true for the rhetoric of the Bundesbank, but of course also for the actually implemented policy stance. We estimate the following:

$$(1) \quad \text{Index}_t = \alpha + \beta_1 \text{Index}_{t-1} + \beta_2 \pi_{t-3} + \beta_3 \text{IP}_{t-3} + \beta_4 u_{t-3} + \beta_5 \text{OC}_t + \beta_6 \text{Dum}_t + \varepsilon_t$$

The dependent variable is the Bundesbank monetary policy index Index_t . π_{t-3} is the annual growth rate of the consumer price index, IP_{t-3} is the annual growth rate of the production index and u_{t-3} is the annual growth rate of the unemployment rate.¹⁵ OC_t is a dummy to cover the impact of the oil crisis.¹⁶ Dum_t are the different political variables for the models which will be explained when the models are estimated and ε_t is a random variable. OLS is not feasible for this model since we have a limited dependent variable on the left-hand side. Therefore an ordered logit model is estimated.¹⁷

The same model is also used to explain the level of the day-to-day rate r_t . Since the day-to-day rate fluctuates more and has a stronger AR-part, we add a second lag. We estimate by OLS the following equation:

$$(2) \quad r_t = \alpha + \beta_1 r_{t-1} + \beta_2 r_{t-2} + \beta_3 \pi_{t-3} + \beta_4 \text{IP}_{t-3} + \beta_5 u_{t-3} + \beta_6 \text{OC}_t + \beta_7 \text{Dum}_t + \varepsilon_t$$

This model differs only moderately from regression models used by other authors, such as *Berger* (1997), *Lohmann* (1998) or *Lang/Welzel* (1992).¹⁸ Our regressions are based on monthly data for the period

¹⁵ Since the data on the inflation rate, the production index and the unemployment rate are only available with a certain lag, we use a three-month lag in our estimates. This procedure has also been applied by *Berger* (1997).

¹⁶ This formulation of the OC_t dummy assumes that during the oil crisis monetary policy was on average more contractionary. We have also run regressions with a different formulation of the oil price dummy to control for a possible structural break. It turns out that this simple OC_t dummy covers the oil crisis impact quite well.

¹⁷ See *Greene* (1997) for a detailed description of ordered logit models.

¹⁸ One major difference is that we explicitly control for the impact of the oil price shock and do not include the government's budget deficit.

01:1969–12:1994.¹⁹ All time series have been detrended if necessary to ensure stationarity. Since the rhetoric of the Bundesbank stresses the importance of monetary targeting, we also estimated all models for the annual growth rate of M3 instead of the consumer price index as an additional robustness check. With one exception, this did not change our results substantially.²⁰ The Bretton Woods system certainly constrained the conduct of monetary policy (see *Berger* (1997)), therefore all estimates are reported for the entire sample period and separately for the post-Bretton Woods period (05:1973–12:1994).²¹

2. The Political Business Cycle

The model for the *Political Business Cycle (PBC)* assumes that governments are only interested in their reelection. Before elections, they employ expansionary monetary policy to stimulate the economy and lower the unemployment rate. Due to the long lags of monetary policy, inflation increases only after elections. Then, the central bank is forced to adopt a contractionary economic policy and unemployment raises again to its natural level. The poor memory of the voters allows governments to repeat this cycle endlessly.²²

So far the empirical evidence on the Political Business Cycle model for Germany is weak: *Alesina/Roubini* (1992) find a political business cycle in M1, a finding that *Lang/Welzel* (1992) cannot confirm. *Berger/Woitek* (1997a) focus on policy outcomes and instruments and reject the PBC model for Germany because the inflation rate decreases before elections, but conclude that M1 expands on a fairly regular basis before elections.

Figure 1 reveals that the grey-marked pre-election periods are characterized as well by relatively contractionary rhetoric (for instance in 1991) and high day-to-day rates, but there are also elections such as 1972, when mildly expansive rhetoric goes along with expansive effective

¹⁹ The sample period is restricted since the net production index for West Germany is only available until 12:1994. Similar results can be obtained for the period 01:1969–02:1998 with the production index from the Bundesbank CD-ROM.

²⁰ The use of the central bank money stock instead of M3 delivered similar results. However, only seasonally-adjusted figures for the central bank money stock are available, therefore we have preferred to use data for M3.

²¹ Separate results for the Bretton Woods period were not estimated, since between 01:1969 and 05:1973 only two elections occurred.

²² See *Nordhaus* (1975) and *Rogoff/Sibert* (1987) for details.

Table 2
The PBC model for the Bundesbank index

	01:1969–12:1994			05:1973–12:1994		
$Index_{t-1}$	2.67***	2.70***	2.73***	2.92***	2.97***	2.96***
π_{t-3}	0.34	0.39	0.24	0.15	0.28	0.07
IP_{t-3}	0.21**	0.2**	0.18**	0.14	0.12	0.11
u_{t-3}	-0.01***	-0.01***	-0.01***	-0.01***	-0.02***	-0.01***
OC_t	0.40*	0.42*	0.45*	0.47*	0.56*	0.54*
$PBC12_t$	-0.50**			-0.53**		
$PBC18_t$		-0.56***			-0.71***	
$PBC24_t$			-0.47**			-0.42*
LR-Index	0.72	0.73	0.72	0.75	0.76	0.75

monetary policy. To perform a test of the model, we use the dummy $PBCN_t$ that takes the value +1 before elections and 0 otherwise. Following *Alesina/Roubini* (1990), we have chosen the preelection period N to be 12, 18 or 24 months preceding an election. A further implication of the PBC model is that after elections monetary policy is tightened to fight inflation. This prediction is tested by using the dummies $Post - PBCN_t$, where we have chosen N again to be +1 for the 12, 18 or 24 months after an election and 0 otherwise.

Bundesbank Rhetoric: We estimate eq. (1). Our results show that the $PBCN_t$ dummies all have the expected sign and are mostly highly significant (see table 2).²³ We find no significant impact of the consumer price index, but the Bundesbank responds to higher unemployment by switching to more expansive rhetoric. The impact of the dummies is negative, thus before elections the intended policy stance becomes more expansive. This is in line with the predictions of the PBC model.²⁴ Changing the lag

²³ In all tables, ***/**/* indicates significance at the 1%/5%/10% level.

²⁴ However, the value of the coefficients have to be cautiously interpreted (*Greene*, 1997). Running regressions without the elections in 1972 and 1983 which were called earlier we obtained similar results.

Table 3
Post-electoral behavior for the Bundesbank index

	01:1969–12:1994			05:1973–12:1994		
$Index_{t-1}$	2.76***	2.72***	2.68***	2.99***	2.98***	2.95***
π_{t-3}	0.14	0.12	0.20	-0.06	-0.13	-0.05
IP_{t-3}	0.18**	0.18**	0.17**	0.12	0.11	0.11
u_{t-3}	-0.01**	-0.01***	-0.01***	-0.01**	-0.01**	-0.01***
OC_t	0.43*	0.43*	0.47*	0.48*	0.47*	0.49*
$Post - PBC12_t$	0.53***			0.38*		
$Post - PBC18_t$		0.41**			0.35*	
$Post - PBC24_t$			0.34*			0.31
LR-Index	0.72	0.72	0.72	0.75	0.75	0.75

used for the CPI or using M3 instead of the consumer price index delivered similar results.²⁵

Next, we check whether the rhetoric of the Bundesbank change to more contractionary policy after elections. This is tested with the dummies $Post - PBCN_t$. Our estimates for the Bundesbank index are shown in table 3: The dummies are mostly significant, at least at the 10% level. This indicates that a complete political business cycle can be observed, with announced monetary ease prior to elections and announced contractionary monetary policy once the elections are over.

We have found clear signs of a PBC in the rhetoric of the Bundesbank. Next we check whether these cycles also show up in the effective Bundesbank policy.

Effective Bundesbank Policy: First, we estimate eq. (2) for the $PBCN_t$ dummies. Our results are given in table 4.²⁶ We find that although all dummies have the right sign, they are far from being significantly differ-

²⁵ As a robustness check we also estimated other election variables found in Allen (1986). These additional estimates indicate a constant ease of monetary policy before elections in the Bundesbank index, while after elections monetary policy is suddenly tightened. Detailed results are available on request.

²⁶ The industrial production index is only marginally insignificant.

Table 4
The PBC model for the day-to-day rate

	01:1969–12:1994			05:1973–12:1994		
r_{t-1}	0.64***	0.64***	0.64***	0.53***	0.54***	0.54***
r_{t-2}	0.19***	0.19***	0.20***	0.34***	0.34***	0.34***
π_{t-3}	0.97***	0.96***	0.92***	0.61**	0.61**	0.59**
IP_{t-3}	0.10	0.09	0.09	0.05	0.05	0.05
u_{t-3}	-0.01***	-0.09***	-0.01***	-0.01***	-0.01***	-0.01***
OC_t	0.20	0.22	0.23	0.24*	0.25*	0.25*
$PBC12_t$	-0.21			-0.04		
$PBC18_t$		-0.15			-0.04	
$PBC24_t$			-0.12			0.02
R^2 adj.	0.81	0.81	0.81	0.88	0.88	0.88
SSR	363.97	365.09	365.74	187.14	187.15	187.22
F-Stat.	188.74	188.03	187.62	277.83	277.82	277.71

ent from zero. This does not alter if we use M3 instead of the CPI. Thus while the rhetoric of the Bundesbank show a political business cycle, the effective policy stance does not.

There are two possible interpretations: First, this is in line with the PBC model with rational expectations by *Rogoff/Sibert* (1987), so cycles in instruments need not translate into cycles in policy outcomes. But second, one could also argue that the Bundesbank does not support the preelection talk by adjusting monetary instruments such that expansive announcements also show up in the actual conduct of monetary policy. In this case they would try to fool to public by their rhetoric. While the first possibility supports the theory, the second would imply a weak position of the Bundesbank on the surface, but a strong independent position when it comes down to actions.

Next, we look at post-electoral effects (table 5): Positive values of the $Post - PBCN_t$ coefficients indicate that after elections the day-to-day rate is higher than its normal level. This could be due to contractionary

Table 5
Post-electoral behavior for the day-to-day rate

	01:1969–12:1994			05:1973–12:1994		
r_{t-1}	0.63***	0.64***	0.64***	0.53***	0.54***	0.53***
r_{t-2}	0.19***	0.19***	0.19***	0.34***	0.34***	0.34***
π_{t-3}	0.95***	0.92***	0.93***	0.61**	0.60**	0.61**
IP_{t-3}	0.09	0.09	0.09	0.05	0.05	0.05
u_{t-3}	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***
OC_t	0.25	0.24	0.25	0.26*	0.25*	0.25*
$Post - PBC12_t$	0.25*			0.07		
$Post - PBC18_t$		0.13			-0.02	
$Post - PBC24_t$			0.12			0.04
R^2 adj.	0.81	0.81	0.81	0.88	0.88	0.88
SSR	362.90	365.54	365.67	186.99	187.23	187.15
F-Stat.	189.42	187.75	187.66	278.09	277.69	277.81

Bundesbank policy. However, in most cases the coefficient are insignificant, which may either be explained by the theoretical prediction of irregular cycles or ‘blips’ – or supports our argument that the Bundesbank acts independent. In this case post-electoral cycles must not show up, since there is no preelectoral inflationary potential which has to be fought after elections.²⁷

Summary: We conclude that, just as the PBC model predicts, political business cycles can be observed in the Bundesbank rhetoric, but not in the actual use of monetary policy. This outcome certainly reflects the political pressure faced by the Bundesbank before elections. Although the distinction between rhetoric and ex-post policy is certainly less clearcut in reality, it is surprising that the Bundesbank announcements exhibit such a clear pattern.

²⁷ Estimates with M3 instead of the inflation rate and estimates with formulations of the election variable following Allen (1986) confirmed these results.

3. Conflict Models

The traditional models relied on the assumption that federal government and Bundesbank act as one unitary body. This does not hold in reality, since the legal status of the Bundesbank makes her one of the most independent central banks in the world. In fact one might wonder what happens if the Bundesbank does not share the government's assessment of an economic situation and conflicts between both policymakers arise. This is the question *conflict models* address.

We present three conflict models, first focusing on conflicts between Bundesbank and federal government, then examining the credibility of threats in preelection periods and finally testing whether the composition of the Bundesbank council leads to different monetary policies.

a) The Frey/Schneider Conflict Model

Frey/Schneider (1981) were the first to develop a conflict model. Their model did not focus on elections, but on conflicts between government and the central bank at any time. It is assumed that the central bank is generally free to follow its own interests, mainly fighting inflation. However, if the policy stance of the government and of the central bank differ, then a conflict is assumed and the central bank is forced to adopt the government's policy stance.²⁸

The crucial point of this model is how different policy stances are measured. *Berger/Schneider* (1998) estimate the model using the change of the federal full employment budget balance in percent of GDP as a proxy for fiscal policy and detrended annual growth rates of M3 to measure monetary policy. If those policy stances point in different directions a conflict is assumed. They find a highly significant impact of this conflict indicator on various monetary instruments (such as the rate of discount or minimum reserve requirements). We will use their data as an indicator for possible conflicts.

To perform a test of this hypothesis we estimate:

$$(3) \quad \text{Index}_t = \alpha + \beta_1 \text{Index}_{t-1} + \beta_2 (1 - \zeta_t) \pi_{t-3} + \beta_3 (1 - \zeta_t) IP_{t-3} + \beta_4 (1 - \zeta_t) u_{t-3} + \beta_5 OC_t + \beta_6 \zeta_t POLGOV_t + \varepsilon_t$$

²⁸ The rationale behind this is that the federal government has the power to change the Bundesbank act and therefore can threaten the Bundesbank's independence. This assumption, however, is debatable (see the discussion of the Lohmann conflict model in section b)).

$$(4) \quad r_t = \alpha + \beta_1 r_{t-1} + \beta_2 r_{t-2} + \beta_3 (1 - \zeta_t) \pi_{t-3} + \beta_4 (1 - \zeta_t) IP_{t-3} + \beta_5 (1 - \zeta_t) u_{t-3} + \beta_6 OC_t + \beta_7 \zeta POLGOV_t + \varepsilon_t$$

where ζ_t is the conflict indicator which continuously varies between +1 (states of conflict) and 0 (states of no conflict) and $POLGOV_t$ is the direction of fiscal policy. Thus the equations basically state that during non-conflicts ($\zeta_t = 0$) the Bundesbank pursues monetary policy as it did before according to the models 1 and 2, whereas during times of conflict ($\zeta_t = 1$) the Bundesbank adopts the governments policy stance, measured by the change of the full employment budget $POLGOV$. First we examine whether the Bundesbank rhetoric changes during periods of conflicts.

Bundesbank Rhetoric: Our estimates are presented in the table 6. In no case the Berger and Schneider conflict indicator is significant for the announced policy stance. This shows that during conflicts the rhetoric of the Bundesbank shows no sign of weakness. Moreover, in contrast to previous results, we have to conclude that fewer of the coefficients are significant, which indicates that premultiplying the economic variables with the conflict indicator explains the behavior of the Bundesbank rather poorly.²⁹

Effective Bundesbank Policy: Next we ask whether the actual Bundesbank policy responds to conflicts. After all it could be that the rhetoric of the Bundesbank cultivates the image of an independent central bank, resisting governmental pressure, while the actual policy still yields to the government.

Unsurprisingly this does not show up (see table 7): We find the relevant coefficients are far from being significant. The poor performance could be explained by the fact that the model was originally conceived for monetary instruments and it might be a wrong application to test this model for a monetary outcome. On the other hand, we believe the day-to-day rate reflects the use of all instruments, therefore the poor results come as a surprise.³⁰

²⁹ It is interesting to note that if we drop the one-period lag for the Bundesbank index the $\zeta POLGOV_t$ dummy becomes highly significant. We estimated all models with and without lagged dependent variable as economic theory cannot give a clear recommendation whether to include the lag or not. While this in general did not change our results, this is the only exception. However, *Frey/Schneider* (1981) as well as *Berger/Schneider* (1998) include a lagged dependent variable. Therefore, we still think the model still has to be rejected.

³⁰ Obviously, our results are quite different from the estimates reported in *Berger/Schneider* (1998). In an attempt to reproduce their results, we found the following: First, adding the US Federal Funds rate as explanatory variable does not

Table 6
The Berger/Schneider conflict model for the Bundesbank index

	01:1969–12:1994	05:1973–12:1994
$Index_{t-1}$	2.67***	2.91***
$(1-\zeta)\pi_{t-3}$	0.33	-0.19
$(1-\zeta)IP_{t-3}$	0.23	0.09
$(1-\zeta)u_{t-3}$	-0.02**	-0.02*
OC_t	0.08	0.13
$\zeta POLGOV_t$	2.47	2.67
LR Index	0.71	0.74

Table 7
The Frey/Schneider conflict model for the day-to-day rate

	01:1969–12:1994	05:1973–12:1994
r_{t-1}	0.65***	0.56***
r_{t-2}	0.21***	0.36***
$(1-\zeta)\pi_{t-3}$	1.33***	0.63*
$(1-\zeta)IP_{t-3}$	0.10	0.03
$(1-\zeta)u_{t-3}$	-0.02***	-0.02**
OC_t	0.05	0.12
$\zeta POLGOV_t$	0.71	0.60
R^2 adj.	0.81	0.88
SSR	372.93	192.15
F-Stat.	183.17	269.66

substantially alter our estimates. Second, their way of estimation (two-stage least-squares regression with IV estimation) has to be exactly followed. Third, using a single monetary instrument such as the rate of discount instead of the day-to-day rate yields estimates much more in line with their estimates. See *Maier* (1999) for additional details and results on the model.

Summary: The evidence for this model is weak: Conflicts do not seem to influence the intended policy stance, since there is no significant impact on the Bundesbank index, and the effective monetary policy of the Bundesbank does not react to conflicts in our model neither. If the Berger/Schneider conflict indicator is indeed a reliable measure for conflicts the Bundesbank is not impressed by the potential threat of losing its autonomy.

b) The Lohmann Conflict Model

Lohmann (1998) has developed a different measures of conflict: She claimed that the support for the federal government in the second chamber of parliament, the *Bundesrat*, has a significant impact on monetary policy.³¹ This is a proxy for 'potential conflicts': If both chambers of parliament are under unified party control, changes to the Bundesbank act are simplified and Lohmann argues that the Bundesbank fears losing her autonomy before elections only if both chambers of parliament are dominated by the same party.

Lohmann measures the Bundesrat support by the number of seats of the Bundesrat held by the same party as the federal government. She finds that a preelection dummy, multiplied with this measure of Bundesrat support, has a highly significant impact on the growth rate of the central bank money stock. Since Lohmann's model differs from our model only marginally, we will try to capture the influence of the Bundesrat in the following way: Using her dataset we form a variable which captures the size of Bundesrat support for the federal government, $Bundesrat_t$. Lohmann's hypothesis suggests a negative sign of the dummy if it is premultiplied by an election dummy such as $PBC12_t$. Moreover, she controls for the political party that rules the federal government and multiplies a partycode dummy with the measure of Bundesrat support. By doing so, we get two new dummy variables, $BRPBC12_t = Bundesrat_t * PBC12_t$ which is a measure for the support of the government in the Bundesrat and $BRPC_t = Bundesrat_t * PC_t$, which shows the Bundesrat support of the different ruling parties.³² Since the total number of seats in the Bundesrat changed after 1990, we test the model for the period 01:1969-12:1989.

Bundesbank Rhetoric: Our findings for the Bundesbank index are summarized in table *lohmann_index*. While the $BRPC_t$ dummy remains insignificant, the coefficient for $BRPBC12_t$ has the right sign, and is

³¹ See appendix B for details on the German institutional system.

³² See *Lohmann* (1998) for additional information.

highly being significant. The results indicate that the Bundesbank's intended monetary policy stance before elections seems to depend on the question of whether the both chambers of parliament are under unified party control or not.

However, a close inspection of the political variable shows that Lohmann's variable is quite similar to the preelection dummy $PBC12_t$ (see figure 5): The most striking difference is the amplitude, as the $PBC12_t$ dummy just switches between +1 and 0 and the $BRPBC12_t$ variable takes values between 0 and +41. Therefore it is not really a surprise

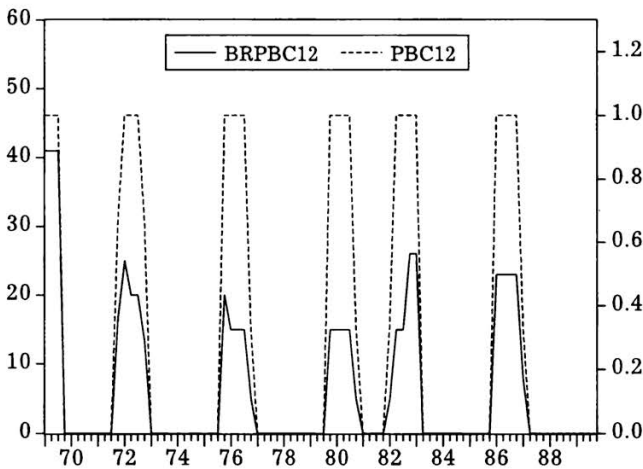


Figure 5: Lohmann's BRPCB12 and the original PBC12 dummy variable

Table 8

The Lohmann conflict model of Bundesrat support for the Bundesbank index

	01:1969–12:1989	05:1973–12:1989
$Index_{t-1}$	2.47***	2.71***
π_{t-3}	0.09	-0.02
IP_{t-3}	0.19*	0.10
u_{t-3}	-0.01***	-0.01***
OC_t	0.22	0.25
$BRPBC12_t$	-0.03**	-0.05***
$BRPC_t$	-0.01	-0.01
LR Index	0.70	0.73

that the $BRPBC12_t$ variable is significant, since the $PBC12_t$ dummy is highly significant itself.

Effective Bundesbank Policy: As the results on the Lohmann hypothesis are largely based on the estimates for the PBC model, we would assume that there is no significant impact on the day-to-day rate. Table 9 confirms this finding: The dummies remain insignificant in regressions for the day-to-day rate for the large sample period. If we estimate only for the post-Bretton Woods period, the political party seems to influence the day-to-day rate in the preelection period, since $BRPC_t$ is significant. However, this variable is only significant at the 10% level and only one political shift has occurred during that period, therefore one should not overrate this result.

Table 9
The Lohmann conflict model of Bundesrat support
for the day-to-day rate

	01:1969–12:1989	05:1973–12:1989
r_{t-1}	0.64***	0.52***
r_{t-2}	0.19***	0.33***
π_{t-3}	0.93***	0.82***
IP_{t-3}	0.10	0.07
u_{t-3}	-0.01***	-0.01***
OC_t	0.20	0.47***
$BRPBC12_t$	-0.01	0.0
$BRPC_t$	0.0	0.01**
R^2 adj.	0.81	0.88
SSR	364.35	184.07
F-Stat.	164.39	246.70

Summary: Our confirmation of the Lohmann model is basically another confirmation of the political business cycle model. Once again we find electoral behavior in the rhetoric of the Bundesbank, but not in the effective monetary policy. A robust additional impact of the Bundesrat is not visible.

c) The Vaubel Model of Obstructionist Central Bankers

Previous models have focused on conflicts, but have not gone so far as to assume that the Bundesbank follows own objectives besides fighting inflation. Especially, the last two models assumed that the Bundesbank remained politically neutral as governments were supported regardless of their political color. This view is not shared by *Vaubel* (1993) who claimed that the political composition of the Bundesbank council, the supreme policy-making body of the Bundesbank, has a significant impact on monetary policy.

The members of the Bundesbank council are appointed through a political process and might therefore mirror the ideology of the nominator. Following Vaubel, a situation might occur such that a leftist government has to cope with a 'rightist' central bank council and vice versa.³³ Then, the Bundesbank will only support the incumbent if the majority of the council shares his political affiliation, otherwise it may reduce the chances of reelection by contractionary policy before the elections. Vaubel has found evidence for his hypothesis, but his study has been refuted by subsequent work by *Neumann* (1993), *Berger/Woitek* (1997c³⁴ and 1998), *Lohmann* (1998) and *Neumann* (1998). There are three hypothesis following more or less directly from Vaubel's hypothesis of partisan central bankers.

Level Effect: The composition of the council could have a significant 'level impact' on monetary policy if rightist central bankers are more concerned about fighting inflation than leftist central bankers and under a rightist majority in the Bundesbank council the monetary policy stance is in general more contractionary. This hypothesis is tested by adding a *Council_t* variable to our regressions (1) and (2), taking the value +1 if the central bank council is dominated by a rightist majority, -1 if the council is dominated by a leftist majority, and 0 otherwise. We would expect a positive sign of the dummy if conservative central bankers implement more contractionary policy.

Hawks and Doves: Next, we can test whether a conservative majority in the central bank council reacts differently to economic changes in rhetoric and effective monetary policy than a leftist majority. The political majority has already been captured in the variable *Council_t*, thus a

³³ Vaubel determines the political preferences of the central bankers by looking at the political color of its nominator. For details see *Vaubel* (1993), p. 51–52.

³⁴ Note Vaubel's reply to *Berger/Woitek* (*Vaubel*, 1998).

test of this hypothesis is done by premultiplying our explanatory variables with the $Council_t$ variable and adding them to the regression:

$$\begin{aligned}
 (5) \quad & Index_t = \alpha + \beta_1 Index_{t-1} + \beta_2 \pi_{t-3} + \beta_3 IP_{t-3} + \beta_4 u_{t-3} + \\
 & \beta_5 Council_t * \pi_{t-3} + \beta_6 Council_t * IP_{t-3} + \\
 & \beta_7 Council_t * u_{t-3} + \beta_8 OC_t + \varepsilon_t \\
 (6) \quad & r_t = \alpha + \beta_1 r_{t-1} + \beta_2 r_{t-2} + \beta_3 \pi_{t-3} + \beta_4 IP_{t-3} + \beta_5 u_{t-3} \\
 & + \beta_6 Council_t * \pi_{t-3} + \beta_7 Council_t * IP_{t-3} \\
 & + \beta_8 Council_t * u_{t-3} + \beta_9 OC_t + \varepsilon_t.
 \end{aligned}$$

If the political view of the central bankers is without any influence, the coefficients β_5 , β_6 , β_7 of eq. (5) and β_6 , β_7 , β_8 of eq. (6) should remain insignificant. Otherwise, we may conclude that the political majority in the Bundesbank council does have an impact: If for instance β_5 in eq. (5) is significant, then a conservative council ('hawks') reacts stronger to changes in the inflation rate than its social-democratic counterpart ('doves').

Obstructionist View: Finally, the more provocative part of the Vaubel hypothesis is that the Bundesbank might obstruct the reelection of a government if the political majority of the Bundesbank council does not share its political affiliation.. To test this hypothesis, we create a variable that takes the value +1 if the majority of the Bundesbank council and the federal government share the same political affiliation, and -1 otherwise. This dummy is then multiplied with the preelection dummies $PBCN_t$ to form the variables $ObstructN_t$. They take the value +1 during the N quarters preceding an election if both policymaking bodies share the same political view, -1 if the political views are not shared and 0 during non-preelection periods.³⁵ If the Vaubel hypothesis is right, we would expect a positive sign on the coefficients for the dummy variables.

Bundesbank Rhetoric: We first consider the hypotheses of a 'level effect' and the possibility that 'Hawks' employ different rhetoric than 'Doves'. Our results for the Bundesbank index are presented in the table 10: For each period the left columns shows the results for the level hypothesis and the right columns the results for the 'Hawks and Doves' test.

First we look at the left columns: The $Council_t$ dummy has the right sign and is significant at the 5% for the entire sample, but remains insignificant if we restrict our analysis to the post-Bretton Woods period. If

³⁵ This procedure has also been used by Lohmann (1998) in an attempt to reproduce Vaubel's results in a regression analysis.

Table 10

**Impact of political majority of the Bundesbank council on the Bundesbank index
(level effect and 'Hawks and Doves')**

	01:1969–12:1989		05:1973–12:1989	
$Index_{t-1}$	2.43***	2.47***	0.26***	2.65***
π_{t-3}	0.70*	0.19	0.33	0.01
IP_{t-3}	0.14	0.10	0.09	0.04
u_{t-3}	-0.02***	-0.01***	-0.01**	-0.01**
OC_t	0.59**	0.47*	0.51	0.47
$Council_t$	0.33**		0.21	
$Council_t * \pi_{t-3}$		0.87*		0.83*
$Council_t * IP_{t-3}$		0.19*		0.09
$Council_t * u_{t-3}$		0.0		0.0
LR Index.	0.69	0.70	0.72	0.73

we use M3 instead of the consumer price index, the dummy becomes insignificant. As the dummy lacks robustness the hypothesis of a level effect should be rejected.

Next we turn to the right columns of the two periods to test the hypothesis that 'hawks' employ different rhetoric than 'doves'. Our results indicate that indeed such an effect is significant (see table 10) on the inflation rate for both sample periods (coefficient $Council_t * \pi_{t-3}$), and on the production index if we look at the entire sample ($Council_t * IP_{t-3}$). This indicates that a conservative majority of central bankers indeed reacts stronger in their announced monetary policy to changes in the inflation rate than their social-democratic counterparts, such that higher inflation leads to more contractionary rhetoric.³⁶ However, this result is not robust, it vanishes if for instance we use M3 instead of the consumer price index. All in all the model can not sufficiently explain the Bundesbank's announced policy stances.

³⁶ This is in line with Berger/Woitek (1998).

Finally, we test Vaubel's 'obstructionist view'. Our results for the Bundesbank index are presented in the table 10. Our results for the $ObstructN_t$ reject the 'obstructionist hypothesis': The coefficient are mainly insignificant. Negative values indicate that if the majority of the Bundesbank council shares the political view of the federal government in preelection periods (thus the dummy has the value +1), then the Bundesbank's intended policy stance is expansive. This is not what the hypothesis suggests.³⁷

Table 11
Vaubel's obstructionist hypothesis (Bundesbank index)

	01:1969–12:1989			05:1973–12:1989		
$Index_{t-1}$	2.48***	2.47***	2.48***	2.68***	2.66***	2.69***
π_{t-3}	0.33	0.42	0.32	0.06	0.26	0.07
IP_{t-3}	0.16*	0.17*	0.16*	0.13	0.14	0.10
u_{t-3}	-0.01***	-0.01***	-0.01***	-0.01***	-0.01**	-0.01**
OC_t	0.38	0.49*	0.34	0.46	0.55*	0.38
$Obstruct12_t$	-0.25			-0.35		
$Obstruct18_t$		-0.40**			-0.53***	
$Obstruct24_t$			-0.11			-0.14
LR Index	0.69	0.70	0.69	0.72	0.73	0.72

Effective Bundesbank Policy: Next, we focus on the effective Bundesbank policy. We start with testing the hypothesis of a 'level effect', the results can be found in the left columns of table 12. Our results for the day-to-day rate are similar to those for the Bundesbank index: We do not find a 'level' impact of the political majority in the Bundesbank council on the effective policy stance, since the $Council_t$ dummies are far from being significant.

Second, we evaluate the possibility that conservative central bankers employ a different effective policy stance than their non-conservative

³⁷ Similar results are obtained if we exclude the 1972 and 1983 elections.

Table 12

**Impact of political majority of the Bundesbank council on the day-to-day rate
(level effect and 'Hawks and Doves')**

	01:1969–12:1989		05:1973–12:1989	
r_{t-1}	0.64***	0.61***	0.54***	0.50***
r_{t-2}	0.20***	0.18***	0.35***	0.32***
π_{t-3}	0.91***	1.43***	0.55**	1.13***
IP_{t-3}	0.09	0.09	0.05	0.04
u_{t-3}	-0.01***	-0.01***	-0.01***	-0.01***
OC_t	0.23	0.21	0.20	0.22
$Council_t$	0.0		-0.06	
$Council_t * \pi_{t-3}$		-0.54		-0.61*
$Council_t * IP_{t-3}$		0.09		-0.02
$Council_t * u_{t-3}$		0.0		0.01*
R^2 adj.	0.81	0.78	0.88	0.86
SSR	366.71	357.84	186.75	178.58
F-Stat.	187.01	99.55	278.49	140.62

counterparts. The results are presented in right columns of table 12. We see that the relevant coefficients for the long sample period all remain insignificant. If we restrict our analysis to the post-Bretton Woods period, 'hawks' react stronger to an increase in the inflation rate, but also to higher unemployment. However, the coefficients are small and only significant at the 10% level, moreover the influence completely vanished if we use M3 instead of the consumer price index. Therefore we conclude that 'hawks' do not implement substantially different policy stances than 'doves'.

Finally, the results for the obstructionist hypothesis are presented in table 13. This hypothesis can be rejected easily, since none of the $ObstructN_t$ dummies are significant.

Table 13
 Vaubel's obstructionist hypothesis (day-to-day rate)

	01:1969–12:1989			05:1973–12:1989		
r_{t-1}	0.64***	0.64***	0.64***	0.54***	0.54***	0.53***
r_{t-2}	0.20***	0.20***	0.20***	0.34***	0.34***	0.34***
π_{t-3}	0.90***	0.91***	0.89***	0.59***	0.60**	0.58***
IP_{t-3}	0.09	0.09	0.10	0.05	-0.05	0.05
u_{t-3}	-0.01***	-0.01***	-0.01***	-0.07***	-0.01***	-0.01***
OC_t	0.22	0.23	0.23	0.25*	0.24*	0.26*
$Obstruct12_t$	0.01			0.03		
$Obstruct18_t$		-0.03				
$Obstruct24_t$			0.05		-0.03	0.05
R^2 adj.	0.81	0.81	0.81	0.88	0.88	0.88
SSR	366.70	366.63	366.39	187.18	187.18	186.91
F-Stat.	187.02	187.06	187.21	277.76	277.76	278.22

Summary: All three hypotheses have to be rejected. Apparently the political composition of the Bundesbank council has no significant impact on the Bundesbank's effective monetary policy: Neither the Bundesbank's rhetoric nor the effective policy stance show a 'level effect' or can confirm the 'obstructionist model' according to Vaubel's predictions. There is very weak evidence that conservative central bankers respond stronger to inflationary pressure, but the results lack robustness.

IV. Conclusion

After analyzing several models for political pressure, we arrive at a twofold picture. While all models reject political influence on the day-to-day rate, thus on a proxy for the *actual* monetary policy, we do find robust evidence for electoral pressure on the Bundesbank index, thus on the measure for the *intended* monetary policy. It comes quite as a surprise that the simplest and less-sophisticated model of political pressure

delivers such robust and clear results for the Bundesbank rhetoric. As we have stressed before, the Bundesbank is independent in legal status, therefore there seems to be little reason for giving way to governmental pressure before election. However, we remind that the actual conduct of monetary policy, thus the day-to-day rate, does not exhibit any sign of political influence.

The distinction we have made between what we call 'rhetoric' and the actual conduct of monetary policy is new. One might wonder whether such a clear distinction does exist in reality. Nevertheless, it comes as a surprise that the Bundesbank suggests a pre-electoral behavior that is not reflected in the day-to-day rate.

Our findings suggest that the Bundesbank seems to respond to pressure by announcing relatively loose monetary policy, while at the same time knowing that the only effect this manipulation will have is the calming down of nervous politicians. This may be interpreted as a clear sign for the political pressure the Bundesbank faces before elections.

Is it likely that the ECB will face similar pressure? We do not believe it is, for the simple reason that elections throughout Europe do not coincide, but are held at different dates. Thus before elections in, say, France, the French government may push hard for monetary ease, but since most other countries do not face an election, it is extremely unlikely that the ECB will give in. The German central bank managed to prevent harmful implication for the effective policy stance which confirms the evidence from legal measures of central bank independence, which all rank the Bundesbank among the most independent central banks in the world. Things would change quite a lot for the ECB, however, should all elections in Europe be held on the same day.

Appendix

1. Data Sources

Growth rates are computed as the change in the log of the raw series and have been detrended if necessary. All computed series were stationary. The following series have been taken from the Bundesbank CD-ROM: M3, CPI, day-to-day rate and the unemployment rate for West Germany. The net production index was directly provided by the Bundesbank. M3 has been corrected for the German reunification. All models have been estimated with EVIEWS 3.1.

2. Germany's Institutional System

Germany is a federal state with 16 *Länder* (11 before unification), each with its own government. The two chambers, Bundestag and Bundesrat, are the legislative bodies of the Federal Republic of Germany. The main functions of the Bundestag, apart from legislation, are the election of the Federal Chancellor and the scrutiny of the Federal Government. The Bundesrat enables the *Länder* to participate in the legislation and administration of the Federation. The members of the Bundesrat are appointed by the *Länder* Governments. They can vote only collectively per Land and are bound by the instructions given by their respective *Länder* Governments. The total of now 69 voices is divided among the 16 *Länder* according to the number of their inhabitants.

In general, the Bundesrat contributes to every law, but the intensity of the contribution differs subject to two types of laws:

- The Bundesrat can only object to the so-called *Einspruchsgesetz*, however this objection can be overruled by the Bundestag by simple majority. Thus a law can be adopted against the will of the *Länder*.
- Some bills however touch the interest of the *Länder* and therefore the consent of the Bundesrat is required. Those bills are called *Zustimmungsgesetz*.

There have been various conflicts over the question whether certain laws require the consent of the Bundesrat or not. It is unclear whether the consent of the Bundesrat is required for a change in the Bundesbank Act. However, a change would be facilitated if one party governed in both chambers of parliament, this is the basic notion of the Lohmann measure of conflict.

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Summary

Pressure on the Bundesbank?

We investigate whether the German central bank responds to political pressure. We focus on two main points: The rhetoric of the Bundesbank, characterized by the 'Bundesbank monetary policy index', and the actual or effective Bundesbank policy, which is measured by the day-to-day interest rate. Besides testing for the political business cycle we also estimate various conflict models. We find that the announced Bundesbank policy responds to political pressure before elections, since the rhetoric shows a clear electoral pattern. However, this does not translate into the effective Bundesbank policy, since the day-to-day rate shows no sign of political influence at all. This result suggests that the Bundesbank pretends relatively expansive monetary policy before elections in its rhetoric to calm down politicians, but in the mean time shields the effective monetary policy from political pressure. (JEL E 52, E 58)

Zusammenfassung

Druck auf die Bundesbank?

Wir untersuchen, ob die deutsche Zentralbank auf politischen Druck reagiert. Wir befassen uns hauptsächlich mit zwei Punkten – mit der Rhetorik der Bundesbank, für die der Bundesbankindex für die monetäre Entwicklung charakteristisch ist, und mit der tatsächlichen oder effektiven, am Tageszins gemessenen Politik der Bundesbank. Neben der Erhebung einer konjunkturpolitischen Stichprobe schätzen wir auch diverse Konfliktmodelle. Wir sind der Meinung, daß die von der Bundesbank angekündigte Politik vor Wahlen auf politischen Druck reagiert, da die Rhetorik der Bank ein klares wahlpolitisches Reaktionsmuster zu erkennen gibt. Dieses wird jedoch in die effektive Politik der Bundesbank nicht umgesetzt, da die Entwicklung der Tageszinssätze keineswegs zu erkennen gibt, daß die Bundesbank auf irgendeinen politischen Einfluß reagiert. Dieses Erkenntnis legt den Schluß nahe, daß zur Beruhigung der Politiker die Bundesbank vor Wahlen rhetorisch zwar vorgibt, daß die von ihr gefahrene monetäre Politik relativ expansionär ist, daß sie ihre eigentliche monetäre Politik jedoch gegenüber politischem Druck abschirmt.

Résumé

Pressions sur la Bundesbank?

Nous examinons ici si la Banque Centrale allemande répond à des pressions politiques en nous concentrant sur deux points principaux: la rhétorique de la Bundesbank, caractérisée par »l'indice de politique monétaire de la Bundesbank« et la politique réelle ou effective de la Bundesbank qui se mesure par le taux d'intérêt au jour le jour. Outre de tester le cycle politique, nous estimons également divers modèles de conflit. Nous concluons que la politique annoncée de la Bundesbank répond à des pressions politiques avant des élections, puisque la rhétorique a un caractère clairement électoral. Cependant, ceci ne se traduit pas dans la politique effective de la Bundesbank puisque le taux au jour le jour ne révèle aucun signe d'influence politique. Ce résultat suggère que la Bundesbank feint dans son discours rhétorique une politique monétaire relativement expansive avant les élections pour calmer les politiciens, mais qu'en même temps, elle protège la politique monétaire effective de la pression politique.