Who supported the *Deutsche Bundesbank*?

An empirical investigation

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Abstract

The relevance of public support for monetary policy has largely been overlooked in the empirical central bank literature. We have constructed a new indicator for the support of the German Bundesbank and present descriptive and empirical evidence. We find that major German interest groups were quite heterogeneous in judging a given policy stance. Empirically, we show that (a) public support can (at least partly) offset pressure from other organized groups and (b) accounting for popular support of the central bank allows to make more accurate forecasts of the short-term interest rate.

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JEL classification: E58, E52

1 Introduction

After a long debate the European Economic and Monetary Union (EMU) has finally started on January 1st, 1999. The slide of the euro exchange rate against the US dollar has again sparked the fears of Eurocritics: A weak currency, which translates into high inflation. So, to become a success in the long run, inflation in the Eurozone must remain low. The prerequisites for that to happen are unclear. Empirical evidence points to the possibility that a high degree of central bank independence lowers inflation.[1] Probably more important than institutional arrangements, however, is the public attitude with regard to monetary policy:

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[1]See Berger et al. (2001) for an overview.

the Germans, for example, are often considered to be especially inflation averse due to the traumatic experience of two hyperinflations.

Different societies tolerate different levels of inflation, but we do not know which factors determine a society's 'preferred' level of inflation. Posen (1995) has emphasized the importance of the financial sector and its opposition to inflation, but this is probably not the only factor.[2] The German central bank has never hesitated to stress the differences in 'stability culture', i.e. relative inflation aversion, among EMU members, but these differences are hard to quantify. As van Lelyveld (1999) shows, even within countries it is not entirely clear who wants stable money![3]

Before the EMU started inflation has declined in all member countries, which indicates that stability culture can be built up; yet, it remains unclear how stability culture develops. Certainly a key aspect in that respect is a central bank's ability to maintain tight monetary policy during 'rough times', that is, when the central bank is under pressure from politicians or pressure groups to change the policy stance. This ability hinges at least partially on the degree of popular support, as support for the central bank makes it easier to resist to threats from organized groups.

In studying pressure on central banks the German case is quite interesting. Before the European Central Bank was established, the *Deutsche Bundesbank* was considered as the most independent central bank in the world. Moreover, it was the dominant European central bank before EMU started and has been the design model for the ECB. The questions we want to tackle is the following: what happened, when the Bundesbank was under pressure – did anyone support current monetary policies? And if so, did it have any impact of the Bundesbank's policies? How likely is it that similar support exists for the ECB?

These questions can not be answered within the traditional macroeconomic framework. We try to give an answer to these questions by estimating a model for Bundesbank policies, which incorporates not only economic, but also political factors. We outline our methodological approach in the next section, before we estimate a purely economic model (section 3). In section 4 the model is transformed into a public choice model by adding data on political pressure, in section 5 we extend the model by including public support. In the final section we will sketch some implications for the ECB.

[2]See also de Haan and van't Hag (1995) for a critical review of Posen's empirical results.

[3]For more information about 'stability culture' see Hayo (1998), Winkler (1999) or Deutsche Bundesbank (1998b).

2 Methodology

2.1 Factors that determine monetary policy

The classical literature on central banking assumes that monetary policy is determined by economic variables, e.g. if inflation is high, then the central bank will respond by raising interest rates. While the economic situation undoubtedly has a big impact on the policy stance, the public choice literature has pointed out that other factors should also be considered. We often observe in real life that certain parts of the population try to apply pressure on a central bank, e.g. before elections.[4] While pressure on central banks has been the subject of many empirical studies, the possibility that a central bank enjoys support from the population has largely been neglected in the empirical central bank literature.[5] Yet a central bank can only be strong if it enjoys broad support.

We extend the existing public choice view of monetary policy by adding public support as a factor influencing the central banks decisions. Our framework for monetary policy thus consists of three components: Economics, pressure and support (see figure 1).[6] We will explain each factor in turn.

Economics is a term for the economic situation, characterized by GDP growth, inflation etc. Each economic situation has an 'optimal' monetary policy, that is, a policy that fits the economic needs of the current situation. Such a behavior is for instance the basis of the type of policies reflected in the Taylor-rule.[7]

Pressure means that some parts of the population demand a change in monetary policy. In our view pressure might result from various parts of society (politicians, employer's organizations, trade unions or commercial banks), but also from public opinion, as expressed e.g. in comments in newspapers. If the pressure is strong enough, it might result in deviations from the optimal monetary policy, that is, it might force the central bank to pursue a policy not compatible with the current economic situation.

[4] A number of reasons have been put forward why pressure may be put on central banks, be it for electoral or other reasons. See for instance the literature on the political business cycles (Nordhaus, 1975), partisan politics (Rogoff and Sibert, 1988) or conflict models (Frey and Schneider, 1981. Maier and de Haan (2000) provide a survey of the empirical public choice literature on the Bundesbank.

[5] For historical evidence on Bundesbank support see Berger and de Haan (1999).

[6] We abstract from the possibility that the Bundesbank or the central bankers have opportunistic, partisan or other interests. See Vaubel (1997) and Lohmann (1998) for different assumptions.

[7] See Taylor (1992).

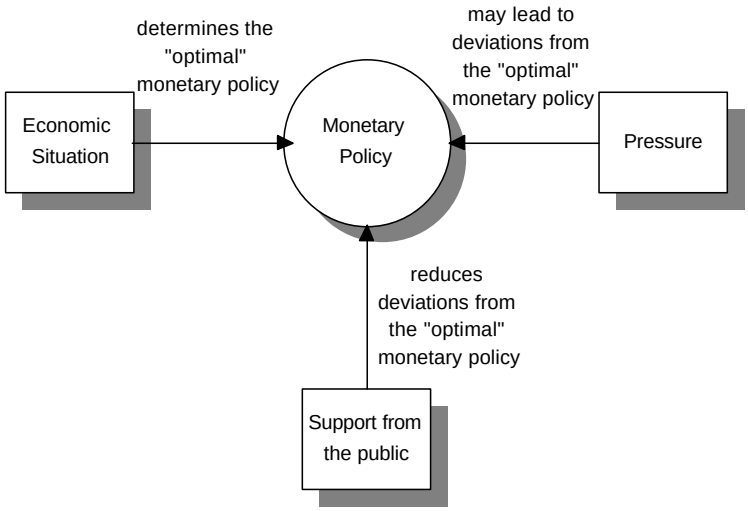

Figure 1: Methodology: The impact of economics, pressure and support

Support strengthens the central bank: if the central bank enjoys a high degree of confidence or support from the population, it has a better position in public discussions about monetary policy and pressure groups have more difficulties in convincing the public, but also the central bank, that monetary policy should be changed. Thus support might (partly) offset the pressure of pressure groups. The higher the support, the 'stronger' the central bank and the more it can focus on economic variables. We assume that any group of the population can offer support to the central bank.

Why would a central bank give in to pressure, especially an independent central bank such as the Bundesbank? One can think of several reasons: the fact that governments might force the central bank to take certain actions is well-known. Here the argument is that even central banks with a high degree of legal independence might (at least partly) comply to politicians as they fear that otherwise their legal independence might be threatened.[8] Pressure groups do not have the possibility to change the level of independence, but central banks might nevertheless listen to their wishes, as they might fear pursuing a certain monetary policy 'against the wishes of the population'.[9] Overall, a central bank

[8]Note that the independence of a central bank is always relative as the parliament has the possibility to change the central bank act and (partially) remove the statutory independence. For a more extensive discussion see Frey and Schneider (1981). The ECB is an exception to that, as changes to its legal status require the unanimous consent of all EMU Member States. See European Central Bank (1999).

[9]Assume the following: a pressure group demands a certain monetary policy. If it is well-organized and represents a significant share of the population, the government might listen to

might fear to lose the support of the public opinion, as only a high degree of confidence of the society can guarantee independence in the long run. This makes the Bundesbank not indifferent to pressure, even though it is nominally independent.

Most components of our model are well-known: if we completely abstract from pressure and support, we only look at the economic situation. This is an approach e.g. followed by Clarida and Gertler (1996): they estimate a reaction function and include only economic variables as independent regressors to analyze the Bundesbank's behavior. Adding the pressure component to this basic model yields the public choice perspective. Finally augmenting the public choice model by adding a support variable allows to examine supportive actions. As the literature has developed along these lines, we will start with the simplest case and then extend the model.

3 Traditional Macroeconomic Model

In the world of traditional macroeconomics a central bank concentrates only on economic variables, political pressure on a central bank is neglected. Econometrically, this can be expressed as follows: the central bank would like to set monetary policy such that

$$i_{CB,t} = \Gamma\,(\text{Economic variables}) + \epsilon_t, \tag{1}$$

where monetary policy is measured by $i_{CB,t}$ and the relevant economic variables are aggregated by a function Γ. As dependent variable we use the day-to-day rate i_t; a short-term interest rate which the Bundesbank regards as 'key indicator' for monetary policy.[10]

When we measure the interest rate it may deviate from the predicted level by an error ϵ_t, which is caused by (1) our less-than-perfect knowledge of Γ, (2) by the fact that even the central bank does not fully control the market rate

their demands. If the government concludes that they need the support of this group for their policies, they might be inclined to signal to the central bank that a change in the policy stance would be desirable. If the influence of the pressure group is strong enough, the government might even signal that otherwise the central bank's independence might be in danger.

[10] See Deutsche Bundesbank (1995). Even though officially the Bundesbank used monetary targeting we have decided to use a short-term interest rate as indicator, as several studies, e.g. Bernanke and Mihov (1997) have shown that monetary targeting was in practice less important than the Bundesbanks official statements might suggest. We believe that the short-term interest rate is the best available proxy for the German monetary policy, as the use and weight of single policy instruments changed over time. See also von Hagen (1998), p. 453, and Maier (2000)

and (3) possibly also by political factors which we have chosen to neglect in this early setup.

In practice, we encounter a few problems when we try to estimate the function Γ: some of the economic variables used by the bank are known, like the unemployment rate and the rate of inflation, but a number of variables such as 'the mood on the stock market' (irrational exuberation, for instance) cannot so easily be quantified. Making matters worse, the number and kind of these unknown variables are probably subject to shifts over time. So while the function Γ is an interesting theoretical construct, there are major obstacles in its practical use by observers outside the Bank.

However, we do have an indicator that shows what the intentions inside the Bank led to in the *previous* period, namely: the interest rate of that period. This rate is a perfect (up to ϵ_t) indicator of Γ. So, we can use lagged values of i as explanatory variables to increase our understanding of the current level of i.

This leads to a new formulation of equation (1):

$$i_t = \Delta\left(L\left(i\right)\right) + \Gamma\left(\text{Economic variables}\right) + \epsilon_t', \tag{2}$$

where $L\left(.\right)$ is the lag function. Now, prediction errors ϵ_t' are caused by three things: imperfect knowledge of Δ and Γ, market fluctuations and, thirdly, unobserved circumstances inside the Bank that led to innovations in i.

To make the model econometrically feasible, we start with the standard assumption that the Bundesbank cares about inflation and, perhaps to a lesser extent, about unemployment. Therefore, we estimate the following basic regression:

$$i_t = \alpha + \sum_j \beta_j i_{t-j} + \sum_k \gamma_k \pi_{t-k} + \sum_l \delta_l U_{t-k} + \epsilon_t, \tag{3}$$

where π_t denotes the rate of inflation and U_t is the unemployment rate.[11] The number of lags is determined using Akaikes Information Criterion (AIC). Admittedly, this is a very simple reaction function, but this regression serves to illustrate the traditional macroeconomic approach – and more sophisticated specifications basically deliver similar results.[12]

The results for this model are presented in table 1.[13] We see that both the

[11] We use growth rates, variables have been detrended if necessary to ensure stationarity. See the appendix for details.

[12] Recent papers often use VAR model to estimate reaction functions, e.g. see Bernanke and Mihov (1997) for the German case.

[13] In all tables ***/**/* denotes significance at the 1%/5%/10% level.

Variable	Lags[a]	Sum[b]	F-Each[c]
Interest Rate	9	0.95***	316.71***
Inflation	2	0.10***	9.28***
Unemployment	4	−0.22***	5.03***
R^2 adj.		0.89	
AIC		2.58	

Table 1: Traditional Macroeconomic Model

[a]Number of lags according to the AIC criterion
[b]Sum of the estimated coefficients: neutrality tests
[c]F-statistic testing whether each of the estimated coefficients equals zero

coefficient of the inflation rate and unemployment are highly significant: higher inflation leads to higher interest rates, while rising unemployment leads to lower interest rates. This is the typical behavior we might expect from a central bank.

4 Traditional Public Choice Model

The traditional macroeconomic approach is useful as a starting point, but it is far from giving a complete picture of how monetary policy is determined. It might be desirable that monetary policy is only influenced by economic factors, but this is not very realistic. In practice central banks have often been exposed to external pressure, be it from the government or be it from other sources.

The public choice literature has sought to examine this component of monetary policy and has shown that external influences cause deviations from the 'economically-desirable' policy. Therefore we augment our reaction function:

$$i_t = \Delta\left(L\left(i\right)\right) + \Gamma\left(\text{Economic variables}\right) + \Phi\left(\text{Pressure variable}\right) + \epsilon_t''. \qquad (4)$$

With this formulation, it is still possible for researchers to predict the Bank's preferred interest rate, taking into account the political pressure. We assume that, like Γ, the function Φ can be known, or can be estimated from the data. Errors in the prediction, denoted by ϵ_t'' this time, are no longer caused by neglected political pressure; they reflect imperfect knowledge of Γ and Φ and by market fluctuations.

4.1 The 'Pressure' variable

The main difference between the macroeconomic approach and the public choice literature is that the latter allows for 'pressure'. And in an empirical study, that

is exactly the problem, as measuring this 'pressure' is tricky.

Historically, as a first attempt, it has been assumed that political pressure occurs in certain intervals, for example before elections.[14] Obviously, this is not a very flexible choice. High pressure might occur following political disputes or economically difficult situations, regardless of the electoral calender. Next, Frey and Schneider (1981) have developed a conflict model, where pressure on the central bank occurs when government and central bank follow different economic policies.[15] The problem here is that (a) the direction of fiscal policy is difficult to measure (certainly on quarterly or monthly basis), and (b) different policies need not indicate a conflict, but could also be a desired policy mix.

Historical or anecdotal evidence gives a description of conflicts, but are fairly subjective. The problem is that from this literature we know fairly well when conflicts occured, but lacking objectiveness we cannot use it to build an indicator. Yet, a simple pattern such as 'electoral dummies' does not realistically reflect the complicated relationship between government and central bank.

Havrilesky (1993) has found a solution to this problem. He has developed a relatively simple and objective methodology to build an indicator for pressure. The basic assumption is that if conflicts between the government and the central bank occur, this is 'interesting news', which will therefore be reported in the newspapers: all monetary policy information from exchanges between the government and the central bank

> '... that is of value to market participants will systematically appear in the financial press. Specifically, we assume that the policy content of formal and informal communications from the Administration to the Federal Reserve ... is reliably and consistently reported in the press.'[16]

More severe struggles will lead to more reports, so this evidence can be used to determine the 'strength' or 'severeness' of a conflict. Havrilesky built a conflict indicator using the Wall Street Journal. He counted articles demanding monetary ease as +1 and articles calling for contractionary monetary policy as -1. His conflict index then consists of the simple sum of pluses and minuses. At first this methodology may sound strange, but the empirical results were convincing: a regression of the Federal Funds rate on this indicator turned out to be highly significant – and augmenting this indicator by accounting for

[14] See the literature on political business cycles. Alesina et al. (1997) provide an overview.
[15] See Berger and Schneider (2000) for an updated version.
[16] Havrilesky (1993), p.40.

legislative bills proposed demanding less FED independence during conflicts only made his results more convincing.[17]

We have followed Havrilesky's methodology. Our data set was built in the same way and has thoroughly been examined in Maier et al. (2001). We will refer to this data set as the indicator for pressure on the Bundesbank ('pressure index'). This data set consists of monthly data and covers the period from 1/1960 to 12/1998.

Havrilesky's approach was extended in two ways. First, to minimize possible deficiencies in our data set we have gathered articles from three German newspapers: The *Frankfurter Allgemeine Zeitung* (FAZ), the *Handelsblatt* (HB) and *Die Welt*.[18] Second, we have decided to include all major pressure groups, not only the government.

An inspection of the newspaper data suggested tracking pressure from the following sources:[19]

- the government;
- the financial sector (commercial banks and savings banks);
- employers organizations (export- and domestic-oriented);
- trade unions;
- other: all other articles.

Table 2 summarizes pressure data from the various newspapers. We report the number of observations, that is the number of articles found in this category, the sum of all observations, that is the value of all '+1's and '-1's for this category, and the 'ratio', i.e. the percentage of articles demanding tighter monetary policy over the total number of articles. Unlike Havrilesky we count articles demanding higher interest rates as +1 and articles calling for monetary ease as -1, thus facilitating the interpretation of the regression results.

The table confirms some prior expectations regarding the attitude of different pressure groups with respect to monetary policy: export oriented employers opt far more often for monetary ease than their domestic oriented counterparts. As they can profit from lower exchange rates they are more likely to tolerate higher inflation rates than the domestic oriented employers. Indeed, domestic oriented employers are the only pressure group with a positive ratio, thus more often demanding higher interest rates than interest rate cuts. There are a number of cases where the sum of observations is not equal to the total number of

[17] Froyen et al. (1997) have shown that this conclusion also holds if additional economic variables are included in the regression analysis.

[18] All newspapers tend more to the conservative side, but there are no other suitable German newspapers that go back until the 1960s.

[19] Further details of the data set can be found in appendix A.2.

Pressure on the Bundesbank	*FAZ*	*HB*	*Welt*	*Total*
No. of. obs. 'Government'	36	30	19	85
Sum of 'Government'	-32	-26	-13	-42
Ratio	-89%	-87%	-69%	-49%
No. of obs. 'Financial Sector'	39	58	43	140
Sum of 'Financial Sector'	-29	-26	-23	-58
Ratio	-74%	-45%	-43%	-41%
No. of obs. 'Employers org. (export)'	9	14	9	32
Sum of 'Employers org. (export)'	-9	-12	-9	-30
Ratio	-100%	-86%	-100%	-94%
No. of obs. 'Employers org. (domestic)'	7	13	3	23
Sum of 'Employers org. (domestic)'	-1	3	-1	1
Ratio	-14%	23%	-33%	4%
No. of obs. 'Trade Unions'	16	42	11	69
Sum of 'Trade Unions'	-16	-42	-11	-69
Ratio	-100%	-100%	-100%	-100%
No. of obs. 'Other'	25	67	18	110
Sum of 'Other'	-17	-47	-8	-72
Ratio	-68%	-70%	-44%	-65%
Total No. of obs. ('Total pressure')	153	254	120	527
Sum of all observations	-111	-158	-70	-339
Ratio	-73%	-62%	-58%	-64%

Table 2: Pressure on the Bundesbank

observations (for example pressure from the 'Financial Sector', as reported in the FAZ, is -29 whereas the number of observations is 39). This means that several articles demanding more expansive monetary policy 'canceled out' against some articles demanding a tighter policy stance. This does not occur for trade unions: they always want monetary ease.

Aggregating over all categories one gets the pressure the Bundesbank faces from all parts of society (reported in the last line). This is the series we are most interested in, as it shows the 'total pressure' from all parts of society the Bundesbank faced. Therefore, this is the series we will use.

A plot of this series is found in figure 2. Note the clearly visible spikes in the mid 1960s, when the issue of revaluation of the Deutschmark was heavily debated, spikes during the oil crisis (mid 1970s and early 1980s), and around the German unification (early 1990s). Those were periods when inflation and unemployment were rising and pressure was high on the Bundesbank.

All major conflicts we know about from historical evidence are reflected in this pressure indicator, which is a sign that it reliably measures the relationship between the public and its central bank. So, Havrilesky's methodology may perhaps not be the best way to measure the relationship between central bank

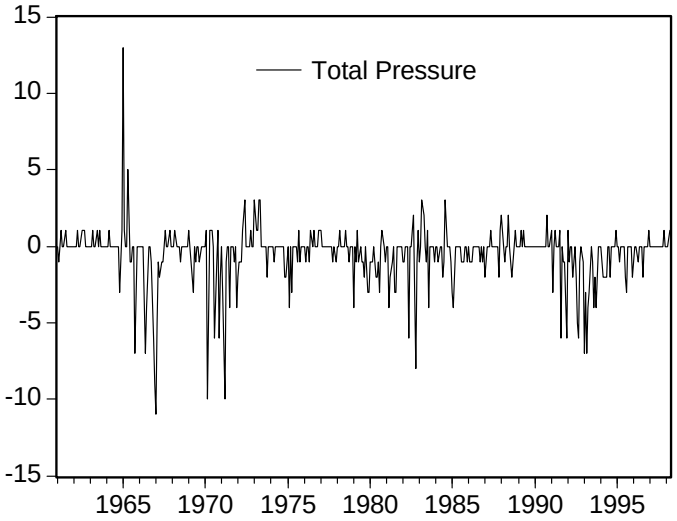

Figure 2: Total pressure on the Bundesbank

and government in absolute terms, yet it is the best possibility we have today and our pressure indicator correctly displays known conflicts.

4.2 Econometric Evidence

It is relatively easy to incorporate this measure for pressure in our macroeconomic model: the impact of economic variables and pressure on the Bundesbanks policy is not fundamentally different – a cut in interest rates might be motivated by decreasing inflationary pressure, but could as well be the result of serious pressure from, say, the government. Thus we treat pressure like the economic variables and it enters the Bundesbank's reaction function in an analogous way. We therefore estimate:

$$i_t = \alpha + \sum_j \beta_j i_{t-j} + \sum_k \gamma_k \pi_{t-k} + \sum_k \delta_k \pi_{t-k} + \sum_m \xi_m \text{Pressure}_{t-m} + \epsilon_t, \quad (5)$$

where Pressure_t denotes the pressure index discussed above. Similar equations are found in other empirical articles using the public choice approach: we use a different type of pressure indicator than most other studies, but the model as such is not very new.

Our estimates are presented in table 3. They confirm previous results reported in Maier et al. (2001): the pressure index has a significant impact; additional estimates (not reported) show that the pressure variable is highly

Variable	Lags	Sum	F-Each
Interest Rate	9	0.96***	298.04***
Inflation	2	0.09***	8.11***
Unemployment	4	−0.20***	3.81***
Pressure	3	0.06*	1.93[a]
R^2 adj.		0.89	
AIC		2.57	

Table 3: Support of the Bundesbank

[a]Significant at the 13% level, the coefficient Pressure_{t-2} is significant at the 1% level.

significant (at the 1% level) with a lag of two months. AIC, the Akaike information criterion, drops marginally, which indicates that this model performs slightly better than the previous one.[20] The estimated coefficients for inflation and unemployment hardly change.

The positive sign on the pressure variable means that pressure to lower interest rates indeed leads to interest rate cuts. As pressure mostly occured to lower interest rates (see figure 2) this means that interest rates on average were lower than the economic variables would have required. These results indicate that the type of regression we ran in the previous section (standard macroeconomic regression without policitical variables) can be improved upon when analyzing the Bundesbank's behavior. Pressure is a significant variable, which means that if this variable is omitted in the estimation, the unexplained variance will be larger.[21] Therefore the public choice model gives a better picture of the factors that influenced the German monetary policy.

To summarize, the above result shows that the Bundesbank did not operate in a 'political vacuum': pressure from organized groups had a significant impact. Due to public pressure interest rates were lower than they would have been if pressure had not been applied. So if we want to know what really influenced the Bundesbanks decisions we have to include political variables.

5 The Role of Public Support

The public choice model has a clear advantage over the traditional macroeconomic reaction function. The use of pressure data distinguished the public choice approach from the purely macroeconomic theory. This is, however, not

[20]Using the Akaike information criterion as a model selection guide, one selects the model with the smallest information criterion. See also Kennedy (1998), p. 103.

[21]Estimation bias is not a big worry in this case, as our estimates show that the coefficients of the economic variables change little after the inclusion of political variables.

Support for the Bundesbank	*FAZ*	*HB*	*Welt*	*Total*
No. of obs. 'Government'	35	41	12	88
Ratio support/pressure	97%	137%	63%	104%
No. of obs. 'Financial sector'	29	64	18	111
Ratio support/pressure	74%	110%	42%	79%
No. of obs. 'Employers org. (export)'	12	17	6	35
Ratio support/pressure	133%	121%	67%	109%
No. of obs. 'Employers org. (domestic)'	9	12	3	24
Ratio support/pressure	129%	92%	100%	104%
No. of obs. 'Trade unions'	3	6	0	9
Ratio support/pressure	19%	14%	0%	13%
No. of obs. 'Public opinion'	1	12	1	14
Ratio support/pressure	4%	18%	6%	13%
Total no. of obs. ('total support')	104	163	47	314
Ratio total support/total pressure	68%	64%	39%	60%

Table 4: Support for the Bundesbank in different newspapers

the end of the story: reading through the newspapers one does not only find articles demanding changes in the monetary policy stance, but also supportive statements can be found. Indeed, they are quite frequent and basically say: 'Don't force the central bank to do anything, they know better how to apply monetary policy. Trust them, they will do the right thing.' How can such a supportive behavior be incorporated in our framework?

5.1 The Support Variables

Before we extend the estimates of the traditional public choice approach by adding support to the model we first we have a look at the support data. Again we have relied on Havilesky's methodology: using the same newspapers we now have focused on supportive statements from the different sources distinguished above. Articles that expressed support of the current Bundesbank policy, regardless of the actual policy stance, were counted as +1, all other articles were counted as 0. This data set will be called 'support index'. As before we have gathered data for the government and interest groups.

In table 4 we summarize the main components of the support index. For each pressure group we report the number of supportive articles per newspaper and the ratio number of supportive articles over the total number of 'pressure' articles. As we can see, public support of the Bundesbank is relatively high across all categories; to some degree, even the trade unions supported the central bank. Figure 3 plots the most aggregated support index ('Total support'). Again spikes in the mid-1960s, during the oil crisis and in the early 1990s can

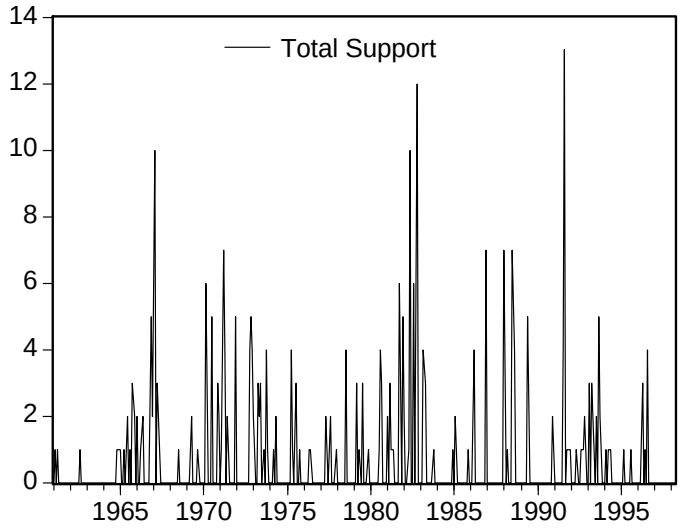

Figure 3: Total support for the Bundesbank

easily be distinguished.

Apparent is the degree of heterogeneity of the organized groups. Interest groups define themselves by members sharing a common interest (e.g. exporters profiting from lower exchange rates). Therefore one would suspect that if such a group expresses wishes concerning monetary policy, most members would agree. Yet, clearly the expectation that the 'best' policy stance is subject of debates only *between* interest groups is wrong, clearly the debate also occurs *within* groups. The high degree of heterogeneity can be explained by different preferences or discount factors of the individual members of an organized group.

To examine the relationship between pressure and support we use absolute values of the pressure index, denoted as Pressure*. The correlation coefficient for Pressure* and Support is 0.46, which is relatively low; Granger causality test reported in table 5 show that correlation runs from Pressure* to Support.[22] This means that high pressure from certain parts of the population triggers off public support.

[22]We included 12 lags for the Granger test, other specifications confirmed the result.

Granger causality tests	*F-Stat.*	*Prob.*
Pressure* does not Granger cause Support	2.07	0.02
Support does not Granger cause Pressure*	1.11	0.35

Table 5: Correlation between Pressure and Support

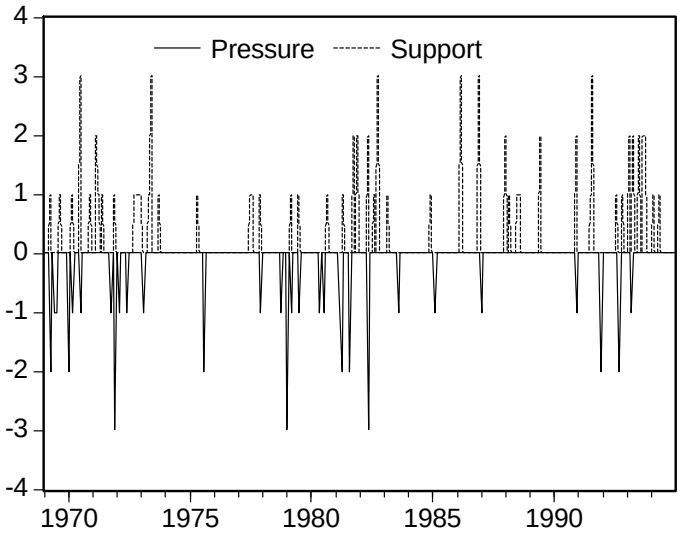

Figure 4: Pressure and Support from the German government

Of particular interest is the relationship between the government and the central bank. We see that the government more often *supported* the central bank than it applied pressure by demanding changes in the monetary policy stance (i.e. the ratio support/pressure for the government in table 4 is $> 100\%$). The common assumption that the relationship between these two institutions is characterized by frequent conflicts apparently does not hold, at least not for Germany. This is further visualized in figure 4, where we have plotted the absolute value of the 'pressure from the government' variable on the negative axis, while our 'support of the government' index is shown on the positive axis. Again we see that pressure triggers off support.

To summarize, a first important finding is that interest groups are not homogeneous at all. The data reveals a high degree of heterogeneity among interest groups, that is while some members of a pressure group were demanding policy changes, others members *of the same interest group* supported the current monetary policy.

5.2 Econometric Evidence

So far, we have estimated simple reaction functions. Economic data and data on pressure easily entered our regressions, as both data have a simple interpretation, e.g. if inflation goes up, interest rates are raised. Our pressure variable was constructed in such a way that if pressure is positive, we expect a rise in the interest rate, whereas negative pressure leads to lower interest rates. That

means that pressure has a *direction*, that is we can distinguish between pressure for higher and for lower interest rates.

The support variable is different. Support can be high in periods with high interest rates as well as in periods with low interest rates. High support does not call for higher or lower interest rates, it is 'unconditional', which means that no matter what policy the Bundesbank is following, supporters back its actions. This makes estimation more tricky: we cannot simply add the support variable to our public choice equation. Technically speaking, unlike the pressure variable, support has *no direction*.

It is at this point that we take an interest in the variance of the error term. Previously, it was an indicator of how well our model was doing in predicting the interest rate. However, you can also interpret the error term as a deviation from the 'optimal' monetary policy: if we go back to equation 1, ϵ_t is high if economic variables have less power in explaining variation of the interest rate. This means that other factors besides economic variables used in the regression might have influenced the central bank's decisions. One such factor has been identified in the last section: if political pressure is high, then the central bank deviates from the purely economic needs.

There are two reasons for this: first, high pressure means that people are complaining about the Bank's normal policy. This makes it more likely that the Bank will deviate from the optimal policy. Secondly, given that the bank is more likely to deviate, it will be more attractive for speculators to enter the debt market and try to manipulate r_t. Both factors should be expected to play up *when the bank lacks public support*.

We need to find a model that mimics this kind of behavior. Our model should show that the central bank is led more by economic considerations when its support is high – and is more likely to deviate from the rules when support is low. In that case, our measure of policy (r_t) is not so well explained by the rule.

We will use a simple linear form to estimate Δ, Φ and Γ and use an ARCH model to explain the variance in the error term. ARCH, or Autoregressive Conditional Heteroskedasticity models, generally have the following form:[23]

[23]See e.g. Gouriéroux (1997) and Harvey (1990) for details about ARCH models.

Variable	Lags	Sum	F-Each
Interest Rate	9	0.98***	346.38***
Inflation	2	0.05*	11.13***
Unemployment	4	$-0.12 * *$	1.79^a
Pressure	3	0.03	1.59^b
Arch (5 Arch terms)		Coefficient	
Support_t		0.01	
Support_{t-1}		0.00	
Support_{t-2}		−0.02***	
R^2 adj.		0.89	
AIC		1.77	

Table 6: Support of the Bundesbank

[a]Significant at the 13% level.
[b]Pressure_{t-2} remains significant at the 10% level.

$$\begin{aligned} y_t &= x_t'\beta + \varepsilon_t \\ \varepsilon_t &\sim N(0, h_t) \\ h_t &= \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 \end{aligned} \tag{6}$$

We see that the variance h_t of the error term ε_t varies over time, with a minimum of α_0 and increasing with the previous realization of the error term. We can amend (6) by allowing for exogenous variables:

$$h_t = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + z_t'\theta \tag{7}$$

Estimating these equations, now known as an XARCH model, can be done by maximum likelihood. The value of parameter θ tells us about the effect of the exogenous variable on expected variance.

Our main estimation results are reported in table 6. We see that (a) the estimated coefficient for pressure is smaller, it becomes statistically less significant (the Pressure_{t-2} variable remains significant at the 10% level) and the sum of the Pressure variable drops; and (b) the $Support_{t-2}$ coefficient is highly significant with a two period lag. The sum of the support variable has the expected negative sign. Note also that this model yields the lowest Akaike information criterion, which means that this model outperforms the previous ones and can therefore be considered as the preferable specification.

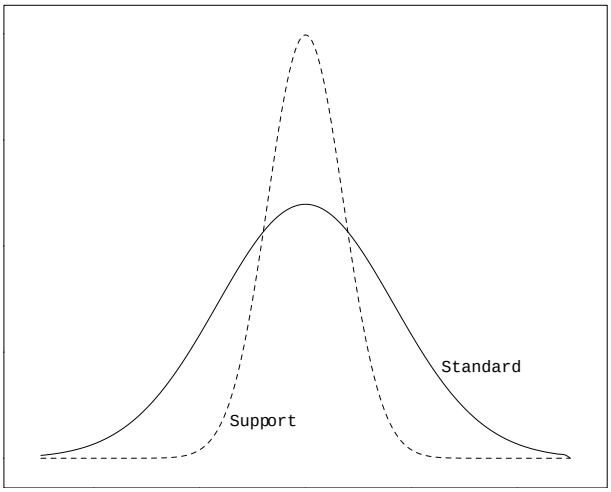

Figure 5: Effect of public support on forecast error ϵ_t

5.3 Interpretation

How should these findings be interpreted? First, we have made the variance of the error term endogenous. The coefficient for public support is negative, which means that the variance of ϵ_t becomes smaller as support for the bank increases, larger when it is lacking support.

Second, we look at the impact of public pressure: the pressure variable is less significant compared to earlier estimates and the estimated coefficient is smaller. This makes sense: we expect the effects of political pressure to surface when support for the economic rule is low – however, our model tells us that the variance of the error terms becomes large precisely when that happens. This makes it harder to detect the effects of the political variable as they are covered by a larger 'cloud of error'. Put in simple terms, we have shown that a high degree of support – at least partly – offsets pressure from interest groups.

We can illustrate the effect of public support on the error term graphically. In figure 5 we have plotted two hypothetical distributions of the error term, with the dotted line representing a smaller variance. In the center of these distributions is our estimate of r_t. We know that the variance depends on the support of the Bundesbank with a negative sign. Translated into figure 5, the variance of the error term is larger (unbroken line) when support is low, and smaller when support is high. If we estimate the traditional public choice model and do not account for public support, the distribution will lie between the two figures. This means that adding support as an explanatory variable increases our understanding of the error term. It translates not only into a

better understanding of the factors influencing the Bundesbank, but also – quite practically – allows us to make better forecasts.

Summarizing the above, the traditional macroeconomic approach assumes that the Bundesbank would prefer to focus on economic variables only. Section 4 has shown that this is not the case, pressure from organized groups does plays an important role. In this section we have demonstrated that our understanding of the factors influencing monetary policy can be improved even more if we add public support to the traditional public choice model. Pressure is (at least partly) offset and the estimated reaction function has an error term with an endogenous variance. In periods of high support, this means lower deviations from the optimal monetary policy, compared to the 'public choice'-type of reaction functions. We can make more accurate forecasts of the Bundesbank's policy if we account for the public support it enjoys.

6 Implications for the ECB

The literature has identified two main factors influencing monetary policy: Economic variables, but also pressure from government or interest groups. We have investigated a third factor: Public support. We have seen that the Bundesbank not only has been under severe pressure from all major German pressure groups, but also that public pressure led to lower interest rates than would have occured if monetary policy had only been based on economic needs. At the same time the Bundesbank enjoyed broad support often from the same pressure groups. This shows that pressure groups are heterogenous. Furthermore, we have seen that pressure triggers off supportive actions.

Our regression analysis shows that if we account for public support, pressure from interest groups becomes less important. Also, the variance of the error is reduced, compared to previous reaction function, which means that we can make more accurate predictions about the Bundesbanks monetary policy. Neglecting public support simply does not give a complete picture of the factors influencing monetary policy.

Our findings also have strong implications for the future of European monetary policy. High support is warranted, as it allows the ECB to concentrate more on economic needs. Is is likely that the ECB will enjoy a similar degree of support?

First, there are no indications why European pressure groups should be less heterogenous as German pressure groups. Therefore we might expect that broad support is offered if the ECB is under pressure. Second, there is the 'national

factor': if European monetary policy does not perfectly fit the need of a country (and it probably will never perfectly fit the needs of all member countries), then the entire population of this country, which translates into all pressure groups from one country, could demand a change in the monetary policy. If the current policy stance fits the needs of other countries better, we can expect support from these countries.

Clearly, support for the ECB will also depend on (a) people's believes about prospects for the economic situation and (b) support for the European Union in general. Here the latest Eurobarometer survey shows a relatively positive picture:[24] the majority of people take a favorable view of membership of the European Union, as 50% of citizens consider it to be a good thing (+1% in comparison with spring 2000), whereas 14% take the opposite view. In each of the Member States, positive views outnumber negative views, and there was an increase in positive opinion in four Member States. In reply to the question about the benefit derived from membership of the Union, 47% of citizens think that their country has benefited, while 32% take the opposite view. Perhaps even more important is that 55% of Europeans support the single currency, whilst 37% are against it.[25]

To conclude, so far we have no reason to believe that pressure groups will be less heterogenous in the broader European context than within a single country. In the EMU support has an additional dimension, that is it will not only consist of different pressure groups within a country, but will most probably also be spread between countries. Our conclusion is therefore a positive one: we do not expect that the ECB will enjoy less support for its policies than national central banks, instead it is quite likely that pressure from one sector and/or one country will provoke strong supportive reaction from other sectors and/or countries. Thus we believe that the support for sound monetary policy at the European level is not smaller, but higher than at the national level, which allows the ECB to focus on economic needs more than on pressure from different interest groups.

[24]The Eurobarometer survey No 54 was conducted in November and December 2000 among more than 16 000 citizens of the European Union. All results were taken from the website of Eurobarometer survey 54, http://europa.eu.int/comm/dg10/epo/eb/eb54/highlights.html.

[25]Other European institutions also showed increasing rates of approval: the level of confidence in the Commission, which stood at 40% in spring 1999 and 45% in the previous Eurobarometer survey, rose to 46% in autumn 2000. The level of confidence in the Commission exceeds 50% in eight Member States. At the same time, Europeans are optimistic about the prospects for the employment situation. 30% of citizens consider that it will improve in 2001 (+ 4% in one year).

Appendix

A.1 The economic data set

The economic data was taken from the CD-ROM of the Deutsche Bundesbank (1998a). We use the following series: Day-to-day interest rate, consumer price index and the unemployment rate for West Germany. Growth rates are computed as the change in the log of the raw series and have been detrended if necessary. All computed series are stationary.

A.2 The data from the newspapers

Both data sets for the Bundesbank's monetary policy were build during a stay at the *Hamburgisches Welt-Wirtschafts-Archiv* (HWWA archive) in Hamburg, Germany. Gathering the data was done by screening all articles related to the Bundesbank or monetary policy in the newspapers 'Frankfurter Allgemeine Zeitung' (FAZ), 'Handelsblatt' (HB) and 'Die Welt'. For each article the following characteristics were noted: The main actors, the main statements ('who wants what') and the date of appearance. Each article was classified, based on the following origins:

- Government and opposition in parliament.
- Commercial banks (commercial banks, bank organizations and statements from the stock market) and savings banks (savings banks and credit cooperatives).
- Export-oriented trade associations (*Bundesverband der Industrie* and *Bundesvereinigung der Arbeitgeber*) and domestic-oriented trade organizations (*Deutscher Industrie- und Handelstag* and the Chambers of Commerce).
- Trade unions,
- Public opinion (journalists, council of economic advisors, economic research institutes, supra-national organizations such as the IMF), consumers (*Sparer-Schutzvereinigung*) and other opinions or unspecified sources (such as 'The Bundesbank is asked to lower the interest rates' or 'The demand for monetary ease becomes more frequent').

For the 'pressure index' articles that expressed the demand for more contractionary monetary policy were counted as +1, articles demanding a looser monetary stance were counted as -1. For the 'support index' we counted all articles expressing approval of current Bundesbank policy as +1. Both time series then consist of the simple sum of the pluses and, in the former case, minuses.

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