

The Monetary Policy Decision Process in the Federal Republic of Germany

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I. Introduction

In theoretical analysis and econometric models monetary policy is generally treated as being exogenously determined. It is assumed that the central bank operates in the public interest, i.e., that it tries to realize the main goals of economic policy simultaneously: stabilization of the price level, full employment, high growth rates of real GNP and balance of payments equilibrium.

In more recent approaches both the exogeneity of monetary policy decisions and the public interest hypothesis have been questioned. Central banks and their behavior are incorporated into the general economic and political process. This implies that central banks do not react independently with respect to a given economic situation. Deviations between actual and desired goal variables of monetary policy as well as political pressure influence the decisions of the central bank. The question then is, to which disturbances do central banks react and how strong is their reaction pattern. In the following analysis an answer to this question shall be given for the behavior of the Deutsche Bundesbank. In addition, whether the Bundesbank has followed a discretionary or a nondiscretionary monetary policy over the past 22 years will be empirically analyzed.

II. Principles of Monetary Policy: Discretionary versus Nondiscretionary Policy

Monetary policy can be conducted either as discretionary or as non-discretionary policy.

Arguments in favor of a discretionary policy are:

- (1) The economy is a constant deterministic or stochastic system, where the impact of monetary policy actions on the final goal variables is systematically determined.
- (2) Policymakers have a thorough understanding of the structural properties of the economy while private agents are poorly informed about the working of the economy and are unable to learn. Thus, policymakers can exploit the lower information level of the general public.
- (3) Information on target variables of monetary policy is available with

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different lags. Fine tuning is necessary to correct deviations between the course of "fast-speed" and "low-speed" target variables.

- (4) Undesired results that are produced by monetary policy actions within the stochastic system can be corrected by prompt policy actions.
- (5) The central bank is an institution that operates in the public interest and tries to make its operations as transparent as possible.

The proponents of a discretionary policy assert that it achieves a higher performance level of the economy than any other policy. The flexible adjustment to all possible disturbances is considered to be a great advantage of this type of monetary policy. The basic assumption behind this approach is that the private sector of the economy is inherently subject to shocks which are caused by erratic changes of aggregate demand, mainly due to shifts in the marginal efficiency of capital (Keynesian view of the economy).

Nondiscretionary policy can be executed by following some pre-committed constraints or by following a fixed rule of monetary expansion.

Arguments in favor of a nondiscretionary policy are:¹

- (1) The structure of the economy is not fixed. It changes with variations of the policy regime. Economic agents modify their behavior by absorbing information on the effect of policy actions.
- (2) Policymakers do not have a monopoly of information on the structural properties of the economy. Private agents are—on the average—able to learn to understand how the economy works and how it is affected by policy actions. The accumulation of all available information on economic affairs by private agents leads to the rejection of the hypothesis of systematic long-lasting effects of monetary policy on the real sector of the economy.
- (3) A central bank should only have one target variable of monetary policy and not "look at everything."
- (4) A nondiscretionary monetary policy reduces the uncertainty about the current and future course of the development of monetary policy variables and thus improves the framework for the private decisionmaking process.
- (5) Central banks do not act independently of the political process and follow their own preference function. In order to prevent a critical evaluation of their decisions they prefer to issue vague statements concerning their actions and an unconstrained activism.
- (6) Central banks are not interested in a nondiscretionary policy since their degree of public esteem and thus their welfare level increase with the development of new instruments and their more frequent use.

The proponents of a nondiscretionary policy are convinced that this policy stabilizes the economy's long-term real growth rate and the rate of

¹Some of these arguments are derived from Karl Brunner, "The Pragmatic and Intellectual Tradition of Monetary Policymaking and the International Monetary Order," unpublished paper presented at Geldtheoretischer Ausschuß des Vereins für Socialpolitik, Frankfurt, July 1982.

inflation more than a discretionary policy. A nondiscretionary policy allows for higher real growth through reducing information costs on investment and thus leads to more capital formation and a better utilization of the existing capital stock. Discretionary monetary policy itself—according to this approach—causes the destabilization of aggregate demand and the cyclical fluctuations of the economy. The private sector is assumed to be basically stable since the demand for money is a stable function of some predetermined variables. Most of the fluctuations of aggregate demand for goods and services are the result of fluctuations of the money supply caused by the central bank (monetarist view of the economy).

III. The Legal Framework of Monetary Policy in Germany

1. The Main Goal of Monetary Policy as defined by the Bundesbank Law of 1957

The main goal of monetary policy of the Deutsche Bundesbank is to ensure the stability of the price level. This goal is explicitly mentioned in paragraph 3 of the Law of the Deutsche Bundesbank (Gesetz über die Deutsche Bundesbank von 1957).² According to paragraph 3 the Bundesbank has to expand the supply of money and credit with special regard to the stabilization of the price level.

Thus the Bundesbank Law is based on the classical view of economic theory that the main task of monetary policy is to prevent inflation. The focusing on the goal of price stability has its origin in the experience the Germans had with inflation during the twenties. Since then the Germans have become more sensitive towards inflation than people in many other countries.

However, the Bundesbank Law also requires the Bank to support the general economic policy of the government.³ On first glance this could imply that the Bundesbank can be forced by the government to finance an official inflationary full-employment policy. The law itself protects the Bundesbank against such pressure by two qualifications: 1. The support of government policy ends when the goal of price stability is in danger; 2. The Bundesbank makes its decisions independently of the government.

2. The Independence of the Bundesbank

The Bundesbank is a public institution, whose capital is owned by the Federal Government and which provides itself with its own funds. Responsibility for monetary policy decisions rests with the Central Bank Council (Zentralbankrat). This Council consists of 17 members, namely the 6 members of the Directorate of the Bundesbank and the 11 presidents of the (regional) State Central Banks (Landeszentralbanken). The Directorate

²Gesetz über die Deutsche Bundesbank, Frankfurt 1957, paragraph 3.

³Ibid., paragraph 2.

has to execute the decisions of the Central Bank Council. Both the council and the Directorate operate basically independently of the government and other economic and political institutions. However, paragraph 13 of the Bundesbank Law requires the Bundesbank to consult the Federal Government in decisions that have substantial effects on monetary variables. Members of the Federal Government have the right to attend the meetings of the Central Bank Council. Although they are not allowed to vote they can include points on the agenda and can delay decisions by two weeks. Conversely, the Federal Government has to consult the President of the Bundesbank in decisions that affect national and international monetary matters. The last point is of special importance since the Federal Government and not the Bundesbank is officially responsible for all international financial agreements such as those involving the International Monetary Fund or the European Monetary System.

Members of the government have frequently attended meetings of the Central Bank Council while the President of the Bundesbank has only occasionally participated in meetings of the government. From time to time the government has decided on policy matters affecting monetary variables without consulting the Bundesbank.⁴

While the political influence of the government on the operational level of the Bundesbank is rather small its influence through the appointment of the members of the Council and the Directorate is much more significant. The president, the vice-president and the other members of the Directorate are put in power by the Federal Government. Their term is generally eight years but can also be as short as two years. The presidents of the 11 State Central Banks are de facto selected by the State Governments. Their term is also generally eight years.

In the 1950s and 1960s the Federal Government and the State Governments generally appointed qualified central bank experts suggested by the Bundesbank. In the 1970s the Socialdemocratic governments in Bonn as well as in the states broke with this tradition and frequently appointed party members or members of the trade unions without central bank experience. In several cases the appointments have been pushed through against the objection of the Central Bank Council.⁵

The impact of the political appointments on the policy of the Bundesbank is difficult to ascertain.

3. Instruments and Intermediate Target Variables of Monetary Policy

In order to carry out its tasks as specified by the law the Bundesbank has a variety of instruments available in the form of the discount policy, Lombard policy, open market policy and the minimum reserve policy.

⁴Rolf Caesar, *Der Handlungsspielraum von Notenbanken*, Nomos, Baden-Baden 1981, p. 185.

⁵*Ibid.* p. 187

Through the discount policy commercial banks can obtain credit generally for three months from the Bundesbank against commercial drafts. The Bundesbank determines the discount rate and the rediscount quota. The quota is set individually for each bank. An overextension of the quota is not allowed. Only qualified drafts are accepted by the Bundesbank.

Lombard policy is the allowance of credit from the Bundesbank against collateral. Such credits are only granted for very short periods of time (normally not more than seven days); their purpose is to help commercial banks overcome short-run liquidity squeezes. The Bundesbank has the right to abandon the supply of Lombard credits completely. Instead of the ordinary Lombard credit it can introduce a special Lombard credit at a special Lombard rate. This special Lombard credit can be cancelled daily and the rate can be changed daily.

Open market policy consists of the purchase and sale of different types of bonds or papers in the open market. The Bundesbank usually sets the rate at which it buys or sells these papers to commercial banks while commercial banks decide about the quantity they want to hold in their portfolio. However, from time to time the Bundesbank has fixed the quantity of papers it intends to buy or to sell, leaving the determination of the interest rate to market forces. In addition, the Bundesbank can buy open market papers or commercial drafts from commercial banks under special repurchase agreements (*Offenmarktgeschäfte über Wertpapiere mit Rückkaufsvereinbarung*). In the recent past this instrument of monetary policy has become more and more important.

Minimum reserves are imposed on the deposits of all credit institutions including branches of foreign banks. Only a few institutions like the postal office, the social security system, insurance companies and the Bundesbank itself are exempted. Reserves must be held on deposits of nonbanks and foreign banks with a maturity of less than four years. Minimum reserve rates are differentiated with respect to maturity. For demand deposits the maximum rate is 30 percent, for time deposits it is 20 percent and for savings deposits it is 10 percent. For nonresident deposits the Bundesbank can impose a reserve ratio up to 100 percent. If the minimum reserves are below their required level, commercial banks have to pay a penalty.

Almost all the Bundesbank's tools are nondirigistic in nature. Tools like credit-rationing, fixing interest rates on credits and deposits or direct capital controls are not available to the Bundesbank. In Germany monetary policy operates by influencing the conditions in the market for short-term assets. The Bundesbank controls bank liquidity, money, and credit mainly by changing the relative prices of assets.

The collection of monetary policy instruments as set forth in the Bundesbank Law of 1957 has so far proved to be very adequate; as such, the introduction of basically new instruments has not been necessary. With their given tools the Bundesbank was able to handle even difficult situations in the sixties and seventies.

In the seventies the Bundesbank found it necessary to change its inter-

mediate target variable of monetary policy. Up to the early seventies the liquidity ratio of commercial banks served as the main intermediate target variable. The Bundesbank interpreted an increase of this ratio as an expansionary situation and a decrease as a restrictive situation. In periods of relatively stable interest rates bank liquidity was a relatively reliable indicator of monetary policy. By focusing on bank liquidity the Bundesbank was for a long time able to provide the economy with a supply of money and credit that allowed for high rates of real growth while generating only very modest rates of inflation. With the severe disturbances of the international economy caused by the United States within the Bretton Woods System in the late sixties and early seventies the Bundesbank increasingly lost its control over bank liquidity and the monetary aggregates. As a consequence, the rate of inflation reached a level of more than 7 percent in 1973. The main goal of Bundesbank policy was heavily in danger. Therefore, with the breakdown of the Bretton Woods System in 1973 the Bundesbank took quick initiative in order to fight inflation. At the same time the Bundesbank shifted its intermediate target variable from bank liquidity to central bank money. As part of this new approach, since 1974 the Bundesbank has announced the planned annual growth rate of central bank money in advance.

IV. Actual Behavior of the Bundesbank since 1960

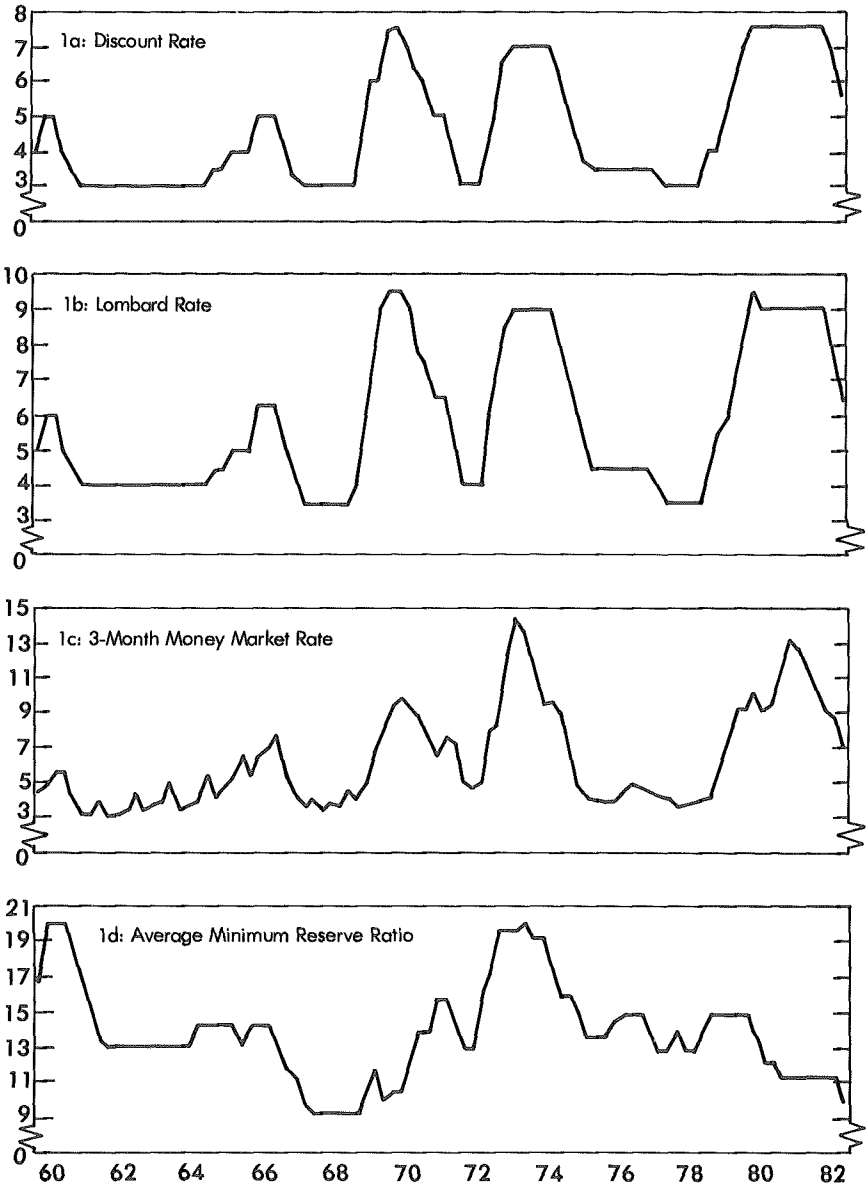
1. The Development of Instruments, Indicators and Target Variables of Monetary Policy

In the period under consideration, the Bundesbank applied the various instruments of monetary policy intensively. One of the most important instruments has been the discount rate. Decreases or increases in this rate have a significant announcement effect on the economy as they indicate the trend of general monetary policy or shifts of this policy. The discount rate has been varied much more frequently in the period since 1969 than in the sixties. In addition, the range of variation was much wider in the latter period than before. In the first decade the discount rate oscillated between 3 percent and 5 percent; in the following period the lowest rate was 3 percent but the highest rate was 7½ percent. In the seventies restrictive as well as expansionary policies were carried out much more intensively than before (Chart 1a). On the average, between 1960 and 1982, the discount rate has been 4.5 percent.

The Lombard rate has followed a pattern very similar to the discount rate. Both rates have almost always been changed simultaneously in the same direction. However, the Lombard rate has fluctuated somewhat more strongly, varying from 3½ percent to 6¼ percent up until 1969 and from 3½ percent to 9½ percent in the following period (Chart 1b). The Lombard rate has generally been somewhat higher than the discount rate (averaging 5.7 percent in the period under consideration). The reason for this is that

Chart 1

Development of Instrument Variables of Monetary Policy 1960 - 1982



Source: Deutsche Bundesbank

the Bundesbank wants to warn commercial banks which are borrowing through the Lombard window that they should pursue a more careful credit policy. Usually, commercial banks only borrow through the Lombard window when cheaper and more convenient facilities of refinancing are no longer available.

Open market policy has played and continues to play an important role in the fine tuning of bank liquidity, central bank money and short-term interest rates in Germany. The institutional framework and the handling of this policy in practice has been drastically changed by the introduction of open market papers in combination with repurchase agreements in 1973. Since then, the Bundesbank has shifted from a price tender system to a system where price tenders and quantity tenders have been varied in an alternating fashion in which the Bundesbank has even limited the tender system from time to time. Therefore, it is very difficult to analyze the Bundesbank's behavior with respect to open market policy in the 1970s. It is clear though that open market rates fixed by the Bundesbank cannot deviate too much from short-term interest rates in financial markets. The development of the three-month money market rate is shown in Chart 1c. The chart shows that this rate's pattern is very close to the cyclical movement of the discount rate but that it has fluctuated much more than the discount rate.

Through its minimum reserve policy the Bundesbank tries to equilibrate large-scale shifts in commercial banks' liquidity. If, for example, banks lose reserves due to the transfer of funds abroad, the Bundesbank reduces the minimum reserve ratio. Conversely, if a sizable liquidity inflow to commercial banks occurs, the Bundesbank increases the minimum reserve ratio in order to neutralize this effect. Thus, minimum reserve policy is not intended to contribute primarily to policies relating to the growth of central bank money but instead to contribute to more stable liquidity on the part of commercial banks. The development of the average reserve ratio is shown in Chart 1d.

During the sixties and up to 1973 bank liquidity was the leading target variable of monetary policy in Germany. The Bundesbank tried to control the stock of liquid assets available to commercial banks rather than central bank money or the money supply. The theoretical concept behind this approach is that bank liquidity affects interest rates and the credit supply which, in turn, influence capital investment and thus real growth. For the Bundesbank the main indicator of commercial bank liquidity has been a variable that consisted of commercial banks' excess reserves, their stock of domestic money market papers, short-term foreign assets as well as their unutilized capacity to borrow through the discount window. However, the definition of bank liquidity and free liquidity reserves has been changed quite frequently by the Bundesbank. The concept was based on the notion that monetary aggregates could be influenced indirectly by the Bundesbank through the control of bank liquidity.

Using bank liquidity as the primary target variable and indicator of

monetary policy has been subject to heavy criticism by many economists in Germany.⁶ The main objections have been that the whole approach has lacked a consistent theoretical underpinning capable of explaining the factors determining the monetary process and furthermore, that it has been unable to take into account commercial banks' portfolio reactions as relative yields have changed. It was shown that under certain circumstances, bank liquidity was a misleading indicator of monetary policy. This became evident in the early 1970s, when the liquidity ratio of commercial banks declined drastically—thus indicating a restrictive monetary policy—while the volume of bank credit and the money stock grew rapidly. The Bundesbank tried to explain this situation with a shift of commercial banks' behavior. The fact was that a strong credit demand pushed up interest rates considerably so that it became profitable for commercial banks to reduce their stock of liquid assets as far as possible to satisfy this demand.

The observed inadequacy of the liquidity concept of the Bundesbank stimulated a reconsideration of the principles of monetary policy within the Bundesbank. More and more members of the Central Bank Council became convinced that the relationship between the money stock and economic activity was much closer and much more stable in the long- as well as in the short-run than the relationship between bank liquidity and the real sector of the economy.⁷ The direct effect of changes in the money stock on aggregate demand was no longer questioned. This was in contrast to the view prevalent in the 1960s that variations of the money stock were endogenous reflections of real economic activity. At the same time the Bundesbank accepted the hypothesis of a relatively stable money demand function, at least in the long run.⁸

The process toward paying more direct attention to the money stock than before was expedited by the accelerating rate of inflation in the early 1970s. In several statements leading members of the Directorate of the Bundesbank declared that in order to control inflation the growth rate of the money stock had to be reduced.⁹ These remarks confirmed that the Bundesbank intended to shift its target variable from bank liquidity to the money stock. However, the implementation of the new concept was delayed until the breakdown of the Bretton Woods System. Only the discon-

⁶Manfred J.M. Neumann, "The Deutsche Bundesbank's Concept of Monetary Theory and Monetary Policy," *Proceedings of the First Konstanzer Seminar on Monetary Theory and Monetary Policy*, (Karl Brunner, Ed.), *Supplement to Kredit and Kapital*, Vol. 1, Berlin 1972, pp. 165-218; Manfred Willms, "An Evaluation of Monetary Indicators in Germany," *Ibid.*, pp. 219-242.

⁷See for example Deutsche Bundesbank, *Längerfristige Entwicklung des Geldvolumens*, *Monthly Report*, Vol. 23 (1971), No. 7, Frankfurt, July 1971, pp. 11-28.

⁸*Ibid.*

⁹Heinrich Irmeler, "Ursachen und Abwehr der Inflation," Deutsche Bundesbank, *Auszüge aus Presseartikeln*, No. 12, Frankfurt, February 1972, pp. 1-10; Helmut Schlesinger, "Der Beitrag der Geldpolitik zur Preisstabilisierung," Deutsche Bundesbank, *Auszüge aus Presseartikeln*, No. 94, Frankfurt, August 1972, pp. 1-6.

Table 1
Annual Target Rates of Central Bank Money Growth, Actual Growth Rates of Central Bank Money and Growth Rates of the Money Stock M_1 (1975–1983)

Year	Target Rates of Central Bank Money Percent	Actual Rates of Central Bank Money ^b Percent	Growth Rates of M_1 ^b Percent
1975	8 ^a	7.8	13.7
1976	8 ^b	9.2	10.4
1977	8 ^b	9.0	8.2
1978	8 ^b	11.4	13.3
1979	6–9 ^a	9.1	7.5
1980	5–8 ^a	4.8	2.3
1981	4–7 ^a	4.4	1.1
1982	4–7 ^a	4.9	3.1
1983	4–7 ^a	—	—

^aTarget in the Course of the Year

^bAverage Annual Growth Rates

SOURCE: Deutsche Bundesbank, *Monthly Report*, Current Issues; Deutsche Bundesbank, Statistical Supplements to the *Monthly Reports* of the Deutsche Bundesbank, Series 4, Seasonally Adjusted Economic Data, Current Issues.

tinuation of the system of fixed exchange rates gave the Bundesbank the chance to control the growth of the money stock effectively. In the spring of 1973 the Bundesbank began direct control of central bank money. Central bank money became the primary target variable of monetary policy in Germany. In December 1974 the Bundesbank, for the first time, announced a target growth rate of central bank money for the year 1975. Since then the Bundesbank has annually declared a target rate in advance and since 1979 a target range of the planned annual rate of expansion of central bank money. The target rate or target range was based on a combination of the following four criteria:¹⁰

- the expected growth rate of production capacity,
- the expected change of capacity utilization,
- the unavoidable increase of the price level and
- the expected change in the velocity of money.

The annual target rates and the actual rates of growth of central bank money since 1975 are shown in Table 1. A comparison of the two makes it clear that—with the exception of 1978—the actual growth rates have not deviated too much from the target rates. Thus, at first glance one of the main goals of the new monetary policy, namely to stabilize the growth rate of central bank money in order to stabilize economic growth seems to have been realized.

¹⁰Deutsche Bundesbank, *Annual Report*, Frankfurt 1975, p. 11.

In order to examine whether monetary policy has been more stable since 1973 than before, the variance of the growth rates of central bank money has been calculated. The variance shows the average squared deviation of the growth rates of central bank money from the average growth rate. In the following analysis the variance is calculated on quarterly growth rates and an eight-quarter-moving-average-basis:

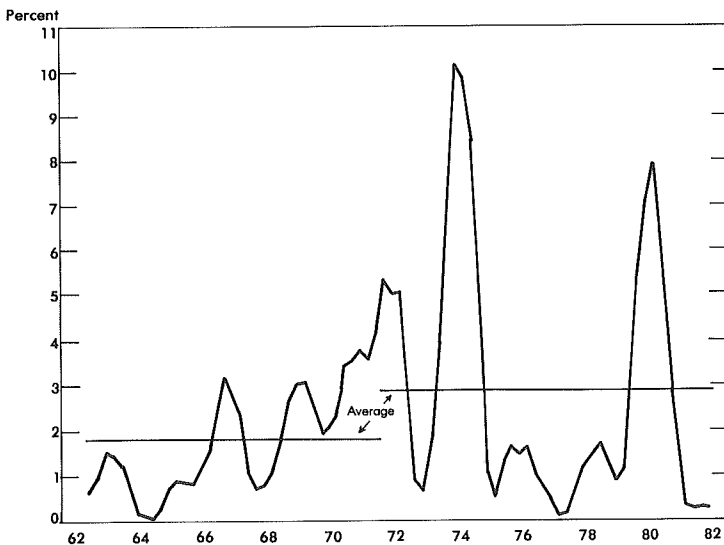
$$\text{VAR}(\hat{\text{CBM}}_t) = \frac{1}{8} \cdot \sum_{i=0}^7 (\hat{\text{CBM}}_{t-i} - \overline{\hat{\text{CBM}}})^2$$

$\hat{\text{CBM}}_t$ = Quarterly growth rate of central bank money to previous year.

$\overline{\hat{\text{CBM}}}$ = 8-quarter-moving-average of growth rates of central bank money to previous year.

The values are displayed in Chart 2. It is obvious that the variance of the growth rates of central bank money fluctuated much more in the seventies than in the sixties. This result is surprising since the direct control and stabilization of central bank money has been declared as the primary goal of monetary policy in the seventies and not in the sixties. If it is true that a greater variance of monetary policy stimulates the economy less than a smaller variance, monetary policy in the sixties was more expansionary than monetary policy in the seventies.

Chart 2
Variance of Growth Rates of Central Bank Money 1962 - 1982



Source: Own calculations

2. Monetary Policy and Internal Disturbances

If seven-month moving averages of central bank money growth rates are applied to distinguish between periods of restrictive and periods of expansionary policy, five periods of restrictive monetary policy and five periods of expansionary monetary policy can be observed between 1962 and 1982 (Chart 3a). On the average the Bundesbank has shifted its policy every 24 months.

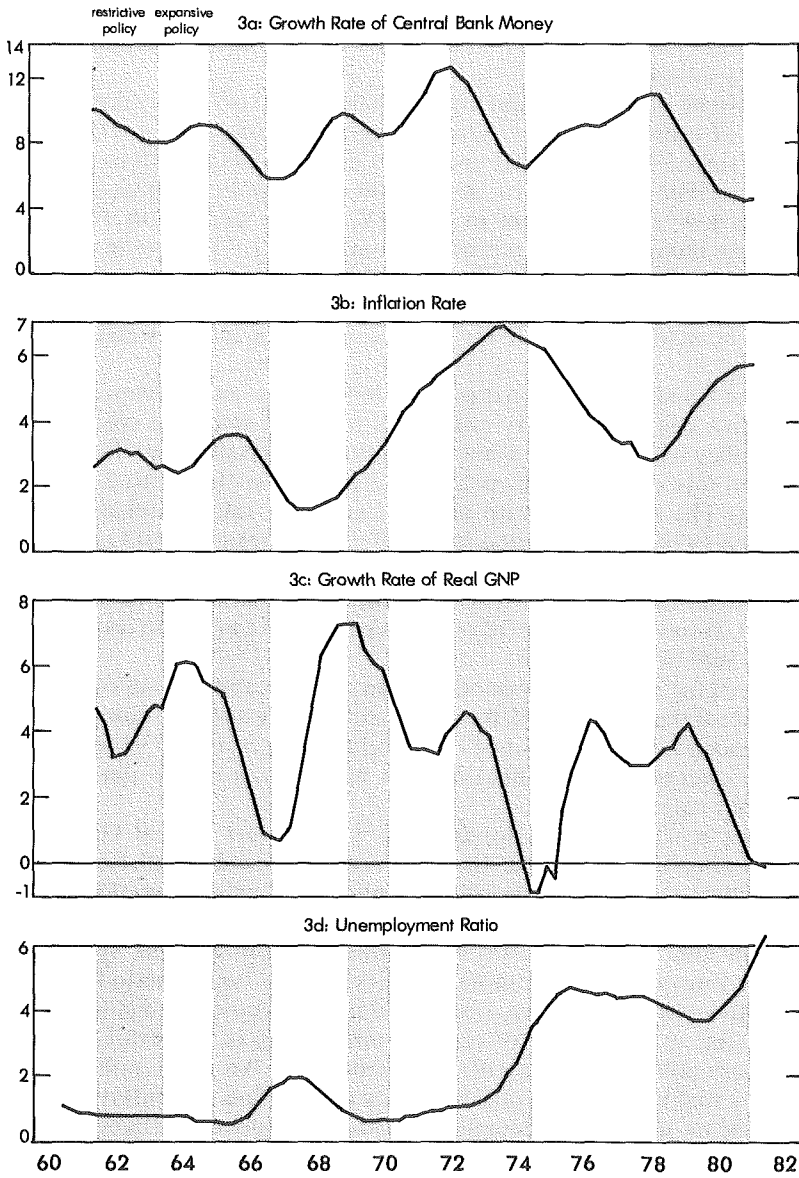
In some periods the fight against inflation has obviously dominated the course of monetary policy. The increasing deterioration of the value of money since 1964 may have induced the Bundesbank to shift to a restrictive course in 1965 II (Chart 3b). As a result of this policy, inflation rates have been as low as 0.7 percent in 1967 IV and 0.9 percent in 1968 II. The following increase in the rate of inflation, up to 7.3 percent in 1973 II was due to the adjustment of the German rate of inflation to the world inflation rate as a consequence of the Bretton Woods System. The Bundesbank cannot be made responsible for the increase in the inflation rate during this period.

The Bundesbank's concern about inflation became obvious by the very restrictive course monetary policy has followed since the spring of 1973. This policy was intended to break inflationary expectations. It brought the inflation rate down from its peak of 7.3 percent in 1973 II to 2.2 percent in 1978 II. The slow downward adjustment of the rate of inflation between 1973 and 1978 was in part due to the oil price increase in 1973 and in part to the fact that the Bundesbank had shifted to an expansionary monetary policy from 1974 onwards. The inflation rate began to rise again at the end of 1978. It took three years of restrictive monetary policy in order to get the rate of inflation to decline.

Looking at the total period with an average annual rate of inflation of 3.9 percent the Bundesbank has not realized its most important goal. Amazingly enough, in the period of managed floating from 1973 I through 1982 IV the average rate of inflation was higher than in the period of fixed exchange rates.

The reaction of the Bundesbank with respect to real GNP is much more difficult to determine than the reaction towards inflation, although the cyclical connection between the growth pattern of central bank money and the growth pattern of real GNP is relatively narrow. At first glance one can conclude that in recessionary periods the Bundesbank systematically shifted towards an expansionary policy and in boom periods towards a restrictive policy. However, from the data it cannot be concluded whether the change in the growth of central bank money is the result of an active monetary policy or a policy of accommodation. An active policy would be a policy that leads to a change in money growth due to a variation of policy instruments while an accommodative policy induces a change in money growth by forces from the real sector of the economy. In recessionary periods money-growth changes are very often the result of a policy of ac-

Chart 3
 Development of Central Bank Money and Internal Economic Variables
 1960-1982
 (7 quarter-moving-averages)



Source: Deutsche Bundesbank

commodation, while in inflationary boom periods they are mainly the result of an active policy of restraint.

With respect to unemployment no systematic behavior pattern of the Bundesbank has been observable. For example, the unemployment rate increased from 0.6 percent in 1966 I to 2.7 percent in 1967 III (Graph 3d). During this period the policy of the Bundesbank was a restrictive one. The Bundesbank did not switch to an expansionary policy before the fall of 1967. On the other hand, the Bundesbank reacted promptly with an expansionary policy to the increase of the unemployment rate in 1974. However, the renewed increase of the unemployment rate in 1980 has not been followed by an expansionary monetary policy since the fall of 1981.

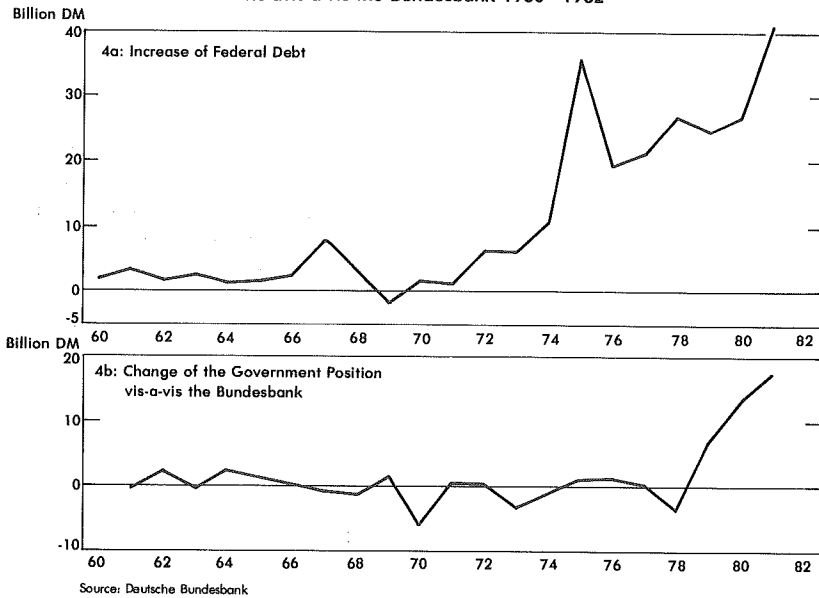
Besides inflation, growth, and unemployment, another variable to which an independent central bank like the Bundesbank could react is the increase in the stock of public debt. Since policymakers in almost all democratic societies tend to spend more than can be financed by taxes, there is considerable pressure on the central bank to finance a portion of the budget deficit by issuing new money. Very often this pressure is not a direct one but comes indirectly through developments within financial markets. In advanced economies, as a first step, budget deficits are typically financed by newly issued bonds which are sold to the commercial banking sector. As a consequence, interest rates increase, private investment is crowded out and the unemployment rate goes up. In order to get interest rates to decline, the government demands that the central bank finance part of the government debt in the open market. For a short period this procedure can lead to decreasing interest rates and stimulate the economy. The long-run inflationary effects are disregarded at that moment. Especially in order to escape this type of government pressure many central banks introduced target variables of money growth in the seventies.

In Germany, the Bundesbank has been relatively successful in resisting government pressure to finance the rapidly increasing budget deficits since the mid-seventies by printing new money.¹¹ Chart 4 shows the annual increase of the federal debt and changes in the net government position at the Bundesbank. This position is the sum of government deposits at the Bundesbank, of short-term government credit and of open-market papers in the hands of the Bundesbank. It can be seen that only since 1979 has the Bundesbank contributed to a large extent to the financing of the public debt. In addition to these amounts the Bundesbank transferred profits of DM 2.3 billion in 1980 and of DM 10.5 billion in 1981 to the Federal Government.

3. Monetary Policy and External Disturbances

In many statements the Bundesbank has declared that external goals are almost as important in its policy decisions as internal goals. External goals are balance of payments equilibrium and exchange rate stability. Both the balance of payments and the exchange rate are influenced by domestic

Chart 4
 Increase of Federal Debt and Change of the Government
 vis-a-vis the Bundesbank 1960 - 1982



monetary policy actions. The current account depends very much on the absorption of the economy. The absorption itself is a function of the expansion of the domestic money stock relative to the expansion of the foreign money stock. A relatively restrictive domestic monetary policy leads to a surplus in the current account while a relatively expansionary policy causes a current account deficit.

In Germany, the relatively expansionary monetary policy compared to the previous period and to other countries from 1974 through 1977—with a brief interruption in 1977—led to a rapid deterioration of the current account from 1978 through 1980. Obviously, the very restrictive course of monetary policy since 1978 was intended to reduce domestic absorption. The result of this policy showed up in the current account in 1980 when the deficit began to decline for the first time after two years. In 1982 after almost four years of deficits the current account switched into a surplus.

The short-term capital account is influenced by interest rate policies. A positive interest rate differential vis-à-vis the domestic economy leads to an inflow of short-term capital while a negative differential induces a capital outflow. For Germany, the most important interest rate differential is the difference vis-à-vis the United States. Substantial net outflows of short-

¹¹See Manfred Willms, "Monetäre Wirkungen der Staatsverschuldung," *Die Bank*, Cologne 1978, pp. 466-471.

term capital from Germany occurred in 1967/68 and 1973/74 (Chart 5c). In both of these periods the short-term interest rates in the United States were above those in Germany. The heavy inflow of short-term capital in 1969/70 and 1976/77 was obviously related to expectations of a revaluation of the mark. Although with its interest rate policy the Bundesbank followed the development of the U.S. interest rate closely (Chart 5a), it was not able to control short-term capital movements effectively.

The behavior of the Bundesbank with respect to exchange rates is best reflected by changes in the stock of foreign reserves. This stock has been relatively stable during most of the period of fixed exchange rates (Chart 5d). It was not before 1970 that the Bundesbank tried to oppose the devaluation of the dollar with substantial interventions in the exchange market. However, even with an increase in the stock of foreign reserves—mainly U.S. dollars—from DM 7.2 billion in 1970 I to DM 73.5 billion in 1973 III, the Bundesbank has not been able to prevent a devaluation of the dollar from DM 3.66 in 1970 to DM 2.40 in 1973 (Chart 5e).

During this period the Bundesbank lost control of the stock of central bank money. This process contributed to the adjustment of the German inflation rate to the international rate of inflation. With the final collapse of the Bretton Woods System in 1973 it was possible to stop the deterioration of the dollar's value and the Bundesbank was able to sell about DM 25 billion of its stock of foreign reserves between the fall of 1973 and the fall of 1975. In late 1975 the dollar once again was under pressure and the Bundesbank again started to buy U.S. dollars. As before, the Bundesbank was not able to prevent the downfall of the dollar.

In 1979 IV the dollar at DM 1.77 reached its lowest level in postwar history. Since then the value of the dollar increased again to about DM 2.50. The statistical data do not indicate that this development has been influenced by the Bundesbank. In total, the data seem to demonstrate that the Bundesbank, despite comprehensive interventions in the exchange market, has never been able to influence the course of the U.S. dollar except in the very short run. The interventions towards exchange rate stabilization only disturbed the course of domestic monetary policy.

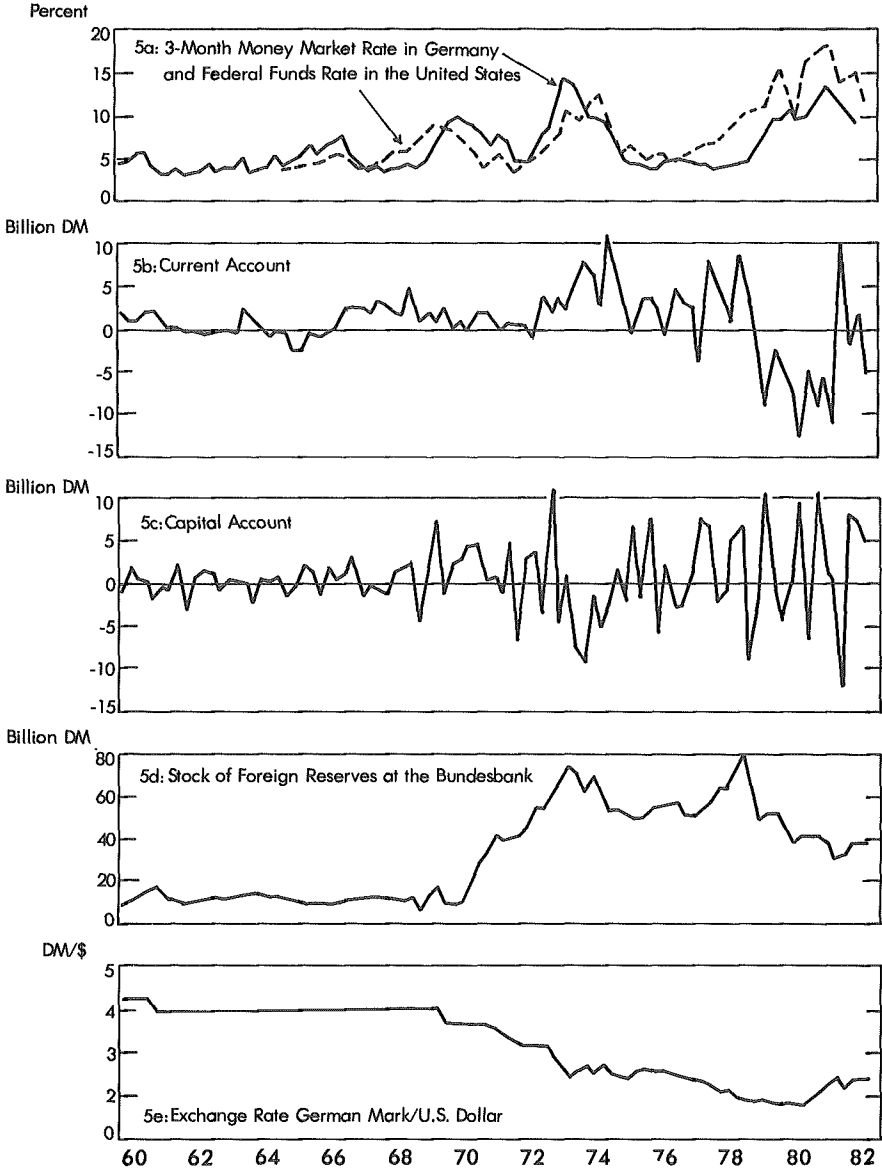
V. Models and Empirical Tests of Bundesbank Behavior

1. Existing Models and Empirical Results

In the recent past two efforts have been made to analyze the monetary policy decision process of the Bundesbank within the context of more rigorous models. A model applied by Basler is based on the theory of bureaucracy.¹² It assumes that the Bundesbank behaves like any other bureaucracy: it tries to maximize its own utility in the form of its prestige and power. This

¹²Hans-Peter Basler, "Die Wirtschaftspolitischen Zielpräferenzen der Deutschen Bundesbank," *Kredit und Kapital*, Vol. 11 (1978), pp. 84–108.

Chart 5
 Development of Short-Term Interest Rate and
 External Economic Variables 1960 - 1982



Source: Deutsche Bundesbank

can best be done by an optimal fulfillment of its legally defined goals. Any deviation from the final goals of monetary policy is considered to be a loss of utility for the central bank and leads to a shift of its monetary policy actions. An underfulfillment of the goals implies a greater loss of utility than an overfulfillment. Furthermore, the central bank tries to reduce disturbances in financial markets. Accordingly, it adjusts the instruments of monetary policy only by small steps.

In the estimated reaction functions various instruments of monetary policy like the discount rate, the minimum reserve ratio, the rediscount quota, and the money market rate are regressed as dependent variables on differences between desired values of final goal variables and their actual standard. Goal variables are the inflation rate, the unemployment rate, the growth rate of real GNP, and the stock of foreign reserves. Desired values of the variables have been taken from statements of the Bundesbank or were estimated individually by the researcher. The regression results indicate that price stability has been the most important goal of monetary policy from 1958 through 1974. Real growth and balance of payments equilibrium were less important goals, while a reaction of the Bundesbank with respect to unemployment could not be observed. The last result may be due to the fact that unemployment—with the exception of 1967—was not a problem during the period under consideration.

In a more general politico-economic approach Frey and Schneider have tried to analyze the behavior of the Bundesbank within the framework of a model that explicitly incorporates the influence of the government and the electorate on monetary policy.¹³ While it is assumed that the Bundesbank is largely independent of the voters' opinion, a conflict situation between the government and the Bundesbank is inferred whenever the Bundesbank is not willing to support the fiscal policy actions of the government. According to the model, such a situation occurs when the government attempts to stimulate the economy by monetary/fiscal policy actions in order to become reelected while the central bank in turn has opposed accommodating procedures in the fear of their subsequent long-run inflationary impact.

In the empirical estimates on Bundesbank behavior instruments of monetary policy like credits of the Bundesbank to the Federal Government, the rate on open market papers, the minimum reserve ratio, the discount rate, and the Lombard rate as dependent variables are regressed on their lagged endogenous variables as well as on variables that measure situations of conflict or nonconflict between central bank policy and government policy. A situation of conflict has been postulated when the Bundesbank increased its credit to the Federal Government while the stock of free liquid reserves of commercial banks decreased. In such a situation government policy was defined as expansionary, while central bank policy was

¹³Bruno S. Frey and Friedrich Schneider, "Central Bank Behavior. A Positive Empirical Analysis," *Journal of Monetary Economics*, Vol. 7 (1981), pp. 291-315.

defined as contractionary. For periods of an increase of Bundesbank credit to the government combined with an increase in the stock of free liquid reserves a nonconflict situation between the central bank and the government was assumed.

The regression results show that the lagged level of every instrument variable had a statistically significant positive effect on its current value.¹⁴ Net credits of the Bundesbank to the Federal Government decreased in situations of nonconflict between the two institutions, i.e., when the Bundesbank could follow its anti-inflationary goal. In situations of conflict, however, the empirical results indicate that the Bundesbank had to follow the direction of government policy. Using the interest rates and the minimum reserve ratio as independent variables, a nonconflict situation led to an increase in interest rates while in situations where the Bundesbank had to adjust its instruments to an expansionary fiscal policy interest rates declined.

Although the models of Bundesbank behavior are consistent and the empirical results are plausible some questions remain with respect to the approaches in general. One question refers to the usefulness of applying instruments of monetary policy as endogenous variables in the regressions. The measurement of the effect of a change of an individual instrument variable on hypothesized situations of conflict or nonconflict is not very meaningful. What matters in monetary policy is not the shift of an individual instrument variable but the development of intermediate target variables like central bank money or short-term interest rates. Another question refers to the selection of an adequate variable to measure monetary and fiscal policy actions in order to separate periods of conflict between the Bundesbank and the Federal Government and periods of nonconflict. The liquidity ratio is certainly not a meaningful indicator or intermediate target variable of monetary policy. In addition, due to the small value of government debt in the hands of the Bundesbank and its relatively small change in the period under consideration this variable can hardly have affected the interest rate or the rate of inflation in a measurable way.

2. Reaction Functions Based on Intermediate Target Variables

In estimating reaction functions of the Bundesbank, the traditional Theil approach is applied in this section.¹⁵ It is assumed that the utility of the Bundesbank increases as the actual goal variables and intermediate target variables of monetary policy approach their corresponding desired values. Diverging developments between actual and desired values imply a loss of utility and lead to policy reactions.

If a low rate of inflation, a high rate of real growth, and a low rate of

¹⁴Ibid, p. 302.

¹⁵See Henri Theil, *Optimal Decision Rules for Government and Industry*, Amsterdam 1964.

unemployment are the main goal variables of monetary policy and if central bank money is the intermediate target variable of the Bundesbank, the following loss function L_t can be specified:

$$(1) L_t = a_1(\hat{P}_t - \hat{P}_t^*)^2 + a_2(\hat{Y}_t - \hat{Y}_t^*)^2 + a_3(U_t - U_t^*)^2 + b(\hat{C}BM_t - \hat{C}BM_t^*)^2.$$

The function is subject to the following constraints

$$(2a) \hat{P}_t = a_{11}\hat{C}BM_t$$

$$(2b) \hat{Y}_t = a_{21}\hat{C}BM_t$$

$$(2c) U_t = a_{31}\hat{C}BM_t$$

where

\hat{P} = growth rate of consumer price index

\hat{Y} = growth rate of real GNP

U = unemployment rate

$\hat{C}BM$ = growth rate of central bank money

Variables with a star are desired variables.

Differentiating equation (1) totally with respect to $\hat{C}BM_t$ leads to

$$(3) 0 = 2a_1(\hat{P}_t - \hat{P}_t^*)a_{11} + 2a_2(\hat{Y}_t - \hat{Y}_t^*)a_{21} + 2a_3(U_t - U_t^*)a_{31} \\ + 2b(\hat{C}BM_t - \hat{C}BM_t^*).$$

Solving equation (3) for $\hat{C}BM_t$ results in the reaction function

$$(4) \hat{C}BM_t = \hat{C}BM_t^* - \frac{a_1 a_{11}}{b} \hat{P}_t - \frac{a_2 a_{21}}{b} \hat{Y}_t - \frac{a_3 a_{31}}{b} U_t + \frac{a_1 a_{11}}{b} \hat{P}_t^* \\ + \frac{a_2 a_{21}}{b} \hat{Y}_t^* + \frac{a_3 a_{31}}{b} U_t^*.$$

Assuming that the desired values of the goal variables are dependent on lagged observed values of the variables in question we obtain

$$(5a) \hat{P}_t^* = f_1(\hat{P}_{t-1}, \hat{P}_{t-2}, \dots, \hat{P}_{t-n})$$

$$(5b) \hat{Y}_t^* = f_2(\hat{Y}_{t-1}, \hat{Y}_{t-2}, \dots, \hat{Y}_{t-n})$$

$$(5c) U_t^* = f_3(U_{t-1}, U_{t-2}, \dots, U_{t-n}).$$

The desired growth of central bank money is considered to be a function of lagged inflation rates, lagged growth rates of real income, lagged unemploy-

Table 2
Intermediate Target Reaction Functions of the Deutsche Bundesbank (1973 I-1982 II)
Cochrane-Orcutt-Procedure

Interme- diate Target Variable	Independent Variables										
	Const.	\hat{P}_t	\hat{P}_{t-1}	\hat{P}_{t-2}	\hat{P}_{t-3}	\hat{P}_{t-4}	\hat{P}_{t-5}	\hat{Y}_t	\hat{Y}_{t-1}	\hat{Y}_{t-2}	\hat{Y}_{t-3}
(1) $C\hat{B}M_t$	18.27 (4.7)	-0.57 (-1.8)	-1.58 (-4.5)	0.91 (2.9)	-0.67 (-2.2)	-0.45 (-1.5)	0.32 (1.2)	-0.08 (-0.7)	-0.14 (-1.1)	0.11 (0.9)	-0.32 (-2.9)
(2) $C\hat{B}M_t$	17.50 (8.8)	-0.78 (-2.9)	-1.56 (-5.5)	1.01 (4.2)	-0.69 (-2.8)	-0.53 (-1.9)	0.25 (1.0)	0.00 (0.0)	-0.07 (-1.0)	0.08 (1.2)	-0.36 (-5.5)
(3) $C\hat{B}M_t$	14.49 (6.4)	-0.80 (-2.4)	-0.90 (-2.4)	0.77 (2.4)	-0.61 (-1.9)	-0.77 (-2.0)	0.62 (1.8)				
(4) $C\hat{B}M_t$	14.58 (3.7)	-0.58 (-1.7)	-1.22 (-3.3)	0.60 (2.0)	-0.49 (-1.6)	-0.62 (-1.7)	0.43 (1.3)				

List of symbols:

$C\hat{B}M$ = Growth Rate of Central Bank Money

\hat{P} = Rate of Inflation

\hat{Y} = Growth Rate of Real Gross National Product

U = Unemployment Rate

\hat{p} = Autocorrelation Coefficient

ment rates and a variable Z that reflects long-run growth of production capacity:

$$(6) \quad C\hat{B}M_t^* = f_4(\hat{P}_{t-1}, \dots, \hat{P}_{t-n}, \hat{Y}_{t-1}, \dots, \hat{Y}_{t-n}, \\ U_{t-1}, \dots, U_{t-n}, Z).$$

Assuming that central bank money will be adjusted only partially with respect to time the following reaction function will be obtained:

$$(7) \quad C\hat{B}M_t = \text{const.} + \gamma_{11}\hat{P}_t + \gamma_{12}\hat{P}_{t-1} + \dots + \gamma_{1n}\hat{P}_{t-(n-1)} \\ + \gamma_{21}\hat{Y}_t + \gamma_{22}\hat{Y}_{t-1} + \dots + \gamma_{2n}\hat{Y}_{t-(n-1)} \\ + \gamma_{31}U_t + \gamma_{32}U_{t-1} + \dots + \gamma_{3n}U_{t-(n-1)}$$

Inter- mediate Target Variable	Independent Variables								R ²	DW	$\hat{\rho}$
	\hat{Y}_{t-4}	\hat{Y}_{t-5}	U_t	U_{t-1}	U_{t-2}	U_{t-3}	U_{t-4}	U_{t-5}			
(1) $C\hat{B}M_t$	-0.12 (-1.3)	-0.03 (-0.4)	-1.10 (-1.9)	0.28 (0.4)	0.51 (0.6)	0.26 (0.3)	-0.01 (0.0)	-0.16 (-0.2)	0.98	2.08	0.90
(2) $C\hat{B}M_t$	-0.10 (-1.4)	0.00 (0.0)							0.97	2.00	0.90
(3) $C\hat{B}M_t$									0.93	1.49	0.88
(4) $C\hat{B}M_t$			-0.75 (-1.3)	0.17 (0.3)	1.32 (2.0)	0.10 (0.2)	0.59 (0.8)	-1.39 (-2.2)	0.96	1.80	0.90

with

$$\gamma_{11} = \frac{a_1 a_{11}}{b} \quad \gamma_{12} = \frac{a_1 a_{12}}{b} f_1 \quad \gamma_{1n} = \frac{a_1 a_{1n}}{b} f_1$$

$$\gamma_{21} = \frac{a_2 a_{21}}{b} \quad \gamma_{22} = \frac{a_2 a_{22}}{b} f_2 \quad \gamma_{2n} = \frac{a_2 a_{2n}}{b} f_2$$

$$\gamma_{31} = \frac{a_3 a_{31}}{b} \quad \gamma_{32} = \frac{a_3 a_{32}}{b} f_3 \quad \gamma_{3n} = \frac{a_3 a_{3n}}{b} f_3$$

$n = 3 \dots$

Equation (7) has been estimated with quarterly data for the 1973–1982 period utilizing the COCHRANE-ORCUTT iteration technique for reducing autocorrelation (Table 2). During this period central bank money has been the most important intermediate target variable of monetary policy. Out of various calculated lag patterns a lag structure of six periods has been selected according to best fit criteria. The reaction functions were regressed on inflation rates, real growth rates of GNP and unemployment rates together as independent variables, and by dropping real growth rates and unemployment rates from other equations.

The results indicate that the Bundesbank's central bank money policy has primarily been a reaction to the development of the inflation rate. This is the only variable for which most of the coefficients have the right sign and are statistically significant. F-tests show that the unemployment rate (equations 1 and 4) does not contribute to the explanation of the growth rate of central bank money. On the other hand—according to the F-test—real GNP has had an influence on Bundesbank behavior, although most of the lagged GNP-variables have a negative instead of the expected positive sign and many coefficients are not statistically significant (equations 1 and 2). According to the F-test equation 2 has the best explanatory power. The equation reveals that over six-quarter periods the Bundesbank reacted to a 1 percent increase in the rate of inflation with a 2.3 percent decline in the growth rate of central bank money.

While central bank money has only become an intermediate target variable of the Bundesbank since the early 1970s, short-term interest rates have been an important intermediate target variable throughout the post-war period. Therefore, reaction functions of the Bundesbank using the three-month money market rate (MMR) as the intermediate target variable have been estimated for the 20-year period 1962 II through 1982 II. As above, the inflation rate, the growth rate of real GNP, and the unemployment rate were used in various combinations as independent variables. The best fit was obtained for a lag structure of three quarters.

The results in Table 3 show that a statistically significant reaction pattern of the short-term interest rate can only be observed with respect to the rate of inflation. Real GNP and the unemployment rate do not significantly contribute to the explanation of Bundesbank behavior as reflected in the short-term interest rate. Therefore, equation 3 explains the behavior of the Bundesbank with respect to the short-term interest rate best. According to the sum of the coefficients the Bundesbank reacted towards a 1 percent increase in the inflation rate by increasing the short-term interest rate by 1.3 percentage points over three quarter periods.

VI. Summary

1. During the period under consideration (1960–1982) the Bundesbank mostly followed an activist rather than a nonactivist monetary policy.

Table 3
Intermediate Target Reaction Functions of the Deutsche Bundesbank (1962 II-1982 II)
Cochrane-Orcutt-Procedure

Intermediate Target Variable	Independent Variables										R ²	DW	$\hat{\rho}$
	Const.	\hat{P}_t	\hat{P}_{t-1}	\hat{P}_{t-2}	\hat{Y}_t	\hat{Y}_{t-1}	\hat{Y}_{t-2}	U _t	U _{t-1}	U _{t-2}			
(1) MMR	2.69 (0.7)	0.67 (2.2)	0.31 (0.9)	0.25 (0.8)	0.05 (0.5)	-0.05 (-0.5)	0.12 (1.2)	-0.46 (-0.6)	-0.34 (-0.4)	0.24 (0.3)	0.88	1.53	0.92
(2) MMR	0.64 (0.3)	0.71 (2.4)	0.33 (1.0)	0.27 (0.9)	0.08 (0.9)	-0.01 (-0.1)	0.15 (1.8)				0.88	1.40	0.88
(3) MMR	3.24 (1.8)	0.66 (2.4)	0.48 (1.6)	0.17 (0.6)							0.86	1.36	0.86
(4) MMR	6.61 (1.9)	0.56 (2.0)	0.44 (1.5)	0.09 (0.3)				-0.45 (-0.7)	-0.68 (-0.8)	0.02 (0.0)	0.87	1.63	0.94

List of symbols:
MMR = 3-Month Money Market Rate
 \hat{P} = Rate of Inflation
 \hat{Y} = Growth Rate of Real Gross National Product
U = Unemployment Rate
 $\hat{\rho}$ = Autocorrelation Coefficient

2. Monetary policy became increasingly more destabilizing in the 1970s than in the 1960s. The fluctuation of central bank money as measured by the variance of its growth rates was much higher during the seventies than in the sixties even though the seventies was a period with floating exchange rates and where target growth rates of central bank money were announced.
3. Due to the heavy fluctuations of central bank money growth the Bundesbank obviously contributed considerably to the cyclical fluctuations of real GNP. An overrestrictive course of monetary policy led to a situation where an over-expansionary policy was felt to be required, which, in turn, soon led to a situation where a restrictive course was followed again. Through this behavior the Bundesbank destabilized the economy instead of stabilizing it.
4. The Bundesbank successfully resisted any pressure to absorb high portions of the government debt that has been growing rapidly since 1974. The increase in the net government position vis-à-vis the Bundesbank since 1978 did not result in an inflationary acceleration of central bank money.
5. The estimation of reaction functions of the Bundesbank is a difficult task. Estimates of reaction functions with central bank money and the three-month money market rate as dependent variables and the inflation rate, the growth rate of real GNP, and the unemployment rate as independent variables show that the most important goal of Bundesbank policy has been the stabilization of the price level. According to the estimates over six-quarter periods the Bundesbank reacted to a 1 percent increase in the rate of inflation with a 2.3 percent decline in the growth rate of central bank money and over three-quarter periods with an increase in the short-term interest rate of 1.3 percentage points.

Discussion

Hermann-Josef Dudler*

At a recent monetary conference in Tokyo, Milton Friedman, the dean of professional central bank critics, confessed privately that among the larger central banks the Bank of Japan and the Deutsche Bundesbank indulged less in monetarist “rhetorics” than others, but did “quite well” policy-wise. His views were corroborated on the spot as Japanese academics sang the praises of their own central bank. Fortunately, no German university teachers of monetary economics had been invited. In Germany academics can best maximize their individual utility function by severely criticising the Bundesbank’s performance. Professor Willms’ paper, which I find deserves to be carefully considered by the Bundesbank, provides a good example of a monetarist subculture indigenous to Germany, that may seem somewhat peculiar to outsiders, but helps us to maintain high stability standards.

I shall refrain from discussing technical or institutional details of Professor Willms’ paper which might only be relevant in the context of an intra-German dialogue. The system of monetary policymaking in Germany is well described in his paper. However, the rather critical view that he takes on the Bundesbank’s performance needs to be more closely examined. Since the author has conveniently summarized his assessment by placing five concise judgmental statements at the end of his paper, I shall take up these key propositions in order to structure my own comments and refer to the most important sections of the main body of the paper in the relevant context.

Before turning to the author’s concluding theses, let me clarify my own position with respect to the academic tradition in which his paper is written. The criteria and analytical framework, which Professor Willms applies to assess the Bundesbank’s performance, are apparently derived from a “strong” or “hard-core” monetarist position. The German inflation rate, real income and employment fluctuations and the declining growth performance of the German economy are attributed almost uniquely to variations in the nominal stock of central bank money for which the Bundesbank is held responsible. It is not clear from Professor Willms’ paper what kind of reaction mechanism—a radical “rational” or more gradually working “adaptive” expectations structure—he sees at work in Germany that links the observed behavior of the money stock with information processing by private agents. But the author, at any rate, seems to adhere to the well-known monetarist tenet that systematic monetary policy action cannot exert any lasting effects on the level of economic activity.

As a central banker I am inclined to take a less neoclassical view of the

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functioning of the German economy. I am uncertain about the strength or dominance of the presumed self-stabilizing properties of the German private sector. I also doubt whether expectations mechanisms are at work that leave no room for efficient corrective monetary action in the face of domestically or externally generated demand and supply shocks.

On the other hand, I must confess that monetary policy in Germany—as elsewhere—may, at times, tend to overreact to perceived inflationary or deflationary disturbances. This does not necessarily reflect a pathological preference function of a central bank bureaucracy operating in an ivory tower. An even more important reason are public opinion pressures, from which the monetary authorities cannot be insulated in a democratic society. Government, parliament, industrial organizations, the financial community and the public at large frequently tend to underestimate the impact lags in monetary management, overestimate its efficiency and demand quick remedial monetary action, whenever a major stabilization goal is missed in the short run.

Virtually all major central banks have adopted monetary targeting techniques as an institutional device that helps to reduce such destabilizing political pressures and commits monetary management to a longer term anti-inflationary orientation. I am therefore in basic agreement with a good deal of the political economy spirit in which Professor Willms' paper is written.

Nevertheless, among Professor Willms' concluding propositions I found only one statement which I would accept without reservation, namely the author's assertion that "the estimation of reaction functions of the Bundesbank is a difficult task." Given this apparent difficulty he seems to have decided to base his assessment of policymaking at the Bundesbank and the German central bank's performance on a fairly limited set macroeconomic data, which he interprets in the light of a well-established German school tradition.

Proposition 1.

The author's first concluding observation that the Bundesbank mostly pursued "activist" policies over the past 20-odd years must be heavily qualified in order to convey a reasonable up-to-date impression of the Bundesbank's policy intentions. Judging from the main text of the paper, the author bases his judgment on a narrow perception of "activist" policies which he equates with the traditional notion of "discretionary" monetary "fine tuning." The empirical evidence presented is more or less confined to his own measurement of variance in central bank money (which statistically and visually exaggerates volatility near turning points), the policy response pattern derived from his monetary policy reaction functions and the impressionistic messages he reads from graphs juxtaposing changes in the central bank money stock with variations in domestic economic variables (cf. Graphs 2 and 3).

Contrary to what the paper asserts, the Bundesbank has hardly ever accepted the notion of a "direct effect of changes in the money stock on aggregate demand." Our own assessment of the relevant magnitude and periodicity of monetary fluctuations incorporates a fairly long time lag from shifts in monetary policy to output changes, since the demand for money is assumed to be fairly interest elastic while private expenditures appear to be relatively insensitive to changes in nominal interest rates.

At the conceptual plane, Professor Willms' conventional distinction between activist "discretionary" and "nondiscretionary" policies guided by a constant monetary growth rate rule is no longer fully adequate to characterize the relevant options concerning the Bundesbank's choice of policy regime in recent years. Since 1979, the Bundesbank establishes a 3 percentage point target band for the money supply, whose upper and lower ends are associated explicitly with specific changing circumstances (such as unpredicted exchange rate and domestic inflationary disturbances or recessionary tendencies). Limited departures from the medium-term mid-point target path were thus made dependent on well-defined events, and the Bundesbank deviated from the targeted middle-path for monetary growth only, when such disturbances actually occurred. The Bundesbank's present policy approach thus combines—within the confines of our limited knowledge of the dynamic response patterns of the German economy—elements of "formula flexibility" or "control-theoretic" procedures with more conventional monetary targeting. The so-called "activist" ingredients in the Bundesbank's policy approach do thus not allow the monetary authorities to act in a completely unconstrained or unaccountable manner or to "look at everything" in an unstructured way. Our policies should therefore not be labelled "discretionary" in the traditional sense.

Proposition 2.

Based on his measurement of variance of the central bank money stock, Professor Willms concludes that monetary policy in Germany became increasingly more destabilizing in the 1970s, although the Bundesbank adopted monetary targeting practices in a floating rate environment. The term destabilizing is qualified mainly to refer to real income volatility, but the paper also suggests that the Bundesbank "has not realized its most important goal" and may also be responsible for the economy's poorer growth performance in the 1970s.

I could not claim with a safe conscience that the Bundesbank always followed an ideal stabilization course. On the other hand, I fail to see any hard evidence in Professor Willms' paper that would support his harsh verdict on what appears to be an outstandingly poor policy record of the German central bank.

With respect to nominal and real income fluctuations, the relevant statistical tests of the Sims and Granger type tend to give inconclusive and poor results with respect to the potential causal role of key monetary aggre-

gates in Germany. Similarly, policy simulations undertaken with the help of the Bundesbank's large-scale econometric model do not suggest that implementation of a rigid monetary rule could have produced better results than the Bundesbank's actual policy behavior in the 1970s.

The deterioration in economic performance experienced in the 1970s is, of course, less of a puzzle to those economists who recognize the influence of the sizable abnormal demand and supply shocks characterizing the 1970s, which Professor Willms' paper hardly ever mentions. Germany entered the 1970s in a state of sharply accelerating inflationary expectations and increasing trade union militancy. The economy suffered not only from the impact of international monetary disturbances, but also from the aftermath of the most excessive postwar boom to which fiscal and monetary overstimulation in the late 1960s had greatly contributed. The world raw material boom and the first oil shock (1973/74), the dollar depreciation crisis (1977/78), the second oil shock (1979/80) and the recent pronounced real dollar appreciation affected the German economy as heavily as other open industrial economies. Apart from these intermediate-run disturbances, the long-run growth performance of the German economy was influenced unfavorably by the rapid expansion of the public sector, international competition from newly industrialized countries and the new world energy situation which rendered part of the capital stock obsolete.

Proposition 3.

Since the paper takes virtually no account of the deteriorating economic environment, in which monetary policy had to operate since the early 1970s, the author sees the economy over the past two decades exposed to what he conventionally calls "cyclical fluctuations" in real GNP, which he links with a self-perpetuating destabilizing four-year monetary policy cycle. For obvious reasons, I find this interpretation of the data unacceptable, especially for the 1970s. If the German monetary authorities were so regularly and almost predictably wrong, one really wonders, why the private sector failed to anticipate the Bundesbank's recurrent, more or less offsetting policy shifts and why agents did not learn to disregard these transitory short-run monetary disturbances altogether.

Proposition 4.

There is one measure of success presented by the author which should please the Bundesbank. In his view the German monetary authorities "successfully resisted any pressure to absorb higher portions" of government debt. I do not believe that this observation, by itself, provides any evidence that the Bundesbank completely refrained from accommodating large fiscal deficits. The Bundesbank Law simply prevents it from lending more than marginal amounts directly to the Government and from buying marketable public debt in order to finance the Government. However, there are no direct legal restrictions on the extent to which the central bank may facili-

tate public sector borrowing from commercial banks by lowering minimum reserve ratios, acquiring foreign and private sector assets, or lending to the banking system against security collateral. There was at least one period—namely the years 1967/68—when the Bundesbank under heavy political pressure facilitated the placement of an abnormally large volume of highly liquid short-term government debt with the banking system. This helped to finance smoothly several ambitious deficit spending programs which contributed to the subsequent period of pronounced overheating.

Proposition 5.

Professor Willms concludes from his work on Bundesbank reaction functions that the overriding concern of Bundesbank policy has been the stabilization of the price level. I cannot quarrel with this general statement. The Bundesbank Law requires the German monetary authorities to follow such a course of action, and our own perception of the stabilization function of monetary management clearly implies that maintenance of a fairly stable and reasonably low inflation rate represents the main contribution that a modern central bank can make to support the smooth functioning of a market economy and maximize public welfare.

In other places in the paper, notably the fourth section, the author indicates, however, that concern about recessions repeatedly produced excessively expansionary policy shifts and that external goals have almost been as important among the Bundesbank's explicit targets as domestic final objectives. It is certainly true that the Bundesbank, at times, took account of output objectives when the long-lasting fight against inflation seemed to be won. The specific decisionmaking model tested by Professor Willms and notably the adopted lag structure may have prevented him from establishing strong empirical evidence on this aspect of Bundesbank policymaking.

The author was principally right to refrain from directly testing the relevance of external goal variables. Contrary to what the paper states in other places, a stable DM/\$- or effective exchange rate and a desired gross interest rate differential between Germany and the United States have hardly ever represented final goals of monetary policy after 1973. The Bundesbank was concerned, however, about the destabilizing output and inflation effects associated with pronounced real exchange rate variations which occurred since the second half of the 1970s. These external disturbances, which destroyed our belief in the "neutrality" or ideal insulating function of a floating exchange rate regime, complicated the independent pursuit of domestic monetary and final economic objectives. They could therefore not be neglected in considering feasible and desirable combinations of internal price and output objectives. A complete model of Bundesbank decisionmaking would have to allow for such complexities.

Generally speaking the rudimentary decisionmaking model presented by the author can hardly adequately represent the economic structure at

which the Bundesbank was looking over the past 10 to 20 years and greatly simplifies the decisionmaking process. The author “explains” quarterly variations in the central bank money stock (and a key money market rate) with the help of lagged observed changes in prices, output, and unemployment, with no explicit allowance being made for exogenous shocks, interdependence between final goal variables, shifts over time in the Bundesbank’s perception of feasible and desirable goal combinations, lags in the transmission of monetary shocks to final objectives and the working of expectation mechanisms or learning processes. The exercise also exhibits some obvious weaknesses from a purely statistical point of view. The reaction function treating the central bank money stock as a control instrument may suffer from simultaneous equation bias, the estimated coefficients and t-ratios for all reaction functions could be distorted due to intercorrelations between independent variables, higher-order autocorrelation cannot be excluded, and the simple lag structure applied may not be appropriate given the likely complexity of the problem at hand.

The fairly extensive list of critical counterarguments which I have presented in the foregoing should, of course, be read with a grain of salt. They represent a response of an interested party in the continuous fruitful dialogue between Bundesbank economists and German academic critics of the central bank’s behavior. Let me repeat that the central political messages of monetarism are well understood and heeded at the Bundesbank, even if we feel that implementation of a rigid monetary growth rate rule does not provide the secular answer to all our problems. What we have achieved since the transition to monetary targeting in 1975 in terms of the level and variability of the inflation rate—our prominent final goal variable—may best be judged from the behavior of the German GNP deflator (which eliminates the distorting direct inflationary impact of external price shocks):

Annual average change in German GNP deflator, 1975–1983 in percent.

1975	1976	1977	1978	1979	1980	1981	1982	1983 ^e
6.1	3.4	3.7	4.2	4.0	4.5	4.2	4.8	3.0

^ePartly estimated.