

# Lessons from West German Monetary Policy

By George A. Kahn and Kristina Jacobson

In the last two decades, inflation generally has been lower and more stable in West Germany than in other industrial countries. This low inflation rate, however, has been accompanied by rising unemployment and, for much of the 1980s, sluggish GNP growth. Both West Germany's success in controlling inflation and its failure to lower unemployment possibly reflect a monetary policy that is different from that of most other industrial countries.

Two features of monetary policy in West Germany set it apart from monetary policy in most other countries. One feature is the intense commitment of the Bundesbank, West Germany's central bank, to the goal of controlling inflation. The weight the Bundesbank gives to this goal is greater than the weight given by

most other central banks. The other feature is the Bundesbank's commitment to monetary targeting as a means of achieving its goals. West Germany was one of the first industrial countries to announce targets for monetary growth and to use these targets as a guide to short-run policy decisions. Furthermore, West Germany has continued to rely heavily on monetary targets in the conduct of policy even as financial market deregulation has led some other countries in recent years to deemphasize monetary targeting.

This article examines the contribution of the Bundesbank's monetary policy to West Germany's economic performance. The article argues that the goals of the West German Bundesbank and its strategy of controlling monetary growth have resulted in low inflation, but perhaps at the cost of persistently high unemployment. The first section of the article explains how the Bundesbank's monetary targets reflect its primary goal of keeping inflation low. The second section reviews the

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Bundesbank's experience in implementing its strategy of controlling monetary growth. The third section examines how pursuing the goal of low inflation may have contributed to persistently high unemployment.

### **The goals and monetary targets of the Bundesbank**

The Deutsche Bundesbank Act of 1957 established the Bundesbank "to regulate the amount of currency and credit in circulation . . . with the aim of safeguarding the currency."<sup>1</sup> In the last two decades, the Bundesbank has interpreted its mandate primarily to require controlling inflation and, as a secondary goal, to maintain a stable foreign exchange value for the deutsche mark. Ultimately, the Bundesbank defines controlling inflation as price stability, implying little or no increase in the price level. To achieve its primary and secondary goals, the Bundesbank establishes targets for monetary growth. This section discusses the goals of controlling inflation and maintaining exchange rate stability, and shows how these goals are reflected in the targets the Bundesbank sets for monetary growth.

#### *Primary goal of controlling inflation*

The Bundesbank emphasizes controlling inflation over any other goal. The priority West Germany places on price stability differs from the multiple goals of U.S. monetary policy, which include high employment, sustainable economic growth, price stability, and external

balance, any of which may be emphasized at a given time.<sup>2</sup> Although the Growth and Stability Act of 1967 commits the West German government to these same goals, the Bundesbank ultimately is responsible for price stability over all else.<sup>3</sup>

The Bundesbank's mandate in large part reflects German hyperinflation following the world wars. After each war, Germany experienced severe inflation rates, effectively destroying the value of savings of two generations of Germans.<sup>4</sup> Some observers believe these periods of hyperinflation were due to the German government's use of the central bank to finance the wars. Such experiences increased the national desire for a central bank independent of the government.

The Bundesbank is legally independent of the West German government but must support the federal government's economic policy to the extent the policy does not conflict with controlling inflation. The federal government and the Bundesbank are required to consult with each other. For example, members of the federal government may participate in deliberations of the Central Bank Council, the ultimate policy-making body of the Bundesbank, but not vote on policy decisions. Similarly, Bundesbank

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<sup>1</sup> *Deutsche Bundesbank Law*, 1957.

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<sup>2</sup> These goals of the Federal Reserve are expressed in the Federal Reserve Act of 1913, the Employment Act of 1946, and the Full Employment and Balanced Growth Act of 1978.

<sup>3</sup> *The Economist*, "A Survey of the West German Economy," February 4, 1984, p. 5.

<sup>4</sup> Peter Koenig, "Seven Men on the Twelfth Floor," *Euromoney*, March 1988, p. 68; and Robert Gordon, *Macroeconomics* (Boston: Little Brown and Co., 1984), p. 364.

members may participate in government economic policy discussions but not vote on policy decisions. The requirement for consultation between the central bank and government facilitates the development of complementary monetary and fiscal policies. However, if fiscal policy conflicts with price stability, the Bundesbank's independence allows it to conduct monetary policy as necessary to control inflation. There is no similarly clearcut legislative mandate for the Federal Reserve or most other central banks to conduct a monetary policy that may conflict with other government policies when necessary to achieve price stability.

### *Secondary goal of exchange rate stability*

The Bundesbank's emphasis on exchange rate stability as a secondary goal relates to West Germany's interdependence with the world economy. By maintaining exchange rate stability, the Bundesbank intends to protect the domestic economy from excessive exchange rate volatility. Through its influence on the value of the mark, the Bundesbank tries to shield the West German economy from foreign exchange rate movements that reflect purely speculative activity. The Bundesbank considers this goal important in part because import prices increase when the mark depreciates, contributing to domestic inflation. Furthermore, a stable exchange rate helps provide stability in the export sector. Because exports have accounted for over one-quarter of West German real output since 1975, they have been a substantial contributor to economic growth. Thus, the Bundesbank's stabilization of the mark indirectly contributes to real output stability.

Both West Germany's interdependence with

the world economy and the mark's role as an important world currency have contributed to West German participation in various exchange rate agreements. One example is West Germany's membership in the European Monetary System (EMS), an organization of several European countries established in part to keep exchange rates between member country currencies within specified ranges. In response to its explicit commitment to the EMS, the Bundesbank frequently has adjusted interest rates or intervened in the foreign exchange market to influence the mark's value relative to other EMS currencies.

Over the years, the Bundesbank has also intervened in the foreign exchange market at various times to influence the mark's value relative to the dollar. This intervention has been guided in part by implicit agreements with other industrial nations, such as the 1987 Louvre Accord, to stabilize the dollar. In response to these agreements, the Bundesbank has taken actions that might have been inconsistent, at least in the short run, with controlling inflation. For example, in 1987 an appreciation of the mark called for the Bundesbank to ease policy, while the goal for inflation called for tightening policy.

### *Relationship of monetary growth targets to policy goals*

The Bundesbank's annual monetary growth targets are yet another reflection of its commitment to controlling inflation. The Bundesbank began targeting monetary growth in 1975 in response to relatively high inflation. By setting annual monetary growth targets, the central bank intended to confirm its commitment to price stability. Over long periods of time, the

price level is directly related to the money supply. Thus, the Bundesbank can control inflation by controlling monetary growth. To control inflation the Bundesbank sets fairly precise targets for monetary growth.

*Formulation of targets.* The Bundesbank sets its annual monetary growth targets to accommodate economic growth compatible with long-run price stability. The Bundesbank bases its annual monetary growth targets in large part on the expected average annual growth in potential real production and the price level. For example, the Bundesbank based its 3-6 percent target range for monetary growth in 1988 on a projected 2 percent increase in potential real production and a 2 percent increase in the price level.<sup>5</sup> The sum of these two projected growth rates falls just below the 4.5 percent midpoint of the 1988 monetary growth target range.

To determine the suitability of the monetary growth targets in light of current economic developments, the Bundesbank reviews its monetary growth targets at midyear. However, the Bundesbank has never revised a monetary growth target at midyear. The Bundesbank's unwillingness to revise its targets because of short-run economic developments reflects its primary commitment to controlling inflation.<sup>6</sup>

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<sup>5</sup> *Report of the Deutsche Bundesbank*, 1987.

<sup>6</sup> The Bundesbank has changed the definition of its money growth target period. In 1975 the Bundesbank targeted money growth on a December-over-December basis. However, because this method exaggerated temporary factors, from 1976 to 1978 the Bundesbank targeted money growth on a year-over-year basis. In 1979 the Bundesbank began targeting money growth on a fourth-quarter-over-fourth-quarter basis in response to money growth above target. Bharat Trehan, "The Practice of Monetary Targeting: A Case Study of the West German Experience," *Economic Review*, Federal Reserve Bank of San Francisco (Spring 1988), pp. 30-34.

The Bundesbank has carried out its commitment in large part by gradually reducing targeted monetary growth. The Bundesbank's targets for monetary growth declined from 8 percent in 1975 to a 3-5 percent range in 1985, reflecting the central bank's growing intolerance of inflation. Through 1984 the Bundesbank's monetary growth targets reflected an allowance for unavoidable inflation, which the central bank described as price increases due to price-related decisions already built into the economy.<sup>7</sup> The Bundesbank's unavoidable price increase allowance, however, was consistently below the expected inflation rate. In 1985 the Bundesbank determined that significant progress toward price stability had been made. Since then the Bundesbank's annual monetary growth targets have reflected an inflation allowance primarily due to statistical uncertainty in price level measurement.<sup>8</sup>

In setting its annual monetary growth targets, the Bundesbank at times has considered special factors, occasionally adjusting its targets in response. These considerations generally have reflected changes in the relationship of money to economic activity and assumed changes in employment and capacity utilization.<sup>9</sup> For example, the Bundesbank slightly raised its 1989 target in part to account for an apparent

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<sup>7</sup> *Report of the Deutsche Bundesbank*, 1984 and 1985.

<sup>8</sup> One problem is that price indexes do not always capture quality changes. Thus, an increase in the overall quality of goods and services produced may be misconstrued as a price increase.

<sup>9</sup> *Deutsche Bundesbank Special Series*, No. 7, pp. 94-95; *Report of the Deutsche Bundesbank*, 1979 and 1983; and *Monthly Report of the Deutsche Bundesbank*, December 1988.

long-run increase in the rate of monetary growth needed to sustain any particular level of economic activity.

*Precision of targets.* The Bundesbank targets only one monetary aggregate rather than multiple aggregates, committing the Bundesbank to a single goal. By setting a single target consistent with the goal of price stability, the Bundesbank commits itself to achieving price stability. In contrast, targeting several monetary aggregates at the same time could give rise to the perception of multiple and possibly inconsistent policy goals. For example, one monetary target could be consistent with price stability but not with strong economic growth. Another target could be consistent with strong economic growth but not price stability. Thus, because the central bank could not achieve both goals, it would have the discretion to choose which of the targets and associated economic goals to achieve.<sup>10</sup> This discretion could lead to public confusion about the central bank's preeminent goal. With only one target, the Bundesbank does not have this discretion, and the public can easily understand the rationale for short-run policy decisions.

By setting monetary growth targets that are relatively narrow, the Bundesbank further reinforces its commitment to achieving monetary growth consistent with controlling inflation. Establishing narrow targets limits the flexibility of monetary policy to respond to unexpected

economic developments. From 1975 through 1978, and again in 1989, the Bundesbank set monetary growth targets as single rates rather than as ranges. However, from 1978 through 1988 the Bundesbank set target ranges to allow some flexibility to address unexpected economic developments, such as exchange rate movements. To clearly communicate its monetary policy intentions while establishing target ranges, the Bundesbank generally announced where within a stated range it would aim monetary growth.<sup>11</sup> For example, in 1979 the Bundesbank announced that it would target monetary growth toward the lower bound of its target range to minimize the possibility of rising inflation given the strength of economic activity and the weakening of the mark against the dollar.<sup>12</sup>

*Experience with targets.* The Bundesbank has achieved its monetary growth targets in 5 of the 14 years it has targeted monetary growth. As Table 1 shows, monetary growth was above its annual target from 1975 to 1978 and from 1986 to 1988, within its target in 1979 and from 1982 to 1985, and slightly below its target in 1980 and 1981. At least until recently, the Bundesbank has offset periods of above-target monetary growth with periods of monetary growth below or well within target. By allowing monetary growth to deviate from target only in the short run, the Bundesbank has addressed unexpected short-run economic developments

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<sup>10</sup> Targeting multiple monetary aggregates at one time also may be useful. In particular, if the behavior of one or more aggregate became unreliable, other aggregates would still be available as guides for monetary policy. The Federal Reserve, for example, has targeted several aggregates at one time.

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<sup>11</sup> In contrast, the Federal Reserve's money growth target ranges generally have been wider than those of the Bundesbank, and the Federal Reserve typically has not specified where within its ranges it expects money growth to occur.

<sup>12</sup> *Report of the Deutsche Bundesbank, 1979.*

—generally exchange rate related—and still managed to control long-run inflation.

The Bundesbank's willingness to tolerate monetary growth outside annual target ranges generally reflects the secondary monetary policy goal of exchange rate stability. For example, in 1986 and 1987 the Bundesbank tolerated above-target monetary growth because of an appreciation of the mark relative to the dollar.<sup>13</sup> At that time the Bundesbank was concerned that appreciation of the mark would dampen the strength of the export sector. In response, the Bundesbank cut interest rates and intervened in the foreign exchange market to reduce the mark's value. In 1988 the Bundesbank allowed money to grow above target for the third consecutive year. Such a decision suggests an apparent willingness by the Bundesbank to deemphasize for considerable periods the primary goal of controlling inflation.

### Implementing the strategy of controlling monetary growth

To realize its goal of low and stable inflation, the Bundesbank has adopted a strategy of targeting and controlling monetary growth. While other central banks have adopted similar strategies, the Bundesbank has been particularly successful in reaching its goal. Part of the Bundesbank's success results from its choice of a monetary aggregate to control. After showing how control over monetary growth indirectly affects inflation, this section shows how the Bundesbank came to target first one, then another, specific monetary aggregate and why

<sup>13</sup> *Report of the Deutsche Bundesbank, 1986 and 1987.*

**TABLE 1**  
**West German money growth,**  
**target and actual**  
(percent, annual rates)

<u>Period</u>	<u>Target</u>	<u>Actual</u>
1975	8.0	9.8
1976	8.0	9.2
1977	8.0	9.0
1978	8.0	11.5
1979	6.0-9.0	6.4
1980	5.0-8.0	4.8
1981	4.0-7.0	3.6
1982	4.0-7.0	6.1
1983	4.0-7.0	7.0
1984	4.0-6.0	4.6
1985	3.0-5.0	4.5
1986	3.5-5.5	7.7
1987	3.0-6.0	8.0
1988	3.0-6.0	6.8
1989	5.0	—

Note: From 1975 to 1987 the Bundesbank targeted the growth of central bank money (CBM), a weighted average of the components of the broad monetary aggregate M3. In 1988 and 1989 the Bundesbank targeted M3 growth rather than CBM growth because of distortion in CBM growth. Precise definitions of the monetary aggregates and the reasons for switching target variables are provided in the discussion on the choice of a monetary aggregate to target.

these choices turned out to be good ones for achieving low inflation.

### *Monetary growth and spending*

Neither the Bundesbank nor any other central bank directly influences inflation. Instead, monetary policy influences inflation indirectly

through its influence on aggregate spending—spending by consumers, businesses, and government on domestically produced goods and services. For example, inflation results whenever increases in spending persistently outstrip the economy's capacity to produce more goods and services. Thus, any increase in the growth of spending beyond the economy's long-run growth capacity will eventually appear as higher inflation. By influencing spending and keeping it in line with the economy's production capabilities, policymakers can indirectly control inflation in the long run.

Like other central banks, the Bundesbank influences spending through its control over the growth of the money supply. For example, when the Bundesbank reduces monetary growth, interest rates and the foreign exchange value of the mark rise. As a result, the growth of interest-sensitive spending and net exports slows. Eventually, this slowdown in spending growth results in a lower inflation rate. Thus, by slowing the rate of growth of specific monetary aggregates, the Bundesbank has slowed the growth of spending and, therefore, inflation.

The Bundesbank has been successful in slowing spending growth because of two characteristics of the monetary aggregates it has chosen to control. First, the controlled aggregates have exhibited a stable, predictable relationship to spending. By controlling growth in these aggregates, the Bundesbank has been able to slow spending growth in a fairly predictable manner. Second, the controlled monetary aggregates have responded predictably to the Bundesbank's policy actions. By influencing the availability of reserves to the banking system and, therefore, the level of short-term interest rates, the Bundesbank has been able to control the growth of specific monetary aggregates.

### *Choice of a monetary aggregate to control*

In West Germany, control over two measures of the money supply—central bank money (CBM) and more recently M3—has served as the means for achieving and maintaining low inflation. The Bundesbank chose to control growth in these aggregates because they exhibit a more stable relationship to spending and interest rates than other available aggregates. The Bundesbank arrived at this decision in 1974 after considering an array of traditional and nontraditional monetary aggregates.

The Bundesbank considered four monetary aggregates as potential target variables—M1, M2, M3, and CBM.<sup>14</sup> The narrowest aggregate, M1, consists of currency and demand deposits. The Bundesbank rejected M1 as a target variable because the deregulation of German deposit interest rates in 1965-67 blurred the distinction between demand deposits, which are included in M1, and short-term deposits, which are not. As a result, interest rate movements caused substitution between M1 assets and assets only included in broader monetary aggregates. This substitution effect implied that changes in interest rates led to swings in the growth rate of M1 that were difficult to predict. Furthermore, changes in the growth rate of M1 were associated more with interest rate changes than with changes in spending. Thus, it was difficult to determine whether movements in M1 were consistent with

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<sup>14</sup> This section draws on Bharat Trehan, "Monetary Policy in West Germany," *FRBSF Weekly Letter*, Federal Reserve Bank of San Francisco, April 22, 1988, and Bharat Trehan, "The Practice of Monetary Targeting . . .," pp. 30-44.

goals for spending growth and inflation.

The Bundesbank rejected M2 as a target variable for similar reasons. M2 consists of M1 plus time deposits of up to four years' maturity. Because savings deposits are excluded from M2, interest rate movements caused substitution between M2 and broader monetary aggregates. This substitution, in turn, made M2 difficult to predict. Just as with M1, it was difficult to determine whether movements in M2 reflected changes in spending growth or interest rates.

To overcome the apparent defects of M1 and M2 as guides for policy, the Bundesbank turned to M3 and CBM. M3, the broadest measure of the money supply, consists of M2 plus savings deposits. Because substitution between time and savings deposits does not affect M3, the Bundesbank believed M3's growth rate would reflect the growth of spending more closely than it would the effect of interest rate changes. However, M3's reliability as a policy guide was questioned because assets used in transactions—assets such as demand deposits and currency—represent only a small proportion of the total aggregate. These transactions balances, which are held primarily for the purpose of purchasing goods and services, are positively related to spending. Most economic theories that relate the money supply to economic activity describe a relationship between transactions balances and spending, not between savings balances and spending. For this reason, the Bundesbank initially chose not to target M3.

Instead the Bundesbank targeted CBM. CBM consists of currency held outside banks plus a weighted average of the components of M3 that are subject to reserve requirements.<sup>15</sup> Thus, in addition to currency, assets represented with differing weights in CBM are domestic demand

deposits, savings deposits, and time deposits. CBM is similar to the U.S. monetary base, although it excludes excess reserves and required reserves on nonresident balances. Because CBM gives greater weight than M3 to relatively liquid assets used in transactions, the Bundesbank considered it a better guide for monetary policy. Starting in 1975, the Bundesbank set targets for CBM and attempted to control its growth.

More recently, however, the Bundesbank has switched to targets for M3 because of distortions in CBM growth resulting from unexplained increases in currency holdings. In 1987, currency in circulation, the largest component of CBM, rose sharply relative to other CBM components. This increase in currency could not be fully explained by changes in interest rates or by increased demand for transactions balances. Therefore, the Bundesbank decided the behavior of CBM may have changed and, as a result of the change, faster CBM growth might be consistent with the same growth in spending as before. Given uncertainty about this behavior, in 1988 the Bundesbank began targeting and controlling growth in M3. This decision was based on the lesser weight given to currency in M3.

### *Reliability of CBM and M3 as policy guides*

Have CBM and, later, M3 turned out to be

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<sup>15</sup> The weight for each of the reservable components is its required reserve ratio in 1974. The ratios are 0.166 for demand deposits, 0.124 for savings deposits, and 0.081 for time deposits. These required reserve ratios reflect each component's degree of liquidity, with the most liquid asset receiving the greatest weight. Although required reserve ratios have changed since 1974, the weights have not.



reliable policy guides that have helped the Bundesbank achieve low and stable inflation? Evidence suggests that the Bundesbank was able to control CBM growth through its control over short-term interest rates from 1975, the year the Bundesbank began targeting CBM, to at least 1986, two years before it switched to M3. Furthermore, CBM growth throughout this period was predictably related to spending. Thus, at least for the 1975-86 period, the Bundesbank correctly foresaw potential pitfalls with M1 and M2 as policy guides and chose to control a more appropriate monetary aggregate. And although the Bundesbank chose to control only CBM, CBM and M3 behaved similarly over this period. Therefore, either aggregate could have served as a reliable policy guide.

Relatively simple measures of the relationship of spending to CBM and M3 provide evidence that CBM and M3 were reliable policy guides from 1975 to at least 1986. For example, the ratio of nominal GNP, a measure of spending, to both CBM and M3 was relatively stable during this period, especially compared with the ratio of nominal GNP to M1 and M2.<sup>16</sup> The stability of this relationship is important

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<sup>16</sup> The ratio of nominal GNP to the money stock is also called the income velocity of money. During the period of CBM targeting, from 1975:Q1 to 1987:Q4, the standard deviation of CBM velocity from trend was roughly 10 percent, and the standard deviation of M3 velocity was roughly 11 percent. In contrast, over the same period the standard deviations of M1 and M2 velocities were roughly 25 percent and 29 percent, respectively. Thus, CBM and M3 velocities were more stable than M1 and M2 velocities. This greater stability implies that CBM and M3 may have been more closely related to the policy goal of price stability than were other aggregates.

because policymakers need to have confidence that the targeted money supply will support a level of spending consistent with policy goals. If nominal GNP is a fairly stable multiple of the money supply, policymakers can generate a level of nominal GNP consistent with policy goals through their control over the money supply.

Although such simple measures as the ratio of nominal GNP to money are useful, a better assessment of the reliability of monetary aggregates as policy guides comes from studying more detailed relationships between monetary growth and spending. Moreover, determining the controllability of monetary growth requires evaluating the effect of interest rate changes on money. As noted earlier, the linkage between monetary growth and interest rates is important because the Bundesbank uses its influence over short-term interest rates to control monetary growth.<sup>17</sup>

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<sup>17</sup> The Bundesbank influences short-term interest rates through open market operations in government bonds and through its control over the short-run supply of borrowed funds. The Bundesbank uses two instruments to control short-term borrowing—the Lombard window and security transactions under repurchase agreements. (The Bundesbank's discount window is used as a regular, long-run source of base money creation.) The Lombard window serves as a source of last resort for banks in covering an exceptional need for base money on a day-to-day basis. Security-based repurchase agreements, introduced in 1979 to replace the purchase of foreign exchange as a medium-run to long-run source of base money creation, serve as a reversible form of short-run money market management. For more information on the operating procedures of the Bundesbank, see Manfred Neumann, "Implementation of Monetary Policy in Germany," paper prepared for the conference on "Monetary Aggregates and Financial Sector Behavior in Interdependent Economies," Board of Governors of the Federal Reserve System, Washington, D.C., May 26-27, 1988.

A recent study examining these more complex relationships provides further evidence that only CBM and M3 were reliable policy guides from 1975 to 1986.<sup>18</sup> By allowing for possible lags in the adjustment of financial portfolios to changes in interest rates and GNP, the study goes beyond a simple comparison of contemporaneous movements in spending and money. The study concludes that, unlike M1 and M2, both CBM and M3 had a stable relationship to income and interest rates at least through 1986.

What about the behavior of CBM and M3 since 1986? Using the estimated relationships from the above study to forecast monetary growth for 1987 and 1988 reveals that the relationships held up for M3, but not for CBM. Forecasts for CBM underpredicted monetary growth in 1987 and 1988 by as much as nine percentage points.<sup>19</sup> This underprediction reflected the failure of estimated relationships to account for the rapid growth of currency since 1986. Thus, it appears that the Bundes-

bank was wise to stop using CBM as a monetary target in 1988.

It is premature to conclude that M3 growth will remain unaffected by either the distortions that have affected CBM or by other distortions, despite the fact that M3 growth appears to have remained predictable on the basis of pre-1987 relationships. Although prediction errors after 1986 are about the same size as prediction errors before 1986, there is no guarantee that the relationships among M3 growth, GNP growth, and interest rates are unchanged. If some fundamental distortion has affected the behavior of M3, as well as of CBM, the Bundesbank's ability to predict and control M3 growth may deteriorate. Thus, it is not at all certain that the Bundesbank's past success at controlling monetary growth will be translated into similar success in the future.

### **The result: low inflation but high unemployment**

Through its control over CBM and M3, the Bundesbank has generally been able to control inflation—but not without a cost. Although the Bundesbank can influence spending by controlling monetary growth, it has little or no control over how lower spending growth is divided in the short run between lower inflation and higher unemployment. By reducing spending growth in the economy, the Bundesbank has lowered inflation, but unemployment has increased.

While the Bundesbank can claim much of the credit for lower inflation, the associated increase in unemployment has been the result of the combined effect of monetary policy, external shocks, and labor market imperfections. Throughout the 1970s and 1980s, a

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<sup>18</sup> Bharat Trehan, "The Practice of Monetary Targeting . . . ."

<sup>19</sup> Error correction specifications of money demand equations for CBM and M3 growth, estimated with data from 1975:Q1 to 1986:Q4 and reported in Table 4 of Bharat Trehan, "The Practice of Monetary Targeting . . . .," were simulated for the period from 1987:Q1 to 1988:Q4. Simulated CBM growth ranged roughly from -2 percent to 6 percent, compared with actual CBM growth of 4 percent to 8 percent. The average error was about 5 percentage points. Simulated M3 growth ranged roughly from 2 percent to 4 percent, compared with actual M3 growth of 3 percent to 5 percent. The average error was about 1 percentage point. Furthermore, from 1975:Q1 to 1986:Q4 the root-mean-square errors of CBM and M3 were 3.0 percentage points and 3.4 percentage points, respectively, while from 1987:Q1 to 1988:Q4 the root-mean-square errors were 5.6 percentage points for CBM and 1.9 percentage points for M3.

number of adverse economic shocks hit West Germany. These shocks included two significant oil price hikes and large swings in the value of the mark against the U.S. dollar. When combined with a monetary policy committed to achieving lower inflation, these shocks pushed up unemployment. After the effects of the shocks wore off, a higher rate of unemployment persisted, possibly because of imperfections in West German labor markets. This section examines how monetary policy has affected inflation and unemployment in West Germany in the 1970s and 1980s. After reviewing the inflation and unemployment experience, the discussion focuses on the response of monetary policy to external shocks and on the role of labor market institutions in causing the persistence of high unemployment.

### *Inflation and unemployment experience*

While inflation has generally fallen during the period of monetary targeting in West Germany, unemployment has generally risen. Charts 1 and 2 relate this inflation and unemployment experience to the behavior of CBM from 1970 to 1988. Although monetary targeting did not begin until 1975, data from earlier years are included to show the economic circumstances that prompted the Bundesbank to begin targeting monetary growth. These circumstances included relatively rapid monetary growth and rising inflation and unemployment.

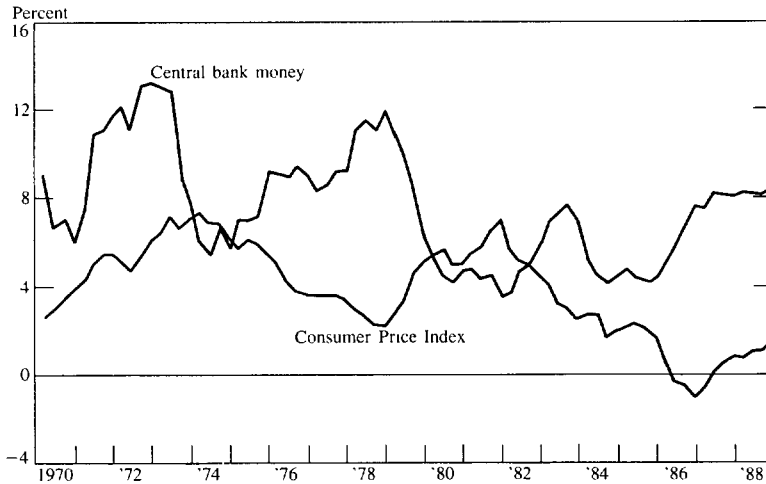
The relationship between the inflation rate, as measured by the consumer price index, and the growth rate of CBM is shown in Chart 1. Viewing the 1970-88 period as a whole, both the growth rate of CBM and inflation tended to decline. Furthermore, over shorter time spans, reductions in monetary growth, such as

from 1979 to 1982, generally preceded periods of falling inflation, such as 1982-87. Similarly, periods of rising monetary growth, such as 1974-79, generally preceded periods of rising inflation. This pattern supports the view that, while the rate of monetary growth largely determines the rate of inflation in the long run, monetary growth affects inflation with long and variable lags.

The relationship between the unemployment rate and the growth rate of CBM is shown in Chart 2. As seen in the chart, the two periods of sharply decreasing monetary growth, 1973-74 and 1979-81, are followed closely by sharp upturns in the unemployment rate. In particular, the deceleration of money from 1973 to 1974 was associated with a subsequent increase in unemployment of roughly four percentage points. Similarly, the deceleration of money from 1979 to 1981 was associated with a subsequent increase in unemployment of roughly five percentage points. Thus, when policymakers in West Germany reduced monetary growth to control spending and inflation, much of the initial effect on the economy was to increase unemployment rather than to reduce inflation.

The effect of monetary policy on unemployment was asymmetric, however. While periods of decreasing monetary growth increased the unemployment rate, periods of increasing monetary growth did little to reduce unemployment. Thus, unemployment increased steadily from 1970 to 1988. What caused this asymmetric effect of monetary policy on unemployment? As argued below, restrictive monetary policy in combination with adverse external shocks caused increases in unemployment. Given well-functioning labor markets, these increases in unemployment might have been

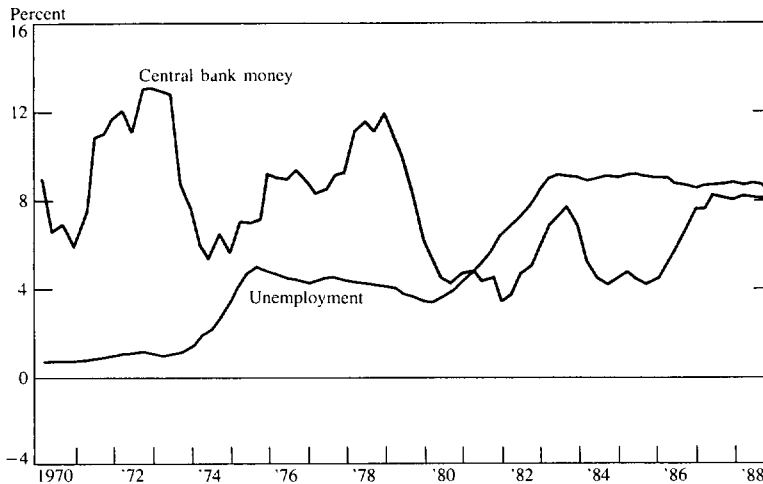
**CHART 1**  
**Monetary growth and inflation**



Note: Central bank money growth and Consumer Price Index growth are percent change from prior year. All data are quarterly.

Source: Bank for International Settlements.

**CHART 2**  
**Monetary growth and unemployment**



Note: Central bank money growth is percent change from prior year and unemployment is average rate. All data are quarterly.

Source: Bank for International Settlements.

temporary. But with West Germany's labor market institutions, these increases in unemployment persisted.

### *External shocks and monetary policy*

A starting point for examining the coincidence of external shocks and monetary policy in West Germany in the last two decades is the switch from a fixed-exchange-rate regime to a floating-exchange-rate regime in the early 1970s. When the Bretton Woods system of fixed exchange rates broke down in 1973, for the first time in the postwar period West Germany was able to pursue a monetary policy devoted primarily to domestic policy goals. Previously, under the fixed-exchange-rate regime of Bretton Woods, the Bundesbank's primary obligation was to fix the exchange value of the mark against the dollar. Now, with monetary policy freed to pursue other goals, the Bundesbank focused on inflation. This focus on inflation, in combination with the adverse economic shocks that have hit the West German economy, explains much of the behavior of inflation and unemployment during the period of monetary targeting.

Many of the same factors that led to the breakdown of the Bretton Woods system of fixed exchange rates led West Germany to begin targeting monetary growth as a means to control inflation. These factors included rapid monetary growth, rising inflation caused by a global economic boom, and accelerating raw materials prices. Under floating exchange rates, West Germany was able to pursue its domestic policy objective of lower inflation. Accordingly, the Bundesbank sharply reduced the growth rate of money.<sup>20</sup>

*The 1973-74 oil price shock.* The slowing of

monetary growth that initially preceded, but later accompanied, the setting of targets for CBM growth immediately followed the 1973-74 oil price shock. The sharp increase in oil prices reinforced the contractionary effect of tighter monetary policy on the real economy, while exacerbating inflationary pressures. As a result, from 1974 to 1975 unemployment in West Germany rose from less than 2 percent of the labor force to just over 5 percent. And inflation gradually began to fall after reaching a peak of about 7 percent in late 1973 and early 1974. By 1975 inflation had fallen about two percentage points.

The commitment of the Bundesbank to restrain monetary growth, even while unemployment was rising, reflected the Bundesbank's goal of lowering the inflation rate. The commitment has also been viewed by some observers as the Bundesbank's investment in obtaining inflation-fighting credibility in a floating-exchange-rate regime.<sup>21</sup> By earning a reputation for fighting inflation, the Bundesbank may have hoped that workers would expect greater price stability in the future and more readily accept moderate wage growth. By keeping workers' inflation expectations low, inflation could not become embedded in labor's wage contracts.

Nevertheless, the Bundesbank raised the growth rate of money just before unemployment

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<sup>20</sup> This section draws on Stanley Fischer, "Monetary Policy and Performance in the U.S., Japan and Europe, 1973-86," NBER Working Paper No. 2475, December 1987; and Bharat Trehan, "The Practice of Monetary Targeting . . .," pp. 41-43.

<sup>21</sup> See, for example, Stanley Fischer, "Monetary Policy and Performance . . .," p. 11.

peaked in West Germany in late 1975. The Bundesbank set a target for monetary growth of 8 percent in 1975, the first full year of monetary targeting. This growth rate was a couple of percentage points higher than monetary growth in the previous year. The easing of monetary policy reflected not only weakness in the economy and below-potential real growth but also strength in the value of the mark against the U.S. dollar. Monetary growth for the year came in above target at 10 percent and led to a slight decrease in unemployment in 1976.

As the effects of the oil shock wore off after 1975, inflation declined steadily, real GNP growth picked up somewhat, and unemployment continued to decline slowly. Central bank money grew between 9 percent and 11.5 percent yearly, somewhat above the target rate of 8 percent. The Bundesbank justified above-target monetary growth on the basis of an appreciating mark, which was depressing West German exports. Although CBM growth was above target, progress was made in lowering inflation. This progress continued until the second oil price shock in 1979. That unemployment did not fall faster came as a surprise to the Bundesbank, given past experience and the then generally accepted view of economists that monetary policy only temporarily affects unemployment.<sup>22</sup>

*The 1979 oil price shock.* From 1979 to 1981, the price of oil more than doubled. The Bundesbank met the second oil price shock with

another sharp reduction in the rate of growth of CBM. The growth rate of CBM fell from 10 percent in the first half of 1979 to 5 percent in the first half of 1980. Higher oil prices forced inflation higher despite monetary restraint. Inflation rose from below 3 percent in 1978 to above 5 percent in 1979, and eventually to over 7 percent in 1981. Although unemployment had been falling at a very modest rate, it began to rise sharply in 1980. Starting from a low of 3.6 percent in 1979, unemployment eventually climbed to 9.3 percent in 1985.

The sharp increase in unemployment, especially after 1981, reflected the Bundesbank's determination to maintain restrained monetary growth in the face of an inflationary shock. As inflation rose, the Bundesbank kept a tight grip on monetary growth. Adding to the Bundesbank's resolve were a depreciating mark and a federal government budget deficit. The combined effect of the oil shock and tight monetary policy sent West Germany into a recession that lasted from 1980 to 1982.

Toward the end of the recession, slower monetary growth gradually reduced inflation in West Germany, but the unemployment cost was severe. The rate of CPI inflation fell four percentage points, from 7 percent in late 1981 to 3 percent in 1983. By another measure, the improvement in inflation was less: the GNP deflator fell from a peak of 4.7 percent to 3.0 percent. Meanwhile, unemployment increased from under 5 percent in 1981 to over 9 percent in 1983. The Bundesbank's willingness to maintain reduced monetary growth after the second oil price shock again reflected its commitment to achieving price stability, even at the cost of higher unemployment. The severe tradeoff between higher unemployment and lower inflation, however, came unexpectedly.

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<sup>22</sup> See, for example, *Report of the Deutsche Bundesbank*, 1976, p. 1, and 1977, p. 1.

Despite an investment in credibility following the first oil shock, the Bundesbank received no payoff after the second oil shock. The unemployment cost of tighter monetary policy remained high.

*Aftermath of the oil shocks and instability of exchange rates.* In late 1982 the Bundesbank temporarily eased monetary policy. Real exports had stagnated and real GNP had declined. Because inflation continued to fall and exchange rates remained relatively stable, the Bundesbank focused for a short time on output growth. But as the mark began to depreciate on foreign exchange markets in 1984, the Bundesbank again tightened monetary policy. With monetary growth remaining below 5 percent throughout 1985, inflation continued its downward trend and unemployment remained high.

After 1985 monetary policy was driven largely by developments in foreign exchange markets. The Bundesbank focused on stabilizing the mark's value as inflation continued to fall from 1985 to 1987. As the mark appreciated against the dollar, the Bundesbank allowed CBM and, later, M3 to grow above target. In 1986, 1987, and 1988, monetary growth exceeded the upper end of its target range.

With inflation picking up in 1987 and 1988, and with three consecutive years of above-target monetary growth, the Bundesbank again has become increasingly concerned about inflation. As a result, growth of M3 might be expected to come close to its target rate of 5 percent in 1989. Meeting this target for monetary growth, of course, depends on the Bundesbank retaining its ability to control growth of M3. The consistency of this target with goals for inflation depends on continued stability of the relationship between M3 growth and spending.

### *Persistence of high unemployment*

Although monetary tightening pushed up unemployment in the short run, other factors have kept unemployment persistently high. As a result, unemployment has failed to decline significantly during periods of relative monetary ease. The causes of the seemingly permanent increase in unemployment in West Germany are not entirely clear, yet several factors can be identified as potentially important. These factors include the unwillingness of West German labor unions to accept moderate wage growth, government programs that make hiring new employees expensive, and unemployment insurance that reduces cost of unemployment to the unemployed.

Although monetary restraint effectively cut the rate of inflation in West Germany, reductions in monetary growth were not as effective in reducing the rate of wage growth. In fact, in the recession of 1980-82 the Bundesbank interpreted surprisingly strong wage growth, along with a depreciating mark, as indicators of continuing inflationary pressure in the economy. Pointing to these factors, the Bundesbank maintained tight monetary policy throughout 1982. Nevertheless, West German real wages climbed because workers received nominal wage increases in excess of the inflation rate. As a result of the rise in real wages, unemployment also rose.<sup>23</sup>

Unemployment has persisted as real wages have remained high relative to workers' pro-

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<sup>23</sup> Stanley Fischer, "Monetary Policy and Performance . . .," pp. 16-19.

ductivity. Powerful trade unions may have been largely responsible for excessive real wages. Union wage contracts cover 32 percent of the labor force. These wage contracts are renegotiated each year in West Germany after extensive discussions among government, labor, and employers. As a result of the information gained from these discussions and from past inflation experience, the negotiated wages reflect accurate inflation expectations. Because workers have resisted reductions in their expected real wage, nominal wages have moved in step with inflation. Excessive real wages inherited from the past therefore tend to remain excessive. As a result, an easing of monetary policy has left real wage growth effectively unchanged. Thus, easier monetary policy has not reduced unemployment.<sup>24</sup>

Another possible reason for the persistence of high unemployment is the high cost imposed on employers of hiring and firing new workers. As a result of a deep recession in the late 1960s, the West German government adopted a number of programs that ultimately may have made unemployment persistence a problem. Aggressive trade unions, with the help of government programs that were supposed to encourage full employment, have used collective bargaining agreements to improve the working conditions of employed workers, or insiders. The result has been to increase the cost of hiring new workers and, thereby, to keep the unemployed, or outsiders, out of the work

force. Furthermore, the nonwage terms of the agreements have become so complicated that changing them has proved costly. For firms that have nevertheless taken on new employees, the cost of firing unproductive workers has also become excessive. Each dismissal requires legal justification, and the courts usually have favored workers in employer-employee disputes.<sup>25</sup>

These labor market institutions have caused unemployment to persist in West Germany—even as the economy recovered from recessions—because firms have been reluctant to expand employment unless they are certain they need a permanent addition to their work force. Furthermore, because of the high costs of hiring and firing, firms have found it advantageous to invest in labor-saving plants and equipment even though such investment might not be economical with a more efficient labor market.<sup>26</sup> Thus, when recessions have in fact caused firms to lay off workers, these workers have become outsiders. As outsiders, they are very difficult to employ. The resulting conflict between the employed, as insiders, and the unemployed, as outsiders, has led to a phenomenon known as hysteresis—the tendency for unemployment to persist in the absence of

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<sup>24</sup> This view is expressed in Michael Bruno and Jeffrey Sachs, *Economics of Worldwide Stagflation* (Cambridge: Harvard University Press, 1985), pp. 217-47.

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<sup>25</sup> Rudiger Soltwedel, "Employment Problems in West Germany: The Role of Institutions, Labor Law, and Government Intervention," *Stabilization Policies and Labor Markets*, Carnegie-Rochester Conference Series on Public Policy (Spring 1988) as quoted in Lindley Clark, Jr., "Why Unemployment Stays So High in Germany," *Wall Street Journal*, May 22, 1987.

<sup>26</sup> Rudiger Soltwedel as quoted in Lindley Clark, "Why Unemployment Stays So High . . . ."



shocks and for adverse shocks to cause permanent increases in unemployment.<sup>27</sup>

Another possible cause of persistently high unemployment in West Germany is an increase in unemployment benefits and social aid. Before 1974, West German unemployment insurance provided a benefit of up to 63 percent of a worker's last wage in the first 12 months of unemployment and a benefit of up to 53 percent of the last wage after 12 months of unemployment. In 1974 and 1975, however, these benefits were increased to 68 percent and 58 percent, respectively. Moreover, every West German with an inadequate source of income is entitled to welfare payments. The size of these payments has increased regularly with changes in the cost of living and general increases in aggregate wealth.<sup>28</sup> These increases in unemployment benefits and social aid have reduced the cost of being unemployed. Regardless of the effects of monetary policy and adverse economic shocks, unemployment may have permanently increased because the unemployed have had a reduced incentive to find work.<sup>29</sup>

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<sup>27</sup> See, for example, Olivier Blanchard and Lawrence Summers, "Hysteresis and the European Unemployment Problem," *NBER Macroeconomics Annual* (Cambridge: The MIT Press, 1986), pp. 15-78

<sup>28</sup> Rudiger Soltwedel, "Employment Problems in West Germany . . . ," pp. 202-06.

<sup>29</sup> This explanation of the rise in unemployment is controversial. One reason is that the increase in unemployment is voluntary. However, unemployment benefits also create a floor below which wages are unlikely to fall. These benefits therefore potentially contribute to wage rigidities that prevent the adjustment of wages to external shocks. See, for example, Michael Burda and Jeffrey Sachs, "Institutional Aspects of High Unemployment in the Federal Republic of Germany," NBER Working Paper No. 2241, May 1987.

To summarize, monetary restraint by the Bundesbank has been effective in reducing inflation in West Germany but this restraint has pushed up the unemployment rate. Once unemployment began to rise, other factors involving labor markets have kept unemployment high. Although these factors are not well understood, they probably include excessive real wages, the high cost of hiring and firing, and increases in unemployment benefits. Thus, while the Bundesbank can be credited with lowering inflation, several factors contributed to high unemployment.

## Conclusions

West Germany has been successful in achieving relatively low and stable inflation. This success is the result of the Bundesbank's primary goal of price stability and its ability to control growth in a monetary aggregate that has maintained a stable relationship to spending. By keeping monetary growth low, the Bundesbank has restrained the growth of spending. Some of the reduction in spending growth has appeared as lower inflation. The rest has appeared as higher unemployment. Because of labor market institutions in West Germany, high unemployment has persisted. Thus, West Germany's success in controlling inflation has perhaps come at the expense of persistently high unemployment.

What can be learned from this experience? First, the Bundesbank's mandate to pursue price stability as a primary goal has helped it to combat inflation even when unemployment has remained high. Second, monetary targeting can be an effective way to control inflation if policymakers can find reliable monetary aggregates to control. Third, a reputation for fighting

inflation does not necessarily reduce the unemployment cost of reducing inflation. Finally, central banks do not operate in a vacuum. It is the combination of monetary policy, other

government policies, external shocks, and labor market institutions that, in the end, determines the inflation and unemployment consequences of programs to control inflation.

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