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THE DEUTSCHE BUNDESBANK'S CONCEPT OF MONETARY POLICY WITH PARTICULAR REFERENCE TO ITS CHOICE OF INTERMEDIATE VARIABLES IN THE PERIOD 1972-1979

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It goes without saying that I am responsible for any errors.

ERRATA

Page 9 line 13 from top
read: methodological

Page 15 line 2 from bottom
delete: $\bar{R}^2$

Page 15 last line
read: $\bar{R}^2 = .9986$

Page 37 line 3 from top
read: or lent for instead of or but for

Page 48 line 2 from top
read: or $\frac{dK}{dE} i - z = 0$

Page 48 line 6 from bottom
delete: $(\frac{dFR}{dE} - \frac{1}{m})$ and add (5a)

Page 48 add footnote: (5a) $\frac{dFR}{dE} - \frac{1}{m}$

Page 67 line 1 from top
read: Its effect might be limited to a change in the composition of bank assets.

ABSTRACT

The maintenance of price stability is the Bundesbank's ultimate objective. The memory of two hyperinflations within a 30-year period has made the fight against inflation of paramount social and political importance. In the Bank's view inflation engenders uncertainties which may jeopardise capital investment on which the competitiveness of German industry as well as full employment and economic growth depends.

The Bundesbank pursues this goal by setting the marginal cost of central bank money required by the banks to finance their expansion. Thus, both the liquidity of the banking system and the cost of borrowing are controlled. This does not necessarily mean that the banks' loan rate of interest is the Bundesbank's intermediate target. In fact, the Bank does not have one single intermediate target. Since the Bank's views of the monetary sector are manifested in the form of an interlocking system of financial variables, the selection of an appropriate intermediate target depends on the actual economic situation.

In this context, the money stock supply (M3) is seen by the Bundesbank as functionally related to bank lending and the accumulation of long-term funds at the banks (monetary capital formation). An increase in interest rates would reduce bank lending, stimulate monetary capital formation and hence reduce the money stock supply (M3). In addition, it would check the utilisation of the money stock supply. This is seen as important because once money has entered the system it may generate unacceptable expenditure flows. To control the growth of the money stock supply, the Bundesbank relies on monetary capital formation, because small stocks of public debt rule out large-scale open market operations. In the Bank's view monetary policy should

aim at keeping the banks' loan rate of interest as closely as possible to the natural rate.

Lags in this Wicksellian transmission process may arise if the banks have ample margins between their loan and deposit rates when a restrictive monetary policy is implemented. As deposit rates adjust sooner than loan rates to a change in market rates, this also blunts the immediate impact of a policy change.

The Bundesbank favours flexible rates of exchange in order to safeguard the financial system against inflows of foreign capital. It would welcome an appreciation of the D-Mark as a contribution to price stability, even though it could result in a loss of employment and exports as it stimulates German business to invest abroad.

Furthermore, the Bank aims at constraining the monetary disturbances arising from public sector deficits and collective wage bargaining by means of its annual monetary growth target. This should serve as a signal to non-banks, which they are supposed to internalise in their decision-making.

During the review period, the effectiveness of these safeguards was small as witnessed by inflows of foreign capital, large public sector deficits and excessive wage settlements. Moreover, the Bundesbank has been confronted with the development of parallel markets, in particular the Eurocurrency markets, in which borrowers can avoid the effects of its constraints.

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CHAPTER ONE DEFINITION AND DISCOVERY OF A QUALITATIVE REACTION FUNCTION

1.1 Purpose of this study

The purpose of this study is to derive the Deutsche Bundesbank's overall concept of monetary policy from its publications in the period 1972-1979. Such an overall concept may be described specifically as a central bank's view on the relationship between the monetary sector and the real economy or its basic belief as to how the monetary sector should be controlled in order to achieve the well-known ultimate goals of economic policy: price stability, economic growth, equilibrium in the balance of payments and full employment.

Since a central bank must react to on-going developments not only in financial markets but also in the real economy, it is important to know from which viewpoint it frames its policies.

The Bundesbank's concept will be assessed with special reference to those variables which it believes are best suited to transmit its policies to the real economy. Inasmuch as monetary theories diverge markedly with regard to the transmission process, the actual preferences of an important central bank will be of interest to monetary economists.

This is, therefore, a case study aimed at identifying the Bundesbank's qualitative reaction function as revealed by its publications during a recent period. The starting year of 1972 was chosen as it was the first year after the so-called Smithsonian Agreement of 20 December 1971, which provided for a re-alignment of exchange rates after the period of floating which had followed the suspension of the U.S.A. dollar's convertibility into gold on 15 August 1971.

1.2 The distinction between theoretical and practical analysis

The broad concept of a central bank's understanding of its role with regard to the monetary sector should not be confused with a monetary theory.

Theoretical analysis is at one remove from practical experience. Thus, monetary theory will analyse systematically money and its functioning, from an economic point of view, by isolating it conceptually from its usual context in life. This procedure implies that theoretical work will always have a somewhat hypothetical character.

Naturally, monetary theory will take account of the specific character of the institutions whose financial behaviour it analyses. A central bank, for example, will not shape its policies so as to maximise the profits of the trading banks, but rather to achieve monetary stability and other economic goals for the country as a whole.

In contrast to monetary theorists, central banks are always confronted with a total situation and not just with its economic aspect in abstraction. This is not to deny that policymakers draw on the results of theoretical analysis. What is denied is that devising and implementing monetary policy is a theoretical activity. It is rather a set of pragmatic actions in a market place. The analysis which central banks carry out in preparation of their policy decisions is based upon a broad concept of the functioning of money in a particular institutional setting. This broad concept is influenced by prevailing views on the nature of society, the task of government and so on. In Western Germany, the views of liberal economists like Walter Eucken have exerted a powerful influence on economic policies. Briefly, they entail a distinction between the institutional framework or the economic order and the economic process. The State should confine itself to setting the conditions for economic life, but should refrain from directing the economic process. This has become known as the concept of the

Social Market Economy [1]. An independent central bank equipped with sufficient powers to enforce price stability through the operation of markets is an essential element of such a social market economy. In the next chapter this institutional setting will be further explored.

1.3 The transmission process of monetary policy

Since it is proposed to study the Bundesbank's concept in particular on the basis of its choice of intermediate variables, that is variables which are believed to transmit the effects of policy instruments to the real economy, some brief notes on the literature about the transmission process are required. Table 1.1 sets out the main views.

Table 1.1 Main theories of Transmission process of monetary policy

Theory	Leading theorist	Intermediate variable	Other characteristics
Credit system approach	Wicksell, Hayek	Loan rate/ natural rate of interest	Austrian theory of capital
Neo-quantity theory	Friedman; Brunner & Meltzer; D. Patinkin	Money supply, monetary base; (desired real balances vs. actual balances)	Portfolio balance theory
Neo-Keynesian theory	Tobin	Rate of interest, (yield on equity/costs of reproducing capital assets)	Portfolio balance theory
Credit availability	Roosa, Duesenberry	Rate of interest, credit rationing	
Liquidity theory	O. Veit, G. Schmölders A. Oberhauser C. Köhler R. S. Sayers	Banks' secondary liquidity	Distinction between objective and subjective liquidity

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[1] Stolper, W. F. and Roskamp, K. W. [1979]. Also Watrin, C. [1979].

In Chapter three it is shown that the Bundesbank's views have been strongly influenced by elements of both the credit system approach and the liquidity theory of money. Since one of the leading liquidity theorists in Germany, Prof. Claus Köhler, has been a member of the Bundesbank Directorate since 1975, a brief explanation of his version of the liquidity theory is in order. The theory of the credit system approach is discussed in more detail in Chapter three. In Köhler's view [2], economic policy should make sure that the demand for real output does not exceed potential real supply. Monetary policy, in particular, should limit the amount of new loans made available to non-banks, such that the volume of demand corresponds to the possibilities of supply of output. The amount of demand deposits and other sources of finance, which are already available to economic subjects, should be taken into account when the permissible amount of new loans is calculated.

This approach considers firstly the factors determining the supply of output, such as the potential labour force (defined as the number of man-hours which can be used per period), the ratio of the existing capital stock to the potential labour force and the capital/output ratio, assuming the capital stock is optimally used. Potential production should then be compared with the real national product. Allowing for unavoidable price increases (e.g. increases in import prices), the ratio of real national product to potential production would indicate whether monetary policy should be stimulating or restricting the supply of finance. The shape of monetary policy measures should, however, depend on the behaviour, both of banks and non-banks, with regard to their financial assets (liquidity).

For the banking system as a whole the critical variable is the amount of potential "central bank money" available to finance an expansion

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[2] Köhler, Claus [1977], pp.323-330.

of bank lending (secondary liquidity)[3]. The central bank should control, therefore, the banks' access to central bank money. Köhler is not dogmatic about intermediate variables, because basically all monetary variables are interrelated. Nevertheless, he prefers the volume of bank lending, for the following reasons:

a. It is closely related to the amount of cash, excess reserve holdings and other sources of central bank money available to the banks.

b. It is influenced by all factors, concerning both banks and non-banks, which together constitute the financial process. This covers the demand for bank loans, expectations, the liquidity of non-banks, profitability of new investment projects etc.

c. Bank lending is one of the main sources of money creation. The recipients of the loans will draw on them to effect payments. As it depends on the dispositions of the recipients of these payments how the expansion of bank lending will eventually be reflected in bank liabilities, bank lending is more readily controllable than the money supply.

d. As bank assets, bank loans are less affected by exogenous factors than bank liabilities such as the money stock.

The German economist Oberhauser [4] has made a similar analysis, in which he compares the supply of central bank money with the demand for bank loans as the latter originates in the real economy. If the central bank were to provide whatever amount of central bank money the banks required, the demand for bank loans would determine the

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[3] The term central bank money was established in 1973; it is defined and discussed in detail in Chapter three.

[4] Oberhauser, A. [1977], pp.208-211.

volume of bank lending. On the other hand, if the central bank were to curb the supply of central bank money, then the banks would have to curtail their lending, so that the demand for bank loans would be constrained by supply. According to the liquidity theory of money, the demand for bank loans originates in the real sector. This, of course, is basically the view of the 'needs of trade' or banking theory of money. The liquidity theory, however, also accepts the truth of the currency principle that it may be necessary to constrain the demand for bank loans and the creation of money. Since, in practice, both factors will operate with varying strength there is a two-way causality between the real economy and the financial sector.

1.4 How to discover a qualitative reaction function

The list of intermediate variables given in Table 1.1 could serve as a guide to the study of the Bundesbank's publications. Which intermediate variables does the Bundesbank prefer for the transmission of its policies and how does it set out to control them? This raises the a priori question whether the Bundesbank has indeed a concept of intermediate variables which corresponds to the theoretical concept as developed by Brunner and Meltzer [5].

Another possibility is to look for basic principles which are being adhered to by the Bank.

A third approach to uncover the Bundesbank's qualitative reaction function is to find out how it conceives of the functions of money. Each of these will be discussed briefly.

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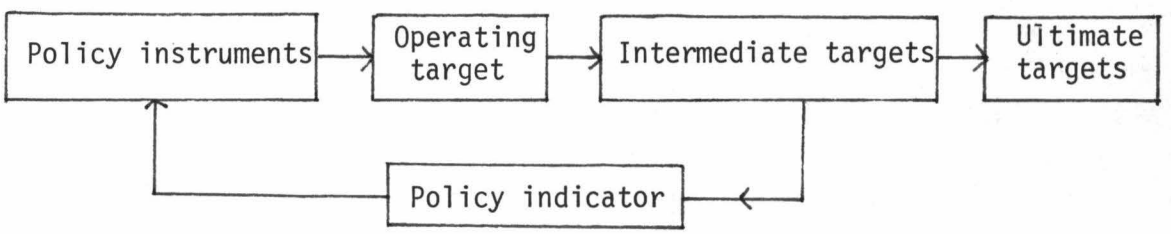
[5] Brunner, K. and Meltzer, A. [1969].

1.5 The theory of economic policy

Tinbergen [6] introduced a distinction between policy instruments and policy targets, with a view to examining how economic policy targets bear upon the use of policy instruments. For example, what sort of policy instruments should a central bank use to stabilise the price level? Brunner and Meltzer [7] have expanded Tinbergen's model by incorporating some intermediate steps between policy instruments and final goals, as set out in Figure 1.1. In view of the popularity of Brunner and Meltzer's innovations, this might well be called the theory of intermediate policy variables.

Figure 1.1

Policy Instruments and Targets



⟶ Direction of causation

Instrument variables are assumed to be under the control of the monetary authorities. They are aimed at an operating target, which is, therefore, also able to be substantially manipulated by the central bank. In view of the uncertain structure of the transmission process, intermediate variables are to take the place of ultimate variables, being predictably related to them. The relationship could take the

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[6] Tinbergen, J. [1952].

[7] Ibid.

form of a stable demand for money function or a predictable term structure of interest rates [8]. The choices made in this respect by a central bank would give a clear indication of its theoretical orientation.

A problem is that intermediate targets are influenced not only by the operating target, but also by the decisions of other policy-makers. For this reason, a central bank requires a policy indicator to judge the thrust of its policies reasonably quickly. Preferably, a policy indicator should only be affected by monetary policies and should be quickly measurable.

In Brunner and Meltzer's view, as represented in Figure 1.1, the monetary authorities are able to handle ultimate variables by remote control via intermediate variables, inasmuch as the latter are interchangeable with the former. Clearly, this requires that the selected intermediate variables are capable of being controlled by policy instruments. Basically, the monetary authorities and their policy instruments are thought of as exogenous to the economic process and, therefore, able to control this process.

The question is whether this is really true.

If policy instruments were part of the economic process, the causality might not be as deterministic as suggested by Brunner and Meltzer's theory.

Interestingly, Brunner and Meltzer's view corresponds well with W. Eucken's distinction between data and economic process [9]. Data are all factors which control the working of the economic process by being exogenous to it. Government policies, for example, trigger

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[8] Havrilesky, Th. [1977].

[9] Eucken, W. [1950], pp.156, 262; Goudzwaard, B. [1970], p.109.

off predictable reactions in a free market economy, but are themselves unpredictable. It is impossible to predict whether, and if so by how much, a central bank would alter its rediscount rate, but if it were to change it by x percent, then one could predict what would happen to prices and investment. Thus the responses of the market economy can always be traced back to changes in the data such as changes in government policy [10]. The economic process is, in fact, thought of as analogous to a completely determined physical or chemical process.

In his theory of economic policy, Tinbergen [11] inverted the categories of policy instruments and policy goals. Using the example just given, he asked how monetary policy instruments should be used to stabilise prices. Although Tinbergen used this inversion as a methodical device, it opened the way, nevertheless, to a recognition that there is an interaction or interdependence between monetary policy instruments and the economic process. So developments in the market place invite reactions from the monetary authorities and vice versa. In its own way, a central bank is just as much part of the 'economy' as a business enterprise. If this is so, then the choice and use of monetary policy instruments cannot be considered as truly exogenous.

The interrelationships between changes in policy instruments and changes in both the monetary sector and the real economy can be complex. A certain event in the market place may cause the authorities to change immediately the setting of their instruments. In other cases, they may act on the basis of changes in intermediate variables, as registered by the policy indicator. Conversely, announced, or even expected, changes in the central bank's policies may have direct effects

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[10] Eucken, W. [1950].

[11] Tinbergen, J. [1952], p.14.

on the buying and selling of financial assets. In general, the transmission process is complex because it depends on the transaction decisions of banks, and lenders and borrowers of funds. The outcome of wage negotiations, for example, would certainly have an imprint on prices, capital investment and the demand for bank loans. In any case it would be difficult to determine to what extent the negotiations were affected by a given or expected monetary policy and how the actual outcome would modify central bank policy.

The main value of Tinbergen's classification of policy variables is that it allows for a distinction to be drawn between financial markets according to the degree of control exercised by the central bank. One can accept the concept of intermediate variables without necessarily having to agree with the idea of a predictable relationship between intermediate and ultimate variables. In the following, the theory of economic policy will be used as a heuristic device to identify the main elements of the Bundesbank's concept of monetary policy.

1.6 A classification of monetary systems

Eucken's methodology [12], no doubt, has had a large imprint on economic thinking in Germany. This appears, for example, from the review article "Monetary theory"in the authoritative German encyclopaedia , Handwörterbuch der Sozial- und Staatswissenschaften, written by the monetary economist Ehrlicher [13]. Without referring to Eucken, Ehrlicher approaches monetary policy in terms of 'pure

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[12] Eucken, W. [1950].

[13] Ehrlicher, W. [1965], pp.231-259.

systems'. He defines such systems as pure forms of techniques of money creation. The underlying view is that of Eucken's 'pure elements' of economic life which can be arranged like the letters of the alphabet into an economic order [14]. It is a view on economics which seems to have been inspired by chemistry. So concrete monetary systems will be combinations of pure monetary systems. Ehrlicher enumerates the following pure systems [15].

a. A commodity system of money creation (gold standard) in which monetary policy is concerned to maintain the external value of money.

b. A credit money system in which the authorities aim at maintaining monetary equilibrium or neutral money.

c. A system of State intervention designed to achieve particular goals such as price stability, full employment and economic growth.

Ehrlicher's description of a credit system of money relies heavily on Wicksell's view that price stability cannot be achieved unless the natural rate of interest equals the banks' loan rate [16]. Apparently, Wicksell enjoys a certain popularity in Germany.

In practice, a monetary system can be organised in such a way that conflicts arise between its pure elements. For example, a system of fixed rates of exchange, when combined with a domestic credit system, would create conflicts if the growth of productivity was diverging between participating countries. The more productive country would develop balance of payments surpluses with inflationary effects.

In Ehrlicher's view [17], a system of flexible rates of exchange

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[14] Eucken, W. [1950], p.166 ff.

[15] Ehrlicher, W. [1965], p.249 ff.

[16] Wicksell, K. [1898/1936].

[17] Ibid., p.252.

would overcome this type of conflict. Later on it will be shown that the Bundesbank shares this opinion. Internal stability would also be jeopardised if the State were to create substantial amounts of money to finance its expenditures. Sooner or later it would be necessary to remove money from circulation, say by means of higher taxes, stabilisation loans (as applied in Germany in 1973) or a currency reform.

The examples given point to the fact that views such as held by Eucken and Ehrlicher have had an impact on monetary thinking in Germany and probably also on the views of the Bundesbank.

1.7 The functions of money

Eucken's methodology is rejected by the Dutch monetary theorist Bos [18]. Instead of approaching economic life in terms of non-existent 'pure forms', like Eucken did, monetary economics should be empirical and examine how money actually functions in a concrete economy.

Since there is no doubting that money fulfils a number of functions, it is important to know how a central bank perceives these functions and how it brings this perception to bear upon its monetary policies. In addition, an empirical examination of the functioning of money during a particular period may serve as an audit on a central bank's performance.

Bos distinguishes three basic, micro-economic, functions [19].

a. Money as a means of payment.

b. Money as a means of preparing for future payments (liquidity or store of value function).

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[18] Bos, P. C. [1969].

[19] Ibid., pp.56-67.

c. Money as a means of determining amounts to be paid (prices defined from a monetary angle).

The significance of function c (pricing function) is that prices are set by economic decisionmakers as amounts to be paid for the purchase of goods and services. Recent history has certainly shown that the pricing of energy products and labour services can have major monetary consequences.

The Bundesbank's concern that employers and unions should not bargain for wage increases which would jeopardise price stability underlines its awareness of the importance of money's pricing function [20].

In general, money is an essential economic tool, which may be used either economically or uneconomically. If it is used properly it will render a maximum of benefits. If it is used uneconomically, it will fail to render the services it is capable of, so that it malfunctions.

Monetary management should strive to secure the best possible use of money.

Since money is an asset which is capable of performing simultaneously a number of distinct, though related, functions, its improper use in one of its functions will have repercussions on the other functions. For example, should money be used excessively as a means of payment, then spending would cause prices to rise and economic subjects would have an incentive to look for substitute stores of value.

An inquiry into the functioning of money should study a wide variety of indicators, related to each function in turn. This approach suggests that what matters eventually is not so much whether the subjective goals of policymakers are attained, but rather whether money has been

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[20] E.g. Bundesbank, AR 1974, pp.12-14.

functioning as well as it should from an economic point of view. The functions of money are much more of a 'universal' than the subjective views of policymakers.

1.8 Closed or open-ended systems?

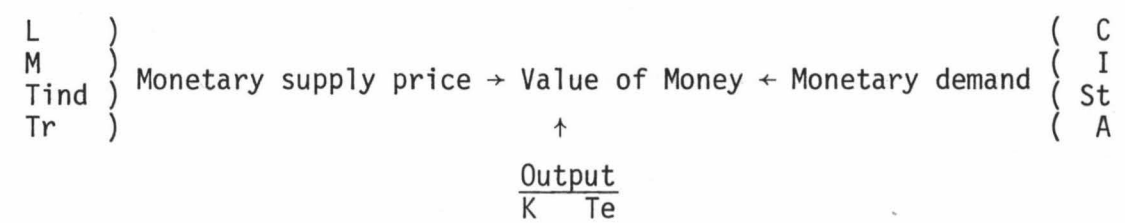
So far three approaches to a central bank's concept have been suggested. First, an examination of its preferred policy instruments, intermediate variables and policy indicator. Second, its view on monetary systems. For instance, does a central bank favour a system of flexible or one of fixed rates of exchange? Third, the central bank's perception of money's functions.

These approaches are not mutually exclusive. Each may contribute insights which cannot be so easily derived from the others.

In this connection, it is of some interest to note Ehrlicher's observation [21] that since the time of the Great Depression theoretical interest has shifted from the construction of business cycle theories as closed systems, moved along by one particular cause to a much more open-ended approach, which tries to classify all factors which bear upon the economy. Thus, the following diagram, as produced by Ehrlicher [22], could indicate all the possible factors influencing the value of money.

Figure 1.2

Factors of the Value of Money



[21] Ibid., p.246.

[22] Ibid., p.241.

where: L = wage level; M = degree of monopoly; Tind = indirect taxes; Tr = terms of trade; K = capacity effect of investment; Te = technological progress; C = demand for consumption goods; I = demand for capital goods; St = state expenditures; A = external trade balance.

The output factor is, of course, associated with employment as well.

If policymakers are indeed averse to basing their actions on one particular theory and, instead, work on the basis of a classification such as depicted in Figure 1.2, then it would be possible to find traces of various theories in a central bank's publications. Nevertheless, there is likely to be one dominating theme, one that accords best with the outlook of the policymakers, the institutional environment in which they are operating, and the prevailing economic situation.

1.9 Comparison with quantitative reaction functions

Once the qualitative reaction function of a central bank is derived, it could, in principle, be used as a basis for a quantitative estimation or modelling.

Quantitative reaction functions, however, tend to take a different form. Potts and Luckett [23] have generalised them as follows:

$$MP = f(U, P, G, B)$$

where MP is some indicator of monetary policy, and the symbols on the right-hand side of the equation are proxies for unemployment, prices, growth, and the balance of payments, respectively.

Reuber [24], for example, fitted the following reaction function for the Canadian monetary authorities, covering the period 1949-1961:

$$\ln M_t = .51 - .09U_t^{-1} + .25 \ln\theta_t + .09 \ln P_t + 1.35 \ln M_{t-1} - .58 \ln M_{t-2} \cdot \bar{R}^2 = .9986$$

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[23] Potts, G. T. and Luckett, D. G. [1978], p.526.

[24] Reuber, G. L. [1964], pp.109-132.

where: t = quarters; ln = natural logarithm; M = money supply; U^{-1} = reciprocal of the percentage of the labour force unemployed; θ = productivity index; P = consumer price index; $\bar{R}^2$ = coefficient of determination corrected for degrees of freedom.

Reuber's procedure was, therefore, to relate changes in the money supply to changes in indicators of ultimate policy goals, apparently assuming that the Canadian monetary authorities had full control over changes in the money supply. In order to arrive at conclusions about the implied trade-offs of the authorities, Reuber derived an equilibrium condition by allowing all lags to work themselves out. This produced:

$$\ln M = 2.20 - .37U^{-1} + 1.08 \ln\theta + .41 \ln P.$$

Reuber then noted that the equilibrium condition revealed, for example:

> the degree of neutrality and accommodation in monetary policy with respect to price changes. Neutrality would imply a regression coefficient of zero; complete accommodation would imply a coefficient of one. [25]

In actual fact, the coefficient was 0.41, indicating that the monetary authorities neither supplied to the full extent the money required to accommodate given price increases nor refused to make any money available to finance such price increases.

This result would have been more interesting if it had been contrasted with an assessment of the authorities' view on the money supply, the interrelationship between inflation and unemployment and so on. In fact, these views should be ascertained before a reaction function is fitted. The reasons advanced for a quantitative approach as sketched are that a central bank's policy statements may be deceptive because policymakers might not carry out their declared policy intentions. Alternatively, they might indulge in an ex-post rationalisation of failures.

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[25] Ibid., p.123.

While there is certainly a core of truth in these reasons, they, nevertheless, do not detract from the fact that a central bank must have a view on its role with regard to both the financial sector and the real economy. The Bundesbank has definitely such a view.

1.10 Basler's classification of quantitative reaction functions

In his doctoral thesis, Basler, a German economist [26], has introduced the following classification of quantitative reaction functions.

Type A (to which Reuber's function belongs) assumes that the desired values of the target variables are constant in time and that the instrument variables are re-set on the basis of observed values of target variables. The influence of past values of the target variables is thought to decline geometrically. No attempt is made to set up a behavioural model of the decisionmaking process.

Type B or revealed preference approach. In these models all instrument and target variables are considered, so that the authorities' preference for particular targets and instruments can be derived.

Basler criticises both the A and B types. In his view, the geometric decline in importance of past target values is unrealistic. As statistical information on the values of target variables during the current period either is not yet available or only in a very provisional form, policymakers might not attach as much importance to it as to the more reliable statistics of past periods.

Secondly, in the course of time the reaction of policymakers to similar deviations from certain targets may diverge, because of changing insights into the structure of the economy due to new theories, to changes in that structure, which have become known, and to changes in personnel, or because negative deviations are appreciated differently

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[26] Basler, H. P. [1979].

from positive deviations. These factors are responsible for unstable reaction coefficients in type A and B functions.

Type C makes no a priori assumption about the lag-structure. A geometrically declining one is just one of the possibilities.

Type D functions have an asymmetric loss function. Negative deviations from target values are given more weight than positive deviations.

Type E reaction functions have a side condition which allows for changes in the ideas of policymakers about the economic structure.

Type F combines types C, D and E. It assumes that the values of the target variables in the current period have no impact on actual policy decisions. The lag rules out simultaneous equation bias.

Basler's reaction functions E and F combine qualitative as well as quantitative factors. This is certainly a positive feature. Numbers as such may be of interest to mathematicians, but in economic life they are only meaningful in relation to defined concepts and variables. The interpretation of quantifications depends, therefore, on qualitative concepts. So monetary authorities will not act exclusively on the basis of numbers. In spite of this recognition, Basler's preferred F function is still circumscribed by the assumption that policymakers attempt to minimise a loss function with implied trade-offs, whereas they might not believe in trade-offs.

1.11 Summary

This study produces evidence that the Bundesbank has a distinctive view on its function as the epicentre of the German financial system as well as on the transmission of its monetary policy to the real economy.

This view should be ascertained as a first step in the identification

of a central bank's reaction function. A quantitative assessment of this reaction function needs to be considered in a qualitative setting. Chapter three, for instance, explains that the Bundesbank believes that price stability is an essential precondition for the attainment of full employment and economic growth. The Bank attempts to achieve price stability by a control of the demand for credit and assumes that there is a relationship between the demand for bank loans and the growth of the central bank money stock.

Since a central bank's views are also shaped by institutional factors, chapter two explores the institutional framework in which the Bundesbank operates. This is followed by an outline of the Bank's concept in chapter three. The Bank's monetary policy in the period 1972-1979 is assessed in chapter four. The findings of chapters two, three and four are drawn together in chapter five to suggest a conjectured representation of the Bundesbank's reaction function.

CHAPTER TWO THE INSTITUTIONAL FRAMEWORK

2.1 The government

The recession of 1967 made the Federal Government aware of its inability to steer the economy in a truly anticyclical manner. The Act for the Promotion of Stability and Economic Growth 1967 was the result. As objectives for economic policy it laid down the simultaneous attainment of price stability, a high level of employment, external equilibrium and steady economic growth within the context of a free market economy. Practically all government institutions not only at federal, but also at state and local government level are bound to strive for these objectives.

To achieve these goals a wide range of policy instruments was provided, covering economic information, fiscal planning and co-ordination, anticyclical regulation of taxation and depreciation allowances, the formation of anticyclical reserve funds and prescriptions regarding government debt.

The importance of fiscal co-ordination is brought out by the fact that the amount of taxes and social security contributions is as high as approximately 50 percent of the national product at factor costs. Consequently, the government is a very important economic decision-maker. Its economic statement, released in January of each year, is a significant publication in which it sets out its economic and fiscal objectives as well as the policies with which it intends to pursue them. In addition, the report discusses the most recent annual report of the West German Council of Economic Experts (university professors) [1].

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[1] Roberts, C. C. [1979], p.83: 'The policy advocated by the Council of Economic Experts is based on the neoclassical theory of price determination and resource allocation, with scant regard for the well known and well founded criticisms levelled at the basic tenets of that theory since the time of Keynes.'

Bi-annually, the Government must produce a report on government subsidies.

In case the Government fears that decisions to be taken by trade unions, employers and local bodies might jeopardise the achievement of one or more of the Act's objectives, it should make information available to the parties just mentioned, so as to enable them to co-ordinate their decisions ('concerted action').

Fiscal planning and co-ordination is the responsibility of an Economic Policy Council and a Fiscal Planning Council. The Bundesbank is allowed to participate in both councils. The Act has also made it possible for the Bundesbank to make specific policy proposals to the Federal Government, although it is not allowed to publicise these.

The Federal Government's and States' access to central bank credit is strictly limited under the Bundesbank Act 1957. The experience of two devastating hyperinflations in a period of 50 years makes this limitation politically binding on the government. The Federal Republic's commitment to a free market economy is also stated in the Foreign Trade Act. Nonetheless, this Act has given wide powers to the Federal Government to intervene in the flows of goods, capital and money if it deems this necessary for domestic reasons.

Should restrictions be called for in matters of capital and finance, then the Bundesbank is to be consulted on the shape of the measures to be taken.

The Federal Government, for instance, was responsible for the so-called 'Bardepot', a measure which required non-banks to deposit a certain proportion of loans raised abroad in non-interest bearing accounts at the Bundesbank. The Bank merely advised on the size of the proportion.

On the whole, in spite of a basic commitment to free markets, economic

and fiscal policy tends to be pragmatic [2].

2.2 External relations

The pragmatic approach is clearly revealed in the Government's policy on capital flows. The Deutsche Mark's convertibility notwithstanding, restrictions on the import of capital have been imposed in order to achieve internal monetary stability.

As the D-Mark was in fact undervalued [3] there were continuously expectations of a revaluation of the D-Mark under the regime of fixed rates of exchange, which prevailed until March 1973. Consequently, the D-Mark became an attractive investment currency. Monetary policies designed to maintain price stability enhanced this attraction. As a result, the Bundesbank found itself frequently in a dilemma. If it raised interest rates to combat inflation, an inflow of foreign capital would raise internal liquidity and thus frustrate its policy. This has served as a justification for various administrative measures against capital imports.

The introduction of a system of floating rates of exchange saw the lifting of most, but not all, of these restrictions in 1974. Since that time foreign financial investment in W. Germany has risen rapidly from DM 90 billion at the end of 1974 to DM 185 billion in the middle of 1979 [4] or from about 9 percent to 13 percent of nominal GNP. Nevertheless, the Bundesbank has, until recently, strenuously resisted

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[2] Stolper, W. F. and Roskamp, K. W. [1979]: 'Germany has pursued a flexible, pragmatic policy without unnecessary ideological blinders.'

[3] Bundesbank, AR 1977, p.41: '... the abandonment of the system of fixed exchange rates cleared the way for the gradual elimination of the undervaluation of the DM, which had previously had the effect of an export subsidy.'

[4] Bundesbank, MR November, 1979, p.26.

any tendency for the D-Mark to become a reserve currency. Its financial markets are too small for such a role. Rapid shifts in and out of D-Marks could cause havoc in Germany's money and capital markets [5]. The emergence in 1979, for the first time in many years, of a current account deficit might soften the Bundesbank's resolve, however. At any rate, in 1979 it was estimated that at the end of 1978 the total amount of DM assets held by foreign monetary authorities was DM 50 billion or about 11 percent of their foreign exchange reserves. The fear of the D-Mark becoming a reserve currency has been responsible for the Bundesbank's refusal to authorise sales of Treasury Bills or Discountable Treasury Bonds to foreigners. For the same reason, it has made an agreement with the banks that the latter will not issue DM bonds with variable interest rates or Transferable Certificates of Deposits denominated in D-Mark. This agreement applies also to the banks' foreign subsidiaries.

2.3 Parallel markets

The Bundesbank's regulation of foreign capital inflows and its control of domestic money markets may be avoided by dealings in the rapidly growing parallel markets for financial claims.

By way of illustration, the case of borrowers' notes may be adduced. Borrowers' notes are financial claims, comparable to promissory letters, usually issued by major borrowers such as mortgage banks and central giro institutions. They have been issued with a term of more than four years. Since in Germany bank liabilities with a term in excess of four years are not subject to minimum reserve requirements, funds raised by such borrowers' notes are relatively cheap for the banks concerned.

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[5] Bundesbank, MR November, 1979, p.32.

For the lenders of the funds the notes are attractive because they are exempted from the withholding (or coupon) tax of 25 percent.

The significant point is that the market for long-term borrowers' notes is not constrained by the Bundesbank and, therefore, parallel to the constrained money markets.

The Eurocurrency market is another major instance of a parallel market.

Euro-banks, that is banks domiciled outside West Germany (including foreign subsidiaries of German banks), by not being subject to German minimum reserve requirements, are able to offer more attractive loan rates to customers than their German counterparts.

Especially in times of restrictive monetary policies in Germany, this stimulates German business enterprises to borrow in the Euro-currency market.

Inasmuch as foreign investors want to hold DM assets, they may prefer the DM liabilities of banks outside Germany to those of German banks, because the latter offer rates which tend to be less attractive, owing to the minimum reserve requirements on the external liabilities of German banks. Moreover, as pointed out above, short-term German securities are not available to foreign investors.

The interest rate differential in favour of Euro-DM loans increases if the foreign demand for DM assets (bank liabilities) increases, for instance, when the D-Mark is expected to appreciate. Conversely, the Eurobanks will be unable in that situation to extend DM loans to foreigners, unless they reduce their interest rates. The resulting reduction in Euro-DM interest rates is, of course, an incentive to German borrowers. Thus, the Bundesbank observed: [6]

> Owing to the close ties between the Euro-market and the German market an influx of foreign funds to Germany is thus in the

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[6] Bundesbank, MR November, 1979, p.30.

end quite possible (with corresponding implications for the exchange rate of the Deutsche Mark or the foreign exchange holdings of the central bank).

The existence of parallel Euro-DM money and capital markets is, therefore, able to frustrate a restrictive domestic monetary policy aimed at reducing the scope of bank lending. This explains why former Bundesbank president, Dr. O. Emminger, referred to these markets as a parallel government [7].

2.4 The banking system

West German banks offer a wide range of services. Roughly speaking, they combine the functions of trading banks, merchant banks and finance companies in Anglo-Saxon countries. They are, therefore, better described as credit institutions or all-purpose banks.

Although the credit institutions range in size from very small to very large, the industry is dominated by the three large commercial banks. Since the currency reform of 1948, competition among banks has been fierce, witness, for instance, the rapid growth in the number of bank branches. So the savings banks have expanded into commercial banking, whereas the commercial banks have ventured successfully into the area of the savings banks. There has also been a strong tendency for small private bankers to be taken over by larger banks.

In addition to the all-purpose banks, there are a few specialised banks, operating mainly in the market for mortgage finance. Building societies may also be mentioned in this respect. It is important to note that some credit institutions which extend long-term loans on the basis of security issues are considered to be banks by the Bundesbank.

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[7] Emminger, O. [1977], p.29.

As far as solvency is concerned, the credit institutions are subject to control by the Federal Banking Supervisory Office and not to the Bundesbank.

The relationship between the credit institutions and non-banks deserves special attention.

It is a peculiar feature of West German banks that they invest in shares and are represented on the boards of the companies in which they have a significant financial stake. They are, in fact, the only dealers in the share market. There is an historic reason for this development.

In the eighteenth century, German industrialists, unlike their British counterparts, could not fall back upon a large and wealthy middle class for the funds they required. Consequently, the banks were called upon to finance the infant industries. The advantage of such a close relationship between banks and industry is that in times of trouble the banks may convert their outstanding loans into equity capital and so stave off bankruptcy.

Another aspect of this state of affairs is that the share market is not a major source of company finance. The market value of shares listed on the various German stock exchanges is about 12 percent of GNP against 40 percent in Great Britain and 44 percent in the USA [8]. Industrial reconstruction after the Second World War was certainly not financed by the share market, although business enterprises had to borrow heavily.

Even at the present time, German industry is highly geared. For example, during the period 1972-1979, the ratio of own funds to total funds employed, of companies whose balance sheets are analysed by the

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[8] West Deutsche Landesbank [1980], p.38.

Bundesbank, varied between 22 and 32 percent.

The banks play a major role in financing industry, for example by floating security issues on behalf of their customers. Table 2.1 sets out the number of banks and their volume of business.

Table 2.1

The West German Banking System

as at end 1979

Type of bank	No. of banks	No. of branches	Volume of business[1] DM billion	Volume of business[1] As % of total
Commercial banks	252	5891	536.9	24.7
Big banks	6	3104	227.8	10.5
Regional banks and other commercial banks	101	2463	237.5	10.9
Branches of foreign banks	56	47	38.3	1.8
Private bankers	89	277	33.3	1.5
Central giro institutions	12	317	356.1	16.4
Savings banks	603	16752	476.8	21.9
Central institutions of credit co-operatives	10	49	89.4	4.1
Credit co-operatives	4443	15117	229.0	10.5
Mortgage banks	39	29	285.3	13.1
Instalment sales financing institutions	115	503	25.4	1.2
Banks with special functions	17	76	137.3	6.3
Postal giro and savings banks	15	-	39.7	1.8
All banking groups	5506	38734	2176.0	100.0

[1]Total of balance sheet plus endorsement liabilities from rediscounted bills of exchange and other contingent liabilities.
Source: Deutsche Bundesbank (1980) and Monthly Reports.

2.5 The Bundesbank

The liquidity of the banking system is controlled by the Bundesbank, whose structure may be described briefly as follows:

a) Legislation

The Bundesbank Act 1957 stipulates that the Bundesbank shall be an autonomous federal institution, charged with:

> ... to regulate the note and coin circulation and the supply of credit to the economy with the aim of safeguarding the currency and shall ensure appropriate payments through banks within the country as well as to and from foreign countries. (Section 3)

Former Bundesbank vice-president (1970-1977) and president (1978-1979), Dr. O. Emminger, noted in an interview in 1977:

> The official documents pertaining to section 3 make it clear already that the stability of the currency depends on decisions with respect to the correct administration of the quantity of money. [9]

In the Bank's interpretation of section 3, therefore, the supply of credit is to be regulated in such a way that it does not produce a volume of money which would jeopardise price stability. It will be shown that this is indeed a key idea in the Bundesbank's concept of financial market regulation.

b) The Bundesbank's independence

The Bundesbank is an independent agency. Its relationship with the Federal Government is set out in section 12 of the Bundesbank Act 1957, as follows:

> The Deutsche Bundesbank shall be obliged insofar as is consistent with its functions, to support the general economic policy of the Federal Government. In the exercise of the powers conferred on it under this Law it shall not be subject to instructions from the Federal Government.

Hence, the Bank is not allowed to compromise on price stability in favour of other economic objectives. The Bank's independence does not preclude, however, regular contact with the Federal Government. Thus, cabinet ministers may attend meetings of the Central Bank Council.

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[9] R. Hertl [1977]: Dr. Emminger: 'In der amtlichen Begründung dazu hiess es schon, dass die Stabilerhaltung der Währung "wesentlich von den Entscheidungen über die richtige Dosierung der Geldmenge abhängt".'

Although they lack voting power, they may propose motions, and request that decisions taken by the Council be deferred for two weeks. Similarly, the Bundesbank president is entitled to attend cabinet meetings which discuss:

matters of importance in the field of monetary policy.

(Section 13 of the Bundesbank Act 1957)

c) The Bundesbank's policymakers

The Central Bank Council is the Bank's main policymaking body, consisting of the President, the Vice-President, the other members of the Directorate and the Presidents of the Land Central Banks (State branches of the Bundesbank). Each member is entitled to one vote and decisions are taken by majority vote. The Directorate is responsible for the implementation of the Central Bank Council's decisions. It consists of the President and the Vice-President of the Bundesbank and of not more than eight other members. All members of the Directorate must have special professional qualifications and are appointed by the President of the Federal Republic, on the advice of the Federal Government, which must consult the Central Bank Council. The members of the Directorate hold office for eight years. The Presidents of the Land Central Banks are appointed by the President of the Federal Republic, on the advice of the Bundesrat [10].

d) The Bundesbank's publications

Although the Bank is only required to publish its accounting statements and may publish statistics collected, it does, in fact, make a wide range of material available. Its views and comments are made known in its

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[10] The Bundesrat is a type of upper house. It consists of the presidents of the Länder (the States) and must be consulted by the government of the Federal Republic on matters pertaining to the Länder.

Annual Report (AR) and in its Monthly Report (MR), which has also a substantial statistical section. In addition, the Bank issues five specialised statistical series, extracts from press articles (containing speeches of officials etc.) and occasional papers. The German monetary economist R. Pohl has made the point that the Bank's publications are essentially exercises in persuasion. In his view, the strategy is to allow an extensive use of apparently objective theoretical terminology to give the impression that policies are based upon precise, objective analysis. In reality, this would be a ploy to conceal the policymakers' ideology. The public likes to think of the Bundesbank as the only reliable and objective economic institution, doggedly devoted to nothing but the public interest [11]. Without denying the persuasive character of the publications, it would go too far, as pointed out in chapter one, to assume that they are merely deceptive. There must be a view on the role money and credit play as well.

2.6 The Bundesbank's powers

The Bundesbank Act 1957 has equipped the central bank with considerable powers. They may be set out under the following headings:

a) Minimum reserve requirements

Credit institutions may be required to deposit, on giro account, non-interest bearing minimum reserve holdings equal to a specified percentage of their liabilities arising from sight, time and savings deposits, insofar as they have a term of less than four years. The minimum reserve ratios may not exceed 30 percent for sight liabilities,

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[11] Pohl, R. [1971], pp.9-11.

20 percent for time deposits and 10 percent for savings deposits. For external liabilities, however, they may be as high as 100 percent.

The credit institutions must comply with these minimum reserve requirements on a monthly basis, in the sense that their monthly average reserve holdings should equal the required amount. This allows them to hold, for example, lower reserves than required during the first half of the month, as long as they make up for it during the second half. The credit institutions may calculate the daily average over the period from the 16th day of the previous month to the 15th day of the current month, or, alternatively, as the average of their reserve holdings on the 23rd day and the last day of the previous month and their holdings on the 7th and 15th day of the current month. Since March 1977 the minimum reserve ratios have been differentiated by size of deposits, the categories being: up to 10 million DM; 10-100 million DM; more than 100 million DM. The higher the volume, the higher the reserve ratio is.

The Bundesbank has the power to impose a minimum reserve ratio on the growth of external liabilities, in addition to the ratio on external liabilities as such, provided the combined minimum reserve obligation on them does not exceed the legal maximum of 100 percent. Should the banks fail to comply with their minimum reserve requirements, they are charged a penalty equal to the prevailing Lombard rate plus 3 percentage points per annum, for every period of 30 days.

b) Rediscount rates and quotas

The Bank is empowered to set interest rates and rediscount rates, and to determine the principles governing its credit and open market operations. Traditionally, the Bundesbank has set rediscount quotas for individual credit institutions. Currently, these quotas are related to the amount of capital and reserves of the bank. Capital and reserves

in excess of DM 200 million are subject to a regressive scale. The higher they are, the lower the percentage increase in the rediscount quota. Furthermore, after application of the regressive scale, the amount of capital and reserves, on which the rediscount quota is based, is further reduced on the basis of the structural component, which is equal to the amount of short- and medium-term loans to non-banks expressed as a percentage of the bank's business volume. Occasionally, the Bundesbank has reduced temporarily the extent to which the rediscount quotas could be used from 100 percent to x percent ($x < 100$).

Similarly, the quotas have been reduced at certain times by the amount by which the external liabilities of the banks exceeded an initial base figure. For example, between 1 October 1973 and 1 January 1974 the credit institutions had to maintain reserve holdings on time deposits of foreigners equal to 60 percent of the growth of time liabilities over 63.75 percent of the average level of the return dates October 23 and 31, and November 7 and 15, 1971.

The banks may avail themselves of the rediscount facility by selling good commercial bills to the Privatdiskont A.G. The bills must be backed by three parties which are known to be solvent. In practice, the Privatdiskont A.G. will be one of these three parties, because the Bundesbank is only prepared to rediscount bills if they have been endorsed by this discount house (the only one in Germany).

Banks tend to rediscount eligible bills in order to comply with their minimum reserve requirements.

c) Lombard rates and credits

If a bank has exhausted its rediscount quota, it may apply for a special short-term credit known as Lombard credit. Usually, the Lombard rate is 1 percentage point higher than the rediscount rate,

although on occasions the margin may be greater or smaller.

In practice, the availability of Lombard credit has been limited, and sometimes it has been suspended altogether. So as to avoid extremely tight situations on the money market, special type Lombard credits have been granted at special rates of interest. From time to time, Lombard credit has been made subject to quantitative limits (for example, as a monthly average not more than 15 percent of the bank's rediscount quota).

If a bank is able to apply for a Lombard loan, it must supply a collateral as prescribed by the Bundesbank Act 1957. For example, a bill of exchange eligible for rediscounting would qualify for up to 90 percent of its nominal value and a Discountable Treasury Bond for up to 75 percent of its nominal value, provided it matures within a year from the day the Lombard loan is granted.

d) Open-market policy

aa) Money market

In order to regulate the money market, the Bundesbank may buy or sell Treasury Bills or discountable Treasury Bonds. The latter fall into two categories, those which are included in the Bank's money market regulating arrangements and, therefore, can be sold to the Bundesbank at any time and those which are not (known as N-paper). The Bank may buy N-paper when it sees fit to do so.

With a view to keeping the banks' supply of potential central bank money as small as possible, the Bank has mainly been issuing N-paper in recent years. The amount of money the public authorities can raise through issuing Treasury Bills and Discountable Treasury Bonds is subject to a legal maximum. If the Bundesbank's supply of such

paper is insufficient, then it may mobilise its claim of DM 8 billion on the Federal Government, obtained as part of the currency reform of 1948, by requesting that the whole or part of this claim be converted into Treasury Bills and Bonds (mobilisation paper). The Act for the Promotion of Stability and Economic Growth 1967 has extended this claim by another amount of DM 8 billion (described as liquidity paper) to a total of DM 16 billion.

Mobilisation and liquidity paper do not have to be sold exclusively to the banks. Their revenue may only be used for their redemption. The proceeds from their sale must be deposited in a special account at the Bundesbank. The Bundesbank may direct the public authorities as to whether they should deposit their cash at the Bundesbank or in accounts at the credit institutions. A shift from an account at the central bank to the credit institutions would have the effect of increasing the liquidity of the credit institutions.

The money market can also be fine-tuned by foreign exchange transactions. In 1979, for example, the Bundesbank made swap arrangements with the banks. The central bank bought USA dollars from the banks spot and sold them back three months forward. In this way the banks were able to maintain their reserve holdings at the Bundesbank at a time when they had to finance an outflow of foreign exchange.

bb) Capital market

From time to time the Bank intervenes in the capital market to influence interest rates by either buying or selling long-term fixed interest rate securities, issued by the public authorities, such as Federal Financing Bonds.

2.7 The Bundesbank's definitions of monetary aggregates

Open-market policies in Germany are not so much used to control the money stock supply directly, but rather to regulate the liquidity of the banking system and interest rates on the various financial markets. Whereas in the USA the public debt is large enough to allow a regulation of the money supply by means of open-market operations, the German public debt is too small for this purpose. OECD figures for 1978 show that the USA public debt came to 89 percent of the nominal GNP at the end of 1978. For West Germany the comparable figure was 29 percent. Large-scale sales or purchases of debt instruments in Germany would cause, therefore, major changes in interest rates. This is one of the reasons why the portfolio balance theory has never had much appeal in Germany [12].

Whether the money stock will remain in bounds acceptable to the Bundesbank depends, by and large, on the public's willingness to invest money long-term at the credit institutions. This is the institutional significance of the monetary aggregate known as monetary capital formation.

Monetary Capital Formation is defined as the total funds at the banks for a period of four years or more. This includes savings deposits at agreed notice of withdrawal, bank savings bonds as well as the credit institutions' capital and reserves. The Bundesbank's definitions of other monetary aggregates are currently:

M3 The total of currency in the hands of the public; demand deposits; term deposits with a term of less than four years; savings deposits at statutory notice of withdrawal (e.g. 3 months). Savings deposits with an agreed notice of withdrawal (usually six months or more) are considered as part of monetary capital formation.

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[12] Neubauer, W. [1977].

M2 The total of currency in the hands of the public; demand deposits; term deposits with a term of less than four years.

M1 The total of currency in the hands of the public and demand deposits.

It should be noted that monetary capital formation, M3, M2 and M1 include only domestic liabilities.

Central Bank Money Stock (CBMS) is the sum of the following central bank liabilities: currency in the hands of the public and the minimum reserves on domestic liabilities held by the credit institutions at the Bundesbank. As will be shown later, this aggregate does not function as a monetary base in Germany.

Free Liquid Reserves is the sum of the following central bank liabilities: balances of the credit institutions in excess of their minimum reserve requirements; mobilisation and liquidity paper outstanding.

To this total the following are added: unutilised rediscount quotas (a figure which is not published) and the credit institutions' holdings of money market paper, which the Bundesbank is obliged to buy back from them when so requested.

Free Liquid Reserves can be transformed into central bank money at very short notice. They may properly be described as potential central bank money or as the credit institutions' secondary liquidity.

2.8 The money market

The Bundesbank orchestrates its policy instruments to regulate the supply of and demand for central bank money.

The credit institutions sell their surpluses and borrow

to finance their deficits of central bank money in the money market. Surpluses of central bank money can be lent for periods of 24 hours; lent for indefinite periods but at one day's notice; or but for definite periods (one month, three months, six months, one year being the most usual ones). The trade in central bank balances compares with the weekly bidding by banks for treasury bills in Great Britain and the USA. Excess reserves which cannot be sold to other banks are invested in money market paper. Deficits which cannot be covered in the interbank segment of the market must be financed through the Bundesbank (see sections 2.6b and 2.6c above on rediscount quota and Lombard loans respectively).

It is the Bundesbank which declares which financial instruments will be traded as money market paper. If the Bank is prepared to buy certain financial instruments before they mature, respectively to discount them, when offered by the credit institutions, and without charging these purchases to their rediscount quota, then these instruments will function as money market paper. Currently, the following paper is included in the Bundesbank's money market regulating arrangements:

a. Treasury Bills of Federal Government and Federal Railways running for 30-59 days and 60-90 days.

b. Discountable Treasury Bonds of Federal Government, Federal Railways and Federal Post Office running for six months, 12 months, 18 months and 24 months.

The Bundesbank announces the rates at which it is prepared to sell money market paper, but it does not divulge the rates at which it would buy back. They tend to be higher than the selling rates.

In order to dampen violent fluctuations in short-term rates

for day-to-day money, the Bundesbank has, occasionally, enabled the credit institutions to obtain finance through repurchase agreements. The credit institutions, for instance, may obtain Bundesbank loans at pre-determined rates of interest for periods of 10 days against the collateral of domestic bills of exchange eligible for rediscount at the Bundesbank. Traditionally, bills of exchange have been very popular in Germany. Credit institutions may obtain cash by selling prime bankers' acceptances to the Privatdiskont A.G. The Bundesbank is prepared to rediscount these bills up to the limit of the rediscount quotas fixed for each bank. From time to time, the Bundesbank has been prepared to buy bank acceptances to a certain limit, outside of the banks' rediscount quotas.

2.9 The capital market

The credit institutions are the major parties both on the supply and on the demand side of the capital market. This implies that there is a very close relationship between the money market and the capital market. If the banks have a surplus of funds, they will invest in capital market paper. Conversely, when the demand for bank loans increases and the money market comes under pressure, the credit institutions are likely to sell bonds and hence to withdraw funds from the market. To put it another way, the capital market is not so much supplied by a flow of long-term funds, but rather by a flow of money. According to Köhler [13], this is not sufficiently realised. Policymakers are inclined to think of the capital market as a basin which collects the supply of long-term funds. Should demand threaten to outstrip supply, then administrative measures should be taken to pare it down to the level of supply. In

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[13] Köhler, C. [1977], p.143.

effect, committees have been set up to determine the demand for long-term funds administratively so as to mesh with the available supply of long-term funds. For private sector issues this is the Central Capital Market Committee which consists of representatives of the Bundesbank and of the major credit institutions. This composition makes it possible to match the interests of those who want to float debenture issues with the central bank's monetary policies. In 1975, for instance, this Committee halted temporarily the placing of foreign issues in order to support the Bundesbank's policy of lowering interest rates on the capital market [14]. The co-ordinating body for the public sector is the Economic Policy Council, on which the Bundesbank is also represented. It prepares proposals regarding the size, conditions and timing of new government loans. Köhler comments that the basin theory of the capital market appears to play an important role in the recommendations of this Council [15]. Government approval is required for private sector issues so as to rule out issues of non-creditworthy borrowers.

Table 2.2 sets out the volume of outstanding fixed interest rate securities of domestic issuers.

Table 2.2

Outstanding Domestic Issues of Fixed Interest Rate Securities as at the end of December 1979

	DM billion	
	Nominal	As % of total
Mortgage bonds	97.9	19.4
Communal bonds	179.4	35.6
Bonds of specialised banks	25.4	5.0
Other bank bonds	69.3	13.8
Industrial bonds	5.8	1.2
Public bonds	125.8	25.0
Total	503.6	100.0

[14] International Currency Review, July-August 1975, article: "Widening Differentials between US and Continental Rates", p.32.
[15] Köhler, C. [1977], p.144.

Source: Deutsche Bundesbank, Monthly Reports

Table 2.3 shows the development of the securities market during the review period.

Table 2.3

Term Structure of Fixed Interest Rate Securities Outstanding.Issues Falling Due en bloc (Issues not falling due en bloc are excluded)

A. DM billion

Term	4 years & less	4-9 years	10 and more years	Total
As at:				
30.9.71	23.0	27.6	1.5	52.0
30.9.72	32.1	40.2	4.0	76.3
30.9.73	39.3	58.4	2.8	100.6
30.9.74	51.8	72.0	2.6	126.4
30.9.75	78.0	100.2	1.4	179.6
30.9.76	118.0	115.0	1.7	235.7
30.9.77	157.2	125.1	5.6	288.0
30.9.78	195.7	151.0	8.0	357.7
31.12.79	238.4	166.7	8.1	413.2
B. As percentages of total				
30.9.71	44	53	3	100
30.9.72	42	53	5	100
30.9.73	39	58	3	100
30.9.74	41	57	2	100
30.9.75	43	56	1	100
30.9.76	50	49	1	100
30.9.77	55	43	2	100
30.9.78	55	43	2	100
31.12.79	58	40	2	100

Source: Deutsche Bundesbank, Monthly Reports

Table 2.3A indicates that the securities market has grown significantly since 1971. The message of table 2.3B seems to be that increasing uncertainty and a trend of rising interest rates have resulted in shorter terms to maturity.

2.10 Financial wealth

A rapid growth in the holdings of financial assets of domestic non-financial sectors is also shown by table 2.4. Since the end of 1971 financial wealth rose by an amount of DM 1,162.6 billion. As the total held at the end of 1978 was DM 1,991.7 billion, it can be inferred that the total amount grew from DM 999.4 billion at the end of 1971 to DM 2,162.0 billion at the end of 1979, that is at a compound rate of 10.1 percent per annum. This compares with a compound growth rate of nominal GNP of 7.96 percent during this period. This is certainly a very high rate of financial growth. Chapter four will pursue the reasons for this in more detail.

Table 2.4

Annual Changes in the Financial Wealth of Domestic Non-Financial Sectors

Type of Asset	DM billion							
	1972	1973	1974	1975	1976	1977	1978	1979[1]
1 Currency & demand deposits	20.1	7.5	18.2	22.9	3.6	20.2	36.8	8.2
2 Time deposits[2]	24.8	43.9	6.3	- 8.4	28.6	35.4	32.2	49.5
3 Saving deposits	32.8	15.1	31.2	67.3	36.1	28.3	30.5	12.7
4 Deposits at building societies	7.1	8.8	5.8	7.3	6.9	6.5	7.3	7.9
5 Claims on insurance	13.8	15.4	16.5	16.3	17.7	19.7	22.7	24.8
6 Money market paper	- 0.4	5.1	- 0.4	- 2.9	0.1	- 1.1	0.4	0.6
7 Securities including shares	12.8	16.4	14.7	15.9	27.2	17.2	17.9	40.5
8 Other claims	13.2	16.3	37.3	20.1	31.0	25.8	20.5	26.2
Total	124.2	128.5	129.6	138.5	151.2	152.0	168.3	170.3

Source: Deutsche Bundesbank, MR May 1975, MR May 1980, and Bundesbank (1980)

[1]Provisional
[2]Including bank savings bonds, bearer savings bonds and funds channelled through banks and including government participations in public-law banks.

2.11 Summary

The experience of two devastating hyperinflations within a period of 50 years has made it imperative for the German government to strive for price stability. This explains why the Bundesbank has been set up as an independent institution entrusted with the conduct of monetary policy and equipped for this purpose with formidable powers to control the liquidity of the financial system, its most important policy instruments being minimum reserve ratios, rediscount rates, rediscount quotas and controls on Lombard credits. For the same reason, the amount of central bank finance which the government is able to raise is strictly limited. The Bundesbank uses open-market policies to fine-tune the money market rather than to control the money stock supply. The small size of both the public debt and financial markets rules out large scale open-market operations. The amount of long-term funds borrowed by the banks functions as a surrogate for such open-market policies. Banks in West Germany carry out a large range of functions and play key roles in the financing of industry, not only in the short-run, but also in the long-run. Basically, they control the supply of funds to the capital market. The demand for long-term funds, however, is administratively determined so as to mesh with the available supply.

In reaction to the totalitarian regime which had plunged Germany into the Second World War, German policymakers have committed themselves to the concept of a free market economy. The State should confine itself to setting the conditions under which markets work best. This has led to pragmatic economic and fiscal policies. The Foreign Trade Act, for example, allows major interventions in the free flow of goods, money and capital for the sake of domestic economic stability.

Controls on the inflow of foreign capital as well as stringent monetary policies have given rise to the development of unconstrained

markets in financial claims parallel to the constrained ones. The Eurocurrency markets are a case in point.

Despite policies aimed at maintaining price stability, the amount of financial assets held by non-banks increased at a compound rate of 10.1 percent compared with a compound growth rate of GNP of 8.0 percent in the period 1972-1979.

CHAPTER THREE THE BUNDESBANK'S CONCEPTS

3.1 Chief elements of the Bundesbank's overall concept

Control of the credit system is essential in the Bundesbank's view, if the ultimate goal of price stability is to be achieved. In turn, price stability is the key to the attainment of full employment, economic growth and equilibrium in the balance of payments. A strict control of the supply of central bank money is seen as vital for the regulation of the credit system: if the Bundesbank wishes to restrict bank lending, it will raise the marginal costs of any additional central bank money required by the credit institutions. Its main policy instruments for this purpose are minimum reserve ratios, controls on Lombard credit, rediscount quotas and money market interest rates. This approach is consistent with the liquidity theory of money.

The Bundesbank analyses the behaviour of the financial system by means of the consolidated balance sheet of the central bank and the credit institutions. It emphasises those variables which require attention in the light of the prevailing economic situation. Consequently, within the framework of economic policy as adapted by Brunner and Meltzer [1], the Bundesbank's preferred intermediate variable appears to be changing from one period to another. The concept of a credit system approach is more general in that it allows for more than one intermediate variable, the central bank's choice depending on the economic situation.

In the credit system, as it is conceived by the Bundesbank, the volume of bank credit is of strategic importance. The volume of money is also important, but it is basically a residual variable dependent upon bank lending, public sector finance, long-term bank liabilities

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[1] Brunner, K. and Meltzer, A. [1969].

(monetary capital formation) and inflows of foreign exchange.

An assessment of the inflationary significance of the volume of bank lending is usually made in conjunction with the development of long-term bank liabilities (monetary capital formation).

The Bundesbank's view of the financial sector's transmission process hinges on a Wicksellian interplay between the banks' loan rate of interest and the natural rate of interest as well as on the volume of short-term financial assets and means of payment. In this context, flexible rates of exchange insulate the credit system from external inflows of capital, whereas the harmful effects of fiscal policies and wage bargaining are avoided by the monetary target approach: the increases in spending these induce crowd out other forms of expenditure.

3.2 The control of central bank money supply

As a central bank, the Bundesbank believes that it should not operate as a wholesale price fix dealer in money, who supplies whatever is demanded. Instead, central bank money should always be in tight supply, with the varying degree of scarcity expressing the central bank's intentions [2]. In essence, it wishes to shape its policies in such a way that the interest rate level and the state of the money market reflect the scarcity of central bank money.

Since the transition to a system of flexible rates of exchange in March 1973, which allowed the Bundesbank, at least in principle, to regain full control of the domestic monetary system, the Bank has tried to implement restrictive monetary policies by making additional central bank money available at rising marginal costs. The requirement for such policies is that the amount of free liquid reserves at

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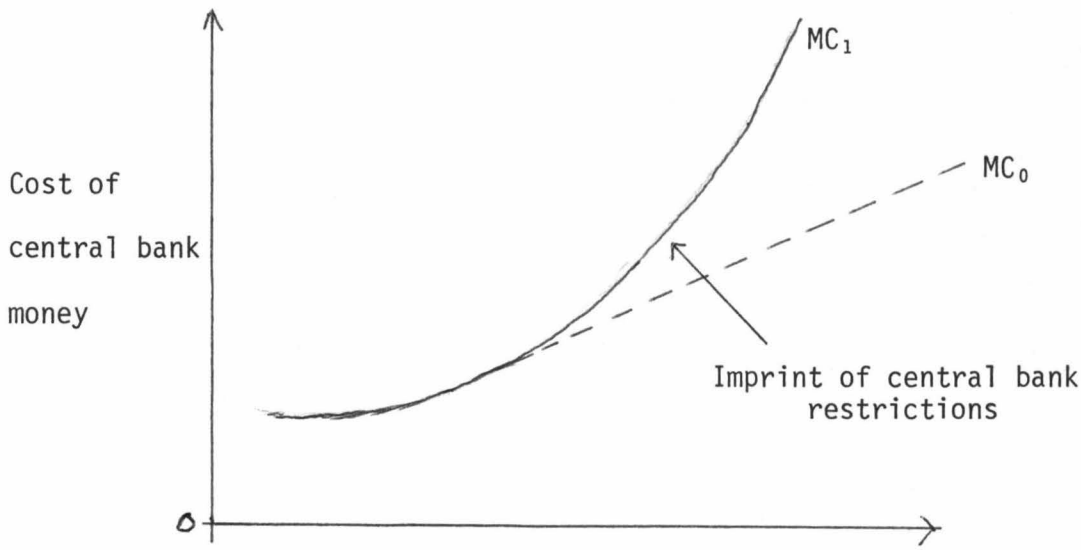
[2] Bundesbank [1980], p.36: '... dass zwischen Zentralbankgeldbedarf der Banken und Zentralbankgeldangebot der Notenbank ein Spannungsverhältnis besteht, das den Intentionen der Notenbank entspricht.'

the disposal of the credit institutions is always at a technical minimum [3].

Figure 3.1 pictures the Bank's view of the ideal supply curve of the credit institutions' central bank finance.

Figure 3.1

The Central Bank Money Supply Schedule



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[3] Bundesbank, MR July 1974: "Central Bank Money Stock and Banks' Free Liquid Reserves", pp.14-20:

> The "transmission mechanism", on which this policy of central bank money control is based, is of course not a rigid mechanical process, but results from the interplay of price (i.e. interest rate) and quantity reactions. If under this system banks go beyond the rate of expansion desired by the central bank in their lending, they will soon notice a great increase in the cost of obtaining funds on the money market and will restrict their credit expansion, because they would no longer be able to gain additional profit thereby, but possibly suffer losses. Thus the banks' individual targets, as well as customers' decisions, are influenced by changes in interest rates and interest rate relations. [p.19]

In the Bank's econometric model [4], the Lombard rate functions as a proxy for the marginal rate of interest for central bank credit. It goes without saying that the marginal cost of central bank money is affected not only by changes in interest rates, but also by changes in minimum reserve ratios, rediscount quotas, availability of Lombard loans etc. The costs are reflected in the credit institutions' supply schedule.

This point may be illustrated on the basis of the model of Richer, McMahon and Regier [5]. Assuming that banks expand their lending up to the point where marginal costs equal marginal revenue, the marginal cost of bank lending can be derived from the following formula for bank profits:

$$Q = iE + zFR - K[E]$$

where:

Q = bank profit

E = earning assets

FR = free liquid reserves (mainly money market paper which the Bundesbank is prepared to buy back at any time and unused rediscount quotas)

K = total costs of banking

i = interest rate on earning assets

z = representative money market interest rate.

Equilibrium is reached when:

$$\frac{dQ}{dE} = i + z\frac{dFR}{dE} - \frac{dK}{dE} = 0 \text{ or } i + z\frac{dFR}{dE} = \frac{dK}{dE} .$$

In the short-run an individual bank will expand its lending by

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[4] Bundesbank, MR May 1975, p.27: 'In the model monetary policy acts on economic activity mainly through the provision of central bank money and through the lombard rate, which is regarded as the marginal rate of interest for central bank credit.'

[5] Richer, R., McMahon, P. C., Regier, H. J. [1978], p.686 ff. See also Wills, H. R. [1979], p.8.

reducing its free liquid reserves. Consequently, for an individual bank $\frac{dFR}{dE} = -1$ or $\frac{dK}{dE} = i - z$.

By raising minimum reserve ratios and lowering rediscount quotas, for example, the Bundesbank is able to eliminate free liquid reserves and to put a bank in a position where it can only make additional loans by borrowing central bank money at increasing z interest rates. If the bank concerned is a price taker in the loan market, it would have to curtail its lending. Alternatively, it might attempt to attract more funds to maintain its lending by raising its deposit rates. The latter option would depend on the margin between its loan and deposit rates.

Richer, McMahon and Regier argue, plausibly, that for the banking system as a whole the value of z must be corrected, because it needs to give up only a fraction of free liquid reserves for each loan of 1 DM. The correction is, in fact, the money multiplier:

$$m = \frac{1}{c + r(1 - c)}$$

where: c = currency ratio

r = average reserve ratio on sight deposits, time deposits (of less than four years) and savings deposits at statutory notice.

In the context of a highly integrated banking system such as the German one, this correction is indeed appropriate. Hence, for the banking system as a whole:

$$i - \frac{z}{m} = \frac{dK}{dE} \left(\frac{dFR}{dE} = -\frac{1}{m}\right).$$

Again, by raising minimum reserve ratios, eliminating unutilised rediscount quotas and reducing the supply of money market paper included in its money market regulating arrangements, the Bundesbank would reduce the value of m. The resulting pressure on the money market would raise short-term interest rates and hence the cost

of additional central bank money. Consequently, the banking system would be compelled to raise its loan rates.

It should be noted that an increase in the minimum reserve ratios provides a strong incentive for the banks to raise their loan rates, because the required reserve holdings are non-interest bearing.

In general, the effectiveness of a restrictive monetary policy, as sketched, depends, firstly, on the speed at which the credit institutions raise their loan rates in response to the rising marginal cost of central bank money and, secondly, on the interest elasticity of the demand for bank loans.

Whether a lowering of marginal costs of central bank finance would be able to stimulate a flagging demand for bank loans depends on the marginal efficiency of capital. If industry has a great deal of idle capacity and is operating at a loss, the return on capital investment becomes negative. Clearly, it is impossible to set a loan rate of interest below such a negative natural rate. The Bank's view that the effects of raising and lowering the marginal cost of central bank finance are symmetrical [6] would need to be qualified to exclude the case of a negative natural rate of interest [7]. At any rate, in terms of the theory of economic policy the marginal cost of central bank finance may be considered as the Bank's operating target.

3.3 Monetary analysis

For the purposes of its monetary analysis, the Bundesbank uses the consolidated balance sheet of the Bundesbank and the credit

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[6] Bundesbank [1980], p.37: 'Analog lässt sich die Politik bei einer angestrebten Belebung der Geldschöpfung einsetzen.'

[7] Goudriaan, J. [1953], p.153.

institutions as an accounting framework to identify the development of monetary aggregates as a result of all those balance sheet items which are not part of the money stock, as follows:

[Lending by the monetary sector to domestic non-banks + net external claims] - [central bank balances of domestic public authorities + monetary capital formation from domestic sources, i.e. the banks' capital and reserves and other liabilities with a term in excess of 4 years] = M3; M3 - savings deposits at statutory notice = M2; M2 - term deposits with a term of less than 4 years = M1.

It is worthy of note that only domestic liabilities are part of the German money stock. External liabilities are excluded because they belong to what the Bundesbank calls the "financial sphere" [8].

The accounting framework reflects the Bundesbank's conviction that the credit institutions' liabilities are a function of their assets. Interest rates will have an impact on the volume of bank lending as well as on monetary capital formation, and depending on exchange rate policy, also on net external claims [9].

a) Monetary capital formation

The close relationship between the German banking system and industry means that long-term funds are not necessarily obtained

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[8] Bundesbank, MR July 1974, p.19: '... only domestic liabilities are part of the German money stock. The Bundesbank's external liabilities and the minimum reserve to be maintained by banks on external liabilities are not included. Although foreign demand is of great significance for economic activity, it is not directly connected with foreigners' deposits in the Federal Republic of Germany, which are primarily to be assigned to the financial sphere.'

[9] Bundesbank, AR 1972, p.25: 'Monetary policy in Germany is guided by the basic concept of controlling banks' supply of credit and the resultant increase in the money stock via bank liquidity and, in addition, of influencing non-banks' demand for credit by changing the interest rate level.'

from a supply of voluntary long-term saving, through the intermediary of the capital market. The credit institutions extend long-term loans, provided they have a reasonable amount of short-term liquidity. If this were lacking, they might, for example, reduce their portfolios of bonds. For prudential reasons, the Bundesbank is anxious to see that an expansion of bank lending is accompanied by an increase in monetary capital formation, because otherwise it might result in a perhaps undesirable expansion of M3 [10]. In this context, interest rate movements are seen as playing a role in controlling key monetary aggregates. An increase in interest rates decreases M3 and a decrease raises M3.

The concept of monetary capital formation can be traced back to writers such as Wicksell and Wagner [11].

Wicksell, for example, drew a distinction between bank liabilities (deposits) which represent long-term savings and shorter-term deposits. As the former have been withdrawn from circulation they are unable to influence prices, unless the banks were to use them as a foundation for further lending [12].

In terms of Wicksell's Austrian theory of capital, an extension of the roundaboutness of the production process financed by bank loans, can only be accomplished without rises in the prices of consumption goods if their consumption is reduced or, what amounts to the same thing, current saving is raised. Current savings would be reflected in monetary capital formation.

The Bundesbank is aware that a higher amount of monetary capital formation could be used as a basis for more lending, but it does not emphasise

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[10] Bundesbank, MR June 1972, pp.8-12.

[11] Marget, A. [1938/1966, Vol.I], pp.311-327.

[12] Wicksell, K. [1906/1935], p.87.

this [13]. Practically, the Bundesbank can only influence monetary capital formation through whatever influence it may have on long-term rates of interest.

b) Net external claims

The item net external claims comprises the net acquisition by the banking system (including the Bundesbank) of external assets. It reflects, therefore, the net result of the external transactions of domestic enterprises and individuals.

During the review period, 1979 was the only year when this item was negative on account of a deficit in the current account of the balance of payments.

It is of some interest to note that a long-term (that is a term in excess of four years) time deposit bought by a non-resident and paid for in foreign currency would be reflected in M3, if the bank sold the foreign exchange to the Bundesbank.

Since monetary capital formation from external sources is excluded from the monetary analysis, the DM equivalent of the foreign exchange would not be balanced by the corresponding liability and would hence result in an increase of M3, unless a correction were made in the analysis.

c) Balances public authorities

Every increase in the balances of the public authorities on account of domestic transactions reduces the money stock and vice versa. Should the Bundesbank direct the authorities to shift their balances, to the credit institutions, then the money stock

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[13] Bundesbank, MR June 1972, p.12.

would rise, assuming the balances are short-term. The central bank money stock would also rise, although this is not reflected in the monetary analysis.

3.4 A Wicksellian credit system approach

The Bundesbank's monetary analysis emphasises the interdependence of bank assets and various bank liabilities. The money supply emerges as a residual variable. Clearly, the Bundesbank is unable to control effectively each of the variables, which in its analysis determine the money stock supply. Monetary capital formation and the balances of the public authorities are probably the least amenable to central bank control. Net external claims can only be controlled if the Bank is able to let the rate of exchange float without impediment, which would make them zero.

Despite the introduction of floating rates of exchange in March 1973, the Bundesbank has regularly intervened in foreign exchange markets. On the one hand, this was necessary to comply with the so-called snake arrangement, now superseded by the European Monetary System. On the other hand, the Bundesbank has intervened in support of the USA dollar to avoid disorderly conditions in foreign exchange markets [14].

The interdependence of bank assets and bank liabilities combined with the Bundesbank's inability to control closely the various factors which determine monetary aggregates casts doubt on the suitability of Brunner and Meltzer's theory of intermediate variables for West Germany.

Even if there were a long-run stable relationship between one particular factor and real GNP, it would still be of little help to the authorities. They have to take their decisions in the short

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[14] Bundesbank, AR 1974, p.60.

run [15].

In fact, the Bundesbank does not think in terms of one particular intermediate variable. In its monetary analysis it compares dispositions in respect of financial claims and liabilities with developments in the real economy. It has, therefore, a Wicksellian type of credit-system approach, which allows it to react flexibly according to the exigencies of the times. The combination of an all-purpose banking system with a close financial involvement of banks in industry comes, in fact, close to Wicksell's description of an organised credit economy [16].

Inasmuch as monetary theories emphasise special features of a monetary economy, such as the money stock supply, real cash balances, the rate of interest, the cost of borrowing etc., the Bundesbank's theoretical orientation appears to be shifting all the time, whereas it simply focuses on a feature which appears to require most of its attention. By selecting quotations from the Bank's reports, it would be possible to classify the Bundesbank as monetarist, neo-Keynesian, liquidity-theoretic and so on. Such a procedure misses the point, however, that the Bundesbank has a credit system approach. Thus, Basler has attempted to pin down the Bundesbank's theoretical orientation on the basis of its actual choice of intermediate variables in the period 1958-1974 [17]. He concluded that the Bank was both Keynesian (credit availability/cost of borrowing theory) and quantity-theoretic. In some periods Keynesian, in others quantity-theoretic views dominated.

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[15] Köhler, Claus [1977], p.328.

[16] Wicksell, K. [1898/1936], pp.62-81.

[17] Basler, H. P. [1979], pp.127-130.

Basler surmised that this was so because the policymakers were basically concerned to carry out section 3 of the Bundesbank Act 1957, which refers indeed to both the volume of credit and the volume of money. Anyway, this result is not very satisfactory. In the Bundesbank's concept the variables of the monetary system are interrelated. So Basler has completely ignored the dependence of the money stock supply on the volume of credit and the significance of monetary capital formation as a link between the two. Surprisingly, monetary capital formation is not even mentioned once in Basler's study.

The volume of credit and the money stock supply play, no doubt, key roles in the Bundesbank's view on the transmission process. But so does the banks' loan rate of interest. A case could be made for the loan rate of interest as key transmission variable in the Bundesbank's concept, but it would meet with the same objection as the volume of credit and the money supply if it were treated as the one and only intermediate variable. In some periods interest rates are more important to the Bank than in other ones.

The Bundesbank's concept cannot be comprehended adequately in one or two intermediate variables. Its concept is much broader and covers the whole monetary sector as an interlocking system.

The Bank endeavours to control this system in a number of ways. First, bank liquidity and hence bank credit is controlled through the marginal cost of central bank money. Second, a system of flexible rates of exchange should protect the domestic credit system against external shocks. Third, the Bank's medium-term monetary target is designed as a signal to indicate to government, business and unions how much finance the Bank is prepared to provide for additional spending. Should they fail to internalise this signal, they would have to bear the consequences, e.g. fail to get the money. The Bundesbank's

econometric model [18] lists public sector deficits, wage rates and external factors as autonomous causes of price rises, very much in the sense Wicksell described as "autonomous" factors outside of the central bank's control [19].

3.5 The link between the monetary and the real sector

Assuming the Bundesbank has full control over the domestic credit system, how then would it construe the transmission of its policies to the real sector? The Bank's view of the transmission process has two elements. First, an interplay between the banks' loan rate and the natural rate of interest. Changes in the volume of bank lending are seen as closely related to changes in the relationship between these two interest rates. Second, the use that can be made of money once it has been created.

a) Loan rate/natural rate

In the Bank's view, what matters for borrowers is not so much the nominal interest burden compared with the prevailing inflation rate, but rather interest costs compared with the possible future return on the new investment [20]. Clearly, this distinction is very close to

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[18] Bundesbank, MR May 1975, p.28.

[19] Uhr, C. G. [1960], p.293.

[20] a) Irmler, H. [1972], pp.138, 139: 'Every borrower compares the financial return on the investments he has financed on credit with the cost of interest on the credit.' (Dr. Irmler was a member of the Bundesbank Directorate throughout 1972-1979.)

b) Bundesbank, MR May 1975: "Structure and results of the econometric model of the Deutsche Bundesbank", p.27: 'Thus, the level of and changes in the real rate of interest play a part in enterprises' decisions on capital investment. In the model the yield on outstanding public bonds less the rate of change of the gross national product deflator is used as a rough indicator of the real rate of interest.'

(contd.)

Wicksell's distinction between a natural rate of interest and the banks' loan rate, where the natural rate is thought of in marginal terms.

In Uhr's review of the debate which followed the publication of Wicksell's theory, mention is made of an objection of Wicksell's main opponent, Davidson, to the effect that the banks may raise their loan rate when the profitability of business increases, especially when there is a close relationship between banks and industry [21].

Wicksell, while accepting this possibility, did not find it compelling enough to abandon his whole mental construct. It bears more on the extent of the cumulative process than on the distinction between a natural rate and a loan rate.

In Germany, the banks tend to adjust their loan rates in line with changes in the Bundesbank's rediscount rate. Their loan contracts stipulate that the interest rate will be adjusted when the rediscount rate changes. This applies in particular to short-term and medium-term loans. Thus, an increase in the natural rate could stimulate the demand for bank loans, given a certain loan rate. This development might induce the central bank to raise the rediscount rate, which, in turn, would force up the loan rate.

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[20] (contd.)

c) Bundesbank, AR 1976, p.29: Having discussed the possible calculation of a real rate of interest by subtracting current price rises from the nominal interest rate, the Bank commented: 'However, it is not this "real rate of interest" as such which is important for business cycle policy but rather its relationship to the return on fixed assets ... Investment decisions primarily depend not on the overall relationship between the nominal interest burden and the prevailing inflation rate but rather on interest costs and the possible future return on the new investment for each investor ...'

[21] Uhr, C. G. [1960], p.258: '... Davidson insisted that ... the effective alliance which exists between banks and industrial enterprises makes the real and the money rate of interest capable of simultaneous and parallel variation.'

The Bank's model allows interest rates to affect incomes, prices and production, while monetary aggregates and interest rates, in turn, depend on developments in the real economy [22].

b) The use of money

Notwithstanding its belief that bank liabilities arise out of bank lending, the Bundesbank is concerned that the volume of short-term bank liabilities (M1, M2, M3) should remain within the limits set by the supply of output. The Bundesbank rejects, therefore, the real bills doctrine of self-liquidating bank loans [23]. Once money has been created, it can be used again, as former Bundesbank president Dr. Klasen put it [24]. Wicksell once made this point by quoting approvingly the Dutch economist Pierson, who had likened money to a shunting locomotive at a railway station. Once the locomotive is there, it can be used over and over again. Similarly, money remains always in the market, albeit in different hands [25].

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[22] Bundesbank, MR May 1975, p.27.

[23] For example, Bundesbank, MR April 1975, p.21: 'The fact is ... that a central bank cannot assume that the trade bill and its conversion into money produce an automatic connection between non-monetary and monetary developments. The amount of the bill reflects goods and prices ... Bills are issued and discounted by enterprises because of a general need for credit ...'

[24] Dr. K. Klasen, speech delivered on 24 October 1973, reproduced by the Bank of International Settlements, in its series of speeches by central bankers: 'Price movements in the Federal Republic are strongly influenced by the growth of the money supply ... For our monetary system produces a continuous expansion of the money supply through the banks' lending and the opportunity to use that credit in the form of deposit money too.'

[25] Wicksell, K. [1906/1935], p.19.

To put it another way, a distinction is drawn between the money stock and the utilisation thereof. The Bundesbank's analysis of the economy follows consistently the pattern of supply, demand and prices. If the volume of money becomes too large (the "monetary cloak" too wide) demand will outstrip supply, causing prices to rise. This may be compared with Wicksell's view that the general price level is determined by the total demand for and total supply of goods in the economy [26].

3.6 The demand for money

In recent years the Bundesbank has shown a proclivity towards a demand for money to hold (portfolio balance theory) rather than a demand for money to spend. So the monetary aggregates M2 and M3 include financial assets which are bought and held as means of preparing for future payments. Since such assets function as precautionary or speculative stores of purchasing power, their volume is likely to be less volatile than the stock of means of payment (M1) and hence, more amenable to monetary control. It is worthy of note that the Bundesbank has been looking for a monetary aggregate which is interest inelastic [27].

Conceivably, the Bank might wish to raise interest rates in order to restrain the amount of bank lending so as to reduce pressure on real resources. At the same time, as outlined above, it wishes to keep an eye on the development of monetary aggregates. Should the rise in

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[26] Wicksell, K. [1906/1935]. Also Hansen, B. [1951], p.2.

[27] Bundesbank, MR February 1974, pp.8, 9. Having noted that savings deposits had been shifted into time deposits and securities, the Bank commented: 'In these circumstances only an even broader definition, e.g. one including some types of saving deposits, such as those at statutory notice, would seem appropriate, as it would come nearest to being "neutral" as regards interest rates. Such a definition would, however, depart even further from the concept of money as an amount of payment media than M2 does, which is why it is not used in this context.'

interest rates cause economic subjects to reduce their spending and to invest in short-term highly liquid assets, then the decline of M1 could be misleading because in the near future spending could be fuelled by expiring time deposits [28]. The larger monetary aggregates (M2, M3), which are not so influenced by shifts from demand deposits into financial assets are, therefore, in the Bank's opinion, a better indicator of the demand for money [29].

There are problems with this view. For a start, the boundary line around the broader monetary aggregates is always arbitrary. Assets which have never been sensitive to interest rate changes might become so when the interest rate passes a certain threshold. In general, the more long-term/less liquid financial assets are included in a monetary aggregate, the stabler it is [30] and the higher its correlation will be with an aggregate such as GNP, which is not likely to show large fluctuations either.

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[28] Bundesbank, AR 1979, p.24: '... the restrained growth of the money stock M1 in 1979 does not permit any reliable conclusions to be drawn as to the degree of restrictiveness of monetary policy, for it was attributable not to any general weakening of the demand for money but in part only to a shift out of highly liquid money holdings into forms of investment which are regarded by non-banks in almost the same way as liquid funds ...'

[29] Bundesbank, AR 1979, pp.24, 25: 'The subdued trend of the money stock M1 is therefore more a measure of the "monetary stimuli" generated by the increase in short-term interest rates; it does not so readily allow any direct inferences to be drawn on the impact of monetary policy measures on the real economy ... Because of the ... finding that the more narrowly defined aggregates M1 and M2 may be subject to random fluctuations which lead to misinterpretations, the Bundesbank is primarily guided by the development of the broadly defined monetary aggregates M3 and central bank money stock, whose correlation with economic activity is comparatively stable in the medium term.'

[30] See note 27 and also Bundesbank, AR 1977, p.22.

One could then argue that the broad monetary aggregate provides a good basis for a medium-term policy. The high correlation, however, does not reveal anything about causation. In principle, there are three possibilities. First, changes in GNP or economic activity cause corresponding changes in the monetary aggregate. Second, changes in the monetary aggregate bring about changes in economic activity. Third, changes in both the monetary aggregate and in economic activity are the result of another factor. The first two seem the most relevant as Oberhauser has pointed out [31]. They can be boiled down to the question whether, in the period considered, the central bank has been able to constrain the demand for credit and hence for money to spend.

As such this question would bear upon the relationship between economic activity and M1, means of payment.

When wider monetary aggregates are considered, it should be borne in mind that decisions with regard to investment in financial assets involve a use of money which is different from decisions to use money as a means of payment. The former are made on the basis of money which is already available, because they concern financial portfolio assets, whereas the latter may require finance to be organised.

For example, if economic subjects want to indulge in a spending spree, they will try to get hold of means of payment, amongst others by converting various financial assets into cash or by raising loans. As a result, M1 would tend to expand, whereas M2 and M3 might remain fairly stable. Furthermore, interest rates would rise and eventually check the spending spree. In this case, interest rates are, in the first instance, a dependent variable. Decisions on investment in financial

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[31] Oberhauser, A. [1976], pp.633, 634; Oberhauser, A. [1977], pp.216-220.

assets, on the other hand, tend to be made in response to changes in interest rates. Thus, a reverse structure of interest rates, when short-term rates are higher than long-term rates, as occurred in Germany during 1979, might attract long-term funds into the short-end of the market. If these long-term funds would otherwise have been invested in financial assets not included in M3, M3 would show an increase unrelated to changes in spending on goods and services.

Broader monetary aggregates such as M3 and M2 are the outcome of decisions involving at least two different functions of money, money as a means of payment and money as a store of value. The Bundesbank's practice of calling M1, M2 and M3 all money, albeit in a narrow, a wide and a widest definition respectively, is confusing.

In the recession year of 1975, for example, the Bundesbank stressed the need for using both the M1 and the M2 definition. Whereas M1 had expanded, M2 had grown very slowly. M1 seemed to indicate a potential for inflation and M2 that the reflationary policy had been ineffective [32]. In actual fact, the divergence was due to the lower velocity of circulation of M1 in a time of recession. The cash balances were not invested either because of uncertainty or because the rate of interest was too low.

3.7 The Bundesbank's monetary indicator-cum-monetary growth target

The Bank's preference for broad monetary aggregates is revealed in its choice of the Central Bank Money Stock (CBMS) as basic monetary indicator. For this purpose, CBMS is defined as the total of the minimum reserve balances the credit institutions are required to hold against their domestic liabilities at the Bundesbank, calculated on the basis

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[32] Bundesbank, AR 1975, p.11.

of the minimum reserve ratios prevailing in January 1974, and augmented with the amount of currency in the hands of the public (prior to 1978, currency in the hands of the banks was also included). While the minimum reserve balances constitute a fraction of the bank liabilities on which they are levied, currency in the hands of the public is incorporated in total.

CBMS was chosen as a monetary indicator in 1973 because, firstly, the liabilities of the central bank are related to the credit institutions' creation of deposit money, secondly, CBMS as a monetary aggregate is relatively interest-rate inelastic and, finally, it is very quickly measurable. CBMS would represent the entire expansion made possible by the central bank [33].

CBMS should not be confused with the actual central bank money stock which would include currency in circulation, required minimum reserve holdings on domestic liabilities (calculated at actual reserve ratios), excess reserve holdings, public authority balances, deposits of foreigners at the Bundesbank and minimum reserve holdings on external liabilities. CBMS serves rather as a proxy for the domestic money stock outstanding (M3).

If currency in circulation is defined as C, time deposits as T, demand deposits as D, savings deposits as S and the minimum reserve ratios of January 1974 as t, d and s respectively and $\bar{}$ means 'constant', then:

$$CBMS = C + \bar{d}D + \bar{t}T + \bar{s}S, \text{ whereas}$$

$$M3 = C + D + T + S.$$

As long as the 'multiplier' is constant, movements in CBMS would indicate past movements in M3.

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[33] Bundesbank, AR 1974, p.25.

It should not be thought, however, that the Bundesbank believes that it can control movements in M3 by manipulating the central bank money stock. CBMS is not so much a monetary base, but rather an indicator of past movements in M3. Control of actual M3 depends on the control of bank liquidity, bank lending etc. (See Bundesbank letter in Appendix 1.) Should actual M3 be larger than desired M3, as represented by CBMS, then monetary policy will be tightened up.

When at the end of 1974 the Bundesbank decided to commit itself publicly to the attainment of a monetary growth target, it chose CBMS as the target variable. Recently, Dr. Bockelmann, a Bundesbank official, explained that CBMS was selected for this role because it had had an elasticity of one with respect to GNP during the period of 1960-1973. Unfortunately, after 1973, CBMS grew faster than GNP, because of the fast growth of the currency component [34].

The gist of this view is that CBMS was chosen for purely statistical reasons, a procedure which is known as measurement without theory. One would wish to know why CBMS should have an elasticity of one and whether the growth rate of CBMS is a stable function of nominal GNP or whether it is the other way round. The experience subsequent to 1973 indicates that a choice based on past statistics is not without its problems.

It now remains to be seen how CBMS as a proxy for M3 performs in comparison with actual M3. Table 3.1 sets out various cases in which financial assets are bought and sold during a certain period. The minimum reserve ratios are the constant ratios at which CBMS is assumed to be calculated.

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[34]Bockelmann, H. [1980], p.167.

Table 3.1

Offsetting Changes in Liabilities of Credit Institutions and their Effects on M3 (actual) and CBMS (calculated at assumed constant minimum reserve ratios, being 12.45% on Sight Deposits; 8.65% on Time Deposits less than four years; and 6.3% on Savings Deposits at Statutory Notice). Each case involves $100

Case	Initial Position	New Position	M3	CBMS
1	Time Deposit 5 years	Sight Deposit	+100	+12.45
2	Sight Deposit	Currency	0	+87.55
3	Savings Deposit Stat.Not.	Time Deposit <4 yr.	0	+ 2.35
4	Sight Deposit	Time Deposit <4 yr.	0	- 3.80
5	Savings Deposit Stat.Not.	Currency	0	+93.70
6	Time Deposit < 4 years	Debenture Stock[1]	-100	- 8.65
7	Loan Bank	Reduction Overdraft	0	0
8	Loan Bank	Sight Deposit	+100	+12.45

[1]Bought from a bank.

Case 1

A financial asset, not included in any monetary aggregate is transformed into a sight deposit. CBMS indicates a growth which is equal to the amount of the sight deposit multiplied by the constant reserve ratio on sight deposits. The Bundesbank must decide whether this indication of a growth in M3 is acceptable.

Case 2

A sight deposit is converted into currency. M3 remains unchanged. Yet CBMS increases substantially. It gives a wrong indication of the development of M3 owing to the 100 percent incorporation of currency in CBMS. It is assumed, of course, that the central bank has actually made the extra currency available.

Case 3

In response to increased interest rates on time deposits, a savings deposit at statutory notice is transformed into a short-term time deposit. This is, in fact, a move towards a less liquid position. Whereas there is no change in M3, CBMS increases because of the different reserve ratios on time deposits and savings deposits. It could be argued that CBMS is slightly more sensitive to changes in interest rates than M3.

Case 4

Like the previous case, this is a move towards a less liquid position, as a sight deposit is converted into a time deposit. Contrary to the previous case, however, CBMS declines. To put it differently, in Case 3 CBMS gives a better indication of M2 than of M3 and in Case 4 it indicates M1 better than M3.

Case 5

A savings deposit is withdrawn and paid out in currency. CBMS registers a large increase, almost equal to the rise in M1. Yet M3 is not changed at all. Like in Case 2, it is assumed that during the period considered, the Bundesbank was prepared to make the additional currency available.

Case 6

On its expiry, a term deposit is used to buy a bond from a bank. This is not necessarily a move towards a less liquid position. If interest rates were falling, the bond might be disposed of quickly at a profit. The decrease in CBMS and in M3 may or may not be right.

Cases 7 and 8

concern a bank loan against which a cheque is drawn which is paid by the recipient into an account in overdraft in Case 7, and added to a demand deposit in Case 8. Case 7 demonstrates that an increase in bank lending does not necessarily give rise to an increase in bank

liabilities. Its effect might be limited to a change in bank assets.

The conclusion from the cases examined is that CBMS is by no means a perfect indicator of M3. The currency component of CBMS, in particular, can produce major distortions. As an indicator of what M3 should be, CBMS has a certain margin of error, which might well be acceptable for this purpose.

The cases just discussed make it clear that CBMS changes in response to decisions of economic subjects other than the central bank, although the latter may have an indirect influence through its interest rate and bank liquidity policies. One can agree, therefore, with the Bundesbank that it is not a monetary base.

The calculation of CBMS at constant reserve ratios is unobjectionable as it is intended to be an indicator of M3. In practice, one can either use the reserve ratios as they were at a certain date in the past or the reserve ratios as they are in the present. The Bundesbank has adopted the former method and uses the reserve ratios of January 1974. This method is acceptable as long as, subsequent to January 1974, the actual minimum reserve ratios do not change relative to each other. If they do so change, however, there may arise a different systematic relationship between CBMS and other monetary aggregates or real GNP, as Duwendag has noted [35]. The use of current minimum reserve ratios, to calculate CBMS backwards in time, would overcome this problem.

The calculation of the monetary growth target is clearly inspired by Prof. Claus Köhler's idea of a monetary policy which is oriented to the production potential of the economy [36]. The calculation consists

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[35] Duwendag, D. [1976], p.290. To overcome this problem Duwendag suggests that the present minimum reserve ratios be used to calculate a past time series of CBMS.

[36] Köhler, Claus [1977], pp.319-357.

of the following estimations:

a. The growth rate of potential production, by means of a Cobb-Douglas production function.

b. The change in the utilisation of productive capacity.

c. Unavoidable price rises, such as planned changes in indirect taxes or import price rises.

For example, the target for 1977 was calculated as:
+3% in production potential +2% in capacity utilisation = +5% real growth. Price rises should be less than 4%.

Allowing for a slight increase in the velocity of circulation of 1 percent, the target was set at 8 percent for that year [37]. The validity of this calculation hinged, of course, on the presumed stable relationship between CBMS (Note: not the actual central bank money stock) and nominal GNP. It so happened, however, that the velocity of circulation, i.e. the ratio of GNP to the CBMS indicator declined in the period 1975-1978, contrary to expectations. Addressing itself to this problem in 1977, the Bundesbank identified about six possible causes [38], but concluded candidly that it did not really know for lack of information. Consequently, the Bank has ceased to make precise estimates of the velocity of circulation. Deviations from the annual targets caused the Bank to note [39] that it was really pursuing a medium-term policy of controlling M3 and hence

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[37] Bundesbank, AR 1976, p.22.

[38] Bundesbank, AR 1977, pp.22-24. The six factors were: 1) Unanticipated changes in economic activity 2) Unexpected inflows of foreign exchange 3) Changes in the distribution of income (a sharp increase in pensions) 4) A substantial reduction in interest rates and in inflationary expectations 5) Growing importance of the 'grey' area in the economy which requires cash payments 6) Higher holdings of DM notes abroad to speculate on an appreciation of the D-Mark.

[39] Bundesbank, AR 1977, p.22.

nominal GNP, although it did not define the length of the medium-term.

The idea behind the monetary growth target is that the public should know how much money the central bank is prepared to make available for additional spending [40]. If wage rates, for instance, were raised in a way which would cause price increases to exceed the target figure, the Bundesbank's policy would be found to be restrictive. Thus, the Bank has attempted to eliminate the autonomous causes of price rises. The success of this strategy depends crucially on whether trade unions, employers and the government are willing to let themselves be circumscribed by the target. Business enterprises might try to circumvent it by borrowing abroad, particularly if the Bank reacted to unfavourable wage settlements by raising interest rates.

In principle, the introduction of a monetary target has made the Bundesbank's policy of controlling the credit institutions' secondary liquidity by means of changes in the marginal cost of central bank money more predictable.

3.8 The term structure of interest rates

At first sight the idea of controlling a monetary target appears to be inconsistent with the Bundesbank's wish to control also the long-term rate of interest as it relates to the natural rate of interest. This ambiguity is more apparent than real. If the loan rate of interest is equal to the natural rate, then the pace of business investment will be in line with the rate of growth of real resources and bank lending would not create an excessive amount of money. Nevertheless, the growth and

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[40] For example: Bundesbank, AR 1976, p.22: 'Through the announcement of this target all those involved in economic activity are confronted with the question of how their behaviour can be reconciled with this aim.'

use of the money stock should be watched. After all, the money supply is not only influenced by bank lending, but also by public sector deficits. Moreover, the money income flows generated by a given stock may be unacceptable. In terms of linear programming concepts, it could be put this way: minimise the difference between the loan rate of interest and the natural rate, provided the money stock supply does not grow more rapidly than real GNP.

The problem is what the relationship is, in the Bundesbank's view, between its money market policies and the long-term rate of interest.

Basically, monetary economics offers three competing hypotheses of the term structure of interest rates.

a. The expectations hypothesis asserts that the current long-term rate is a combination of future short-term rates and that securities with different terms to maturity, but otherwise equal, can be substituted for each other. Cross-elasticities are infinitely high.

b. The liquidity hypothesis emphasises that the liquidity of short-term financial assets is superior to that of long-term ones. Lenders prefer to lend short-term, whereas borrowers prefer to borrow long. It requires a higher yield on long-term securities to reconcile the difference.

c. The segmented market hypothesis assumes that lenders and borrowers have distinct preferences for particular maturities. Cross-elasticities between financial assets with varying terms to maturity will be low (but not zero), so that security markets are segmented. Changes in the maturity structure of securities supplied to a particular financial market will cause changes in the term structure of interest rates.

The Bundesbank's view on the term structure of interest rates in

the bond market can be described as follows [41].

In general, the yields on Federal Government bonds are slightly lower than average, because such bonds are considered to be highly liquid, owing to regular price support operations. The yields of industrial bonds, communal bonds and mortgage bonds tend to be higher than average, the bonds being less liquid.

According to the Bank:

> ... the market rates bonds with varying maturities differently if they are identical in all other respects ... The size and direction of the yield differentials relative to the (remaining) period to maturity fluctuate quite considerably. [42]

The chart (Figure 3.2) gives a good idea of the variability of yield curves in the period 1967-1978. Expectations of falls or rises in the level of long-term interest rates, for example, have played a role in this. "Pure" interest rate expectations, however, are only one factor in the determination of yield curves. Other factors are:

> ... the liquidity wishes of market operators with corresponding preferences for particular (remaining) periods to maturity. [43]

The Bundesbank has calculated yield curves for the bond market covering the whole period since 1967 (when interest rates were exempted from controls), using the formula: $Y = a + b(T) + c\ \ln(T) + u$, where Y = yield, T = term to maturity, a = constant, b and c = coefficients for the linear and logarithmic effects and u = residual.

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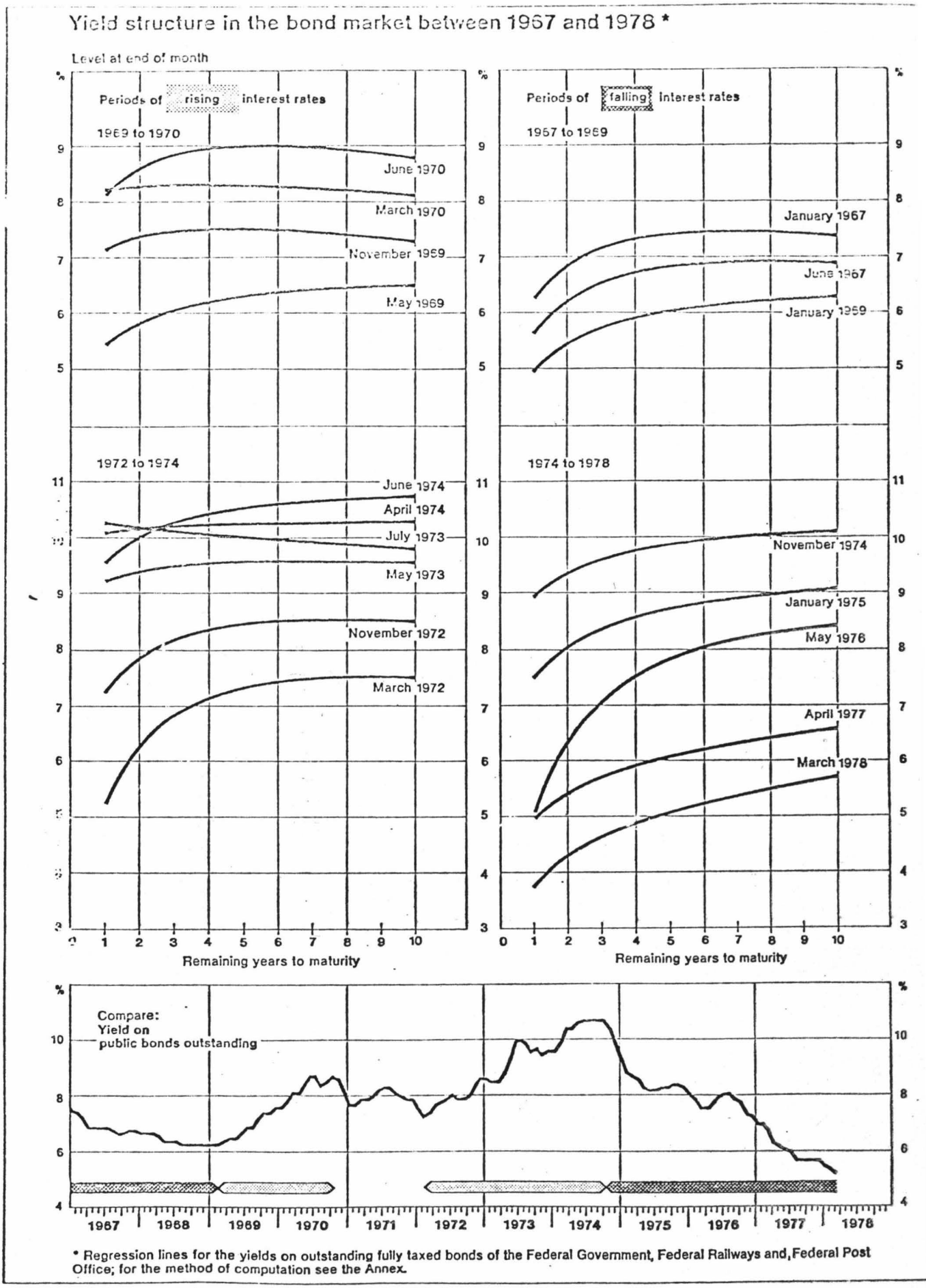
[41] Bundesbank, MR April, 1978: 'Interest Rate Movements and Changes in the Interest Rate Structure in the Federal Republic of Germany since 1967' (pp.11-21).

[42] Op.cit., p.16.

[43] Op.cit., p.16.



Source: Deutsche Bundesbank, Monthly Report, April 1978, p.17.

Figure 3.2

This equation was not determined on a priori grounds, but as part of an attempt to fit a curve to the observations [44]. The equation implies that the relationship between the yield and the term to maturity is not strictly linear.

Summing up, the Bundesbank's view can be characterised as favouring the segmented market hypothesis of the term structure of interest rates. The role of liquidity preference and expectations is also recognised, however. This is not illogical, because the segmented market hypothesis lends itself easily to an absorption of elements of competing hypotheses, such as expectations and liquidity premiums [45].

As this is not a quantitative study, an empirical verification of the segmented market hypothesis is contained in Appendix 3.

3.9 Analysis of the Bank's view on the term structure of interest rates

Since the Bundesbank acts as a monopolist in the money market, interest rates in that market, as well as in other markets in which its instruments have an impact, must be unpredictable to others than the Bank itself, simply because the actions of one man or one institution are unpredictable. This tendency is reinforced by the oligopolistic behaviour of the credit institutions. With a small number of market participants, it seems inevitable that intricate patterns of action and reaction will emerge. Reaction, of course, can be either positive or negative. What this means is that the Bundesbank should not only base the use of its instruments

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[44] Op.cit., p.18: 'A compromise ... has to be found between a polynomial of low degree, the statistical explanatory value of which is relatively small but which is simple and informative for interest rate policy purposes, and a polynomial of a higher degree, the statistical explanatory value of which is greater but which shows the overall trend of the curve less clearly.' By experiment the equation as quoted was found to be the optimal one in terms of this compromise.

[45] Thus, e.g. Culbertson, J. M. [1977], p.280.

on an analysis of the economic situation, but also on an estimate of the possible reactions of credit institutions in the various financial markets, along with the reactions of other market participants.

Haverkamp [46] has given an insider's account of reaction patterns in the bond market during the period 1978-1979. Significant psychological factors were:

a. Expectations such as: (i) W. Germany will follow Japan and Switzerland and introduce controls on the inflow of capital. (ii) The deficit of the public sector will increase. (iii) The Bundesbank will implement a restrictive policy, because central bank money stock is expanding in excess of the target rate. Such expectations, of course, may or may not come true. Even if the Bank were to implement a restrictive policy, its shape and degree of severity could vary considerably.

b. Such expectations are usually exaggerated.

c. When a particular expectation has gripped the market, only news which reinforces it is considered and news to the contrary is ignored.

d. Institutional investors think in terms of thresholds. If the rate for, say, 10-year bonds has hit the 7 percent mark and then declines, investors believe that the rate will return to the 7 percent level, an expectation which is self-fulfilling.

e. A small group of market participants. As a rule they will know each other. No participant likes to stand out from his colleagues by decisions which do not conform to the majority opinion about the trend of the market. The advantage of this is that, should subsequently the market develop differently than generally expected, every participant is able to say that everybody else was wrong too.

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[46] Haverkamp, H. [1979], pp.405-421.

Haverkamp compares this behaviour aptly with that of lemmings.

f. Announcement effects of measures taken by the Bundesbank. For example, the increase in the Lombard rate in January 1979 took the bond market completely by surprise. It was interpreted as a sign that interest rates were going to move up.

The value of this analysis is that it shows that the market does not use all available information, contrary to the idea of the efficient market hypothesis. The market selects information. Another interesting aspect of Haverkamp's story is that the inflow of foreign capital early in 1978 was directed to the bond market, whereas the inflow in October/ November of the same year benefited the money market. Such switches can only increase the indeterminate character of interest rate movements. Like Haverkamp, Goudriaan [47] has pointed out the psychological factors which make interest rates indeterminate. In addition to Haverkamp's factors, he paid attention to speculative stocks. Thus, an increase in the price of financial assets may induce a speculative demand, but also curtail the supply at the same time. These two factors are likely to reinforce each other.

Indeterminate movements in short-term interest rates do not rule out, of course, an interrelationship between short-term and long-term rates. Since financial markets in Germany are closely interlinked through the banking system, movements in the money market are likely to have an effect on the capital market and vice versa. The capital market, however, is not only influenced by the money market, but also by the supply of and demand for long-term funds (monetary capital formation).

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[47] Goudriaan, J. [1953], pp.90-97.

3.10 Ultimate objectives

The Bundesbank firmly believes that in the absence of price stability, economic growth and a high level of employment cannot be achieved [48]. Commemorating the currency reform of 1948, Dr. Emminger stated that creeping inflation:

> does not promote growth and employment ... Inflation has frequently resulted in low real growth and in unemployment, the reason being that it increasingly turns productive forces to unproductive but seemingly inflation-proof uses, disorganises national economies, reduces their competitiveness and obliges economic policy to pursue a course of "stop and go" on balance of payments grounds. [49]

In the literature, the monetary theories inspired by the Austrian theory of capital have linked price stability and/or neutral money with the attainment of full employment. In Wicksell's version the price level should be stable.

The advantages of a boom accompanied by rising prices are more apparent than real. Usually, the boom results in an over-expansion of credit and hence in an economic crisis [50].

Creeping inflation is not much use either, because its advantages are lost as soon as it is anticipated. A lasting fall in the price level is likewise undesirable, because it paralyses business and causes unemployment. The goal of price stability should be attained by making sure that the banks' loan rate equals the natural rate of interest, being the marginal value productivity of real capital or the expected yield on newly created real capital. Should the natural rate be higher than the loan rate, then the demand for capital goods would expand and push up prices.

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[48] E.g. Bundesbank, AR 1979, p.1; AR 1978, p.1.

[49] Bundesbank, MR June 1978: Dr. Emminger, O. '30 Year Currency', pp.8, 9.

[50] Wicksell, K. [1898/1936], p.1.

In turn, this would raise profits and thus stimulate business. National income would rise and if the expansion failed to generate sufficient savings, to cover higher investment, the higher prices of consumption goods would compel forced saving.

This theory leads to the view that a monetary policy which manages to equate the loan rate and the natural rate would remove the root cause of the business cycle. The authorities would then be in a position to tackle any remaining employment problems [51]. Following this approach, the Bundesbank has insisted recently that the unemployment problem has two parts; one part which is amenable to measures of general economic policy, and another part which is structural and requires selective measures of labour market policy [52]. In general, German thinking, as laid down in the Bundesbank Act 1957, and in the Act to Promote Economic Stability and Growth 1967, is that monetary and fiscal policy are to play distinct roles, which should be co-ordinated. The latter Act involves also a specific commitment to the framework of a free market economy. For this reason, the Bundesbank is not in favour of imposing quantitative restrictions on bank credit, but seeks to achieve its goals via the market.

3.11 The Bank's reaction function

The Bundesbank attempts to achieve its goal of price stability by insulating the domestic credit system through flexible rates of exchange against external disturbances. Its monetary growth target is to provide a signal to other economic subjects how far they can go in respect of wage rates, prices and public sector deficits. Compliance with the target

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[51] Uhr, C. G. [1960], p.249.

[52] Bundesbank, AR 1977, p.5.

would enable the Bundesbank to control successfully the operations of the credit system, particularly by setting the marginal cost of central bank money such that the difference between the banks' loan rate and the natural rate of interest is minimised subject to the monetary aggregate M3 remaining within bounds set by the ultimate goal of price stability.

In the Bundesbank's view the monetary sector is an interlocking system. The Bank's monetary control can be thought of in linear programming terms. If a particular variable is to be minimised or maximised, side conditions will be imposed on other important variables.

CHAPTER FOUR THE BUNDESBANK'S MONETARY POLICY

4.1 Failed insulation of the domestic credit system

Apart from a brief period in 1973, the Bundesbank has been unable to pursue rigorously a policy of flexible rates of exchange during the years 1972-1979. Interventions in foreign exchange markets were necessary.

First, to maintain stable rates of exchange within the bloc of European currencies known as the "snake" (now the European Monetary System). Second, to maintain orderly market conditions. Third, to moderate excessive fluctuations in the DM-USA rate. Nonetheless, in the Bank's view, interventions should not, and indeed cannot, counteract fundamental trends in the market [1]. Basically, the Bundesbank blames a lack of confidence in important currencies such as the USA dollar, which, in turn, is caused by inflation, for the Deutsche Mark's role as a currency of refuge [2].

Table 4.1 shows that the net increase in the central bank money stock in the period 1972-1979 was DM 52.4 billion. This net increase consisted of DM 95.0 billion increases and DM 42.6 billion decreases.

Of the factors causing an increase, the central bank's purchases of foreign exchange accounted for 75 percent of the total and increases in the balances of the public authorities for 12 percent. The conclusion must be that the domestic credit system has not been adequately safeguarded against "autonomous" causes of monetary instability.

The behaviour of labour costs reinforces this conclusion, as indicated by Table 4.2.

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[1] Bundesbank, AR 1974, p.60.

[2] Bundesbank, AR 1971, p.46; AR 1974, p.32; AR 1972, p.37.

Table 4.1

Net Changes in the Supply of Central Bank Money 1972-1979 DM Billion

+ = increase; - = decrease in supply of central bank money

Purchases of foreign exchange by the Bundesbank	+71.0
Changes in the balances of the accounts of Federal Government and Länder at Bundesbank	+11.1
Changes in the balances of other non-credit institutions at the Bundesbank	- 1.6
Float	+ 4.0
Other factors (interbank money market)	-29.4
Open-market operations with non-credit institutions, in N-paper and long-term securities	- 8.3
Open-market operations with credit institutions under repurchase agreements	- 0.1
Foreign exchange swaps	- 2.4
Special and temporary Lombard facility	+ 4.2
Changes in required minimum reserves	+ 4.7
Minimum reserves on external liabilities	- 0.8
Total increase in central bank money	+52.4
In addition the free liquid reserves were increased on account of the following factors:	
Changes in rediscount quotas	+ 4.3
Changes in the money market indebtedness of non-credit institutions to credit institutions	+ 6.0
Total	+10.3

Source: Deutsche Bundesbank, Monthly Reports

Table 4.2

Percentage Changes in Wages and Salaries per Employee compared with Real Gross Domestic Product per Employee Period 1970-1979

Period	Annual Average Percentage Increase: Wages and Salaries per employee	Annual Average Percentage Increase: Gross Domestic Real Product per Employee
1970-1973	11.9	4.1
1974-1979	7.2	3.1

Source: Deutsche Bundesbank, Monthly Reports, January 1980 (article: 'The Growth of Productivity in the Federal Republic of Germany and its Determinants', p.12), May 1980

The experience in the period 1974-1979 (Table 4.2) is revealing because it coincided, except for the initial year, with the Bank's experiment with an annual monetary growth target. Apparently, the targets failed to convince the social partners of the need to raise wages by not more than the overall growth of labour productivity so as to maintain price stability.

Summarising, the Bundesbank had to contend with major problems in its control of the domestic financial system: foreign exchange inflows, government deficits and excessive wage rises.

4.2 The balance of payments

To the extent that the Bundesbank is prepared to buy foreign exchange from the credit institutions or the latter are able to sell foreign exchange and to invest the proceeds in assets eligible as free liquid reserves, bank liquidity is increased. Table 4.3 sets out the changes in the Bundesbank's holdings of external assets. The Bank's net purchases of foreign exchange in 1972, 1973, 1976 and 1978 must have had an expansionary effect on the liquidity of credit institutions and net sales in 1974, 1975, 1977 and 1979 a contractionary effect.

Table 4.3

Changes in the Bundesbank's Holdings of External Assets (Balances with foreign banks and Money Market Investment abroad). Percentage changes over one year ago. Period 1972-1979

At end of	1972	1973	1974	1975	1976	1977	1978	1979
March	16.2	68.1	- 6.0	-15.4	6.1	-11.7	27.2	- 3.3
June	31.4	34.8	- 3.0	-24.2	5.6	- 5.7	25.6	-23.5
September	36.9	40.7	-25.4	-16.8	23.0	- 7.7	35.3	-26.0
December	38.7	26.0	-24.4	3.1	1.4	12.1	27.9	-30.5

Source: Deutsche Bundesbank, Monthly Reports

Table 4.4 indicates that the credit institutions themselves have also been accumulating external assets throughout the review period, with the exception of 1972.

Table 4.4

Credit Institutions' Holdings of External Assets - Percentage Increase Over One Year Ago

At end of	1972	1973	1974	1975	1976	1977	1978	1979
March	0.7	-4.5	7.8	32.7	33.3	10.2	10.2	11.0
June	-1.0	0.7	13.5	32.7	23.8	11.9	8.6	11.9
September	-1.5	4.1	15.4	42.7	12.7	12.3	7.9	10.0
December	-3.4	14.6	25.7	40.9	13.3	7.8	9.2	6.9

Source: Deutsche Bundesbank, Monthly Reports

The recession of 1974/75 saw the greatest accumulation. This suggests that the credit institutions might have substituted external assets for free liquid reserves during periods of slack economic activity. In view of the uncertainties prevailing in a recession, banks are cautious and invest their liquid funds in bonds and other securities rather than trying to expand their loans. The Bundesbank's attempt to implement a stimulating monetary policy to overcome the recession, therefore, failed to generate the expected response on the part of the banking system.

It goes without saying that the balance of payments, and in particular the overall balance which indicates whether there has been a net inflow or outflow of funds, is of major importance for the liquidity of the banking system. Table 4.5 shows that there was a net inflow of funds, mainly due to transactions on current account, during the review period.

Table 4.5

Balance of Payments - 1972-1979 - DM Billions

Year	Balance Current Acc.	Capital Accounts Total	Short-Term	Balance All Transactions
1972	+ 2.6	+12.0	- 3.5	+15.7
1973	+12.3	+13.2	+ 0.3	+26.4
1974	+26.6	-25.3	-19.1	- 1.9
1975	+ 9.9	-13.3	+ 5.0	- 2.2
1976	+ 9.7	- 0.1	+ 0.5	+ 8.8
1977	+ 9.8	- 0.8	+12.2	+10.5
1978	+17.5	+ 5.8	+ 8.5	+19.8
1979	-10.5	+ 9.7	- 1.0	- 5.0

Source: Deutsche Bundesbank, Monthly Reports

4.3 The public authorities' finance

According to Table 4.6 the total indebtedness of the public authorities has increased continuously during the period 1972-1979.

Depending on the way in which they are financed, public sector deficits can have a major impact on bank liquidity. For example, if Treasury Bills and Discountable Treasury Bonds are issued and included in the Bundesbank's money market regulating arrangements, the credit institutions' free liquid reserves will rise. To eliminate this possibility, the Bank has been issuing N-paper, which must be held until maturity, in recent years. This might have caused the banks to obtain cash by selling bonds, thereby raising yields on the bond market.

Table 4.6

Total Indebtedness of Public Authorities - Percentage Change over one year ago

End	1972	1973	1974	1975	1976	1977	1978	1979
March	13.6	11.6	2.3	20.7	33.0	13.3	14.2	12.5
June	13.4	9.4	4.4	25.9	27.1	14.5	12.5	13.9
Sept.	12.8	8.3	7.6	30.5	24.1	11.0	15.0	10.6
Dec.	11.2	7.5	14.7	33.3	15.7	10.7	12.9	11.8

Source: Deutsche Bundesbank, Monthly Reports

4.4 Some key facts of monetary analysis

The impact of public sector borrowing and the inflow of foreign capital can be deduced from the scheme of the Bundesbank's monetary analysis: [domestic lending by the banking system + net external assets] - [public sector balances + monetary capital formation] = Money Supply.

The key variables rose at the following compound rates during the review period:

Domestic lending by credit institutions to others	11.0%
Monetary Capital Formation (long-term bank liabilities)	11.5%
M1 (means of payment)	9.8%

By way of comparison, the following variables are of interest:

Cost of Living Index All Groups	5.0%
Index of Net Industrial Production	2.3%

The similar growth rates of bank lending and monetary capital formation mean that the sharp growth of M1 must have originated in net external claims and the finances of the public authorities.

The considerable monetary expansion notwithstanding, the rate of price increases has been moderate.

This raises the question to what extent, if any, monetary policy has contributed to this favourable result.

In terms of the Bundesbank's basic concept, an effective monetary

policy would require the amount of potential central bank money (free liquid reserves) to be as close to zero as technically possible. The Bundesbank is only able to control bank liquidity by manipulating the marginal cost of central bank money if this condition is met. For an examination of this point, the review period can be divided, roughly speaking, into the following subperiods:

a.	End 1971-end September quarter 1972	Policy not restrictive
b.	Dec. quarter 1972-Sept. quarter 1974	Restrictive policy
c.	Dec. quarter 1974-Dec. quarter 1978	Stimulative policy
d.	1979-	Restrictive policy.

Table 4.7 makes it clear that during periods of restrictive policies, the ratio of free liquid reserves to central bank money was indeed quite low, whereas it tended to be relatively high during stimulative periods. Table 4.7 further demonstrates that the Bundesbank, consistent with its concept, implemented its restrictive policies by raising the marginal costs of central bank finance, as proxied by the normal Lombard rate of interest.

An interesting aspect of the stimulative periods is that the credit institutions had a large supply of potential central bank money, so that they could have expanded their lending much more than they actually did. This underlines again that banks respond asymmetrically to monetary policy. They respond as intended to restrictive policies, but not to stimulating policies during a recession.

The information provided by the ratio of free liquid reserves to central bank money may be used to interpret diagrams 4.1 and 4.2 which set out the relationship between Bundesbank lending to credit institutions in real terms and net industrial production and between changes in bank lending to industry in real terms and changes in industrial production respectively. The linear product moment correlation coefficients were 0.58 and 0.69 respectively.

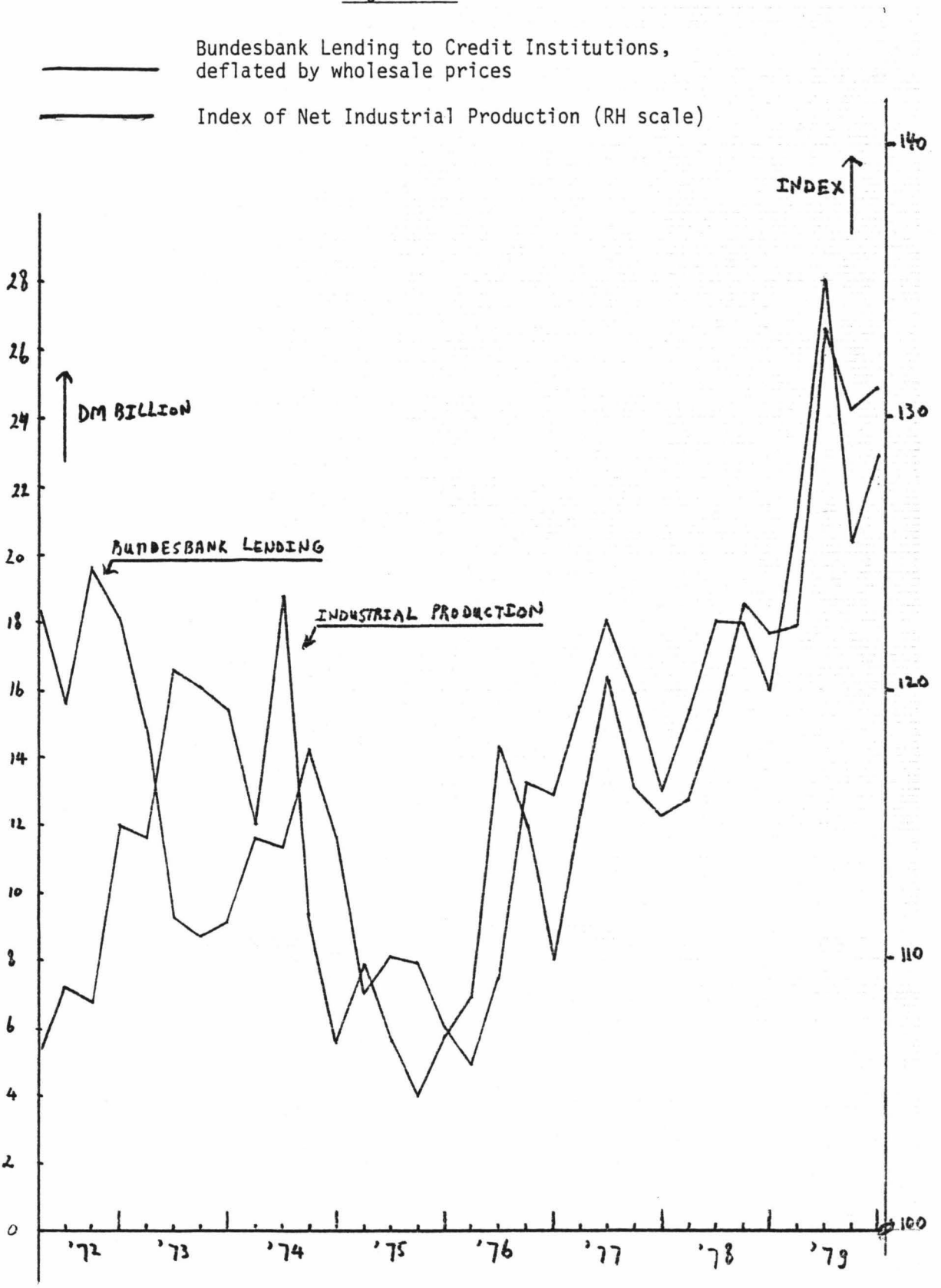
Table 4.7

The Ratio of Free Liquid Reserves to CBMS compared with the (normal) Lombard Rate of Interest - Period 1972-1979 - %

As at end of	Ratio of Free Liquid Reserves to CBMS %	Lombard Rate %	Ratio of Free Liquid Reserves to CBMS %	Lombard Rate %
	Restrictive Periods		Stimulative Periods	
1972 March			16.3	4.0
June			19.3	4.0
Sept.			7.0	4.0
Dec.	8.3	6.5		
1973 March	2.2	7.0		
June	1.9	9.0		
Sept.	3.0	9.0		
Dec.	3.1	9.0		
1974 March	2.3	9.0		
June	1.6	9.0		
Sept.	2.0	9.0		
Dec.			4.5	8.5
1975 March			10.5	6.5
June			8.7	5.5
Sept.			12.3	4.5
Dec.			13.5	4.5
1976 March			13.6	4.5
June			9.8	4.5
Sept.			5.2	4.5
Dec.			6.1	4.5
1977 March			4.3	4.5
June			6.6	4.5
Sept.			8.4	4.0
Dec.			10.3	3.5
1978 March			8.0	3.5
June			6.8	3.5
Sept.			6.4	3.5
Dec.			9.7	3.5
1979 March	2.8	5.0		
June	2.5	5.5		
Sept.	1.9	6.0		
Dec.	2.8	7.0		

Source: Deutsche Bundesbank, Monthly Reports

Figure 4.1

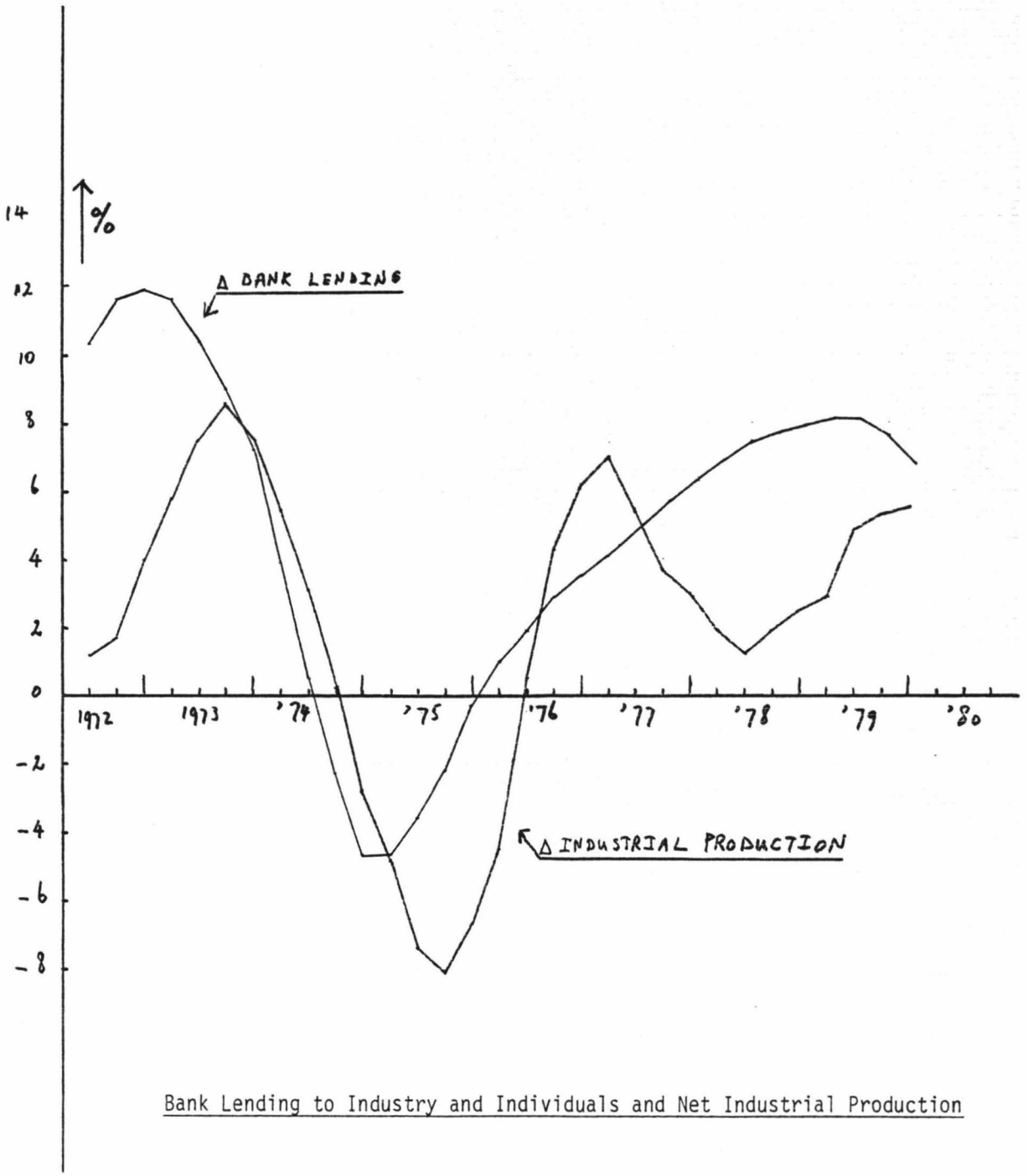


Bundesbank Lending to Credit Institutions and Net Industrial Production

Figure 4.2

Bank Lending to industrial enterprises and individuals % change over one year ago 12 months mov. average deflated by wholesale prices

Net industrial production % change over one year ago 12 months mov. average



Bank Lending to Industry and Individuals and Net Industrial Production

Since during stimulative periods the banks did not exhaust their lending potential, it can be surmised that in those periods the correlation between central bank lending and bank lending on the one hand and industrial production on the other was caused basically by developments in the real economy, in the sense that the banking system provided the loans which were demanded at given rates of interest (horizontal supply schedule). During periods of restrictive monetary policy, the Bundesbank constrained the banks to reduce their supply of bank loans, so that their supply schedule shifted upwards to the left. In this connection it is interesting to note that according to Figure 4.1 the reduction in the Bundesbank's lending to the credit institutions in 1972/73 preceded the decline in production in 1974. Figure 4.2 suggests that the upturn in production in the period 1976/77 (a move out of the recession) preceded an increase in bank lending.

4.5 The Bundesbank's restrictive policy of 1973

A brief description of the implementation of a restrictive policy may convey not only how the Bundesbank tried to put its ideas into practice, but also how the dilemma between external and internal equilibrium continued to bedevil them. When on 19 March 1973 the DM was floated, and thus the Bank released from its obligation to buy USA dollars in support of the rate of exchange between the dollar and the DM, the Bank set out to regain full control of internal monetary development. The preceding year had been a boom year, with both the current and the capital account of the balance of payments in surplus and the money supply, as measured by M1, rising rapidly.

The Bank's first move was to raise the minimum reserve ratios on domestic liabilities, retroactively, as from 1 March. This was followed quickly by increases in the rediscount rate and the Lombard rate.

On 1 June the Bank stopped granting Lombard loans. In January 1973 the Bank had already decided to lower the rediscount quotas by 10 percent with effect from 1 March. To counter excessive fluctuations in interest rates on the money market (the day-to-day rate had been as high as 40 percent on certain days), the Bank introduced new fine-tuning devices. In April 1973, the credit institutions were notified that they could sell commercial bills of exchange, eligible for rediscount, to the Bank under repurchase agreement, for a period of 10 days, at an interest rate of 12 percent, the rediscount rate being 5 percent at that time. This facility has been made available for short periods only. The highest rate of interest recorded for this facility was 16 percent per annum in the first week of September 1973, when the rediscount rate stood at 7 percent. In order to moderate swings in interest rates, the Bundesbank sold Treasury Bills, running for fixed periods of 5 and 10 days, to credit institutions at very low rates of interest, for short periods in August and October 1973. Since the bills concerned were not included in the Bank's money market regulating arrangements, they had to be kept till maturity. With effect from 1 October 1973, the use of rediscount quotas was lowered from a general level of 60 percent to levels ranging from 45 to 60 percent, depending on the amount of capital and reserves of the credit institutions. On 1 November 1973, minimum reserve ratios for sight and time deposits were raised again, by 3 percent.

So as to discourage further inflows of foreign funds, the Bank decided at the same time to reduce the basis from which increases in external liabilities, subject to reserve requirements, were to be calculated. A similar move had been made at the end of June 1973.

The combined effect of the measures outlined must have been a considerable increase in the marginal cost of central bank finance

for the credit institutions [3].

During November 1973 overseas investors started to withdraw capital from Germany. In order to help the credit institutions to overcome liquidity problems, resulting from this withdrawal, the Bundesbank re-introduced Lombard loans, albeit at a high rate of interest (13 percent) and repayable at one day's notice. For the same reason, the limits on the use of rediscount quotas were raised again by 15 percent, so that they varied between 60 and 75 percent of the official quotas. The restrictive domestic policy had to be mitigated, therefore, on account of external factors.

It is interesting to note that the Bundesbank did not allow the withdrawal of capital to be reflected in a depreciation of the currency. Most likely it wanted to maintain the appreciation that had occurred in order to moderate price increases and to eliminate the undervaluation of the D-Mark (see chapter two).

4.6 The effectiveness of the Bundesbank's interest rate policies

A critical question for a monetary policy which acts on the marginal cost of central bank finance is whether and, if so, how quickly the credit institutions will adjust their interest rates accordingly. As argued above, a policy to restrain a boom is more likely to generate the intended response than a policy to combat a recession. Nevertheless,

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[3] The increases in minimum reserve ratios meant that for a given expansion of bank liabilities subject to minimum reserve requirements more money had to be deposited at the central bank (loss of income). Cuts in rediscount quotas implied that the banks could obtain less central bank finance at the rediscount rate and had to apply sooner for special central bank credit. As Lombard credit was suspended, the required funds had to be borrowed in the money market at very high rates of interest. There were also major increases in the rediscount rate. The increases in minimum reserve ratios and the cuts in the rediscount quotas were estimated by the Bundesbank to have tied up about DM 14.9 billion (compared with DM 44 billion required reserves at the end of 1972). Thus, the cost of central bank finance required to finance a given expansion of bank liabilities had increased markedly.

the question should be asked why a bank should pay heed to a restrictive central bank interest rate policy.

If it is assumed that a bank expands its lending to the point where its marginal revenue equals its marginal costs, then an increase in the rediscount rate or in the minimum reserve ratios will hit hardest when the bank is very close to its equilibrium point. The bank must then decide whether to reduce its lending or to raise its loan rates or to reduce its deposit rates.

In practice, it is difficult to determine when the equilibrium point is reached. Something can be learnt, however, from the margin a bank has between its loan and deposit rates or between its loan rates and the yields it could earn by investing in financial assets [4]. In general, the smaller these margins are, the more successful the central bank's interest rate policies are likely to be. Should the margins be high, then the bank might give priority to maintaining its market share and could thus respond to a restrictive policy by increasing its deposit rates more rapidly than its loan rates, so as to attract a higher volume of deposits.

Figure 4.3 reproduces the margin between the credit institutions' highest lending rate and their deposit rate for time deposits with a term of three months, as well as the Bundesbank's rediscount rate. Clearly, the margin was squeezed when the rediscount rate was raised both in 1972/73 and in 1979. In each case the deposit rate was adjusted more rapidly than the loan rate. Similarly, during the recession of 1974/75, the deposit rate was lowered more quickly than the loan rate. Figure 4.4 shows a similar picture for the margin between the highest

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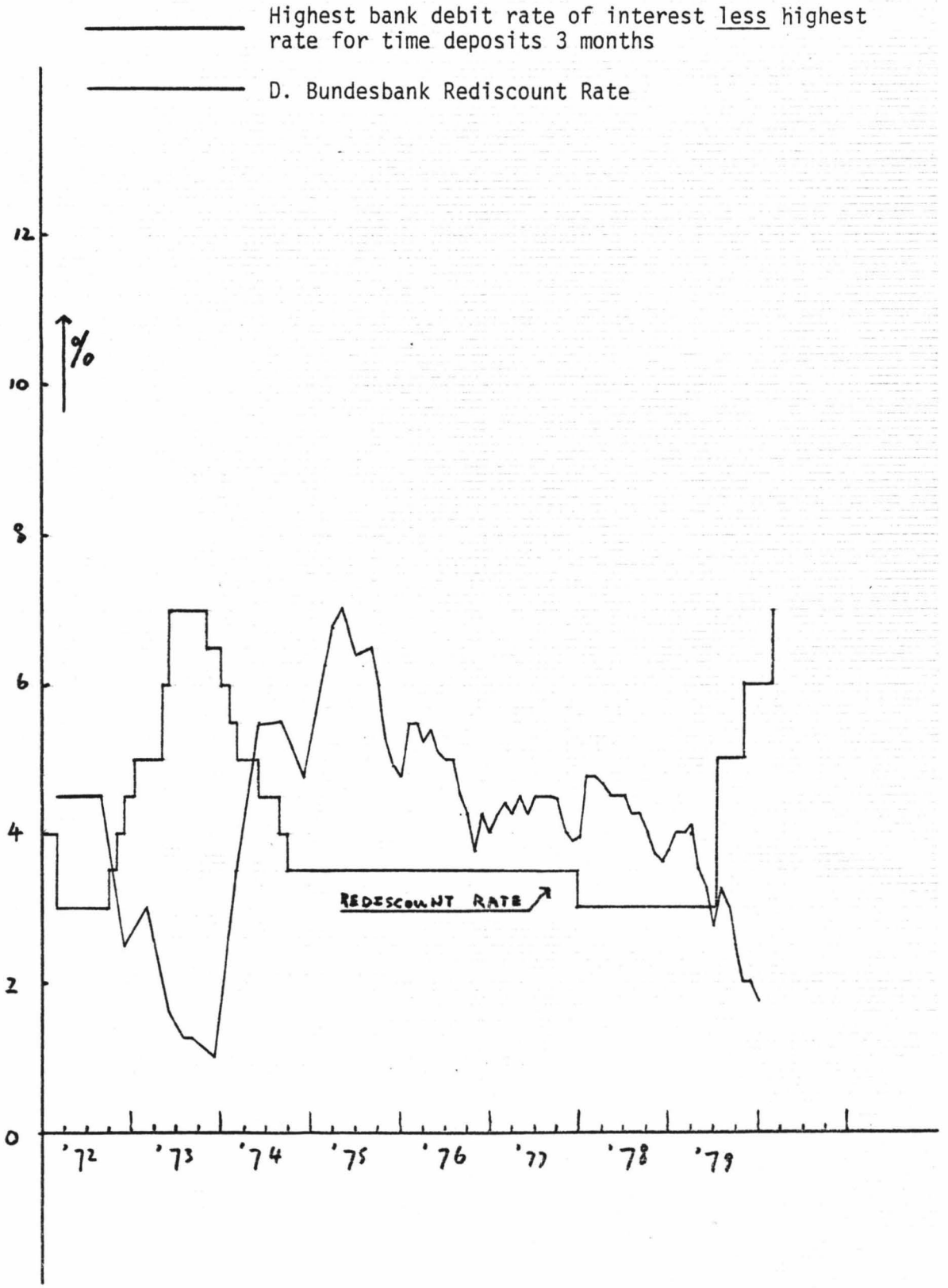
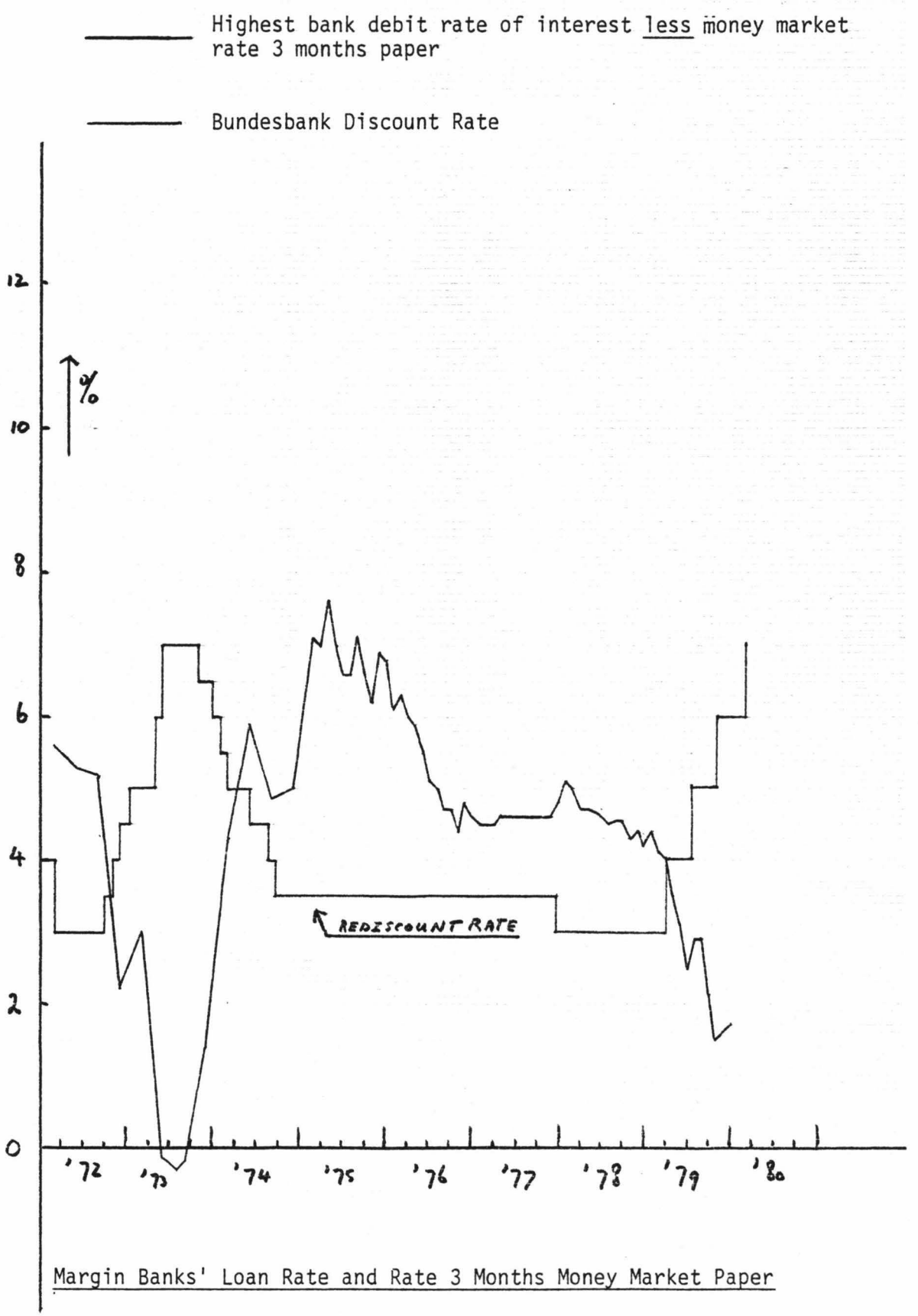
[4] Neubauer, W. [1972], p.223.

Figure 4.3



Margin between Banks' Loan Rate and Banks' Deposit Rate 1972-1979

Figure 4.4



Margin Banks' Loan Rate and Rate 3 Months Money Market Paper

lending rate and the money market rate for three months' paper. The latter, of course, is the rate as it is determined by demand and supply on the money market. Figure 4.5 sets out the margin between the banks' highest loan rate and the Bundesbank's selling rate for Treasury Bills of 60-90 days, an administered rate, therefore. In July 1973 the Bundesbank raised this rate from 6.75 percent to 7 percent, which compared with 2.75 percent a year ago. The rate for 3 months money market paper had reached 14.3 percent in July 1973, compared with 4.65 percent a year ago. After July 1973, the banks' loan rate was increased further to reach a peak of 15 percent in December 1973. The money market rates, however, either remained stable or declined a little subsequent to July 1973. There was, therefore, a lag between the time when the money market was tightened and the time these pressures were translated into higher loan rates. This lag explains the rising margin in Figure 4.5 during the second half of 1973.

Figure 4.6 sets out the margin between the credit institutions' lending rates and the interest rate charged to prime borrowers of three-months Eurodollar loans with DM forward exchange rate cover [5]. Since 1973, the margin has narrowed considerably, indicating a progressive integration of the two markets.

The importance of the credit institutions' interest rate margins for the transmission of monetary policies can easily be established with reference to the situation confronting the Bundesbank at the end of March 1979, when it was in the process of carrying out a restrictive monetary policy. The main features were:

a. A positive margin of 3.6 percent between the Eurodollar short-term

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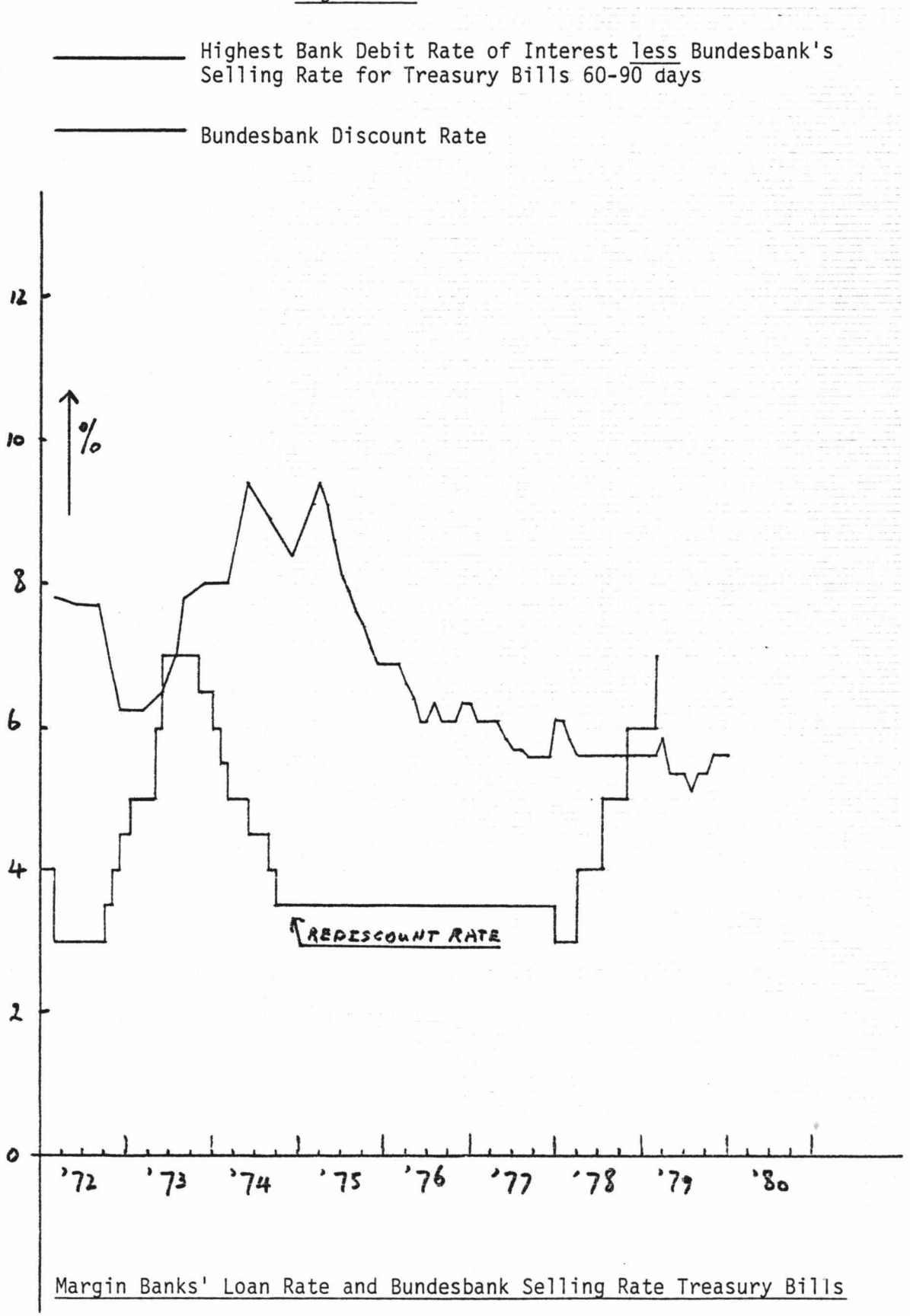
[5] Letter from the Bundesbank reproduced in Appendix 2.

Figure 4.5

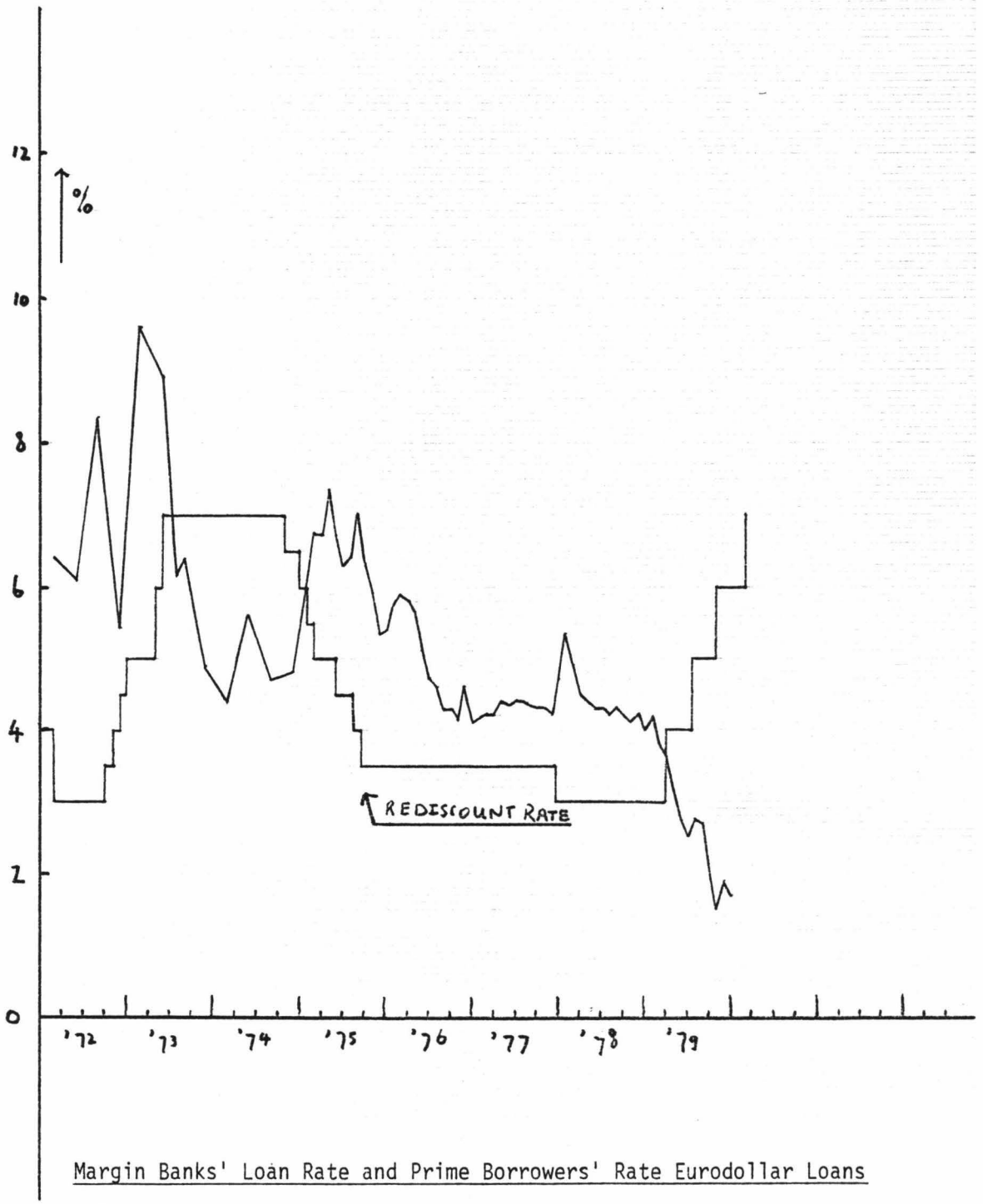


Margin Banks' Loan Rate and Bundesbank Selling Rate Treasury Bills 60-90 days

Figure 4.6

Bundesbank Rediscount Rate

Highest Bank Debit Rate of Interest less Rate for Prime Borrowers of Eurodollar Loans with DM Forward Exchange Cover



Margin Banks' Loan Rate and Prime Borrowers' Rate Eurodollar Loans with DM Forward Exchange Cover 1972-1979

rate, corrected for forward coverage, and the credit institutions' loan rates.

b. A positive margin of about 5.5 percent between the credit institutions' loan rates and the very short-term money market rates.

c. A margin of 4 percent between the loan rates and three months money market paper, the margin showing a decreasing trend.

d. A similar margin between the credit institutions' loan and deposit rates.

e. A low 2.8 percent ratio of free liquid reserves to CBMS.

A restrictive policy would, therefore, be able to push up money market interest rates rather rapidly. The Bank could not expect, however, that the credit institutions would respond by increasing their loan rates accordingly. The boom presented, no doubt, lucrative lending opportunities. In order to maintain their liquidity and ability to lend, the credit institutions would be more likely to raise their deposit rates more rapidly. This is precisely what they did. The deposit rate for time deposits with a term of three months was raised from 4.5 percent in January 1979 to 9.5 percent in December of the same year, whereas the highest loan rate went from 8.25 percent to 11.25 percent during the same period.

Table 4.8 indicates that the rate of bank lending was increasing during 1979. As a result of the sharp rise in deposit rates, the amount of term deposits, with terms less than four years (i.e. M2 - M1) rose markedly during 1979, whereas the amount of M1 decelerated. Consequently, the Bundesbank's restrictive policy had more impact on the composition of the liabilities side than on the assets side of the banks' balance sheets. Table 4.8 shows that the Bundesbank's restrictive policy of 1973 had similar effects, the only difference being that the rate of bank lending decelerated. Both in 1973 and in 1979, the credit

Table 4.8

Movements in Bank Lending and in Monetary Aggregates 1972-1979
Percentage Changes in 12 months' moving averages, over one year ago

A. Total Bank Lending to Domestic Non-Credit Institutions

End of	1972	1973	1974	1975	1976	1977	1978	1979
March	12.3	14.8	12.1	8.1	9.0	11.0	9.3	11.1
June	13.4	14.6	10.8	7.8	10.1	10.5	9.4	11.8
Sept.	14.1	14.2	9.6	7.5	11.3	9.6	10.0	12.0
Dec.	14.4	13.5	8.8	8.0	11.4	9.4	10.5	12.1

B. Monetary Capital Formation, incl. All Savings Deposits

March	4.0	15.1	11.8	10.0	15.6	12.0	9.0	8.9
June	7.6	14.7	11.0	11.1	15.3	11.1	8.7	9.0
Sept.	11.3	13.7	10.5	12.6	14.5	10.2	8.7	9.1
Dec.	14.6	12.8	10.0	14.4	13.3	9.5	8.7	9.1

C. M1

March	13.0	13.5	2.9	8.7	14.9	8.4	9.7	12.6
June	13.2	12.4	1.7	11.2	14.5	7.1	11.4	11.5
Sept.	13.3	9.2	3.5	12.6	13.3	6.7	12.5	9.8
Dec.	13.6	5.7	6.0	14.1	10.4	8.0	13.3	7.5

D. M2 - M1 (term deposits with a term of less than 4 years)

March	15.2	18.7	36.3	1.9	-19.7	5.1	7.9	11.1
June	12.7	25.7	30.8	- 7.3	-16.1	8.8	6.6	14.9
Sept.	14.9	31.3	20.6	-13.1	-10.0	9.5	7.3	17.1
Dec.	15.5	36.5	10.3	-16.9	- 2.4	8.7	8.9	16.6

Source: Deutsche Bundesbank, Monthly Reports

institutions had margins which allowed them to give priority to serving their clients' demand for finance. The Bundesbank's policy would have had a more direct impact on loan interest rates if the margins of the credit institutions had been lower. The conclusion is that the Bundesbank's policy of meeting a higher demand for central bank finance at higher marginal costs has not been a major constraint on the credit institutions'

lending during periods of high economic activity. The higher costs of central bank finance are passed on to customers with a time lag which is a function of the margin between the credit institutions' loan and deposit rates.

4.7 The functioning of money

The acid test of a central bank's policies is how well they help to maintain and improve the functioning of money.

Putting it in the form of a question: does the economy draw all the benefits from the use of money which it is able to provide?

a) Money as a means of payment

Table 4.9 sets out the extent to which use has been made of finance provided by the banking system.

Table 4.9

Selected Items of the Consolidated Balance Sheet of the Banking System 1972-1979

	DM Billion					Percentages				
End of	1972	1974	1975	1978	1979	1972	1974	1975	1978	1979
Claims on Public Auth.	112.4	142.8	197.4	285.3	311.7	16.5	17.5	21.9	23.5	23.1
Claims on Priv. Sector Total	569.3	672.1	703.2	926.7	1039.5	83.5	82.5	78.1	76.5	76.9
Total All Claims	681.7	814.9	900.6	1212.0	1351.2	100.0	100.0	100.0	100.0	100.0
Short-term Claims on Private Sector	155.9	179.7	171.2	205.6	236.5	[1]27.4	26.7	24.3	22.2	22.8

[1]Short-term claims on private sector as a percentage of total claims on the private sector.

Source: Deutsche Bundesbank, Monthly Reports

Not surprisingly, the Bundesbank became increasingly concerned about developments in public finance.

In 1977 the Bank complained about the large size of the projected public sector deficit of 4.5 percent of GNP [6].

The next year it pointed out that a bunching of public and private demand in the construction market had been responsible for increased costs and prices in that sector and that there were narrow limits to 'a policy of boosting economic activity in Germany by expanding public capital investment ...' [7]. In 1979 it warned of the dangers of public deficits remaining high, while the economic situation was improving [8].

The need to combat the recession of 1974/1975 probably warranted an increase in the money supply beyond the growth rate of industrial production. Nevertheless, the overall impression is that the actual rise of 9.8 percent compound was too large compared with the compound growth rate of industrial production of 2.3 percent.

b) The liquidity function of money

Table 4.10 shows that the amount of primary liquidity (M1) per head of the population has been increasing rapidly since the second half of 1974. Over the whole period there was an increase in real terms of 44 percent. This suggests that M1 has been used not only as a means of payment, but also as a means of preparing for future payments.

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[6] Bundesbank, AR 1977, p.11.

[7] Bundesbank, AR 1978, p.18.

[8] Bundesbank, MR December 1979, p.21.

Table 4.10

The Use of M1 for Liquidity Purposes

M1 (12 months moving average) per head of the population and corrected for changes in the Cost of Living Index (All Groups)

End 1971 = 100

End of			
Dec. 1971	100.0	June 1976	118.3
June 1972	103.5	June 1977	122.1
June 1973	109.1	June 1978	131.7
June 1974	103.4	June 1979	143.8
June 1975	108.4	Dec. 1979	144.0 (est.)

Source: Deutsche Bundesbank, Monthly Reports. Population estimates are only available for the middle of the year.

It should be noted that the long-term rate of interest rose sharply in 1973/74 and declined in 1975-1978. The decrease in the opportunity costs of holding cash balances could explain the sharp rise in the period 1975-1979. The ratio of M1 to GNP, as set out in Table 4.11, also suggests this.

Table 4.11

The Ratio of M1 to GNP (at market prices) and the Ratio of Currency to Demand Deposits

Year	M1/GNP[1] %	Currency/Demand Deposits[2] %
1972	14	34
1973	14	34
1974	14	34
1975	14.5	33
1976	15	32
1977	15	33
1978	16	33
1979	16	33

[1]M1 is calculated from 12 months moving averages as: ½(end year 1 + end year 0).

[2]Calculated as average of 4 end-of-quarter ratios.

Source: Deutsche Bundesbank, Monthly Reports

The ratio of currency to demand deposits has been remarkably stable. The absolute amount of currency in circulation has increased considerably, but not at a faster rate than the amount of sight deposits. There is no evidence that sight deposits have been transformed into coins and banknotes so as to spend money at a faster rate. The large amount of real money balances means that, on the assumption of a continuing moderate rate of inflation, economic subjects have considerable spending power. The Bundesbank has certainly recognised the danger to price stability this involves. It described this development as 'excessive monetary growth' [9] and as 'a growing danger of the "monetary cloak" of the economy becoming too large in the long run' [10], so that there is a risk of '... the monetary side no longer curbing an excessive growth of demand and thus a future rise in prices' [11]. This suggests that the Bundesbank's metaphor of the "monetary cloak" refers to money's liquidity function.

c) Money substitutes

The Bundesbank has observed that inflation or expected inflation tends to stimulate a flight into real estate, or to use its own graphic description, into "brick-and-mortar gold or marks". Thus, in 1972 it attributed a strong demand for residential property to the spreading of an inflation mentality [12]. The strong increase in

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[9] Bundesbank, MR February 1979, p.12.

[10] Bundesbank, AR 1978, p.27.

[11] Bundesbank, AR 1978, p.36.

[12] Bundesbank, AR 1972, pp.3, 4.

interest rates in 1973 apparently helped to slow down this demand, but without the expectations of inflation dying out [13]. In 1974, it reported that the inflation mentality had been overcome and that people had started to save again [14]. For the construction industry this resulted in a major downturn in 1974/75.

Table 4.10 indicates that an accumulation of real cash balances started in 1975/76, that is after the sharp downturn in the demand for real estate and after the Bundesbank's stringent monetary policy had quelled the 'inflation mentality'.

During the preceding boom, real estate had not been substituted for financial wealth in response to an observed increase in real cash balances above a desired level, as the portfolio balance theory would have it, but rather because prices were expected to keep rising. Expectations of increasing inflation inspire people to reduce their cash balances or even to go into debt. In spite of a relatively moderate rate of price increases, in recent years, there are signs that the German public continues to fear inflation. Currently, for instance, German citizens are holding about DM 28 billion of gold coins, that is the equivalent of about 10 percent of M1 [15].

d) Money and prices

Prices can be viewed as amounts of money to be paid for individual units of goods and services [16]. These amounts must be determined by economic subjects. For this reason, the setting

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[13] Bundesbank, AR 1973, p.9.

[14] Bundesbank, AR 1974, p.16.

[15] Bundesbank, MR May 1980 art.: 'Gold Transactions in the balance of payments of the Federal Republic of Germany', pp.27-30.

[16] Bos, P. C. [1969], p.58.

of prices is to be regarded as a distinct function of money. Relative price changes may be beneficial when they stimulate people to undertake new activities or to stop wasteful practices or to expand profitable ones. Table 4.12 attempts to pinpoint the most important relative price changes during 1972-1979.

Table 4.12

Changes in Prices During 1972-1979

Price Index	% Period A End 1972-1974	% Period B End 1974-1979	% Period C 1972-1979
Residential Building[1]	15.6	28.5	48.5
Producer Prices Total[1]	20.3	19.1	43.2
Import Prices[1]	52.0	13.3	72.2
Export Prices[1]	24.9	16.9	46.1
External Value DM/23 currenc[2]	28.1	17.8	50.9
COL All Groups[1]	14.7	22.8	40.9
Services[1]	15.0	27.4	46.6
Industrial[1]	15.5	22.4	41.4
Food[1]	14.8	18.3	35.8
Rates of Wages and Salaries[1]	25.0	37.1	71.4
Labour Productivity[3]	6.6	20.3	28.2

Source: Deutsche Bundesbank, Monthly Reports

[1]Percentages calculated from 12 months moving averages.

[2]Derived from monthly averages, calculated by Bundesbank. The 23 currencies cover Germany's major trading partners. The index is a weighted geometric mean and has only been available since the end of 1972.

[3]Real Gross Domestic Product per employed person.

The outstanding features of the three periods considered are:

Period A (1972-1974)

The most striking development was, no doubt, the boom in the prices of raw materials on world markets, and especially the rise in the price of oil.

Period B (1975-1979)

During this period the floating D-Mark appreciated in real terms, so that import prices rose much less than other prices. Noteworthy is also the high rise in the price of services. This was probably caused by the substantial increase in wage rates during this period.

Unemployment rose from 2.6 percent (unemployed as a percentage of employed wage and salary earners) in 1974 to 4.7 percent in 1975 and has since dropped slowly to 3.8 percent in 1979. The number of foreign workers declined from 2.3 million in 1974 to 1.9 million in 1978.

Period C (1972-1979)

Taking the review period as a whole, the substantial excess of wage and salary pay rates over labour productivity of, in round terms, about 40 percent, stands out. Secondly, on balance there was a relative rise in the price of imports. As noted above, this rise was concentrated in the early seventies. From a low of 0.9 percent of employed wage and salary earners in 1971, the unemployment ratio increased to a peak of 4.7 percent in 1975. It has declined to 3.8 percent in 1979.

Not shown in Table 4.12 is the "real" appreciation of the D-Mark that is the appreciation of the DM in nominal terms corrected for differences in inflation rates between West Germany and its trading partners (relative purchasing power theory). The only statistical information on this is given in a diagram in the Annual Report. This shows an effective or real appreciation of about 10 percent up till the end of 1978. This average masks, no doubt, a wide variety of effective appreciations in terms of individual currencies. The effective appreciation must have put pressure on export prices. It has also provided for a sharper competition of imports. Both factors have probably created an incentive for modernisation and

rationalisation in industry.

A similar impulse has been given by the marked rise in labour costs. Since the prices of capital goods have risen to about the same extent as producer prices in total, employers have had an incentive to replace labour by capital.

In the longer run these developments could result in the marketing and production of new products.

4.8 The appreciation of the Deutsche Mark

The Bundesbank's attitude to the "real" appreciation of the DM has been ambiguous. On the one hand, the Bank analyses effects such as the loss of employment opportunities resulting from the decline of uncompetitive export industries, the growing competition from imports and the low profitability of export industries which endeavour to maintain their market shares [17]. On the other hand, the Bank discusses advantages such as lower import prices and the reduced scope for passing on cost increases on the domestic market and the gains in international productivity brought about by a better allocation of factors of production in the world at large and finally the maintenance of freedom of world trade.

The latter two advantages are not exclusively associated with a regime of flexible rates of exchange. They would also result from a system of fixed rates of exchange, subject to periodic adjustments in case of fundamental disequilibria. Under such a system, an industry in a foreign country can just as well become competitive on the German market, provided there is a divergent development of prices and costs in the two countries. The DM was indeed revalued when fixed rates

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[17] Bundesbank, AR 1978, pp.10, 20, 21.

of exchange were maintained under the Bretton Woods Agreements. This leaves the advantage of lower prices. In view of the Bundesbank's ultimate goal of price stability, this must certainly count as the major benefit of an appreciating currency.

Generally speaking, should the DM be allowed to appreciate freely in real terms, then German business could be confronted with flagging demand for its products both at home (owing to the Bundesbank's disinflationary policies and sharper competition from imports) and abroad. At the same time, cost levels abroad would decline relative to costs in Germany in terms of the D-Mark. This combination of factors would provide a strong incentive to German business to invest capital abroad, for example, in overseas subsidiaries or by participation in foreign enterprises [18]. This would help to maintain markets abroad in spite of rising cost levels in Germany.

Although the appreciation of the D-Mark, which had caused this state of affairs, would have contributed to price stability, it would also have had a depressing effect on employment in Germany. Price stability is, therefore, not always a precondition for full employment. This is not to deny, of course, that within Germany employment might rise in industries producing non-tradables, especially in the service industries [19]. There are indications that the Bundesbank would be prepared to counter the disadvantageous effects of an appreciation by means of reflationary monetary and fiscal measures [20].

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[18] Bundesbank, AR 1977, p.36.

[19] Bundesbank, AR 1978, p.4.

[20] Bundesbank, AR 1977, p.2.

4.9 Conclusion

During the review period, the Bundesbank was unable to offer the domestic credit system adequate protection against external monetary disturbances. Relatively large public sector deficits, and wage rises substantially in excess of labour productivity, aggravated its task of maintaining monetary stability.

The speed at which the Bundesbank's increases in the marginal cost of central bank finance are transmitted to the loan and deposit rates of the credit institutions is a function of the credit institutions' margin between these two rates. The higher this margin is, the more severe the central bank's monetary policy should be if it wants to achieve a reduction in the demand for bank credit. The banks tend to adjust their deposit rates sooner than their loan rates with a view to maintaining their market shares.

With the exception of two periods of restrictive monetary policies, 1973/74 and 1979, the credit institutions did not exhaust their potential for making bank loans. This implies that, with the exception of the two periods just mentioned, changes in bank liabilities (including the money supply, M1) were endogenous.

During the review period, a progressive integration of the domestic market for bank loans and the Eurocurrency markets could be observed.

The increase in the volume of money (M1) appeared to be too high for the functioning of money as a means of payment. Especially since 1975, large balances of M1 were held as a store of value. During the boom period of 1972-1974, there was a marked tendency to invest in real estate as an alternative store of value. With regard to money's pricing function, there were some significant changes in relative prices during the period considered, notably increases in wages in excess of increases in labour productivity, increases in the prices of raw materials

during the early seventies, and a "real" appreciation of the D-Mark between 1975 and 1979. The Bundesbank's attitude to a "real" appreciation of the D-Mark appears to be ambiguous. On the one hand, it recognises the structural problems it entails, such as a loss of employment opportunities, but on the other hand, it values its moderating effects on internal prices.

CHAPTER FIVE SUMMARY: A CONJECTURED REACTION FUNCTION

5.1 Assessment of a qualitative reaction function

This study has attempted to assess the Bundesbank's qualitative reaction function, understood as its basic view as to how the monetary sector should be controlled in order to achieve the ultimate goals of economic policy: price stability, economic growth, equilibrium in the balance of payments and full employment.

Such a view is necessarily broad and should not be confused with a theoretical concept.

Although the views of a central bank are influenced by the results of theoretical economic studies, the theoretical preferences of its policymakers tend to be eclectic, their choices depending, amongst others, on the institutional framework in which they are operating and the prevailing economic situation. One reason for this is that central banks are called upon to carry out their monetary policy in a market place which is part of a wide historic and institutional setting.

Consequently, an exploration of a central bank's institutional setting should be just as important as a study of its publications, if its qualitative reaction function is to be assessed.

A central bank's publications may be analysed from a variety of viewpoints. This study has made use of the theory of economic policy as developed by Tinbergen and adopted for monetary policy by Brunner and Meltzer. It requires the identification of policy instruments, operating target, intermediate target, policy indicator and ultimate goals. In addition, attention has been paid to the Bundesbank's views on the functions of money on the assumption that a central bank will be interested in seeing to it that, for its part, money functions in an optimal manner. Moreover, preference for a particular function

may point to a certain theoretical predilection.

The Bundesbank's preference for monetary systems, for instance, flexible or fixed rates of exchange, has also been looked at briefly.

5.2 Social market economy and sound money

Important features of the West German institutional framework are, first, the concept of a social market economy in which the State is expected to establish the social and other conditions, including "sound money", which would allow free markets to perform best. This has led to various pragmatic economic policies, for example in the form of major interventions in the free flow of capital into Germany in order to preserve internal monetary stability [1].

Second, two disastrous hyperinflations, in 1919-1923 and 1944-1947, have had a large imprint on the public's attitudes and expectations. This is certainly the political reason for the primacy of the goal of price stability and the independence of the Bundesbank. In the Bundesbank's view, price stability is, in fact, the key to the attainment of a high level of employment and economic growth [2].

5.3 Austrian theory of capital and liquidity theory of money

The abhorrence of inflation may also be the reason for the Bundesbank's preference for the monetary theories associated with the Austrian theory of capital [K. Wicksell, L. von Mises and F. A. von Hayek] [3]. In spite of differences between these theories, they share a strong preference for price stability or neutral money. They see inflation

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[1] See Section 2.1, pp. 20-22.

[2] See Section 3.10, pp. 76, 77.

[3] See Section 3.10, pp. 76, 77.

as caused by the banks' loan rate of interest dropping below the natural rate. The ensuing increase in the demand for bank loans serves to finance a volume of investment projects which cannot be financed out of voluntary savings. Consequently, the prices of finished products and labour will rise and an "inflation mentality" may arise which leads to unproductive speculative buying of real estate, land and so on. Continuing price rises will increase economic uncertainty and discourage productive long-term investment.

To prevent such a sequence of events, monetary policy should constrain the demand for bank credit by controlling the banks' loan rate of interest, making sure that it is as close as possible to the marginal productivity of new investment projects (i.e. the natural rate).

Another major school of thought which has had an impact on the Bundesbank's views is the "liquidity theory of money". It stresses that monetary policy should only finance a volume of demand which corresponds to the supply of real output. The Bundesbank's monetary target approach has been inspired by this view [4].

5.4 The Bundesbank's view of the transmission process

Figure 5.1 sets out schematically the Bundesbank's view on the transmission process of its monetary policies. For ease of exposition, it is assumed that the credit system is perfectly insulated against inflows of foreign capital.

A hypothetical case may illustrate the operation of the Bundesbank's policies.

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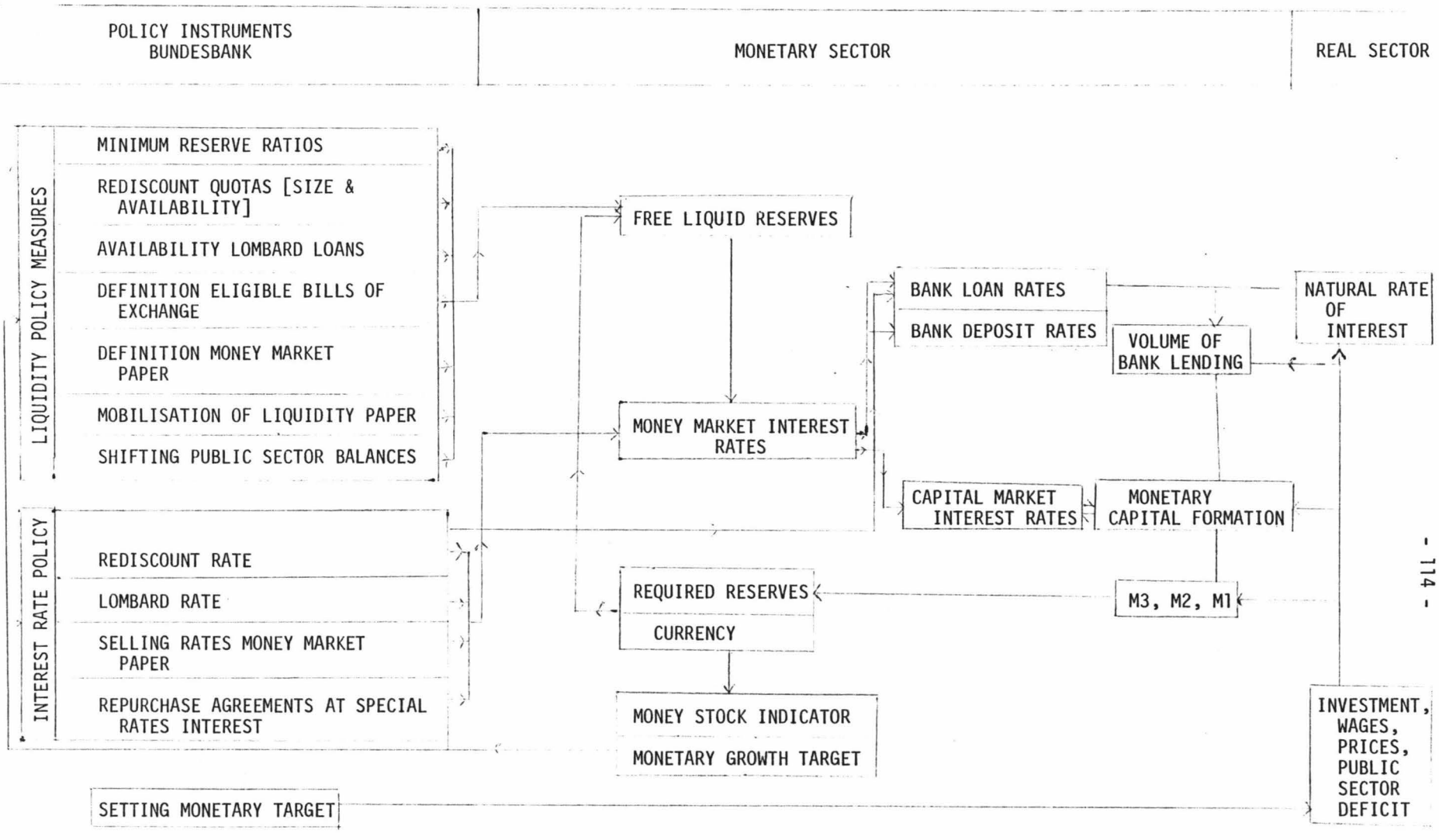
[4] See Section 1.3, pp. 3-6.

Figure 5.1

A Representation of the Bundesbank's View of the Transmission Process



At the beginning of each year the Bank determines a monetary growth target, defined as a percentage growth rate of the Central Bank Money Stock (CBMS), this being the sum of the banks' required reserve holdings calculated at constant (January 1974) minimum reserve ratios, augmented with the sum of currency in the hands of the public [5].

This target serves as a guideline for employers, trade unions and the government to help them to determine their bargaining stance, budgets, investment planning and so on [6]. They know that compliance with the target means that they will be able to obtain the finance they require at given interest rates. Should they exceed the target, then the Bundesbank would implement a more restrictive policy, so that bank credit would become more expensive and more difficult to obtain. This could result in the crowding out of the planned expenditures of groups which had not violated the growth target.

The need for and form of a more restrictive monetary policy is assessed on the basis of two criteria. First, the development of the monetary growth target. Second, the amount of free liquid reserves expressed as a percentage of central bank money. If the latter is high, then measures are called for to eliminate the credit institutions' free liquid reserves, in order to put the Bank into a position which allows it to set the conditions on which the banks may obtain central bank finance to expand their lending [7].

The Bundesbank's concern that the credit institutions should not be able to rely on a bufferstock of free liquid reserves as a source of

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[5] See Section 3.7, pp. 62-69

[6] See p. 69

[7] See Section 3.2, pp. 45, 46.

central bank money points to an influence of the liquidity theory of money [8].

The credit institutions could be compelled to liquidate their free liquid reserves by increases in the minimum reserve ratios, reductions in the rediscount quotas, restrictions on the availability of Lombard credit, more stringent criteria for eligible bills of exchange, a smaller range of money market paper which the Bank is obliged to buy back at any time, the issue of mobilisation and liquidity paper and a refusal to shift balances of the public sector from the Bundesbank to the credit institutions [9].

The resulting squeeze on bank liquidity pushes up money market interest rates. In turn, this raises the marginal cost of any additional central bank money required by the credit institutions if they continue to expand their lending. Sooner or later this will force the banks to adjust their loan rates [10]. In fact, an increase in minimum reserve ratios, without any accompanying measures, would already provide an incentive to the banks to raise their loan rates, because it requires them to keep more funds in non-interest bearing accounts. The rise in money market interest rates is then reinforced by appropriate changes in the Bank's interest rate policy instruments. The rediscount rate and the Lombard rate will be raised in any case. For instance, if the banks had initially a large unutilised rediscount quota, which would not be wiped out entirely by quota reductions, then the banks would be able to borrow central bank finance at a relatively low rate by rediscounting bills. A rise in the

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[8] See pp. 45, 46.

[9] See Section 2.6, pp. 30-35.

[10] See Section 3.2, pp. 45-49.

rediscount rate would prevent this. Moreover, increases in the rediscount rate have an impact on bank lending rates, especially on shorter-term rates [11].

Should the restrictive policy become really severe and result in very sharp interest rate movements in the money market, then the Bank could employ the device of repurchase agreements to stabilise the market.

In general, the credit institutions do not respond immediately to more expensive central bank money by raising their loan rates of interest. They will do so with a time lag which depends on the spread between their loan and deposit rates [12].

How soon the volume of bank lending will react to an increase in loan rates depends on the margin between the loan rates and the natural rate of interest [13]. It is worth pointing out that the latter may be influenced by decisions on wages and prices which the Bank attempts to control via its monetary growth target.

The rise in money market interest rates has also an impact on the capital market. In order to obtain short-term finance, the banks are likely to sell bonds from their portfolios, so that capital market rates go up. This, in turn, affects interest rates charged, for instance, for long-term mortgages. In addition, a rise in capital market rates enables the banks to offer better terms for long-term funds (monetary capital formation). The Bundesbank favours the latter, because it tends to reduce household sector liquidity, as funds are deposited long-term at the banks [14].

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[11] See pp .48, 49.

[12] See Section 4.6, pp. 91-100.

[13] See Section 3.5a, pp. 56-58.

[14] See Section 3.3a, pp. 50-52.

A high interest rate policy would thus improve the supply of funds to the capital market (with a time lag). Interestingly, the Bundesbank is also involved in the administration of the demand for long-term funds in the bond market [15] and it could use its influence in this way to enforce its monetary policy. The combination of a reduction in the volume of bank lending and an increase in monetary capital formation has the effect of reducing the money supply M3 and hence, via the operation of the minimum reserve ratios, the central bank money stock.

In this context, monetary capital formation functions as a device to control the growth of the money stock supply [16]. As such it is a surrogate for large-scale open-market operations, which are ruled out owing to the small size of financial markets in Germany [17].

The Bundesbank sees the money stock supply as important in its own right. Once money has entered the system, its utilisation can vary greatly and produce undesirable income flows of money [18].

The Bank favours the broader monetary aggregate, M3, as policy target, because it is relatively immune to changes in the holdings of money and financial assets induced by changes in interest rates and, therefore, a better indicator of what it calls "the monetary trend". Its view in this respect is influenced by the concept of a demand for money to hold (portfolio balance theory) [19].

An important feature of the Bundesbank's view of the transmission

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[15] See Section 2.9, pp.38-41.

[16] See Section 2.7, pp.35-36.

[17] See Section 2.7, pp.35-36.

[18] See Section 3.5b, pp.58, 59.

[19] See Section 3.6, pp.59-62.

process is that it cannot be characterised in terms of one specific intermediate variable. As Figure 5.1 indicates, the Bank sees the monetary sector as an interlocking system of financial variables and financial markets. Thus the money stock supply (M3) is thought of as a function of the volume of bank lending, the amount of cash balances of the public authorities, the inflow of foreign exchange and monetary capital formation [20].

Another instance is the interrelationship between the money market and the bond market. As the banks are major operators in both, this interrelationship is indeed a close one, especially at the shorter end of the bond market. In this connection, the Bundesbank's belief that the bond market is segmented is quite plausible, because the credit institutions will be concerned to tailor their liabilities to their assets [21].

An important implication of the interlocking character of the monetary sector is that the Bundesbank's policies are more complex than suggested above. In general, the Bank aims at those intermediate targets which appear to require most attention in the light of the economic situation, whilst it imposes side conditions on other financial variables [22]. The account given of the Bank's view of the transmission process has assumed that the domestic credit system was completely insulated against inflows of foreign capital. In the Bundesbank's concept such an insulation should be ensured by means of a system of flexible rates of exchange. In this, it is constrained, of course, by international agreements such as the European Monetary System.

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[20] See Section 3.4, pp.53-56.

[21] See Section 3.8, pp. 69-73 and Section 3.9, pp. 73-76.

[22] See pp. 54-56, 78.

At any rate, the introduction of floating in 1973 has not entirely prevented foreign investment in DM financial assets. It rose from 9 percent of GNP in 1974 to 13 percent in 1979 [23].

The Bundesbank would certainly welcome an appreciation of the currency as a means of reducing price increases. A sustained appreciation, however, could entail a strong incentive for German business to invest abroad and thus to reduce employment opportunities within Germany [24].

Notwithstanding its attempts to protect the domestic credit system against undesirable developments by means of flexible rates of exchange, a sufficient amount of monetary capital formation and a monetary targets approach, the Bank's stringent monetary policies have given rise to the phenomenon of parallel financial markets, that is markets which are not constrained by the monetary authorities. The Eurocurrency markets are the most important of such parallel markets. They allow German business to borrow at cheaper rates when German banks are forced to raise their loan rates as a result of the Bundesbank's monetary policy. In recent years, the Eurocurrency markets have become increasingly integrated with the German domestic financial markets.

The policy implication is that the Bundesbank must take into account the possibility that potential borrowers of funds avoid any restrictive policy by dealings in parallel markets [25].

5.5 Conclusion

The Bundesbank's concept of the transmission process is fascinating in many respects. It is certainly a very coherent view. Its most

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[23] See Section 2.2, pp. 22, 23.

[24] See Section 4.8, pp. 107-109.

[25] See Section 2.3, pp. 23-25.

recent innovation, the public announcement of a monetary growth target, appeals directly to the responsibility of non-banks for a sound monetary development. Implicit in this target approach is a recognition on the part of the Bank that the setting of prices and wage rates is a distinct function of money.

At the same time the target enhances the effectiveness of the Bundesbank's policy instruments. The transmission process itself is, therefore, not altered but rather reinforced by the target approach. It continues to rely on bringing about changes in the profitability of banking, and hence in the costs of borrowing, as well as in the rates of return on saving.

In the Bundesbank's view money ought to be managed in the public interest if inflation is to be avoided. It has an impressive range of policy instruments at its disposal to manage effectively. There can be no doubt about its determination to use these instruments. The more effective it is, however, the more incentives it provides to a flexible, innovative and internationally oriented financial system to avoid its constraints. From this point of view, it can be expected that the Bundesbank will seek to achieve its aims increasingly through international co-operation with international financial institutions, other central banks and governments.

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Wellington North
Neuseeland

Ihr Zeichen, Ihre Nachricht vom	Unser Zeichen	☎ (0611)	Frankfurt am Main
	Vo 130	158- oder 158-1	June 26, 1980

Betreff

Dear Mr. Simons,

We should like to thank you for your interest in the policy of the Deutsche Bundesbank and are pleased to give you the desired information. Two Acts of Parliament are of basic importance for the functions and legal status of the Bundesbank in the political system of the Federal Republic of Germany: the "Deutsche Bundesbank Act" of 1957 and the "Act to Promote Stability and Growth of the Economy" of 1967. According to these Acts it is the primary function of monetary policy to safeguard the stability of the currency. At the same time, the Bundesbank is required to support the general economic policy of the government, but only in so far as is compatible with the fulfilment of its stability function.

Control of the money stock in accordance with primarily domestic targets became possible in Germany with the floating of the exchange rate of the Deutsche Mark in March 1973, i.e. the obligation to intervene against the dollar ceased to exist and interventions were only necessary in the currencies of the countries of the European bloc. The Bundesbank then concretised its stability function for the first time for 1975 by fixing a monetary target. It chose for its target the central bank money stock, by which it

-2-

Bankgebäude	Postanschrift für Wert- und Eilbriefe	Telex	Telegramm-Kurzanschrift	Konten	
Wilhelm-Epstein-Straße 14 Frankfurt am Main	Wilhelm-Epstein-Straße 14 6000 Frankfurt 50	4 1 227 (Inland) 41227 bbkf d 4 14 431 (Ausland) 414431 bbkf d	NOTENBANK FRANKFURTMAIN	Girokonto-Nr./ Bankleitzahl (BLZ) 504 000 00	Postscheckkonto Frankfurt am Main (BLZ 500 100 60) Nr. 3983-60

understands - broadly speaking - currency in circulation plus the banks' required minimum reserves on domestic liabilities (at constant reserve ratios). The choice of the central bank money stock as the key indicator and intermediate target variable has often led to misunderstandings. The concept of the central bank money stock is frequently construed as a special variant of the concept of the monetary base, but the central bank money stock does not describe the creation of central bank money as a "stimulus" to monetary growth (like the monetary base), but its use in the form of the Bundesbank's liabilities to non-banks and banks arising from currency in circulation and required minimum reserves after the completion of the money creation process. In the last few years the manner in which the target is formulated has been changed on several occasions. Since the end of 1978 it has been formulated in terms of a range; the latest target is to keep the expansion of the central bank money stock between the fourth quarter of 1979 and the fourth quarter of 1980 within a range of 5 % to 8 %. More detailed information on the Bundesbank's monetary policy will be found in the booklet "Die währungspolitischen Institutionen und Instrumente in der Bundesrepublik Deutschland", which is enclosed with this letter.

It goes without saying that there is a continuous informal exchange of ideas between the Bundesbank on the one hand and academic and political circles on the other. It would, however, be inappropriate to assign the Bundesbank's monetary policy concept simply to a particular academic school of thought. It differs from strict monetarism, for instance, in that it does not reject outright the discretionary use of monetary policy.

From the mass of literature dealing with the Bundesbank's monetary policy concept we can only give a small selection here, on the assumption that at least some of these works are available in your country:

DEUTSCHE BUNDESBANK Frankfurt am Main, June 26, 1980 Blatt 3

Empfänger Mr. P. Simons, Wellington North, Neuseeland

H. Bockelmann: "Streitfragen zur Kontrolle der Geldschöpfung durch die Notenbank" in: Probleme der Geldmengensteuerung by W. Ehrlicher and A. Oberhauser (publishers), Schriften des Vereins für Socialpolitik, N.F., Vol. 99, Berlin 1978.

H. Böckelmann: "Quantitative Targets for monetary Policy in Germany", Cahiers économiques et monetaires No. 6, Actes du séminaire des Banques Centrales et des Institutions Internationales - Paris Avril 1977, Banque de France.

D. Dickertmann and A. Siedenberg: Instrumentarium der Geldpolitik (3rd revised and extended edition), Düsseldorf 1979.

H.-J. Jarchow: Theorie und Politik des Geldes II. Geldmarkt und geldpolitische Instrumente (2nd revised and extended edition), Göttingen 1976.

H. Schlesinger: "Neuere Erfahrungen der Geldpolitik in der Bundesrepublik Deutschland", Kredit und Kapital, Vol. 9, 1976, No. 4.

Yours faithfully,
DEUTSCHE BUNDESBANK

i.A. H.-J. Zurke

Enclosures

Note: None of the books is available in New Zealand! [P.S.] The journal "Kredit und Kapital" is held by Auckland University Library only.

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Ihr Zeichen, Ihre Nachricht vom	Unser Zeichen	☎ (0611)	Frankfurt am Main
July 24, 1980	Vo 410	158- oder 158-1	August 7, 1980

Betreff

Dear Mr. Simons,

The Euro-dollar interest rates shown in our Monthly Reports in the table "Money market rates in foreign countries" (V,8) are quotations for interbank deposits in the Euro-dollar market (average of buying and selling rates). The costs of dollar loans to non-banks rise by the relevant surcharges for non-banks; we do not, however, carry any statistics on these.

The rates for Euro-DM deposits in the interbank market can be derived from the Euro-dollar rates and the corresponding swap rates, as the following applies with free interest rate arbitrage in the Euro-market:

> Euro-DM interest rate = Euro-dollar interest rate + swap rate (as % p.a.)

If a non-bank surcharge of about 1/2 % for prime borrowers is added to the Euro-DM rates, it becomes apparent that Euro-DM loans (or rather Euro-dollar loans with DM forward exchange cover) have been cheaper in recent months than comparable domestic credits (see table V,6 in the Monthly Reports).

-2-

DEUTSCHE BUNDESBANK

Frankfurt am Main, August 7, 1980 Blatt 2

Empfänger Mr. P. Simons, P.O. Box 12-294,
Wellington North, Neuseeland

Enclosed please find a table of Euro-DM interest rates for three-month loans since 1972.

Yours sincerely,
DEUTSCHE BUNDESBANK

Enclosure

APPENDIX 3 THE TERM STRUCTURE OF INTEREST RATES

As evidence for his segmented market hypothesis, Culbertson [1] found on the basis of U.S.A. data:

> short-term rates have averaged lower and have moved over a wider range than, but generally together with, long-term rates.

For the period 1953 through April 1957, he derived by means of ordinary least squares: long-term rate = 2.3 + 0.31 short-term rate.

Figure A3-1 is a scatter diagram of long-term rates (yields on issue of fixed interest rate securities) and short-term rates (monthly averages of three months money market interest rates) during the period 1972-1980 January. The ordinary least squares relationship is 5.8 + 0.33 short-term rate. Apart from the intercept, this is quite close to Culbertson's result. The coefficient of determination is 0.56, the t-statistic of the coefficient of the short-term rate 10.95 and the standard error of estimate: 0.91%. The Durbin-Watson statistic, however, is as low as 0.07. The residuals are, therefore, extremely autocorrelated. This is not an unusual result, as noted by Goodhart [2]. The Chi-Square test applied to the residuals shows likewise that they are by no means normally distributed.

There are a number of reasons why autocorrelation can be expected to occur in data relating to financial markets.

First, there is a fairly small number of market operators who tend to know each other.

As pointed out by Haverkamp [3], they tend to react to each other's

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[1] Culbertson, J. M. [1957], p.515.

[2] Goodhart, C. A. E. [1975], p.83.

[3] Haverkamp, H. [1979], pp.405-421.

behaviour. This can happen either positively (imitation) or negatively. In Haverkamp's view the former tends to dominate. These reactions take time to manifest themselves. A priori it is not possible to say how long these lags are.

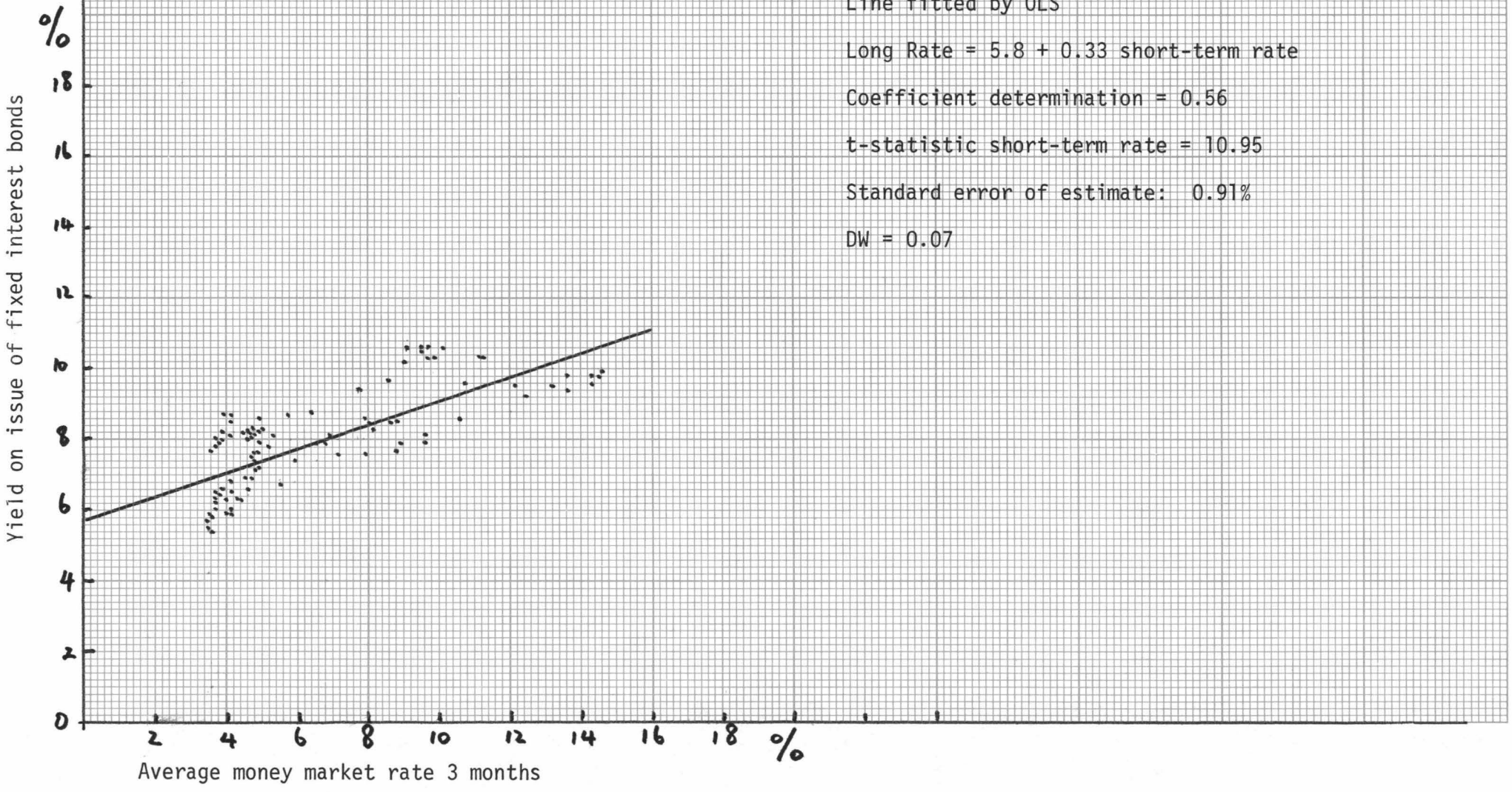
By way of example, if some major market operators believe that interest rates are going to decline, they will start buying bonds. Within a very short time other operators may follow suit. Market operators will be guided not only by the actions of colleagues, but also by their own past experience (correlation with their own past behaviour). The more recent past is likely to carry a greater weight than the more remote. Similar lagged reactions take place between price movements in the money market and in the bond market in Germany.

Bundesbank actions, for example an increase in the rediscount rate, will generate expectations of rising interest rates. These could induce selling on the bond market (with a time lag).

As pointed out in Chapter 2, there is indeed a close relationship between the money market and the capital market in Germany. A tight money market may cause banks to sell bonds, again with a certain time lag, in order to obtain liquid funds.

It is fair to say that the Bundesbank has more control over the supply of funds to the bond market (via its control over the money market) than over the demand for long-term funds.

Figure A3-1 Relationship Long-term Rates of Interest and Short-Term Rates of Interest 1972-1979



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