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Is money supply targeting obsolete?

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Is Money Supply Targeting Obsolete?

by

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The Kiel Institute of World Economics

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Abstract

Money supply targeting has come out of fashion. The large changes
in velocity in some countries and the fact that inflation is
still low in spite of the strong monetary expansion in most in-
dustrial economies since 1985 have undermined the formerly accep-
ted notion of a stable relationship between money and economic
activity. In this paper, the most important objections to money
supply targeting are discussed. Furthermore, alternative indica-
tors for monetary policy, e.g., interest rates and raw material
prices, are analyzed; they seem to have serious weaknesses. A
closer look at the relationship between money and economic acti-
vity reveals that in most countries the volatility of velocity is
no more pronounced than in earlier years. Only in a few countries
the relationship is disturbed. However, this is largely due to
changes in the financial system which were partly caused by high
and volatile inflation rates. Therefore, we argue that a case for
monetary rules can still be made. Some rules which have been
proposed in the literature are designed to adjust to trend chan-
ges in velocity. Simulations suggest that if central banks had
followed such rules, economic performance would have improved
substantially. We conclude that it would be desirable to imple-
ment a rule-based policy in industrial countries and suggest that
rules should be enforced by law.

IS MONEY SUPPLY TARGETING OBSOLETE?

> "To sum up, the most
> important thing about
> money is to maintain
> its stability."
> George Bernard Shaw
> [1928, p. 263]

In recent years, the discussion about the role of monetary policy for stabilizing the economy has intensified again. On the one end of the spectrum, many economists and politicians have argued that the strategy of money supply targeting has either altogether failed or is no longer appropriate because of substantial and unpredictable shifts in velocity. The contention is that the link between the growth rate of the money supply and inflation has disappeared; therefore, central banks should try to control other, more important variables such as unemployment. The alternative view is that the relationship between money and economic activity in principle still holds, but that in some countries the link has been disturbed because of changes in the financial sector. It has been shown that monetary policy can adjust to such changes and still pursue a rule-like policy. At present, the views on what monetary policy should do differ substantially; basically, the discussion can be viewed as a new round in the rules-versus-discretion debate. This discussion has some bearing for the question how monetary authorities should respond to the strong increase capacity utilization and the emergence of inflationary expectations in 1988.

In this paper, we will discuss the basic issue of the role of monetary policy, the experience with money supply targeting, and the possible alternative indicators for monetary policy. We will conclude that a case for monetary targeting can still be made and refer to concrete examples of rules. Finally, we will shortly discuss how such rules for monetary policy can be enforced.

I. What Can Be Expected from Monetary Policy?

In all industrial countries, governments have the monopoly of producing money. The central task of the monetary authority is to keep the cost of holding money as low as possible and to contribute to a stable economic environment. Experience shows that this can best be achieved if the purchasing power of money is stable (1). Major movements in the price level lead to serious misalignments in the economy. Unanticipated inflation shifts wealth from creditors to debtors; high inflation induces economic agents to hold less money than otherwise, and to buy real assets just for the sake of avoiding a wealth loss. How severe these distortions can become is best demonstrated by countries with very high inflation rates, e.g. Argentina [Fischer, Hiemenz, Trapp 1985]. But in an environment of moderate inflation, too, like in most OECD-countries, resources are absorbed by efforts to avoid losses from inflation. As a result, real income is lower in the medium run than it could be under price level stability.

Since the demand for real balances depends on the volume of transactions in the economy - which can roughly be approximated by measures such as real GNP -, the recommendation to keep monetary expansion close to the development of the production potential can be seen as a promising way to assure price level stability in the medium run. A more rapid monetary expansion would only increase the price level. This theoretical underpinning is largely confirmed by observations over long periods [Barro, 1987, p. 463] and also for more recent years (Table 1). Persistently high rates of inflation even have an adverse effect on employment, i.e., in the longer run, there is a positive relationship between inflation and unemployment [Friedman, 1977].

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(1) This conclusion, admittedly, deviates from Friedman's [1969] proposal that a constant rate of deflation is necessary to achieve the optimum quantity of money.

Table 1 - Money and Price Level in Industrial Countries

	Money per unit of output (a)	GNP-deflator
	Average percentage increase per year	
Japan 1973-86	3.3	4.8
West Germany 1973-86	5.4	4.0
United States 1973-86	5.7	6.7
France 1977-85	7.4	9.7
United Kingdom 1975-86	12.1	10.1
Italy 1973-86	12.6	16.6

(a) M1/GNP at constant prices.

Source: IMF, International Financial Statistics. Washington, D.C., various issues. - Own calculations.

This long-run relationship may not hold in the short run. Indeed, in the past we could observe that recessions were overcome with the help of expansionary monetary policies and that restrictive measures have usually produced a recession. However, there is no sustained effect of money on the level of economic activity. An acceleration of monetary expansion can only produce a temporary reduction of the real interest rate because in the course of time, higher demand for goods tends to increase the interest rate. Since people start to expect higher inflation, nominal interest rates go up further; and when inflation actually picks up the expansion of the real money supply slows down and thus the impulse for economic activity becomes smaller. Since central banks usually pursue restrictive policies in the face of increasing inflation, the downturn of the economy is aggravated.

There are other important obstacles to fine-tuning in the short run. The main problem is that we do not know enough about the lags of monetary policy. As a result, an anticyclical measure may in fact have a destabilizing impact. Furthermore, our knowledge about such variables as the natural rate of unemployment or about the behavior of economic agents is very limited. Under these conditions it is impossible to finetune the economy. This could well be observed in the late seventies, when unemployment in most

European countries was substantially higher than in the early seventies. Then, many believed that there was ample scope to expand demand without running the risk of rekindling inflation. However, very quickly after the expansionary measures had been taken, inflation accelerated and progress in reducing unemployment was disappointingly small. The reason behind this was that conditions on labor markets had deteriorated substantially (1). In the late eighties, the situation is similar: unemployment is again much higher than in the previous cycle. But also this time, there is no evidence that this high level was caused by a persistent lack of demand. On the contrary, over the last six years output expanded noticeably and the capacity utilization in most countries is close to or even above previous peak levels.

II. The Experience with Money Supply Targeting

In the early seventies, the idea that growth and employment cannot be stimulated permanently by monetary policy was behind the decision of many central banks to change their strategy. Accelerating inflation had cast serious doubts on the effectiveness of the traditional measures of inflation control. After having gained independence in monetary policy by the introduction of flexible exchange rates, monetary authorities intended to direct their policy at achieving price level stability in the medium run. They announced to give up targeting interest rates and to pursue a policy of directly controlling monetary aggregates in such a way as to assure a steady expansion. Central banks were largely convinced by empirical evidence which showed that there was a close relationship between the development of money and that of nominal income or of the price level. The announcement of a monetary target was also seen as a way to enhance the credibility of the monetary authorities in the public.

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(1) See the analysis of Phillips-curves in various industrial countries in Schatz, Scheide, Trapp [1988]. On the labor market conditions and the factors contributing to high unemployment, see Emerson [1987] and, on a case study for West Germany, see Soltwedel, Trapp [1988].

Actual policies, however, differed not only between countries but also within a country in the course of time, and departed strongly from the stated objectives. While some central banks announced targets for only one aggregate (West Germany, France, Canada), other countries had several target variables (US, UK). Later on, most countries moved toward announcing a target band instead of a single target number. By this the monetary authorities retained a substantial amount of discretion; for example, a change of monetary expansion from the lower to the upper margin of the target band implied a noticeable shift in the stance of policy. But apart from this, the central banks even missed their targets in about half of all cases; most of the time targets were overshot (1). The credibility of central banks was more and more undermined. It was also weakened because the authorities changed the target range within the year (US), shifted to another aggregate and even gave up some indicators (US, UK), or, in an extreme case, stopped money supply targeting altogether (Canada). Since the middle of the eighties, more and more central banks seem to be willing to give up money supply targeting or to use different indicators.

The reasons for missing monetary targets can be seen in the poor control mechanism - most central banks continued to manipulate interest rates - and in the fact that money stock targets collided with other objectives of monetary policy. The attempt of international coordination of policies played an important role. In the late seventies, the locomotive-strategy of coordinated expansion was applied; more recently, the Plaza-agreement (September 1985) and the Louvre-accord (February 1987) included targets for exchange rates. All these arrangements led to a substantial overshooting of monetary targets, in particular, in Japan and West Germany. But not only these attempts to stabilize exchange rates at certain levels and to bring about a reduction of external balances were responsible for deviations from the target. Very often domestic considerations were also important.

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(1) For an overview, see Chouraqui, Driscoll, Strauss-Kahn [1988, p. 45].

Targets were overshot in times of weak growth and high unemployment. Debt problems, too, which were viewed as a threat to the stability of the banking sector were used as an excuse for missing the target (US), in another case the monetary authorities felt forced to allow a higher expansion of the money supply because of the large debt of the public sector (Italy). Tight policies were pursued - and sometimes led to an undershooting - to fight inflation and to import stability via exchange rate appreciation, or because the central bank was concerned about a deficit in the current account (West Germany).

Taken together, these facts suggest that there has hardly ever been a steady monetary policy in any major country in spite of the announcements. In recent years, more and more central banks also seem to dispense with the philosophy of steady money growth altogether. The main argument is that - in their opinion - the relationships between money and various measures of economic activity which held up so well in the seventies do not seem to be valid anymore. In particular, many economists and central bankers point at the fact that there has been no pickup of inflation in spite of the high - and sometimes even accelerating - monetary expansion since 1985 (Figure 1). Some tentative explanations are offered to account for this break. It could be that the marked reduction of inflation and of interest rates since the early eighties led to a sharp increase of the demand for money. People preferred to hold cash rather than to expand spending since they expected a further decline in prices, in particular, in the wake of the collapse of oil prices in 1985 and thereafter. However, this behavior can soon be reversed when price expectations turn around and - as is likely in 1988/89 - lead to higher inflation and interest rates. Another explanation concerns the change in the definition of money due to financial innovations. In a few countries, in particular the US and the UK, the share of interest-bearing assets in M1 has increased substantially. Thus, this aggregate has lost much of its quality as an indicator for the propensity to spend and is, therefore, no longer as closely correlated with the price level as in the past. However, in other

Figure 1 - Money and Inflation in the Industrial Countries
(p.c. change over previous year)
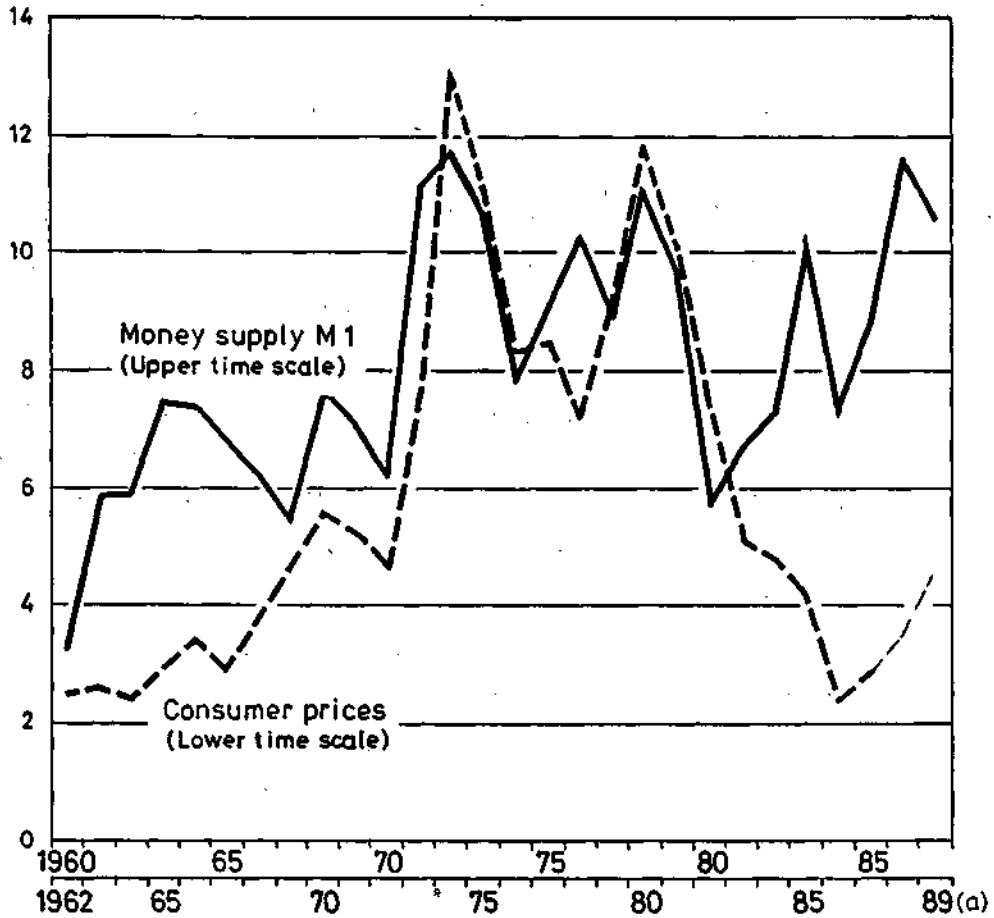
(a) 1988 and 1989 estimated.

Source: IMF, International Financial Statistics; World Economic
Outlook, April 1988.

countries, e.g., West Germany (1) financial innovations and deregulation have hardly played any role.

III. How Good Are Alternative Targets for Monetary Policy?

Since the relationship especially between money and prices seems to have become loose, there are several proposals to use other indicators as a guideline of monetary policy.

The first alternative are interest rates. Many observers point at the high level of real interest rates in industrial countries and argue that monetary policy is excessively tight and prevents faster growth. Although we cannot observe real interest rates, all approximations confirm the diagnosis of relatively high rates. During the upswing in the seventies, they were extremely low, in some cases even negative (Table 2). But did high real rates of interest prevent or dampen the recovery in the eighties? Developments in the United States do not confirm this view.

Table 2 - Real Interest Rates in Industrial Countries (a)

Period	United States	Japan	United Kingdom	West Germany	France	Italy
1968-73	1.0	0.1	2.1	2.2	1.5	1.3
1975-80	0.7	2.7	-3.4	3.0	-0.8	-3.7
1982-87	6.7	5.1	5.6	4.4	2.6	3.9
1968-1987	2.7	2.1	1.4	3.6	1.6	0.2

(a) Long-term interest rates minus percentage change in the GNP-deflator. Average of the respective period.

Source: IMF, International Financial Statistics. Washington, D.C., various issues. - Own calculations.

In fact, the increase of real interest rates in the US was as pronounced as elsewhere, but nevertheless real GNP and employment

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(1) See Dudler [1986].

expanded as fast as in the previous cycle when interest rates were extremely low. Similarly the UK: after 1982, this country experienced the sharpest increase in real rates, but the recovery was stronger than in the seventies and also stronger than in most other European economies. And finally, West Germany had the smallest increase of real interest rates; nevertheless, the economic performance during the present cycle was weaker than in the past. These observations suggest that the increase in real interest rates was not the main cause for the differences in growth rates of real GNP (1) and that high real interest rates do not necessarily indicate tight monetary policies.

Long-term changes in real interest rates rather reflect a real phenomenon of an adjustment process going on in an economy; high interest rates indicate a shortage of savings. As a consequence, only investment projects with a relatively high rate of profit can be carried out. This basic constellation cannot be changed by printing money. But what about short-run effects? If the central banks can create an unexpected increase in the money supply, real interest rates will go down. But it must be doubted that monetary policy can produce such surprises over longer periods of time. Market participants learn to anticipate future actions of the central bank. If they expect more expansionary policies, interest rates will go up. If the central bank uses this as an indication of a shortage of liquidity, it will increase the money supply and thus validate the expectations and contribute to more inflation.

The main problem is that of interpretation. Since real interest rates cannot be observed, nominal rates cannot easily be qualified as being "too high" or "too low". Another problem of interpretation concerns the effects of real disturbances. If a temporary negative shock hits the economy, real interest rates must rise since the supply of goods goes down relative to the demand. If the central bank interprets the rise as signalling a tight

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(1) For a discussion of this issue, see also Schatz, Scheide, Trapp [1988].

policy, it will expand the money supply. But this will only re-
sult in a further increase of the price level, so this action
would be counterproductive since it leads to a violation of one
target (price level stability) without benefitting other targets
(e.g., employment).

A second proposal, very much propagated by governments of large
industrial countries [e.g., Baker, 1987, and Lawson, 1987], is to
use <u>raw material prices</u> as a guide for monetary policy. These
prices seem to be a leading indicator for general inflation and
can thus be used to judge the course of monetary policy. The
empirical evidence, however, is not unambiguous (Figure 2). While
the strong increase of raw material prices in 1972/73 and 1978/80
was indeed followed by an acceleration of inflation, this effect
did not materialize in 1976/77 and 1983/84. Thus, the link seems
to be unreliable (1). This is not surprising since raw material
prices strongly respond to supply shocks, such as harvest failu-
res or supply cutbacks created by cartels.

The functioning of raw material prices as an indicator is impair-
ed by another problem. Monetary policy would react only after the
inflationary dangers have already become apparent. Given the long
lag in the effect of monetary policy on inflation, it would pro-
bably be too late to prevent prices from rising. All the central
bank may be able to achieve is to dampen the acceleration. In
order to avoid inflation altogether it is necessary to eliminate
the main cause for the increase in raw material prices as well as
for the general price level, and in the past, this common cause
has been the strong increase of demand mainly resulting from a
strong monetary expansion.

The average lag between the development of the money stock and
raw material prices is about one year. Compared to the lag be-
tween money and general inflation this is quite a short period
(Figure 3). The quick response of raw material prices to monetary

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(1) This is supported by the time-series analysis (causality
     tests) in Durand, Blöndal [1988].

Figure 2 - Raw Material Prices and Inflation in the Industrial
Countries (p.c. change over previous year)
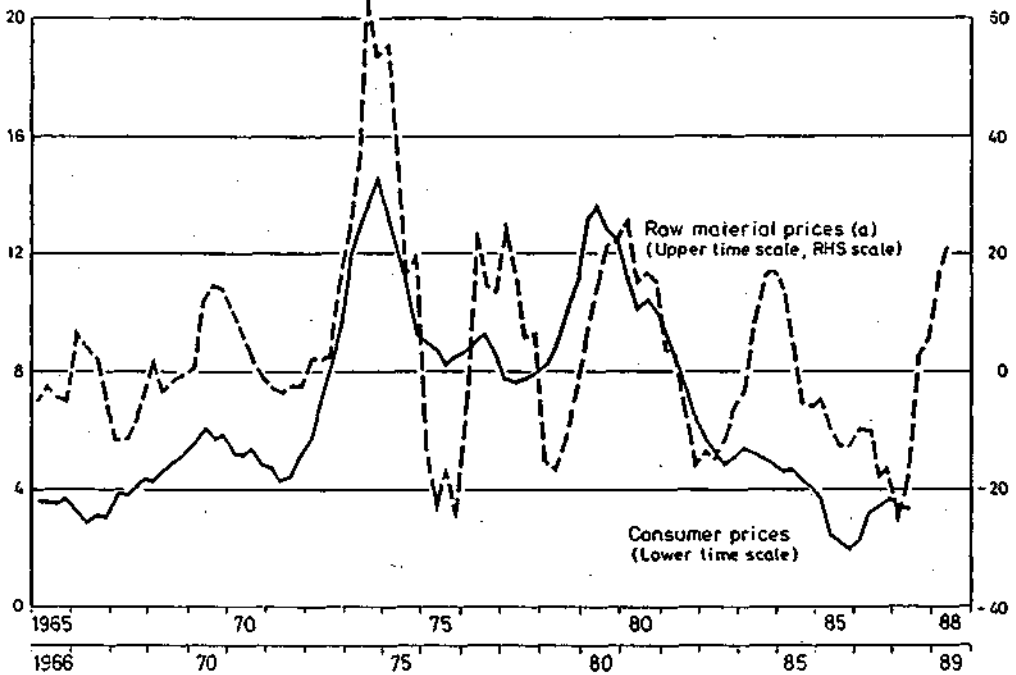
(a) Raw material price index of the Kiel Institute of World Economics, in SDR terms.

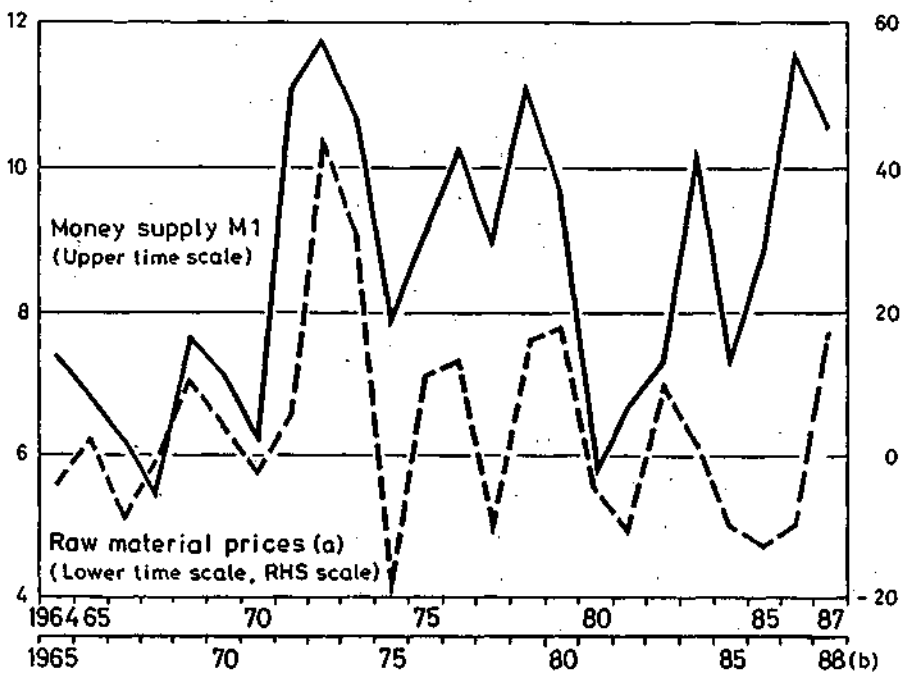Source: OECD, Main Economic Indicators; - Own calculations.

Figure 3 - Raw Material Prices and Money Supply in the Industrial
Countries (p.c. change over previous year)

(a) Raw material price index of the Kiel Institute of World Economics, in
SDR terms. - (b) Partly estimated.

Source: IMF, International Financial Statistics; World Economic
Outlook, April 1988.- Own calculations.

impulses is due to well-functioning future markets and to the high interest elasticity of raw material inventories. In the course of 1988, raw material prices surged again; this is consistent with the previous strong acceleration of monetary expansion. In view of the relatively close link between money and raw material prices, the best way to avoid excessive price fluctuations is to keep the expansion of the money supply stable. Of course, this would not eliminate all price variations because some changes are caused by real phenomena as was also the case with interest rates. Since it is impossible to distinguish between price changes caused by real shocks and by monetary shocks the development of raw material prices is not a reliable policy guide. Therefore, central banks should refrain from short-run manipulation of the money supply but rather provide a stable monetary environment.

Some proposals stress that <u>exchange rate changes</u> can signal whether monetary policy is too tight (real appreciation) or too loose (real depreciation). An example is the McKinnon-Plan (1) which consists of two main elements: Firstly, the aggregate money supply of major industrial countries should expand according to a rule designed to achieve overall price level stability. Secondly, bilateral interventions should keep exchange rates at the level of purchasing power parity (PPP); this is seen as a fundamental precondition for avoiding major inflationary or deflationary impacts from abroad caused by "unnecessarily volatile" changes in expectations of international investors which serve no economic purpose [McKinnon, 1988, p. 86].

The critical issues are first, how can the equilibrium exchange rates be calculated to make this plan work, and second, is exchange rate stability really necessary to assure price level stability? The reference exchange rate cannot be calculated by simply comparing the price of a certain basket of goods in two

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(1) This proposal was first made in 1974, after the collapse of the Bretton-Woods system. A more recent and slightly changed version is McKinnon [1988].

countries: "...What an extraordinary resurgence of a doctrine long thought dead and buried ..." [Dornbusch, 1988, p. 109]. The reason for the invalidity of absolute PPP is that the baskets contain goods that are not perfect substitutes. Thus, it is impossible to determine the absolute value of the "correct" PPP-exchange rate. In addition, there have been substantial and long lasting deviations from relative PPP over the last 15 years. What is behind these movements, and can the McKinnon-Plan prevent them from occurring?

A large part of exchange rate volatility has certainly resulted from sudden changes in monetary policy (1); this element is indeed eliminated by McKinnon's money supply rule, but by itself it does not constitute a unique policy proposal. However, the major disagreement with the plan arises because PPP is no acceptable guiedeline for exchange rate policy; real exchange rates must be able to adjust whenever there are substantial real divergencies between countries. Examples are different trends of economic growth and of technological progress. Therefore, we can expect - possibly even large - exchange rate changes when there are substantial shifts in tax policies or in regulatory measures. Furthermore, all kinds of risks are reflected in exchange rate movements. If such changes are prevented by interventions in exchange markets, other prices will have to adjust. However, the problem is that these prices are normally not as flexible as is necessary to prevent lower growth and unemployment. This is most obvious in the case of wages. Furthermore, real exchange rates will also have to give if there is a real shock affecting countries differently. For example, the oil price increases of the seventies necessitated a relatively strong real depreciation of countries highly dependent on oil imports to bring about the real income transfer to oil exporters. Finally, experience shows that exchange rate stability is neither a necessary nor a sufficient condition for price level stability. For example, the member

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(1) On the effects of changes in the monetary regime on the dollar-DM exchange rate, see Scheide [1987].

countries of the EMS, a system with fixed rates, were not as successful in reducing inflation as other OECD-countries which had flexible exchange rates (1).

More recently, the countries participating in economic summit meetings have suggested to monitor various economic indicators to judge economic policy. These indicators (2) are also commonly used in economic analysis; the new element is that this concept sets out to find a better basis for international policy coordination by judging the compatibility and sustainability of policy measures in various countries. As yet, no concrete concept has been published but it seems that the intention is to define reference paths for economic targets in terms of various indicators in order to establish a trigger mechanism for monetary and fiscal policy when departures from the reference paths are observed. However, what model can possibly calculate the "correct" level of the unemployment rate, of the interest rate or - on an international scale - of the exchange rate or the "correct" distribution of current account balances?

It is not only crucial that all countries would have to agree on the model's results; most likely they won't! (3) It is also highly problematic to connect government policies rigidly to the results of the market process. As governments have no perfect knowledge the result would most probably be that adjustment processes are delayed and that, for example, the natural rate of unemployment increases. The indicator concept is much more ambitious than the other proposals discussed above since several variables are to be made compatible. How should the central banks act if there are changing priorities and sometimes even conflic-

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(1) See the analysis of the inflation performance in Scheide, Sinn [1987].
(2) The list contains GNP, domestic demand, inflation, unemployment, balances of trade and current account, monetary expansion, budget deficits, exchange rates, interest rates and foreign reserves. See Crockett [1987, p. 10].
(3) The differences concerning the policy objectives as well as the economic theory and philosophy are a major obstacle to international coordination. See Scheide, Sinn [1987].

ting targets? It seems very likely that this fine-tuning on an
international scale will not diminish uncertainty concerning
policies. Agents will have to continue to speculate about future
actions, especially if - what is most likely as long as no com-
prehensive model is available - indicator changes cannot be in-
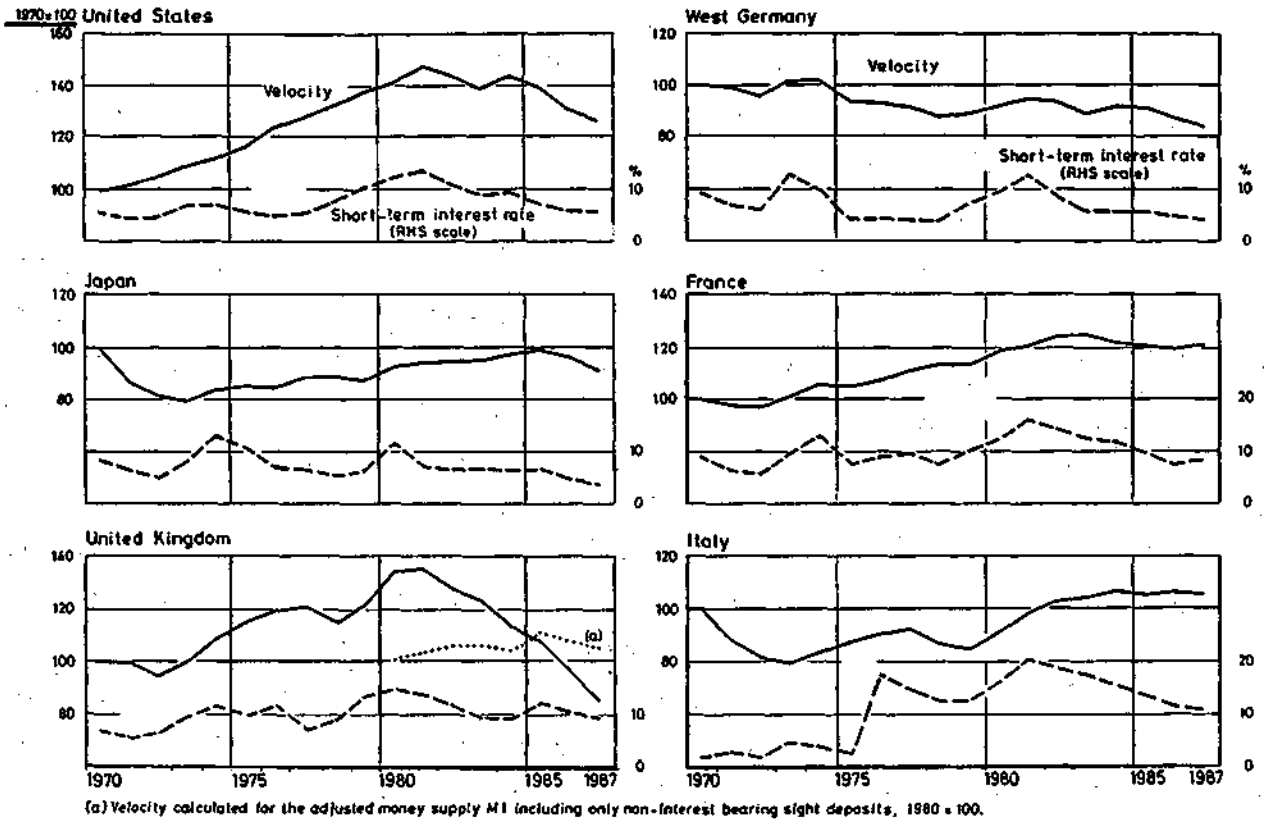terpreted in a clear-cut way.

IV. The Case for Money Supply Rules

In view of the weaknesses of the alternatives discussed above it
seems that the link between money and economic activity is still
reliable enough to continue targeting monetary aggregates. As far
as the positive association between velocity of money and
(short-term) interest rates is concerned, the postulated rela-
tionship holds up quite well in several countries (Figure 4).
Interest rates declined, and this led - as to be expected - to
an increase in the demand for money so that the growth rate of
velocity declined. This observation is compatible with the notion
of a stable demand for money function. Exceptions are the US and
the UK, where the fall in velocity was much steeper than can be
explained by the behavior of interest rates. However, the charac-
ter of M1 in both countries has changed in recent years because
it now includes a much larger share of interest-bearing assets.
If this statistical effect is excluded, the relationship between
the adjusted M1 and the interest rate seems to hold very well in
the case of the UK (1).

Furthermore, the link between money and domestic demand is still
quite close, the cyclical turning points can well be explained by
changes in monetary policy: the restriction of 1979/80 was follo-
wed by the recession in 1980/82, and the acceleration in money
growth starting in 1982 contributed to the upswing since 1983.
Only very recently, this link seems to have become loose for the

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(1) These adjustments cannot be made for the US because the
     necessary data are not available.

Figure 4 - Velocity and Interest Rates in Industrial Countries

(a) Velocity calculated for the adjusted money supply M1 including only non-interest bearing sight deposits, 1980 = 100.

Source: OECD, Main Economic Indicators; Central Statistical
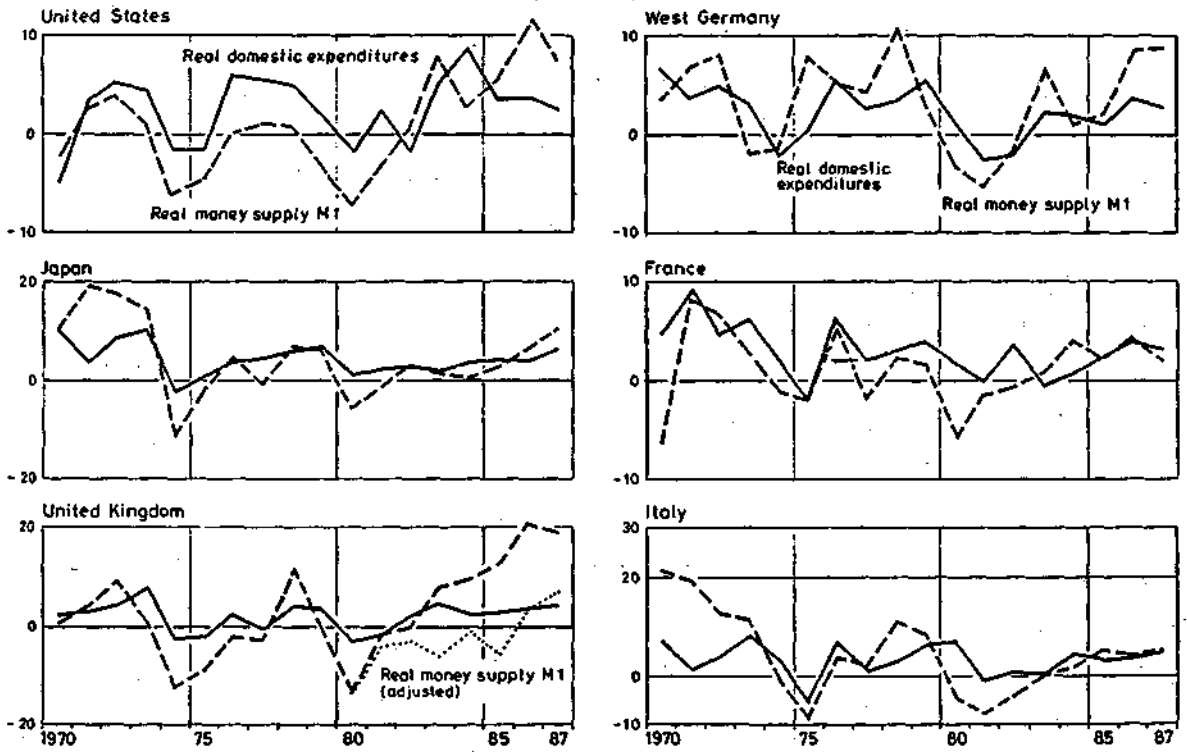Office, Financial Statistics, London; own calculations.

US - domestic demand did not pick up as strongly as could be expected from monetary policy; however, this is probably due to the change of the definition of M1. For the UK, it can be shown that the adjusted M1-aggregate is quite a good indicator. Therefore, it cannot be concluded that the relationships which were so reliable in the past have now disappeared. Concerning the lag in the effect of monetary policy, Friedman's [1961] statement is still valid that the time span between the change in monetary policy and that in economic activity is rather long and variable.

Proponents of stable monetary policy have studied the quality of specific rules. The main advantage of such a policy is that no longer resources have to be devoted to guessing future actions of central banks. This would eliminate a great deal of the price variations on financial markets about which many observers complain so much. Then, central banks would stop to react to monthly data such as industrial production, trade balances etc. Instead, the central banks would concentrate on keeping the money supply on the path they have committed themselves to. What will be provided by the central bank under these conditions is a public good: price level stability. Such a predictable policy would, as empirical evidence shows, contribute to a stable development of overall demand (1), a result which has not been achieved by the discretionary policies actually pursued in industrial countries (2).

An important element in a policy rule is that the central bank uses a monetary aggregate that it can control with sufficient precision. Broader aggregates (M1, M2 or M3) can be influenced through changes in the monetary base, but the link seems to be-

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(1) Of course, the demand expansion cannot be completely stable because there are still real disturbances (changes in fiscal policy, in raw material prices and so on). It is important, however, that monetary policy does not produce additional shocks.
(2) For a theoretical analysis showing the superiority of rule-like policies (in the sense of producing smaller deviations from targets), see Kydland, Prescott [1977].

Figure 5 - Money and Domestic Demand in Industrial Countries
(p.c. change over previous year)

United States

Real domestic expenditures

Real money supply M1

Japan

United Kingdom

Real money supply M1
(adjusted)

1970   75   80   85 87

West Germany

Real domestic
expenditures

Real money supply M1

France

Italy

1970   75   80   85 87

Source: OECD, Economic Outlook, June 1988; Central Statistical
Office, Financial Statistics, London; own calculations.

come the weaker the broader the measure is. So it appears best to use the monetary base which reflects precisely the actions of the central bank (1). The monetary authorities in industrial countries should therefore move away from looking at broader aggregates when judging the stance of monetary policy.

Different monetary rules are conceivable; we will discuss the properties of three variants (2). The first rule is one where the rate of monetary expansion is fixed in advance; this fixed rule (or k-percent rule) was proposed by Milton Friedman. The second rule - by Allan Meltzer [1987] - is less rigid as the the rate of monetary expansion is adjusted when there are changes in the trend of velocity and/or the trend of real GNP (approximated by the realizations in the past three years). The third variant, which was proposed by Bennett McCallum [1987], incorporates a feedback mechanism; i.e., the desired rate of change in the monetary base is adjusted when nominal GNP deviates from the target path. All these rules have in common that - even if they provide for pre-defined flexibility - they imply a firm commitment by the central bank and leave no room for discretionary action or cheating. Thus there is no uncertainty about future intentions of the central bank. Furthermore, the rules are defined in terms of the instrument (instrument-based rules) and thus can easily be monitored by the public.

In this respect, these rules are quite different from the often propagated "GNP-rule" (or "GDP-rule"). Although the latter seems to be quite similar to the McCallum proposal - which also refers to nominal GNP -, it does not aim at expanding a monetary aggre-

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(1)   Some may nevertheless prefer an aggregate like M1 since it is a better indicator in times of a liquidity crisis. However, this argument seems to be relevant only for the case of the Great Depression when the monetary base did not change but M1 fell drastically.

(2)   There are many criteria to qualify or discriminate between rules. See, for example, Blinder [1987] and Salin [1988]. - In what follows we do not refer to rules which imply responses to changes in real variables, such as the unemployment rate.

gate at certain rate consistent with long-term GNP growth but is directed at achieving a certain GNP increase as an outcome (outcome-based rule). The difference is important because there is no fixed operational mechanism that links changes in GNP to changes in, e.g., the monetary base. Advocates of this rule claim that there is no reliable relationship between money and nominal income (1). Therefore, it can not be pre-determined by how much the money supply has to change, to produce a certain increase in nominal GNP. If actual GNP is below the target path the central bank has to increase the growth of the money stock and vice versa. But the GNP-rule does not define by how much monetary expansion has to accelerate or to decelerate. Apart from this, a problem arises for this rule because we do not have enough knowledge about the lagged effects of monetary policy. Therefore, it may be that monetary policy is changed stronger or more often than necessary, leading to further fluctuations of economic activity.

Which of the three rules described above should be applied depends on the question how the quantity theory can be translated into a strategy for monetary policy. If the central bank follows a policy oriented at the production potential of the economy, it must estimate the trend change of output and velocity. Estimates about potential output are available for all major countries, so the choice for a rule depends more or less on the trend behavior of velocity. If there are such changes as in the US in recent years, it would be appropriate to increase (reduce) the desired rate of monetary expansion if the trend of velocity declines (increases). McCallum has tested the properties of such a rule and found that it would have reduced cyclical fluctuations in the US substantially. Furthermore, such a rule would have implied a stable price level on average during the simulation period 1954-1985 (2). In simulations of his feedback rule McCallum con-

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(1) See, for example, von Weizsäcker [1988].
(2) There would have still been price level changes due to supply shocks but these would have averaged out over time. During this period, the price level actually increased by some 320 percent, which is equivalent to an annual inflation rate of almost 5 percent.

cludes that fluctuations in economic activity would have been reduced even more than in the Meltzer rule (1).

The rules with a limited degree of flexibility are designed for the situation in the US. Such flexibility may not be necessary in a country where the velocity does not show abrupt changes. In a case study for West Germany it is demonstrated that a strict application of the k-percent rule would have dampened cyclical fluctuations of domestic demand substantially [Scheide, 1988]. This means that this rule would have reduced the deviations from the targets of economic policy (2).

V. Toward a Constitutional Rule for Monetary Policy

Opponents of monetary rules usually argue that a strict policy might do more harm than good (3) because the flexibility of the private sector is only limited. However, it may also be true that the rigidities of wages and prices are so great because agents can rely on government intervention. Actual discretionary policies did try to accommodate these rigidities, but as experience shows they were not successful. All industrial countries have experienced a more or less substantial decline in the purchasing power of money and one can hardly argue that real income and employment would be higher today if only prices had increased faster. The rules discussed above and the underlying models imply

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(1) Some would criticize the close feedback from quarter-to-quarter changes in nominal GNP because they may also be due to real shocks, and there is a dispute among economists whether monetary policy should react in such cases. For a criticism, see for example Barro [1985, pp. 34 ff.].

(2) Although inflation has always been relatively low in West Germany, the price level nevertheless doubled between 1972 and 1987.

(3) See Blinder [1987] who argues that the servo-mechanism of the economy does not work well. For him, a rule could amount to "fixing a rudder in a stormy sea".

that growth and employment cannot be stimulated by inflation and that, therefore, central banks should not try to control real variables in the short or medium run. Instead, by pursuing a stability-oriented policy, they can contribute to a stable expansion of demand and thus prevent major recessions or booms. This is what also proponents of discretionary policies want to achieve.

Although many central bankers might, in principle, accept these considerations, rules have so far not been applied. It seems to be a major characteristic of the political process that policymakers have a tendency toward activism and would refuse to have their hands tied by a rule (1). Central banks, too, have always argued that flexibility was necessary in order to react to unexpected circumstances (2). The common justification for activism is that policy has to prevent or to counteract unsatisfactory situations. Often, however, the policy does not provide a remedy for economic problems but is only postponing the adjustment and thereby, possibly, even making the outcome worse. For example, in the seventies, many central banks tried to alleviate the impact of the oil-price hike by expanding the money supply. This stimulated economic activity somewhat, but only for a short period. After all, the economies ended up with more inflation than would otherwise have occurred, and unemployment went up because real wages did not decline, as should have been the case after the oil-price hike. The actual increase of unemployment was probably even higher because the government interventions prevented an adjustment of real wages. Another example is the policy to reduce the real value of government debt in those countries where the central banks are not independent of government influence. The long-run consequences of all these policies are negative; but under the time-horizon of policymakers, which is usually the

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(1) For a description of the reasons why a discretionary monetary system tends to be inflationary compare Bernholz [1987].

(2) As an example, see the list of contingencies mentioned by the Chairman of the US-Fed, Alan Greenspan [1988].

short run, it is rational to try to produce short-run benefits
(1).

The reason to think about constitutional rules for monetary poli-
cy is that the existing system is not one of free banking (2).
The following discussion therefore focuses on the optimal strate-
gy in the second best monetary system. Government monopoly in
controlling money creation puts a large amount of political and
economic power into the hands of central bankers. The private
sector is not allowed to produce competing monies and to vote for
the currency which serves their needs best as a medium of exchan-
ge and as a store of value. Furthermore, regulations and controls
prevent the use of foreign currencies; thus there is no check on
experiments with inflation.

A free society should be interested in limiting the power of a
central bank. It is necessary to create a monetary constitution
which eliminates the discretionary power and enforces a money
supply policy for a stable environment. One pre-condition for
such a regime is that the central bank is independent of govern-
ment control, like the Fed in the US or the Bundesbank in West
Germany. Experience shows, however, that independence alone is
not a guarantee for a stable policy. And independence cannot
mean: free of control. The importance of monetary policy makes it
necessary to enforce a law according to which the central bank
has to follow a binding rule.

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(1) This behavior is formalized in Kydland, Prescott [1977] and
     related papers on the choice between policy strategies. The
     benefit occurs, in this simple model, because the government
     has an incentive to create positive price surprises once the
     decisions of the private sector are set. This follows from
     the postulated utility function which, since it is oriented
     at the short run, seems to reflect the "real world". How-
     ever, the outcome of this game between government and the
     private sector is suboptimal since agents will take the
     incentives for governments into account and adjust their
     decisions accordingly. This model can therefore explain the
     tendency of secular inflation.
(2) For a discussion of a monetary order with competing monies
     see Huss, Trapp [1982].

In order to limit the discretionary power and thus contribute to a stable growth of the economy, parliaments in industrial countries should pass a law for a monetary order. The details may be different from one country to another; but a few principles are essential:

1. The central bank is committed to a stable price level in the medium run. To achieve this, it should follow a monetary policy oriented at the production potential of the economy.

2. The central bank announces a target growth for the monetary base for several (e.g., five) years.

3. The rate of expansion depends on the trend growth of potential output and the trend of velocity. Estimates are provided by a group of independent experts.

4. The announced rate can be changed after one year under the condition that the experts change their estimates and substantiate this change.

5. The Governor of the central bank is responsible for the achievement of the target.

As far as the discussion about the European Central Bank is concerned, it is obvious that there are major differences among countries about how independent the bank should be. In addition, there is a dispute about the objectives it should pursue. Therefore, it would be dangerous to transfer the competences of the national central bank to a European Central Bank now without a precise definition of its status and tasks.

An alternative way would be to establish an independent European Central Bank in addition to the already existing national central banks. It should supply a European currency which is allowed to be used without limitation in all countries as legal tender and which should have a freely flexible exchange rate. Each country would still have the souvereignty over the national monetary policy, but must compete with the new currency. As a consequence, the process toward a currency union would set in automatically if

the European currency turns out to be a good store of value. The European Central Bank would then not be created by a discretionary (or arbitrary) political act but would result from a natural process in a competitive order.

BIBLIOGRAPHY:

BAKER, James A., Statement. IMF-IBRD Board of Governors, Annual Meetings, Press Release, No. 50, Washington 1987.

BARRO, Robert J., "Recent Developments in the Theory of Rules versus Discretion". The Economic Journal, Vol. 95, 1985, Supplement, pp. 23-37.

--, Macroeconomics. 2nd edition, New York 1987.

BERNHOLZ, Peter, "Auf der Suche nach stabilem Geld". Neue Zürcher Zeitung, December 9, 1987, p. 20.

BLINDER, Alan S., "The Rules-versus-Discretion Debate in the Light of Recent Experience". Weltwirtschaftliches Archiv, Vol. 123, 1987, pp. 399-414.

BRUNNER, Karl, "Geldmengenregel als effizientes Ordnungsprinzip". Neue Zürcher Zeitung, August 17, 1988, p. 11.

CHOURAQUI, Jean-Claude, Michael DRISCOLL, Marc-Olivier STRAUSS-KAHN, The Effects of Monetary Policy on the Real Sector: An Overview of Empirical Evidence for Selected OECD Economies. OECD Working Papers, No. 51, Paris, April 1988.

CROCKETT, Andrew, Strengthening International Economic Cooperation: The Role of Indicators in Multilateral Surveillance. Washington, November 1987 (unpublished).

DORNBUSCH, Rudiger, "Doubts about the McKinnon Standard". Journal of Economic Perspectives, Vol. 2, 1988, No. 1, pp. 105-112.

DUDLER, Hermann-Josef, "Geldmengenpolitik und Finanzinnovationen". Kredit und Kapital, Vol. 19, 1986, pp. 472-495.

DURAND, Martine, Sveinbjörn BLÖNDAL, Are Commodity Prices Leading Indicators of OECD Prices? OECD Working Papers, No. 49, Paris, February 1988.

EMERSON, Michael, Regulation or Deregulation of the Labor Market: Policy Regimes for the Recruitment and Dismissal of Employees in the Industrialized Countries. Commission of the European Communitites, Economic Paper, No. 55, June 1987.

FISCHER, Bernhard, Ulrich HIEMENZ, Peter TRAPP, Argentina: The Economic Crisis in the 1980s. Kieler Studien, 197, Tübingen 1985.

FRIEDMAN, Milton, "The Lag in Effect of Monetary Policy". Journal of Political Economy, Vol. 69, 1961, pp. 447-466.

--,"The Role of Monetary Policy". The American Economic Review, Vol. 58, 1968, pp. 1-17.

--, "The Optimum Quantity of Money". In: Milton Friedman, The Optimum Quantity of Money and Other Essays. Chicago 1969, pp. 1-50.

--, "Nobel Lecture: Unemployment and Inflation". Journal of Political Economy, Vol. 85, 1977, pp. 451-472.

GREENSPAN, Alan, "Monetary Policy Objectives, Testimony". Reprinted in: DEUTSCHE BUNDESBANK, Auszüge aus Presseartikeln, No. 54, Frankfurt/M, July 16, 1988, pp. 10-14.

HUSS, Hans-Joachim, Peter TRAPP, "Vorstellungen über eine alternative Geldordnung". Kredit und Kapital, Supplement, 1982, No. 7, pp. 79-94.

KYDLAND, Finn E., Edward C. PRESCOTT, "Rules Rather than Discretion: The Inconsistency of Optimal Plans". Journal of Political Economy, Vol. 85, 1977, pp. 473-491.

LAWSON, Nigel, Statement. IMF-IBRD Board of Governors. Annual Meetings, Press Release, No. 44, Washington 1987.

LUCAS, Robert E., "Principles of Fiscal and Monetary Policy". Journal of Monetary Economics. Vol. 17, 1986, pp. 117-134.

McCALLUM, Bennett T., "The Case for Rules in the Conduct of Monetary Policy: A Concrete Example". Weltwirtschaftliches Archiv, Vol. 123, 1987, pp. 415-429.

McKINNON, Ronald, "Monetary and Exchange Rate Policies for International Financial Stability". Journal of Economic Perspectives, Vol. 2, 1988, No. 1, pp. 83-103.

MELTZER, Allan H., "Limits of Short-Run Stabilization Policy". Economic Inquiry, Vol. 25, 1987, pp. 1-14.

SALIN, Pascal, "Comment on the Rules-versus-Discretion Debate". In: Herbert Giersch (Ed.), Macro and Micro Policies for More Growth and Employment. Symposium 1987. Tübingen 1988, pp. 71-84.

SCHATZ, Klaus-Werner, Joachim SCHEIDE, Peter TRAPP, Low Growth and High Unemployment in Europe - Causes and Policy Options. Kiel Discussion Papers, 140, June 1988.

SCHEIDE, Joachim, The Ups and Downs of the Dollar - Consequences of the Changes in the Monetary Regime? Kiel Working Papers, 284, March 1987. 1987.

--, A K-Percent Rule for Monetary Policy in West Germany. Kiel Working Papers, 337, October 1988.

--, Stefan SINN, How Strong Is the Case for International Coordination? Kiel Working Papers, 306, December 1987.

SCHLESINGER, Helmut, Wilfried JAHNKE, "Geldmenge, Preise und Sozial-produkt: Interdependenzzusammenhänge im Lichte ökonometrischer Forschungsergebnisse für die Bundesrepublik Deutschland". Jahr-bücher für Nationalökonomie und Statistik, Vol. 203, 1987, pp. 576-590.

SHAW, George Bernard, The Intelligent Woman's Guide to Socialism and Capitalism. New York 1928.

SOLTWEDEL, Rüdiger, Peter TRAPP, "Labor Market Barriers to More Employ-ment: Causes for an Increase of the Natural Rate. The Case of West Germany". In: Herbert Giersch (Ed.), Macro and Micro Poli-cies for More Growth and Employment, Symposium 1987. Tübingen 1988, pp. 181-225.

WEIZSÄCKER, Carl Christian von, "Plankoordination mittels eines BIP-Zieles". Neue Zürcher Zeitung, August 24, 1988, p. 13.