SWISS AND UNITED STATES MONETARY POLICY: HAS MONETARISM FAILED?

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1. Introduction

In the second half of the 1970s, central banks of a number of industrialized countries, including the United States and Switzerland, adopted growth targets for the domestic money stock. The shift to a monetary policy based on control of the money stock was widely regarded as a victory for monetarism. Monetarists had long advocated strict control of the growth in the money stock. In their opinion, inflation was due mainly to excessive money growth. Therefore, the fight against inflation was doomed to fail unless central banks were prepared to control tightly the growth in the domestic money stock. In order to strengthen monetary control, monetarists urged monetary authorities to adopt growth targets for the money stock.

There is little doubt that the adoption of monetary targets was an important prerequisite for waging a successful assault on inflation. In the United States, money stock targets were first introduced in 1975, when Congress instructed the Federal Reserve System to announce to the public regularly such targets. However, the introduction of money stock targets did not reflect strong monetarist sentiments in Congress (Hetzel, 1986b, p. 802), nor did it imply a fundamental shift in the operating procedures of the Fed. As had been the practice prior to 1975, the Fed continued to target the federal funds rate, the key U.S. money market rate. Until 1979, its commitment to money stock targets was not sufficiently strong to result in a significant decline in inflation. On the contrary, the rate of increase in U.S. consumer prices—which had accelerated intermittently since the mid-1960s—reached a peak of over 13 percent in 1979.

As a result of its failure to restrain inflation, the Fed in October 1979, decided to alter its operating procedures. It felt that more faithful adherence to its monetary targets would strengthen its anti-inflationary policy for two reasons. First the lack of firm commitment to monetary targeting, coupled with an ever rising inflation rate, had created an inflationary psychology and a concomitant loss of confidence in the Fed's willingness to restore price stability. The change in operating procedures was designed "to establish a credible anti-inflationary stance for monetary policy" (Hetzel, 1986a, p. 22). Second, the Fed realized that a significant rise in interest rates was needed to eradicate inflation, but it was unsure about the size of the required increase. Money stock targets were regarded as a useful device for bringing about the required increase in interest rates. As a result of the change in operating procedures, the federal funds rate rose to almost 14 percent at the end of 1979 and reached a peak of over 20 percent early in 1981. With the help of this drastic increase in interest rates, the Fed managed to lower the inflation rate in the United States rather quickly. From 1979 to the end of 1982, consumer price inflation dropped by almost 10 percentage points to slightly over 4 percent, and remained at a level of 3 to 4 percent until 1985. The following year, it fell further as a result of the oil price decline.

In Switzerland, money stock targets were fixed for the first time at the end of 1974, a few months earlier than in the United States. As in the United States, the shift to monetary targeting was motivated by a desire to strengthen the central bank's anti-inflationary policy stance. In contrast to the United States, however, there was no tradition of interest rate targeting in Switzerland. The system of fixed exchange rates—which in Switzerland was in effect until January 1973—implied that movements in Swiss interest rates and prices could not be effectively controlled by the Swiss National Bank (SNB) but were determined in large measure by developments in other countries. The shift to a floating exchange rate severed the link between Swiss and foreign prices. Therefore, floating exchange rates enhanced considerably the scope for an effective anti-inflationary monetary policy. The SNB was sufficiently im-

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pressed by monetarist ideas that it decided to opt for a policy approach of strictly controlling the growth in the domestic money stock. From 1975 to 1978, the SNB relied on yearly growth targets for the money stock M1. For reasons to be discussed later, the SNB did not set a money stock target in 1979. Since 1980, it has fixed yearly growth targets for the adjusted monetary base (see table). In contrast to the Fed—which tends to target a multitude of monetary aggregates—the SNB has consistently stuck to a single money stock target. The SNB's efforts to achieve price stability were successful insofar as it managed to lower consumer price inflation from over 10 percent in 1974 to roughly one percent in 1978. However, as I will show later, Swiss inflation rose again temporarily to over 7 percent in 1981, but in the meantime has fallen back to roughly one percent.

United States and Swiss experience clearly suggests that a monetarist approach to policymaking has helped to curb the unacceptably high inflation rates of the 1970s. Nevertheless, central banks, including the Federal Reserve System and the Swiss National Bank, have been reluctant to go very far in endorsing monetarist prescriptions. Monetarists themselves doubt that their ideas have really penetrated central banks. The well-known monetarist Karl Brunner (1983, pp. 53-55), for example, denies that central banks have shifted to a monetarist policy regime, despite some rhetoric to the contrary, since their "strategy and tactics remain far removed from monetarist ideas." In his view, the SNB is the only central bank that comes close to pursuing monetarist policies. Not only have monetarists failed to convert many central bankers to their cause, but in recent years there has been a growing tendency among central banks—especially in the Anglo-Saxon countries—to return to more traditional operating procedures and to discard whatever monetarist policy ingredients they may have absorbed in the 1970s and early 1980s. The Fed's monetarist policy experiments, in particular, were rather short-lived; only three years after adopting its new operating procedures, the Fed began to express doubts about the wisdom of focussing attention on money growth and partly returned to a policy of targeting short-term interest rates.[1] It felt that money growth was not a reliable guide to policymakers intent on maintaining a reasonable degree of price stability. Exclusive reliance on money growth as a policy indicator, the Fed maintained, might induce central banks to pursue overly expansionary or restrictive monetary policies. Therefore, it was necessary to monitor a wide variety of policy indicators, in addition to money growth. The Fed was not alone in becoming disillusioned with money stock targeting. Similar problems arose in the United Kingdom, Canada, and other countries.

Recent difficulties with money stock targeting have led many observers of monetary policy to question the validity of monetarist prescriptions. The popular press, in particular, is replete with stories about the death or failure of monetarism. These observers tend to overlook the fact that there still are some central banks that feel quite comfortable with money stock targeting. The Swiss National Bank continues to regard money stock targets as the center-piece of its

MONETARY GROWTH: TARGETED AND EFFECTIVE

	Target Variable[a]	Target[b]	Effective[b]
1975	M1	6	4.4
1976	M1	6	7.7
1977	M1	5	5.5
1978	M1	5	16.2
1979	–	–	–
1980	MO	4[c]	−0.6[c]
1981	MO	4	−0.5
1982	MO	3	2.6
1983	MO	3	3.6
1984	MO	3	2.5
1985	MO	3	2.2
1986	MO	2	2.0
1987	MO	2	

[a] M1: Currency, as well as demand deposits with banks and the postal giro system, held by the nonbank public. For M1 only end-of-month data are available.

MO: Adjusted monetary base, defined as the sum of deposits of banks with the SNB and the aggregate banknote circulation, adjusted for the end-of-month bulge in SNB credit to banks. The data on the monetary base are published in the form of monthly averages of daily figures.

[b] Arithmetic mean of monthly year-on-year growth rates.

[c] Average percentage increase over the November 1979 level.

[1] Most monetarists deny that the monetary policies pursued by the Fed in the period 1979-82 should be regarded as a monetarist experiment (e.g., Poole, 1982, 1985; Friedman, 1983, 1984; Brunner, 1983; Olsen, 1986). McCallum (1985, p. 573) shares this view, but feels "that the period [1979-82] did, nevertheless, involve a greater degree of commitment to money stock targets than existed during any previous period of comparable duration."

monetary policy. Similarly, there has been little dissatisfaction with money stock targets in Germany and Japan. Therefore, the question arises whether such a harsh verdict on the usefulness of monetarist prescriptions is really justified. In the remainder of my paper, I shall attempt to answer this question in light of United States and Swiss experience. Most monetarists would probably agree that the following five propositions form the nucleus of their doctrine:

- Inflation is mainly a monetary phenomenon.
- The velocity of money is reasonably stable in the absence of major shocks to the money supply.
- Price stability should be the principal objective of monetary policy.
- Some monetarists also argue that central banks should adopt operating procedures designed to control the monetary base.
- Monetary policy should be based on rules, such as money stock targets, rather than central-bank discretion.

2. Inflation and Money

As to the first proposition, monetarists argue that—over long periods of time—inflation tends to be closely and positively correlated with the trend growth in the money stock. However, the two magnitudes need not be closely linked over short periods since inflation tends to react to changes in money growth with a long and variable time lag. While monetarists stress the importance of money growth as a source of inflation, they do not claim that inflation is exclusively a monetary phenomenon. For example, Brunner (1983, p. 50) explicitly allows for the possibility that such non-monetary disturbances as a change in the price of oil may alter temporarily the inflation rate.

The monetarist proposition as to a close long-run relationship between money and prices is no longer a very controversial issue. It is now accepted by many non-monetarists although there continues to be disagreement about the importance of non-monetary causes of inflation. Furthermore, most central bankers today would agree with the monetarists' claim that excessive money growth has been an important—if not the principal—driving force behind inflation. As a matter of fact, the first monetarist proposition has now become part of the conventional wisdom of central banks. In this regard, monetarism—far from being dead—has strongly shaped the behavior of central banks. In my opinion, central banks would hardly have succeeded in their fight against inflation had they kept completely aloof from monetarist doctrine.

If central banks have qualms about the first monetarist proposition, the reason is not that they question the *existence* of a link between money and prices, but that they harbor doubt about the *stability* of this link. It is one thing to observe that in the past inflation was closely related to money growth It is another thing to forecast accurately future inflation from current money growth on the basis of past experience. As regards the central bank's ability of forecasting future inflation, Swiss and United States experiences have been rather different in recent years.

The behavior of Swiss inflation and money growth is described by Chart 1. The inflation rate—measured in terms of consumer prices—is related to the two monetary aggregates that have served as target variables in Switzerland. The chart shows for each month the percentage change in the respective variable over the preceding year. As indicated by Chart 1, there is a fairly close positive correlation between the growth in the Swiss adjusted monetary base and the money stock M1, with M1 tending to lag movements in the monetary base by a few months. Furthermore, Swiss consumer price inflation typically responds to major changes in money growth with a lag of two to three years.

From Chart 1, it may be seen that money growth accelerated sharply early in the 1970s. The huge bulge in money growth reflected the SNB's obligation to defend a fixed exchange rate in the face of massive inflows of speculative foreign capital. This was followed by a substantial acceleration of inflation in 1973 and 1974. After the shift to a floating exchange rate at the beginning of 1973, money growth came to an abrupt halt, with the inflation rate starting to decline rapidly toward the end of 1974. The drop in the inflation rate was supported by a strong upvaluation of the Swiss franc both in nominal and real terms (Chart 2). In 1978, the real upvaluation began to reach levels that seriously jeopardized the competitive position of Swiss industry and raised the prospect of a drastic slump in domestic economic activity. For this reason, the SNB—reluctantly—decided to abandon its money stock target and to set a target for the exchange rate of the Swiss franc vis-à-vis the Deutsche mark. As a result of the policy shift, the real upvaluation of the Swiss franc was partly reversed in 1979 and 1980.

The need for stabilizing the exchange rate triggered a new burst of money growth, which in turn led to a resurgence of inflation in 1980 and 1981.[2] As indicated by the table, the money stock target

[2] The temporary rise in inflation in 1979 was due largely to the second oil price shock.

Chart 1

INFLATION AND MONEY GROWTH IN SWITZERLAND

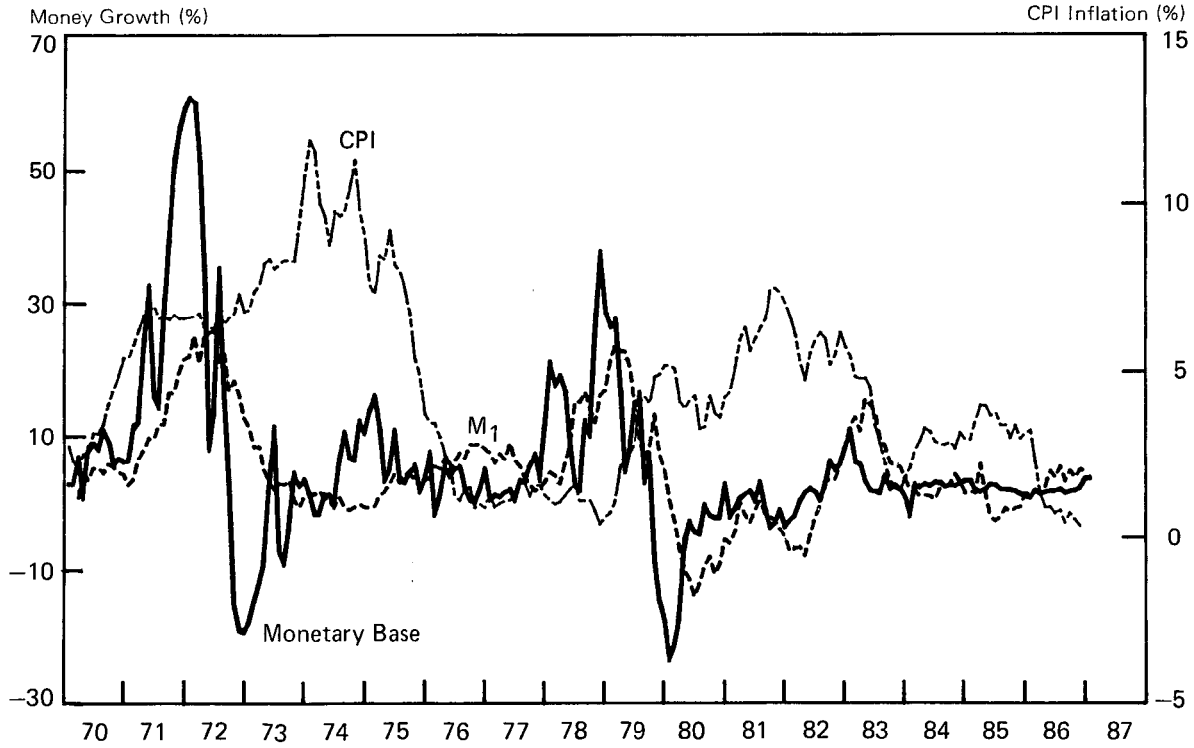
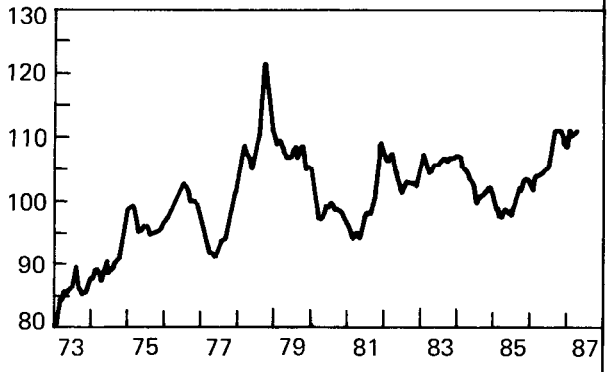


Chart 2

REAL EXCHANGE RATE OF THE SWISS FRANC



The real exchange rate of the Swiss franc represents a weighted average of nominal exchange rate vis-à-vis Switzerland's 15 most important trading partners, adjusted for the respective consumer price indices. The weights employed are the 15 countries' shares in Swiss exports.

for 1978 was overshot by a wide margin. However, the departure from a monetarist policy course was only temporary. In 1979, the SNB returned to a policy of controlling money growth, but a new target was not announced until the end of that year. The slowdown in money growth was followed by a renewed decline in the inflation rate starting toward the end of 1981. A remarkable feature of this disinflationary episode was the sluggish response in the inflation rate to the policy shift. From 1981 to 1983, the inflation rate rapidly fell to roughly 3 percent and remained at approximately that level until the beginning of 1986, when the oil price collapse led to a further decline in the inflation rate. On the basis of past experience, I would have expected the inflation rate to continue its downward course in 1984. Thus, while Swiss experience points to a fairly close link between money growth and the inflation rate, this relationship may have become somewhat less stable in the last three years.

In contrast to Switzerland, the United States has been plagued by serious instabilities in the link between inflation and money growth, especially since

the beginning of the 1980s. Chart 3—which is constructed in the same way as Chart 1—shows the relationship between U.S. consumer price inflation and the growth in the money stock M1. The focus on M1 is justified on the ground that the Fed until very recently regarded Ml as the key target variable.[3] As indicated by Chart 3, until the end of the 1970s, the relationship between inflation and money growth in the United States corresponded to that observed for Switzerland, except for a somewhat speedier response in the U.S. inflation rate to changes in money growth. However, around 1980, a major shift in the patterns of U.S. inflation and money growth occurred. While the policy switch of 1979 elicited a dramatic fall in the inflation rate, money growth did not decline very much. Furthermore, although money growth from 1982 onwards accelerated again strongly by leaps and bounds, inflation tended to decrease further. Thus, in contrast to Switzerland, prices in the United States in recent years have increased far less than would be expected on the basis of past experience.

[3] Although the Fed did not specify a target range for M1 in 1987, it appears that the U.S. central bank will continue to monitor that aggregate closely (see Volcker, 1987, p. 8).

3. The Stability of Velocity

Similar conclusions may be drawn from a comparison of velocity movements in the United States and Switzerland. In countries featuring a close relationship between inflation and money growth, one would also expect the velocity of money to behave in a stable and predictable manner. Chart 4 illustrates the behavior of U.S. and Swiss velocities, defined as the ratio of nominal final demand to the nominal money stock M1. Velocities are expressed in terms of final demand because in both countries M1-demand seems to be more stably related to that variable than to GNP.[4] Moreover, to reduce noise

[4] As regards the performance of final demand as an independent variable in money demand functions, see Radecki and Wenninger (1985) for the United States and Vital (1978, p. 97) for Switzerland. The measure of final demand underlying Chart 4 is nominal GNP plus imports of goods and services. This measure is commonly employed in studies of Swiss money demand and velocity. It should be noted, however, that the measure of final demand underlying Chart 4 differs somewhat from those found in studies of U.S. money demand and velocity. Radecki and Wenninger rely on a concept of final demand defined as GNP less inventory investment less net exports. The same concept is used by Haraf (1986). Gordon (1985, p. 63), by contrast, defines final demand as GNP less inventory change.

Chart 3

INFLATION AND MONEY GROWTH IN THE UNITED STATES

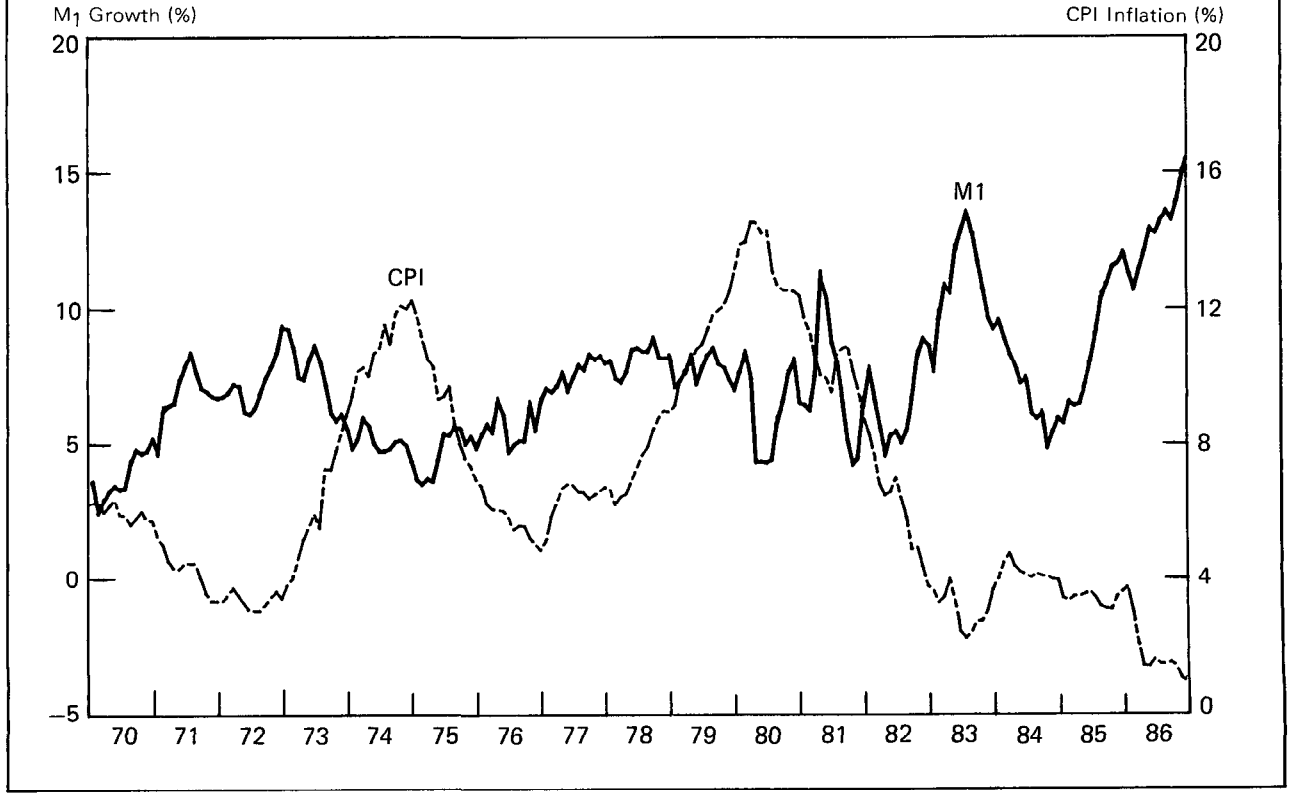
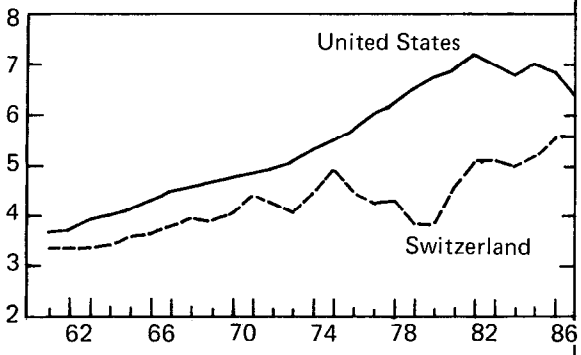


Chart 4

M1 – VELOCITY IN THE UNITED STATES AND SWITZERLAND



in the velocity series, annual averages rather than quarterly data are shown in Chart 4.

At first sight, the evidence of Chart 4 is rather surprising. Over the period 1960-86, the variability of M1-velocity was far greater in Switzerland than in the United States. Only the most recent decline in U.S. velocity is comparable in size to the fluctuations characteristic for Switzerland. The evidence of Chart 4 cannot readily be reconciled with the U.S. and Swiss central banks' pronouncements on the policy implications of velocity movements. While the Fed has repeatedly stressed that velocity movements complicate the task of setting appropriate money stock targets, the SNB has been rather sanguine about these problems.

Needless to say, evidence of strong variability in velocity need not impair a central bank's ability of achieving price stability. As I pointed out earlier, monetarists do not postulate a close short-run relationship between money and prices but argue that tight control of money growth is effective in influencing the inflation trend. If the objective of monetary policy is to lower the inflation trend gradually to zero (or whatever level the public considers acceptable), strong variability of velocity, by itself, does not imply that central banks may fail to achieve their aims. A necessary condition for such a monetary strategy to be effective is that velocity—in an inflation-free environment—behave like a trend-stationary process.[5] Should this condition be met, central banks have a good chance of reducing the inflation trend to zero if they adopt a constant-money-growth (CMG) strategy designed to accommodate nothing more than the growth in money demand arising from the expected trend growth in output (or real final demand) and the expected trend change in velocity. Of course, a CMG-strategy will not prevent cyclical and other fluctuations in velocity and the price level about their stationary trends.

The condition of trend stationarity in an inflation-free environment is likely to be satisfied if velocity is (i) determined largely by domestic interest rates and (ii) a stable relationship exists between these two variables, because interest rates are likely to fluctuate about a stationary trend in such an environment.[6] In Charts 5 and 6, I examine the relationship between velocity movements and short-term interest rates in the United States and Switzerland. The interest-rate variables employed are the U.S. Treasury bill rate and the three-month Euro-Swiss-franc deposit rate respectively.[7] For both countries, the evidence points to a positive correlation between velocity and short-term interest rates.

[5] Movements in U.S. M1-velocity since the early 1960s are best explained by a random walk with drift, that is, its behavior has not been trend stationary (Haraf, 1986). This need not imply that U.S. velocity would have displayed the same time-series properties if prices had remained stable in this period.

[6] This analysis is not altered if inflation expectations are allowed to influence directly velocity. In an inflation-free environment, inflation expectations, by definition, will not affect velocity.

[7] Interest rates quoted on the Euromarket for Swiss francs are regarded as the best indicator of borrowing costs in the Swiss money market. Published domestic deposit rates are posted rates applicable to small investors. They tend to be roughly 50 basis points below the corresponding Euromarket rates. Large depositors are able to obtain Euromarket conditions even if they place their funds with domestic banks.

Chart 5

VELOCITY AND INTEREST RATES IN THE UNITED STATES

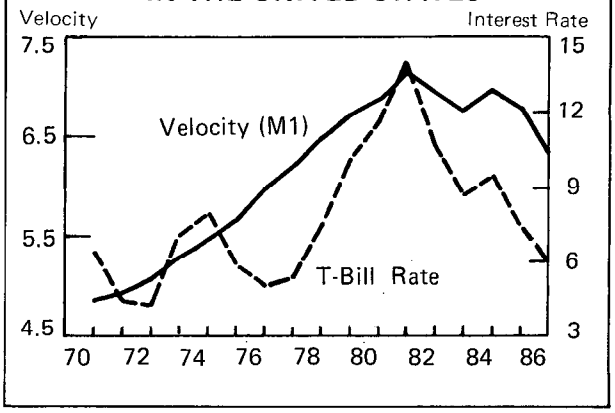
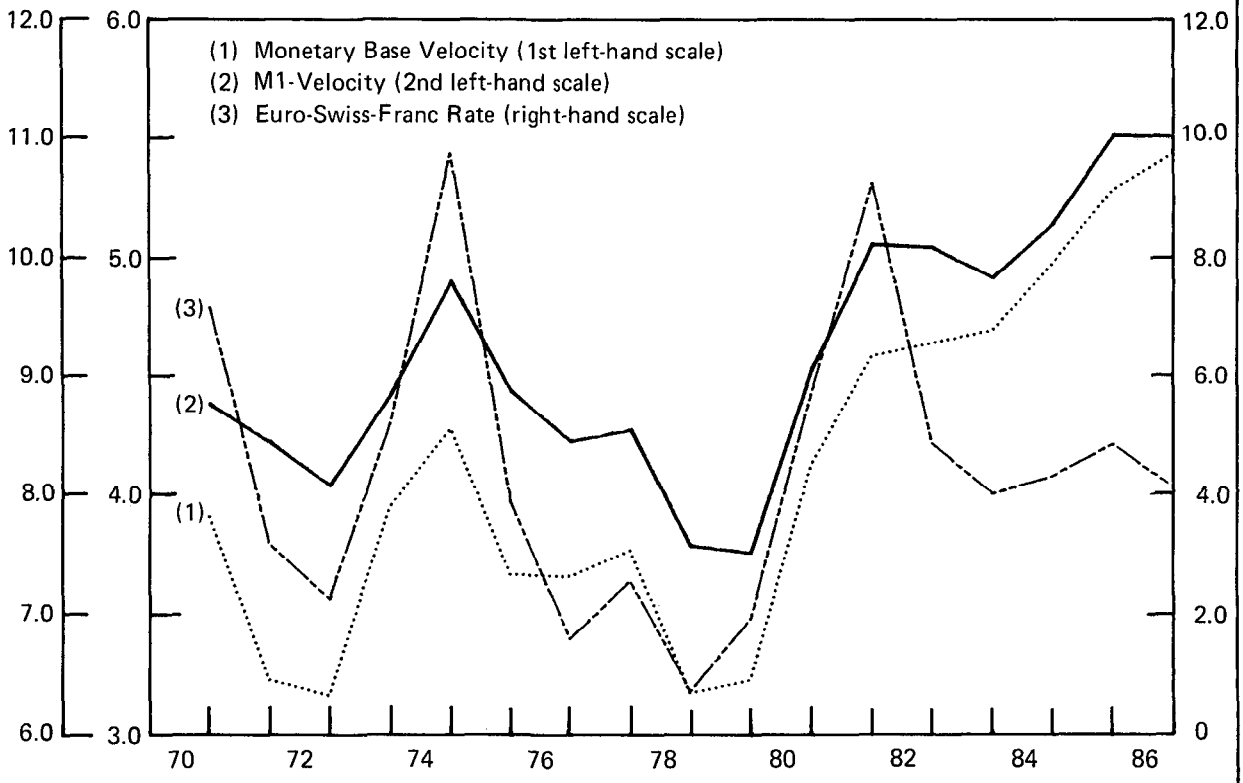


Chart 6

VELOCITY AND INTEREST RATES IN SWITZERLAND



However, there are also notable differences between Charts 5 and 6. In the United States, interest rate movements seem to account, at least in part, for the upward trend of velocity in the 1970s and the subsequent decline in the 1980s. But there was no stable relationship between U.S. velocity and short-run movements in interest rates. The temporary increase in U.S. short-term interest rates in 1974 and 1975 did not affect velocity, while a similar rise in 1984 did. Indirect evidence on instabilities in the link between U.S. velocity and interest rates may also be gathered from recent studies of U.S. money demand, which suggest that the sensitivity of M1-demand—and hence M1-velocity—to changes in interest rates seems to have increased early in the 1980s (Wenninger, 1986; Mehra, 1986; Rasche, 1987a).

Recent instabilities in the behavior of U.S. velocity have commonly been attributed to financial deregulation in the United States. Financial deregulation in turn was a response to the mounting inflation rates of the 1970s, as well as to the policy measures required to combat inflation. Rising inflation expectations and the policy shift of 1979 seem to account in large measure for the sharp increase in nominal U.S. interest rates recorded in the late 1970s and early 1980s.[8] High U.S. interest rates gave rise to calls for deregulation of U.S. markets for bank deposits. Since banks were prohibited from paying interest on checkable deposits, holders of transactions balances incurred large losses in the form of foregone interest. With the authorization of such innovations as NOW and Super-NOW accounts, financial institutions were enabled to offer interest on checkable deposits. These innovations led to shifts in velocity that could not be forecasted reliably on the basis of past experience.

In contrast to the patterns observed for the United States, velocity movements in Switzerland were closely related to movements in interest rates, at least

[8] The mounting U.S. budget deficits probably also explain part of the rise in U.S. interest rates.

until the beginning of the 1980s. As indicated by Chart 5, velocities of both M1 and the monetary base (also expressed in terms of final demand) tended to vary in sympathy with the Euro-Swiss-franc deposit rate. However, evidence of instabilities in the behavior of velocity began to surface in 1982 and 1983, when a marked decline in interest rates was not accompanied by a parallel fall in either velocity measure.

The reasons for the failure of Swiss velocity to react to a decrease in interest rates are not entirely clear. Some observers of Swiss monetary policy attribute these instabilities to financial innovation, in particular to the spread of cash-saving payments techniques. This explanation is not fully convincing for two reasons. First, there is no evidence of a burst of financial innovation in Switzerland in 1982 and 1983 that would account for the upward shift in velocity at that time. Second, the shift was due largely to a smaller than expected rise in commercial banks' deposits with the SNB and in the circulation of large-denomination banknotes. While financial innovation may account for the downward shift in deposit holdings with the SNB, I doubt that it was responsible for the instabilities in the behavior of large-denomination banknotes. It is unlikely that innovations in the payments system only affected the demand for large-denomination banknotes since these denominations do not seem to be used primarily for transactions purposes.[9] A more plausible explanation lies in the gradual removal of Swiss restrictions on capital imports from abroad in 1979 and 1980. There is circumstantial evidence to suggest that these—very severe—restrictions were partly circumvented by foreigners accumulating large-denomination Swiss banknotes. Thus, Swiss monetary policy has not been plagued unduly by unpredictable shifts in velocity caused by financial innovation.[10]

The proliferation in the United States of new types of transactions accounts and new cash management techniques has led many observers to conclude that Swiss banks, for some mysterious reason, are less innovative than their U.S. equivalents. As far as the provision of payments services is concerned, I believe there is nothing mysterious about the behavior of Swiss banks. In Switzerland, the trend of innovation in the payments system points in very much the same direction as in the United States. Switzerland has just launched a new electronic payments system for settling interbank cash balances. This innovation—called the Swiss Interbank Clearing System (SIC)—will enable banks to manage more efficiently their own cash holdings. Moreover, SIC will allow banks to offer new types of payments and cash management services to their customers. Thus, what distinguishes Switzerland from the United States is not the *trend*—but the *pace*—of innovation in the payments system. The leisurely pace at which the Swiss payments system is being transformed is explained by our record of low inflation and low interest rates, rather than by an ingrained conservative disposition of Swiss bankers. The slow pace of financial innovation has facilitated considerably the conduct of Swiss monetary policy. Only the future will tell whether the Swiss financial environment will remain conducive to the pursuit of a monetarist policy strategy.

In conclusion, instabilities in velocity behavior have raised more serious problems in the United States than in Switzerland. Therefore, a CMG-strategy for achieving and maintaining price stability is likely to be more successful in Switzerland than in the United States. However, even in Switzerland, velocity behavior has not been very stable in recent years.[11] It is possible that the upward shift in velocity in 1982 and 1983 accounts for the relatively sluggish response in Swiss prices to the monetary contraction of 1979.[12] Nevertheless, for reasons to be discussed in Section 6, the SNB—thus far—has not responded to this velocity shift by adjusting its money stock target.

4. Objectives of Monetary Policy

Monetarists have consistently argued that price stability should be the principal objective of monetary policy. They admit that a policy of eradicating inflation through a contraction in the growth of the money stock may be associated with a temporary drop in output and employment. The sharp recession triggered by the Fed's policy shift in 1979 clearly testifies

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[9] In Switzerland, the large denominations comprise Swiss francs 500 and 1000 bills (roughly US$ 330 and 660, respectively, at the current exchange rate). They account for over 50 percent of the aggregate note issue.

[10] A recent econometric study of Swiss money demand is consistent with these results as it points to a downward shift in real demand for M1 early in the 1980s (Heri, 1986, p. 103).

[11] It should also be noted that Swiss data on the money stock M1 have not been revised in a major way since 1975, while the corresponding U.S. data were adjusted to take account of new types of transactions accounts. There is some debate as to whether the revised aggregate is more stably related to GNP than an MlA-type measure (see Hafer, 1984; Rasche, 1987b).

[12] Another reason for the sluggish response of prices was the appreciation of the U.S. dollar in 1984 and early in 1985. It caused a sharp but temporary increase in Swiss prices of internationally traded goods.

to the sacrifices society may have to bear in order to quell inflation. However, monetarists are skeptical about the ability of central banks to "fine tune" the economy, that is, to smooth cyclical fluctuations in output and employment. In their view, monetary policy is effective in influencing inflation trends, but not well suited to deal with society's other economic ills.

The Swiss National Bank tends to share the monetarists' skepticism about central banks' fine-tuning abilities. It has always regarded price stability as the overriding objective of Swiss monetary policy. This does not imply that it completely ignores output and employment growth. Real developments have influenced Swiss monetary policy in two respects. First, the SNB in recent years has followed a gradualist approach to combatting inflation in an effort to minimize the real costs of its policies. Second, as I showed earlier, the SNB, in the fall of 1978, was forced to shift temporarily to an expansionary monetary policy in order to forestall an incipient slump in output and employment resulting from an excessive upvaluation of the Swiss franc. The events of 1978 show that in such a small country as Switzerland excessive exchange rate fluctuations seriously limit the central bank's room for maneuver and may compel it to push aside temporarily the objective of price stability.

Although the SNB pays attention to the state of the real sector of the economy, it has never attempted to boost employment through an expansionary monetary policy. In this regard, our approach to monetary policy differs sharply from that of the Fed. The American central bank is much more ambitious than the SNB. Aside from price stability, it has traditionally pursued a wide variety of other objectives. In charting its policy course, it takes account of unemployment, business cycles, the international debt situation, the exchange rate, conditions in financial markets, and other problems. The recent surge in the growth of the U.S. money stock M1 reflects in part the multiplicity of the Fed's objectives. Since inflation is not currently a major problem in the United States, the Fed feels that it has some leeway for breathing new life into a sluggish U.S. economy. In order to stimulate U.S. economic growth, it appears that the Fed has relaxed considerably its monetary reins. Thus, high U.S. money growth probably constitutes a response to deregulation and financial innovation, as well as a shift to an expansionary policy course. The Fed is not overly concerned about possible inflationary consequences of its policies. Fed officials are confident that they will be able to pick the right moment for tightening monetary policy in order to forestall a resurgence of inflation.

I do not feel competent to comment upon the Fed's fine-tuning abilities. As far as the SNB is concerned, we would harbor grave doubts about our own capability of simultaneously stimulating economic growth and keeping prices stable. In all likelihood, the strong variability of Swiss velocity would thwart any attempt by the SNB to achieve short-run price and output goals. The SNB would run the risk of violating its objective of price stability without succeeding in its efforts to smooth cyclical fluctuations in output and employment. I realize, of course, that in a country such as Switzerland—which has not experienced high unemployment since World War II—the political environment is conducive to the conduct of a monetary policy directed primarily at price stability.

Skepticism about central banks' abilities to fine-tune the economy is widespread not only in Switzerland but also in Germany and other European countries. It explains why these countries have been reluctant to endorse enthusiastically recent American calls for stimulating their economies. At the present moment it is too early to tell whether the Fed will succeed in its efforts to stimulate economic growth without jeopardizing price stability. What I find worrisome about the current situation is that the weakness of the dollar has prompted many central banks outside the United States to follow in the footsteps of the Fed and to relax their monetary policies. If the worldwide acceleration of money growth were to continue for some time, I would not be surprised to see a resurgence of inflation. From the Swiss standpoint, a superior response to the current dollar weakness would be a tightening of U.S. monetary policy combined with a relaxation of other countries' policy stance. Whether monetarist skepticism about the wisdom of fine-tuning will be refuted by future developments clearly remains to be seen.

5. Monetary-Base Control

Switzerland is virtually the sole industrialized country that has adopted the monetarist proposition of targeting the monetary base. The chief advantage of this approach is that the monetary base is under direct central-bank control. Therefore, the question as to whether the central bank is able to control its monetary target variable does not arise in the Swiss

context.[13] Our monetary-base target is not only an intermediate target, but also an operational one.

The idea of controlling directly the monetary base has not gone down well with central bankers outside Switzerland. There is a widespread belief among central bank officials that monetary-base control is not feasible for a variety of reasons. A first objection to monetary-base control is that it is likely to lead to unacceptably high short-run fluctuations in interest rates. In most industrialized countries commercial banks only maintain minimal amounts of excess cash reserves, that is, holdings in excess of legal requirements.[14] If excess reserves were negligible, monetary-base control would be liable to have disruptive effects on financial markets. Suppose, for example, that the banking system is shocked by an unexpected drain of cash reserves into currency in the hands of the nonbank public. In the absence of excess cash holdings, banks would be short of required reserves, compelling them to borrow funds on the money market. Unless the central bank were prepared to make up for the reserve deficiency, interest rates would rise, possibly to very high levels.

In stressing the disruptive effects of monetary-base control, critics of that approach tend to overlook the fact that the extent to which banks hold excess reserves itself depends upon the control procedures employed by the central bank. Swiss experience suggests that commercial banks are induced to hold substantial excess reserves if the central bank controls tightly the monetary base. Moreover, in Switzerland, banks' demand for excess reserves is highly sensitive to changes in domestic short-term interest rates.[15] Interest-sensitive bank reserves largely account for the close inverse relationship between the Swiss monetary-base velocity and the Euro-Swiss-franc rate displayed in Chart 6.[16]

Interest-sensitive bank reserves act as a shock absorber designed to smooth short-run fluctuations in interest rates. To return to the example mentioned above, an unexpected cash drain, in the Swiss context, may indeed raise domestic interest rates. However, the increase in interest rates will seldom be large because it is tempered by a fall in banks' excess reserves.[17] Moreover, since these shocks tend to be transitory in the sense that they are typically reversed within a few days, they affect mostly the overnight lending rate, rather than longer-term rates of interest. On the whole, I must admit that the short-run variability of interest rates has been more pronounced in Switzerland than in countries where money market rates tend to serve as operational variables for central banks. Nevertheless, the variability of interest rates engendered by our system of monetary-base control has not been large enough to inconvenience the Swiss economy very much.[18]

Excess reserves play an important role in the transmission of monetary disturbances to the real sector of the economy. For example, if the SNB decides to augment the nominal supply of base money, the immediate effect of such a measure, ceteris paribus, is to lower nominal domestic interest rates. The principal instrument of Swiss monetary

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[13] In the United States, this question was discussed extensively early in the 1980s, as a result of an increase in the volatility of M1 growth, following the implementation of the new operating procedures in 1979. For example, see the papers in the special issue of the *Journal of Money, Credit and Banking* 14, pt. 2 (November 1982).

[14] In Germany and Canada, for example, excess reserves are negligible, while in the Netherlands banks hold very little cash. In contrast to Germany and Canada, legal reserve requirements do not exist in the Netherlands. In the United States, excess reserves are also small, but higher than in Germany and Canada.

[15] In Switzerland, commercial banks must comply with primary and secondary liquidity requirements. Primary liquidity comprises base money (deposits with the SNB and currency), as well as deposits with the postal giro system and certain types of foreign assets. Since the primary liquidity requirement is not specified exclusively in terms of base money, it is difficult to determine the extent to which base-money holdings of Swiss banks constitute excess reserves. However, total base-money holdings of Swiss banks are inversely related to short-term domestic interest rates. (Rich and Béguelin, 1985, Table 4). Rich and Béguelin also provide a theoretical analysis of the relationship between commercial banks' reserve behavior and the central bank's monetary control procedures.

[16] Demand for large-denomination Swiss banknotes is also sensitive to changes in domestic interest rates.

[17] Poole (1982) also argues that accommodative behavior of commercial banks will smooth interest rate fluctuations if the central bank controls the monetary base or total bank reserves. In his analysis the shock-absorber effect does not derive from interest-sensitive excess reserves. Instead, he develops a buffer-stock model of the money market in which money-demand and money-supply disturbances are positively correlated.

[18] Interest rates tend to be more volatile in Switzerland than in Germany, especially at the short end of the maturity spectrum. Although the German Bundesbank employs the monetary base (adjusted for changes in reserve requirements) as an intermediate target variable, it does not control that aggregate directly but through changes in domestic money market rates. The Swiss overnight lending rate is particularly volatile as compared with its German equivalent. Our system of monetary-base control probably is not a major cause of the volatility in that rate. A more important reason is the way in which the primary liquidity requirement (see note 15) is enforced. Banks must only prove at the end of the month that they hold the minimum required liquidity. Therefore, bank demand for base money rises temporarily at month end. Since the SNB does not fully accommodate that increase in demand, the overnight lending rate also tends to surge at month end (sometimes to 100 percent and more). Inasmuch as the realized month-end increase in the overnight lending rate is consistent with banks' anticipations, it does not affect interest rates on assets with a term to maturity of one month or longer. Currently, efforts are under way to change this curious requirement.

policy consists of foreign exchange swaps with commercial banks. To increase the monetary base, the SNB purchases spot foreign exchange (usually U.S. dollars) from commercial banks and simultaneously covers the transaction in the forward exchange market. Since the SNB does not incur any exchange risk, it effectively acquires Swiss-franc denominated claims on foreign countries. As a result, the rates of return on such claims decline. Owing to a close substitutability of domestic assets for Swiss-franc denominated claims on foreign countries, domestic interest rates also fall.[19] This decrease in interest rates is required to induce banks to absorb the additional base money in the form of higher excess reserves. In the long run, the increase in nominal base-money supply leads to a proportionate rise in the price level and nominal base-money demand, while interest rates and excess reserves return to their initial levels.

A concern frequently expressed by opponents of monetary-base control is that excess reserves may be a very unstable element in the transmission process (e.g., Bryant, 1982, p. 620). This concern is supported by Swiss experience only to the extent that central banks are willing to achieve short-run price and output goals. As I pointed out in Sections 2 to 4, the strong interest sensitivity of Swiss banks' demand for excess reserves and base money has not impaired the effectiveness of domestic monetary policy as an instrument for stabilizing price level trends, but renders our system of monetary control unsuitable for attaining short-run price and output objectives. However, I seriously doubt whether alternative systems of monetary control would strengthen our ability to smooth short-run fluctuations in prices and output.

Another objection to monetary-base control derives from the inability of most central banks to keep a tight rein on their loans to commercial banks. Clearly, central banks cannot adequately control the monetary base unless they are empowered to restrict borrowing by commercial banks. In Switzerland, commercial-bank borrowing from the central bank is determined in large measure by the SNB, even though a few loopholes in our system of monetary-base control continue to exist. (See Kohli and Rich, 1986, p. 916). Despite these loopholes, the SNB is able to manage the monetary base with a high degree of precision. Virtually all the deviations between actual and targeted base-money growth shown in the table mirror decisions by the SNB to deviate from its targets, rather than imperfections in its control procedures.

6. Rules Versus Discretion

Monetarists tend to dislike monetary discretion. They feel that the record of discretionary monetary policy has been dismal and, therefore, favor monetary rules such as money stock targets that limit the central banks' freedom of action.

Although there is much truth in the monetarist critique of discretionary monetary policy, I fail to see how central banks could do entirely without discretion. Central bankers are not perfect, but I doubt that the performance of monetary policy would improve if they were replaced by apes following a set of mechanical rules. Nevertheless, I do not wish to advocate unlimited discretion for central banks. In my opinion, it is necessary that central-bank behavior be governed by a set of rules, but these rules should not be so inflexible as to prevent policymakers from reacting to unexpected major shocks to the economy.

Monetary-policy rules are liable to improve the performance of central banks in two respects. First, a rule such as a money stock target makes the central bank accountable to the public. A preannounced money stock target invites public scrutiny of monetary policy, which in turn may aid central banks in devising optimum policy strategies. Moreover, should the central bank deviate from the preannounced target, it must explain its actions to the public. Accountability is socially desirable because it reduces the chance that economic agents misinterpret the intentions of central banks and, thus, take decisions on the basis of erroneous forecasts of future monetary policy. Accountability also enhances the reputation of central banks as it reduces the incentive for shrouding monetary policy in mystery and confusion. In an effort to strengthen accountability to the public, the SNB has always insisted on fixing targets for a single monetary aggregate.[20]

[19] In the absence of default risk, domestic short-term interest rates equal the corresponding dollar rates plus the forward discount on the spot rate of the dollar. An increase in the monetary base by way of a purchase of covered dollar claims raises the forward discount on the dollar and, hence, lowers domestic short-term interest rates.

[20] The annual growth target for the monetary base is publicly announced. However, the SNB does not disclose to the public a set of monthly target values of the monetary base (which are derived from the annual target and take account of seasonal movements in base-money demand). In my opinion, it is not clear whether the benefits of not disclosing the monthly target values outweigh the costs. See Goodfriend (1986) for an excellent discussion of the benefits and costs of central-bank secrecy.

Second, a well-designed rule forces central banks not to lose sight of price stability as the principal objective of monetary policy. Policymakers are always under pressure to achieve a multitude of goals. In particular, they are prone to adopt a short-run outlook by attempting to manage output and employment.[21] If the rule is accepted by the public, it may help central banks to withstand such pressure. In order to stress the importance of price stability as a policy objective, the SNB not only fixes yearly monetary targets, but also indicates what rate of growth in the monetary base it would like to achieve in the medium and long run. Considering our forecasts of potential output growth and the trend change in velocity, we believe that the monetary base should increase by no more than 2 percent per year if the inflation trend is to remain within a range of zero to one percent. As may be seen from the table, the annual target consistently exceeded 2 percent until 1985. The SNB did not want to lower base-money growth quickly to 2 percent because of its preference for a gradualist approach to combatting inflation. As long as inflation remained relatively high, the SNB was willing to accommodate to some extent the growth in base-money demand arising from changes in the price level and output during the targeting period.[22] However, at the beginning of 1986, the SNB reduced its annual target to a level deemed appropriate in the medium and long run.

Despite its preference for a policy approach based on rules, the SNB has not rigidly adhered to its preannounced money stock targets. As a result of the difficulties that may arise from excessively large fluctuations in the real exchange rate of the Swiss franc, the SNB cannot help qualifying its commitment to money stock targeting. The SNB is prepared to deviate from—or even to give up temporarily—its money stock targets if unexpected developments on the foreign exchange market or other unexpected major shocks should call for such a course of action. The major deviations between targeted and actual money growth shown in the table are largely explained by exchange-rate considerations.[23]

In contrast to undesirable exchange-rate movements, the recent upward shift in the monetary-base velocity has not, thus far, prompted any revisions in the SNB's money stock target. The SNB's relaxed attitude toward that velocity shift is explained by three reasons. First, it is not clear at this moment whether the velocity shift is permanent or transitory. Furthermore, even if the shift should turn out to be permanent, we do not know whether it represents an increase in the level or growth trend of velocity. The policy implications of changes in the level and growth trend of velocity are fundamentally different. In the first instance, the SNB need not alter its medium-run money stock target of 2 percent. It should still be able to achieve its objective of price stability even if money growth is kept at 2 percent. But the velocity shift is bound to lengthen the period required to reach that objective. A rise in the growth trend of velocity, by contrast, calls for a permanent reduction of the SNB's medium-run target. Second, the shock-absorber role of excess reserves implies that banks will temper the effect of a velocity shift on domestic interest rates and the real sector of the economy. Therefore, the SNB need not react quickly to a velocity shift but can afford to wait until it is certain about the nature of that shift. Third, even if the SNB were to conclude that the shift represents an increase in the growth trend of velocity, it probably would not be prepared to lower its medium-run target at the present moment. The current tendency of central banks in the major industrialized countries to relax their monetary policies has narrowed considerably our own room for maneuver. A tightening of Swiss monetary policy at the present moment would be inappropriate since it would likely result in a further real appreciation of the Swiss franc. This would impair the competitive position of Swiss industry at a time when there is mounting evidence of a cyclical slowdown in domestic economic growth.

Swiss experience with monetary targeting suggests that a policy of committing the central bank to a simplistic constant-money-growth rule may not be optimal. This does not imply that central banks

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[21] Kydland and Prescott (1977), Barro and Gordon (1983), Barro (1986) and others have argued that discretionary monetary policy may be inconsistent with price stability. If central banks determine their monetary strategy on a period-by-period basis, policy may become "time inconsistent" since policymakers do not take account of possible discretionary decisions to be taken in the future. They have a tendency to create monetary surprises by exploiting prevailing expectations in order to temporarily boost output. However, as economic agents adjust their expectations, this strategy results in additional inflation, while the output effects vanish.

[22] The effective growth in M1 and the monetary base suggests that the actual outcome was less gradualist than might be believed on the basis of the annual targets (see table).

[23] The SNB cannot simultaneously achieve money-stock and exchange-rate targets since sterilized intervention on the foreign exchange market affects the exchange rate only temporarily, if at all. See Weber (1986) for a good discussion of the effects of sterilized intervention. A succinct summary of the SNB's attitude toward official intervention on the foreign exchange market is provided by Schiltknecht (1983, pp. 76-77).

should be guided entirely by discretion. The problem is not to choose between rules and discretion but between a simple CMG-strategy and a more complex set of rules. In my opinion, the ideal central banker is not a person adhering mechanically to a preannounced set of money stock targets, but someone equipped with a good dose of what I would call creative inertia. The ideal central banker will abide by a preannounced set of rules in principle. These rules should be designed to ensure that the central bank will have a good chance of achieving price stability in the longer run. Moreover, the rules should be specified as a contingency plan, that is, the ideal central banker should state in advance the conditions under which he (or she) would contemplate a breach or modification of these rules. In the Swiss context, an important contingency would be the level of the real exchange of the domestic currency. The precommitment to a set of rules implies that the ideal central banker would not react immediately to every unexpected shock affecting the monetary or real sector of the economy. Instead, he would attempt carefully to identify shocks that call for a central-bank response. In my opinion, creative inertia would be a more desirable mode of behavior than the hectic—and frequently vacuous—activism, as well as the penchant for quick fixes that seem to be characteristic of bureaucracies all over the world.

7. Summary and Conclusions

In this paper, an attempt was made to assess recent Swiss and United States monetary policy in light of five important monetarist propositions. The analysis led to the conclusion that the experience of these two countries does not unequivocally support or contradict monetarism. On the basis of that experience, some monetarist propositions may be regarded as dead, but others continue to be well and alive. In particular, Swiss and United States experience is consistent with the monetarist notion as to a fairly close relationship between trend changes in money and prices. Thus, there is little doubt about the monetarist claim that tight control of the growth in the money stock offers the key to a successful assault on inflation. However, monetarists have underestimated the difficulties arising from instabilities in the link between money and prices. These instabilities also show up in unexpected shifts in the velocity of money. Instabilities in the behavior of velocity have been a more serious problem in the United States than in Switzerland. This is attributable to deregulation of U.S. markets for bank deposits, as well as to the rapid pace of financial innovation in the U.S. payments system, as compared with the rather slow changes in Swiss payments techniques. The difference in the pace of financial innovation in the two countries is largely explained by the U.S. record of relatively high inflation and nominal interest rates. Thus, while in the United States velocity shifts have complicated the Fed's task of setting appropriate money stock targets, the Swiss National Bank has not been plagued unduly by such problems. Of course, monetarists might argue that in a more fundamental sense U.S. experience does not contradict their beliefs; it rather confirms an important monetarist truth that central banks should not allow inflation to surface in the first place.

Another difference between United States and Swiss monetary policies lies in the ultimate objectives pursued by the Fed and the SNB. The SNB endorses in large measure the monetarist proposition that price stability should form the principal objective of monetary policy, while the Fed has endeavored to pursue a multiplicity of goals. However, in practice, the SNB has not been able to disregard entirely other objectives. External constraints arising from undesirable movements in the real exchange rate, in particular, have occasionally compelled it to pay attention to the state of output and employment. Moreover, the SNB is virtually alone among central banks in operating a system of monetary base control, a policy approach propagated by some monetarists. The SNB also shares the monetarists' preference for a policy approach based on rules rather than discretion. However, the SNB does not regard rigid adherence to a constant-money-growth rule as the best possible approach to monetary policy. Instead, the rules should be cast in terms of a contingency plan. Central banks should state in advance the conditions requiring departures from their money stock targets. In the Swiss case, the principal contingency is excessively large fluctuations in the real exchange rate of the Swiss Franc.

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