Is the Federal Reserve Hitting Its Money Supply Targets?

By J. A. Cacy

In the spring of last year, the Federal Reserve began to publicly announce its objectives concerning future growth rates of various monetary aggregates. Since that time, a number of observers have devoted considerable attention to the question of whether the Federal Reserve is attaining its stated objectives. Some observers, for example, have viewed any divergence of the actual movements in the aggregates from the targeted objectives as evidence of improper implementation of monetary policy.' Other observers, mainly money market participants, have examined actual developments in the aggregates relative to the stated objectives as a hoped for means of determining future Federal Reserve intentions.

This article examines the issue of whether the Federal Reserve is meeting its targeted objectives with respect to the monetary and credit aggregates. The first section of the article briefly reviews the legislative background underlying the publication of the targets and describes the specific targets that have been announced. The next section discusses various criteria for assessing whether the targets have been met. The final section applies some of these criteria to recent movements in the aggregates with a view toward ascertaining the extent to which—if any—the Federal Reserve has been successful in achieving its targeted growth rates of money and credit.

WHAT ARE THE TARGETS?

On March 24, 1975, the U.S. Congress approved the House Concurrent Resolution 133, which indicated it was the sense of Congress that the Board of Governors of the Federal Reserve System and the Federal Open Market Committee:

(1) pursue policies in the first half of 1975 so as to encourage lower long-term interest rates and expansion in the monetary and credit aggregates appropriate to facilitating prompt economic recovery; and

(2) maintain long-run growth of the monetary and credit aggregates commensurate with the economy's long-run potential to increase production, so as to promote effectively the goals of maximum employment, stable prices, and moderate long-term interest rates.

The resolution also indicated that, pursuant with these general objectives, the Federal Reserve should consult with Congress at semiannual hearings before the Committee on Banking, Housing and Urban Affairs of the Senate and the Committee on Banking, Currency, and Housing of the House of Representatives. These hearings, the resolution stated, should concern:

. . . the Board of Governors' and the Federal Open Market Committee's objectives and plans with

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1/See Milton Friedman, "How to Hit the Money Target," *Newsweek*, December *8, 1975.*

respect to the ranges of growth or diminution of monetary and credit aggregates in the upcoming twelve months.

The resolution concluded by stating:

Nothing in this resolution shall be interpreted to require that such ranges of growth or diminution be achieved if the Board of Governors and the Federal Open Market Committee determine that they cannot or should not be achieved because of changing conditions. The Board of Governors shall report to the Congress the reason for any such determination during the next hearings held pursuant to this resolution.[2]

In response to the consultative procedures contained in this resolution, the Chairman of the Federal Reserve Board reported to Congress on three separate occasions in 1975: on May 1, July 24, and on November 4. In the first report to the Senate Banking Committee, the Chairman indicated the Federal Reserve was seeking a moderate rate of expansion in the monetary and credit aggregates. Such a course, it was felt, would promote an increase in the narrowly defined money supply—denoted as M1 and defined to include currency in circulation and demand deposits at commercial banks—at a rate ranging between 5 and 7% per cent from March 1975 to March 1976. Accompanying this growth rate would be higher rates of increase in the other aggregates—ranging from 8% to 10% percent for M2, defined as M1 plus time deposits at commercial banks other than large CD's; 10 to 12 per cent for M3, defined as M2 plus time deposits at nonbank thrift institutions; and 6½ to 7% per cent for the bank credit proxy.[3]

These targeted ranges in the aggregates were submitted with two important qualifications. The first was that, in a dynamic economy such as ours, the economic and financial outlook could change quickly and dramatically. The Federal Reserve, therefore, might need to modify promptly its views on the appropriate growth rates in the aggregates to minimize possible economic and financial difficulties. The second qualification was that, while the announced growth rates were considered appropriate in the existing environment of high unemployment and unused industrial capacity, the growth rates were high by historical standards and could not be maintained indefinitely without running a serious risk of releasing new inflationary pressures.

The second consultative hearing was before the House Banking Committee on July 22-24, 1975. At that time, the economic prospects were deemed not materially different from a few months previously, so the Federal Reserve reaffirmed its intent to seek the same growth rates in the aggregates announced earlier. A change was made, however, in the method of computing the base from which the growth rates were projected. Whereas a single-month base was employed previously, i.e., March 1975, the growth rates for the aggregates were now projected to cover the 12-month span from the second quarter of 1975 to the second quarter of 1976. A quarterly base was employed because a 3-month average was considered less subject to erratic movements in money balances than a single-month base.

The third consultative hearing was held on November 4, 1975, before the Senate Banking Committee. At the time of the hearing, the recovery in the economy was proceeding but inflation was still a disturbing problem. Consequently, the Federal Reserve indicated its intent to continue to pursue a course of moderation in monetary policy. To implement that policy, the targeted growth ranges of the monetary aggregates differed little from those announced previously. Specifically, the growth range for M1 was again 5 to 7% per cent, while the range for M2 and M3 was widened by reducing the lower end 1 percentage point. Accordingly, the range was 7% to 10% per cent for M2 and 9 to 12 per cent for M3. Similar to the practice announced earlier, these growth ranges applied to the period extending from the third quarter of 1975 to the third quarter of 1976.

2/"First Meeting on the Conduct of Monetary Policy," Hearings before the Committee on Banking. Housing and Urban Affairs. U S. Senate, 94th Congress, April 29-May 2, 1975, p 3.
3/First Meeting . ., p 172. The bank credit proxy includes total member bank deposits subject to reserve requirements, plus Eurodollar borrowings, loans sold to bank-related institutions, and certain other non-deposit items

METHODS OF ASSESSING TARGET ACHIEVEMENT

Various methods can be employed to assess the extent the Federal Reserve accomplishes its objectives for the monetary aggregates. One method is to compare the growth rates achieved at the end of the target period with the targeted growth rate ranges. For example, the actual growth rate of M1 over the target period from March 1975 to March 1976 would be compared with the 5 to 7% per cent range targeted for M1. If M1's growth rate from March 1975 to March 1976 were at least 5 per cent, but no higher than 7½ per cent, the M1 target would be achieved. This method, which is probably consistent with the Federal Reserve's approach to target achievement, is the only definitive way to assess whether the targets have in fact been met. However, the method allows an assessment to be made only after a target period has ended. As such, it does not allow for the useful procedure of assessing target achievement at various times during a target period.

Another method of assessing target achievement is to compare the growth rates of money during subperiods of a target period with the targeted growth rate ranges. Subperiods could be any length, such as a week, a month, or a quarter. For instance, if in the preceding example M1's growth rate in any month exceeded 7% per cent or was less than 5 per cent, an assessment would conclude that the M1 target was not achieved in that month. While this method allows an assessment to be made during a target period, it has the disadvantage of placing undue emphasis on the short-term behavior of the monetary aggregates. Overemphasis of short-term behavior would be especially serious if the subperiods were as short as a week or a month.
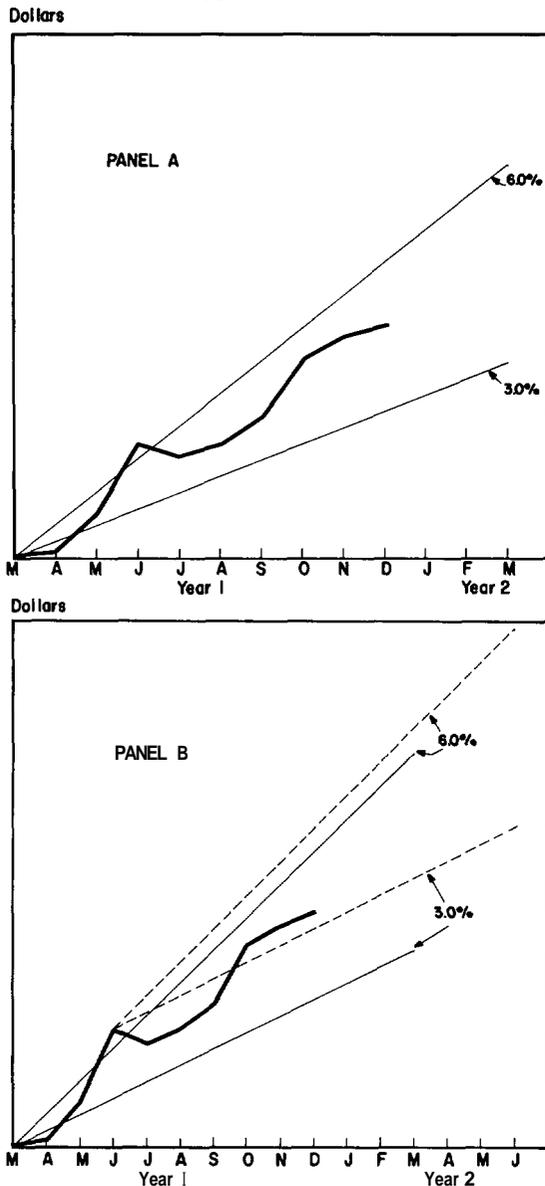
The method used in this article to assess target achievement may be referred to as the "ray" approach. This approach focuses on the behavior of money during intervals from the starting point of the target period to various points within the period. Behavior during these intervals is then compared with the behavior that was targeted for the entire period. In other words, at any point in time, the approach answers the question: How is money behaving so far relative to its targeted behavior for the entire target period? Thus, the ray approach is similar to the previous method in that it allows an assessment of target achievement to be made during a target period. It differs from the previous method, however, by placing less emphasis on short-term movements of money and allowing an assessment of target achievement from a longer run perspective.

Use of the ray approach is illustrated in Chart 1. In Panel A of the chart, it is hypothetically assumed that a target period extends from March of Year 1 to March of Year 2, and that the targeted growth rate range is 3 to 6 per cent. The target path, or ray, has its starting point, or apex, at March of Year 1—the base period. The lower boundary of the ray shows the route that money would follow if money increased throughout the target period at a rate of 3 per cent, which is the lower bound of the target growth rate range. The upper boundary of the ray traces a growth rate of 6 per cent, which is the upper bound of the target range. If the actual level of the money supply is within the ray at any point, the growth rate of money during the interval from the base period to that point is within the 3 to 6 per cent target range. For example, the level of the money supply in May is within the ray, so money's growth rate from March to May is between 3 and 6 per cent. In June, however, the level of the money supply is above the ray, which means the March-June money growth rate exceeds the 6 per cent upper bound of the target growth rate range.

A problem with assessing target achievement by using the ray approach is that the method places rather narrow limits on short-term variations in money growth during the initial part of the target period. As such, undue emphasis might be accorded the short-term behavior of the aggregates in the initial phase of the period. On the other hand, the ray approach allows wide variations in short-term growth rates during the later parts of the target period. In Panel A of Chart 1, for example, the growth rate of money in April must be between 3

Chart 1
MONEY SUPPLY AND TARGET RAYS
A Hypothetical Case

Dollars

PANEL A

6.0%

3.0%

M A M J J A S O N D J F M
Year I   Year 2

Dollars

PANEL B

6.0%

3.0%

M A M J J A S O N D J F M A M J
Year I   Year 2

and *6* per cent for the money supply to be within the ray in April. The growth rate in January, however, could range considerably beyond these values

and still allow money to be within the target ray.

The problem of narrow limits in the initial part of the target period can be resolved in several ways. Reasonable deviations from the ray may be accepted, or the ray may be widened somewhat for the initial part of the period. The problem of wide variations in the later part of the target period is— in practice — automatically resolved. That is because, prior to the end of any target period, a new target period and a new money growth rate range are established. The ray for the new period puts limits on acceptable short-term growth rates in the initial part of the new period, which is the later part of the previous period.

The practice of establishing new target periods prior to the end of the previous periods complicates the assessment of target achievement. It means that the money supply at any point in time may be compared with more than one target ray. Panel B of Chart 1 illustrates a case with two target rays. The ray from Panel A is shown in Panel B and another ray is added. The second ray assumes a target period from June of Year 1 to June of Year 2, and a target growth rate range from **3** to 6 per cent. The starting point of the new ray is the money supply's actual level in June of Year 1, the new target period's base period.[4] For any point after June of Year 1, the money supply may be compared to both rays. For example, in July, August, and September money supply targets established in March were achieved, but those established in June were not achieved. In October, November, and December, however, both targets were achieved.

AN ASSESSMENT OF TARGET ACHIEVEMENT

The ray approach described in the preceding section is now used to assess the extent that the

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4/The actual level of the money supply is not the only possible choice for the base level An alternative would be the level of money that would have existed in the base period if, during the interval from the previous base period to the new base period, money had increased at a rate equal to the midpoint of the previous target growth rate range. This alternative can be referred to as the "midpoint" method of selecting a base level. Under this method, new rays will always fall within all previously established rays as long as the target growth rate range does not change. Thus, if money is within any particular ray, it is within all previous rays, also In other words, if money supply targets established at any particular time are achieved, targets established at all previous times are also achieved.

money supply targets are being achieved. In using the ray approach, it is first necessary to select a type of time series for money to use in comparing money growth with the target rays. A number of time series could be selected, including quarterly, monthly, weekly, or multi-weekly time series. Moving averages of these periods also could be employed. The method used in this article is to select the same period length for the time series that the Federal Reserve employs when designating the base level. Thus, if the Federal Reserve uses a month for the base period, a monthly money supply series is used to compare with the target rays. If the Federal Reserve designates a quarter as the base level, a quarterly series is employed to compare money with the target rays.

Specifically, a monthly time series is used here to compare the behavior of money with the target ray for the target period beginning in March 1975 because the base level for the March target period is the month of March. For the target period beginning in the second and third quarters of 1975, a 3-month moving average series is selected because the base level for these target periods is the average level of money in the second and third quarters, respectively. Also, by using a 3-month moving average series, an assessment of target achievement can be made each month. If an ordinary quarterly series were used, an assessment could be made only once each quarter.

Target achievement for the March 1975-March 1976 target period can be assessed with the help of Chart 2. Ordinary monthly time series for M1, M2, and M3 are shown in the chart along with a target ray for each measure of the money supply.[5] Each ray's starting point is the actual level of the money supply in March 1975, the month the Federal Re-

serve designated as the base period. For example, the starting point for the M1 ray in Panel A of Chart 2 is $284.1 billion, the level that M1 averaged in March 1975. Boundaries for the rays are established by the target growth rate ranges for the March 1975-March 1976 target period.

As seen in Chart 2, M1 was outside the March 1975-March 1976 target ray during most of the initial part of the target period. However, M1 moved into the ray in September and remained inside the ray from October through December, the latest month for which data are available. The behavior of M2 relative to its target ray was similar to that of M1. After moving outside its ray in the first part of the target period, M2 fell within the ray in the last four months of 1975. (See Panel B, Chart 2.) M3 was above its target ray throughout most of the period from April 1975 to November 1975, and then moved within the ray in December 1975.

Target achievement for the second quarter 1975-second quarter 1976 period and the third quarter 1975-third quarter 1976 period can be assessed with the help of Chart 3. This chart shows the behavior of money relative to the target rays for both target periods. The two periods are treated in one chart because the base levels of both periods are averages of data for a quarter. For the same reason, 3-month moving average series for M1, M2, and M3 are used in Chart 3 to compare the behavior of money with the target rays. The starting points for the rays applicable to the second quarter-second quarter target period is the level that money averaged in the second quarter of 1975, i.e., in the three months ending June 1975. Similarly, the starting points for the rays applicable to the third quarter-third quarter target period is the level that money averaged in the third quarter of 1975, i.e., in the three months ending September 1975.[6] Each ray's boundaries in Chart 3 are established by the target growth rate ranges.


5/The analysis of target achievement in this article is confined to M1, M2, and M3 because growth rate ranges for these money supply measures were given in each of the Federal Reserve's consultative reports to the U. S Congress. In the first and second reports, a growth rate range was indicated for the hank credit proxy In the third report, however, a target for the credit proxy was not given

Current estimates of money supply data are employed in this article Experience suggests, however, that these data may he subsequently revised. Substantial 'revisions could alter the conclusions of not only this article but of any assessment of target achievement.

6/In Chart 3, the starting points for the target rays and the 3-month moving average series are shown on an end-month-of-quarter basrs. For example, the starting point for the second quarter target ray, which is the average level of money in the 3 months ending June 1975, is plotted as of the month of June.

Chart 2
MONEY SUPPLY MEASURES AND TARGET RAYS
March-March Target Period

Billions of Dollars

PANEL A

Billions of Dollars

PANEL C

Billions of Dollars

PANEL B
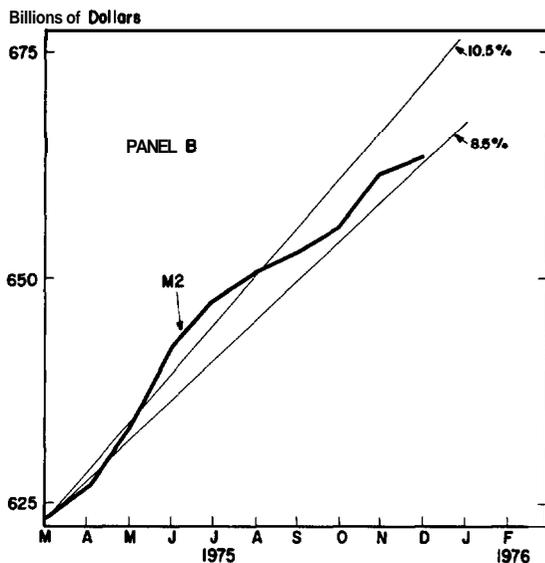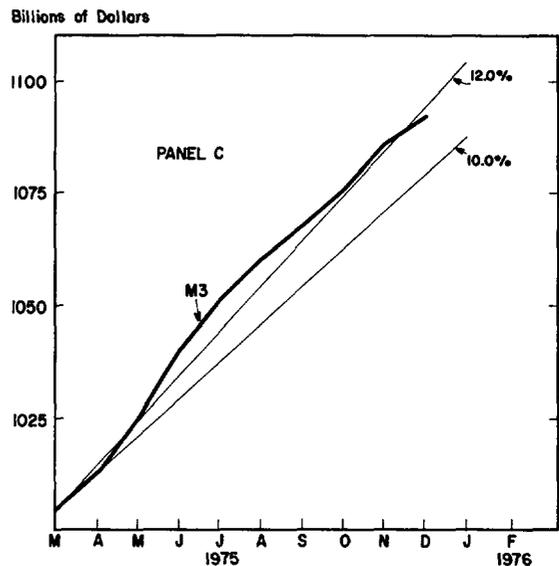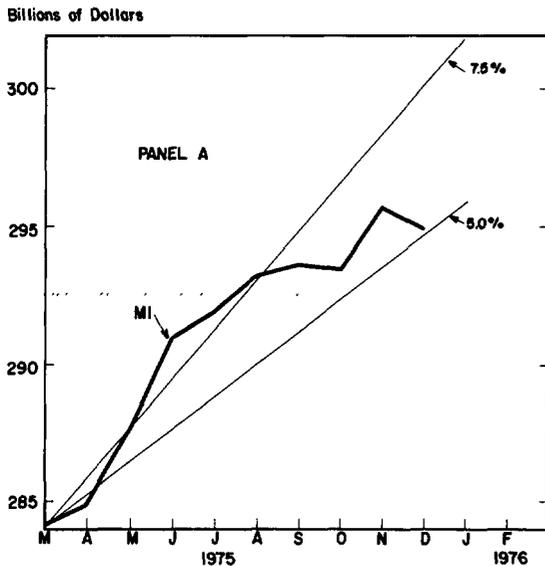
As seen in Chart 3, M1 was above its second quarter 1975-second quarter 1976 target ray in the initial part of the target period. M1 moved into the ray in September and stayed within the ray in October and November. In December, however, M1 fell slightly below its second quarter-second quarter target ray. M1 has remained below its third quarter-third quarter ray throughout the period that the ray has been applicable.

Similar to M1, M2 was above its second quarter 1975-second quarter 1976 ray in the initial part of the target period. M2 then fell within the ray in September, October, and November and moved below the ray in December. (See Panel B.) M2 joined M1 in falling below the third quarter-third quarter ray throughout the applicable period. Panel C of Chart 3 shows that M3 was above its second quarter-second quarter ray from July through November, and fell inside the ray in December. M3 has moved within its third quarter-third quarter ray throughout the applicable period.

CONCLUSIONS

Several conclusions can be drawn from this article's assessment of the extent to which the Fed-

Chart 3
MONEY SUPPLY MEASURES AND TARGET RAYS
Second Quarter-Second Quarter and
Third Quarter-Third Quarter Periods
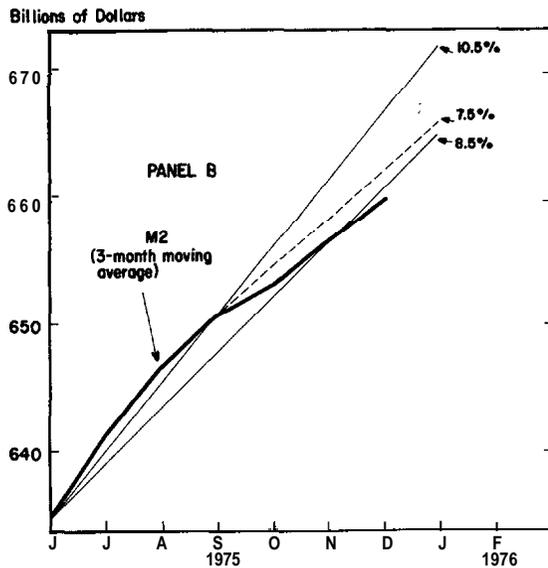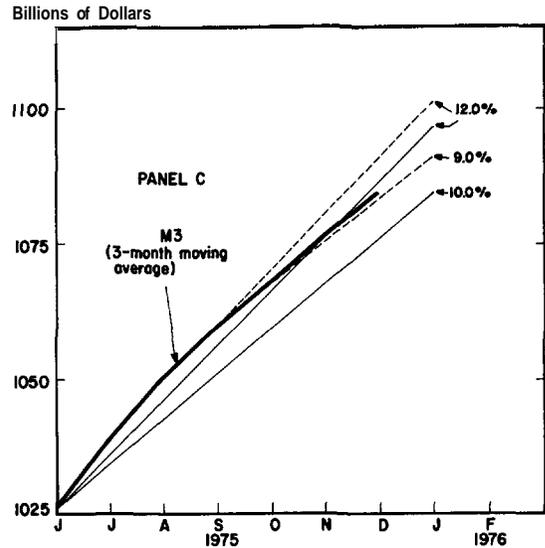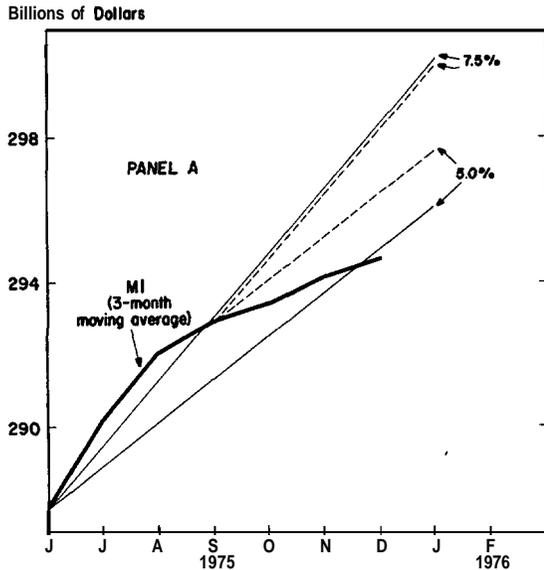
the earlier stages. Target misses in the earlier stages should not be unexpected, though, because precise short-term control over money is difficult to achieve. Control over longer periods is more precise because Federal Reserve actions affect money with a time lag. Also, actions designed to correct errors in the first part of the target periods help to keep money on target in the later stages of the target periods.

Another conclusion is that, in the later part of 1975, M3 moved in line with its target more closely than either M1 or M2. For example, in December, M3 was in line with the target specified for the period from the third quarter of 1975 to the third quarter of 1976. Also, M3 in December was consistent with targets specified for the second quarter 1975-second quarter 1976 and the March 1975-March 1976 period. However, in December M1 and M2 were in line with only the March-March targets and were below both the second quarter-second quarter and third quarter-third quarter targets.

eral Reserve is meeting its money supply targets. One conclusion is that the actual behavior of the money supply measures has tended to be more on target in the later stages of target periods than in

The difference between the behavior of the money supply measures relative to their targets underscores a basic problem inherent in establishing and attempting to achieve multiple money supply targets. The problem arises because the Federal Reserve has little ability to control one of the monetary aggregates independently of others. Actions designed to expand or contract one aggregate will generally tend to expand or contract the other aggregates. Thus, for each of the targets to be achieved, the set of targets must be consistent with one another. If inconsistencies develop, however, which is likely in a dynamic economy, the Federal Reserve will be faced with a dilemma. For example, if the System had acted more vigorously to expand the monetary aggregates in the later part of 1975, **M1** and **M2** may have been kept within their second quarter-second quarter and third quarter-third quarter target rays. However, such action also may have pushed **M3** above its target rays. In brief, after a set of targets has been established and then divergences occur in the growth patterns relative to the targets, it is difficult for the Federal Reserve to correct for the divergent behavior in the aggregates.

A final conclusion is that care should be taken to avoid simple generalizations regarding whether or not the Federal Reserve is hitting its money supply targets. The existence of multiple money supply targets combined with multiple target periods suggests that any such generalizations could easily be misleading. As the evidence presented here has shown, some of the money supply targets are being met for certain time periods and some are not. Especially misleading would be simple generalizations based on comparing money growth rates for short-term periods with targeted growth rate ranges. Such comparisons may wrongly imply that money supply targets are not being achieved because short-term movements in the aggregates are sometimes quite volatile. The ray approach used in this article helps avoid misleading comparisons by placing the assessment of target achievement in a longer run perspective.

In early February, Chairman Bums presented to the House Committee on Banking, Currency, and Housing the target growth rate ranges of the monetary aggregates for the year ending in the fourth quarter of 1976. These ranges differed only a little from those announced previously. For **M2** and **M3,** the growth ranges remain at 7.5 to 10.5 per cent and **9** to **12** per cent, respectively. The growth range for **M1** has been widened somewhat, to a 4.5 to 7.5 per cent range, from the previous range of 5 to 7.5 per cent. The lowering of the bottom end of the range takes into account, among other factors, the transfer of funds from demand balances to business savings accounts at commercial banks—a development that lowers the growth rate of **M1** but leaves unaffected the growth rates of **M2** and **M3.**