

Monetary Policy for 1976--A Primer

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I. Introduction

How fast should money grow? The Fed recently has been seeking to encourage, or accommodate, a growth rate for the money supply that would average between 5 and 7 1/2 percent over the subsequent four-quarter period. In this discussion, we shall attempt to explain the case for that "target" range. Our case will be built on a discussion of three related questions: First, how fast should money be allowed or encouraged to grow over the longer run? Second, what are the key economic relationships that must hold if money growth is to do the desired job? Third, what factors justify a departure from the longer-run path of money growth at the moment?

It's clear enough that in the final analysis our answer to those questions will depend on how we believe the economy works and, particularly, how we believe it is influenced by money. In the light of recent research, both theoretical and applied, we have lost some of our earlier confidence in our ability to pinpoint a "best" target through refined econometric analysis. Rather than attempting to resolve conflicting theories about the role of money in our economy, we will discuss

our questions within a framework that is largely independent of beliefs about how the economy "really" works. This framework, which we discuss in Section I, focuses on a few selected relationships which are true by definition because of the particular bookkeeping system used to record our economic life.

In Section II, this framework will be used, together with observations about the recent and historical performance of certain key economic variables (such as productivity and money velocity) and a consensus view of likely economic performance in 1976, to show why it's reasonable under current circumstances to target growth of the money supply in the range of 5 to 7 1/2 percent. We shall argue that a key requirement necessary to validate this policy prescription is that wage settlements in the aggregate not exceed 9 percent. Average wage increases in excess of 8 to 9 percent would likely cause prices to rise more than allowed for in this policy stance, and thus frustrate or retard the momentum of economic recovery.

This discussion is intended only to illustrate analytically one way of looking at the relationships between money and the performance of the economy. It is not intended to represent predictions of what will actually happen. Nonetheless, it serves to illustrate that the choice of a money growth target not only implies some view of the possible balance between rates of growth in real output and prices, but also depends importantly on private sector decisions for the particular outcome attained.

II. Historical Experience and the Analytical Framework

The economy's long-term rate of growth can be mechanically represented as the sum of two elements: the rate at which real, physical

output grows and the rate at which the general price level rises. Since World War II, for example, real output of goods and services measured in the Gross National Product (GNP) has increased at an average rate of 3.7 percent per year, while the price level implicit in GNP has increased at an average rate of 3.1 percent per year.* That means that dollar GNP, which is the product of price and real output, has grown at the sum of those two rates; namely, 6.8 percent per year on average.

A classical view in economics is that money ought to increase roughly in line with the amount of activity that needs to be financed in the economy. This view rests on the reasonable proposition that real growth possibilities for the economy ought to be fully accommodated. Assuming the 3.7 percent postwar annual growth rate for real GNP is a measure of our economy's long-term potential, then we should want to see, on average, 3.7 percent annual money growth merely to support the physical transactions needs of the economy.

But it's also true that we need to have some additional money growth to accommodate a normal upward drift in the measured price level of 1 to 2 percent per year. This upward drift is quite consistent with the notion of "stable prices" since general price indexes do not sort out all of the quality improvements and innovations occurring in a dynamic economy with its changing mix of output. Thus, a measured creep of 1 to 2 percent a year in the general price index is probably equivalent to zero inflation in a world where technology is static. Assuming, on those grounds, that we should be prepared to accommodate, say, a

*The long-term growth rates used in this section are calculated from data for the years 1947 and 1974 presented in the 1975 Economic Report of the President.

1 1/2 percent per year price level growth, we would arrive at a figure of about 5.2 percent a year (3.7 percent real plus 1.5 percent price) as the annual growth in the amount of "work" money has to do in the economy.

If a dollar of money didn't vary in its ability to finance economic transactions from year to year, then our answer to the first question would be simple: We should want to see the money supply expand at a long-term average rate of about 5 percent a year in order to accommodate normal real growth and price drift. Much more than 5 percent would by this reasoning simply result in undue inflation, while much less money growth would cause undue deflation.

Having said that, we hasten to acknowledge that money itself does indeed increase in efficiency over time, and such changes represent a third element that we need take into account in deciding on a long-term desired rate of money supply growth. The efficiency of money (or the "velocity" of money), defined as the amount of GNP a given dollar of money stock will support, has increased at an average rate of about 3 percent per year over the postwar period. If we could count on such a continuing trend in efficiency of money, then our long-term "target" rate for money growth should be reduced by about 3 percentage points, since each dollar would do about 3 percent more work each year.

In short, the foregoing argument leads us to the conclusion that over the longer term, we should aim toward money growth at an average rate of about 2 1/2 percent per year. We can summarize these results for the long term as follows:

$$\begin{array}{ccccccc}
 \left(\begin{array}{l} \text{Preferred} \\ \text{money} \\ \text{supply} \\ \text{growth} \\ \text{rate} \end{array} \right) & = & \left(\begin{array}{l} \text{Prospective} \\ \text{rate of} \\ \text{growth in} \\ \text{real out-} \\ \text{put} \end{array} \right) & + & \left(\begin{array}{l} \text{Rate of} \\ \text{price level} \\ \text{increase to} \\ \text{be accommo-} \\ \text{dated} \end{array} \right) & - & \left(\begin{array}{l} \text{Prospective} \\ \text{rate of} \\ \text{increase in} \\ \text{the efficiency} \\ \text{(velocity)} \\ \text{of money} \end{array} \right) \\
 2.5\% & & 3.7\% & & 1.5\% & & 2.7\%
 \end{array}$$

where we have used for our velocity projection the slightly reduced 2.7 percent trend it appears to have been following since 1960.

There's obviously nothing very precise about the 2 1/2 percent rate we've described as a hypothetically preferred target. The actual average money growth rate since World War II has been a somewhat larger 3 1/2 percent rate. But it's also not surprising that actual historical experience shows money growth somewhat larger than that of classical prescription--the difference reflecting some net inflationary bias over the postwar period. Either figure, though, tells us that however appropriate may be the Fed's recent target of 5 to 7 1/2 percent money growth, sooner or later we shall need to get back to a rate considerably lower.

There exist other well-defined relationships among economic variables that lie behind those we've just talked about. Consider first what contributes to growth in real output. One approach is to identify three factors: the number of workers, average hours per worker, and average real output per hour of work. As any of these three items gets larger, real output grows. On this reasoning, we can split the rate of growth of real output into three elements as follows:

$$\begin{array}{ccccccc}
 \left(\begin{array}{l} \text{Rate of} \\ \text{growth} \\ \text{of real} \\ \text{output} \end{array} \right) & = & \left(\begin{array}{l} \text{Rate of} \\ \text{growth} \\ \text{of employ-} \\ \text{ment} \end{array} \right) & + & \left(\begin{array}{l} \text{Rate of} \\ \text{growth} \\ \text{of hours} \\ \text{per worker} \end{array} \right) & + & \left(\begin{array}{l} \text{Rate of} \\ \text{growth} \\ \text{of output} \\ \text{per hour} \end{array} \right) \\
 3.7\% & & 1.5\% & & -0.5\% & & 2.7\%
 \end{array}$$

The first element, growth in number of people employed, is pretty much determined (from a policy point of view) by demographic trends in population and labor force. That is, in order that unemployment not persist at rates over its frictional minimum, the rate of employment growth has got to nearly match the long-term growth in labor force. For the postwar period the latter figure averaged a fairly steady 1.5 percent per year. Hours per worker has trended very slightly downward, and this factor by itself acts as an offset to growth in real output. While changes in hours per worker have only a relatively small impact on growth of output over the long run, cyclical swings in hours worked can make a substantial difference in output, plus and minus, in the shorter run.

But as the above figures indicate, the mainspring of real output growth is the change in output per hour or productivity growth. The indicated 2.7 percent per year postwar average annual gain in productivity may possibly be close to the economy's basic potential to expand its efficiency.

Whatever the actual potential, it's important to understand the sources of productivity growth and what we must do to keep productivity advancing. Obviously, that's a major topic in itself. For our present purposes, we'll merely observe that the gains are in a real sense caused by not only social and private investment in education and training of individuals, but also by the development and application of new technology. The heavy involvement of the private sector in these "progress-generating activities," as they've been called, means that profit prospects must continue to appear attractive, or the necessary flow of new investment will eventually dry up. This implies that there

are some definite and real limitations on wage settlements if the economy is to operate without excessive inflation.

We can illustrate this point with one additional relationship that identifies the connection between unit labor costs, wage rates, and productivity. Since prices and unit labor costs (i.e., labor cost per unit of output) tend to rise at the same rate, if the long-run policy objective is to keep inflation at or below 2 percent, and if long-term productivity growth averages 2.7 percent per year, the average increase in wage rates over time cannot exceed the sum of those two:

$$\begin{array}{c} \left(\begin{array}{c} \text{Rate of} \\ \text{increase} \\ \text{in wage} \\ \text{rates} \end{array} \right) \\ 4.7\% \end{array} = \begin{array}{c} \left(\begin{array}{c} \text{Rate of} \\ \text{increase} \\ \text{in unit} \\ \text{labor} \\ \text{cost} \end{array} \right) \\ 2.0\% \end{array} + \begin{array}{c} \left(\begin{array}{c} \text{Rate of} \\ \text{increase} \\ \text{in pro-} \\ \text{ductivity} \end{array} \right) \\ 2.7\% \end{array}$$

Wage claims greater than this over the long run will simply result in more rapid inflation, and/or reduced profit margins and profit's share of GNP.

If growth in dollar wage rates averages 4.7 percent per year, given the assumption of 2 percent inflation and a decline in average hours per worker of 0.5 percent, growth in real wage income (purchasing power) per worker will average about 2.2 percent per year. Even though 2.2 percent per year may not sound like much, it represents more than a doubling of living standards during a normal working lifetime.

Thus, what ought to be done by way of supplying money to the economy is heavily influenced by the capacity of the economy to produce added real output. In turn, any set of objectives for growth in real output and prices is very much at the mercy of a consistent relationship between pricing and wage bargain decisions.

We've talked in this section in terms of long historical averages. But in trying to use long-term averages, we suffer from the same disadvantage as the traveller who knows that a stream he would like to cross is, on average, three feet deep: we are hard pressed to know how to use such information when faced with a specific crossing. On that note, let's see how we may apply the relationships discussed above to the situation the economy currently faces.

III. Prospects for 1976

At this writing the prospect for the economy over the next year appears to be one of continuing recovery from recession. Let's attempt to organize our thinking about these prospects using the relationships discussed earlier in which we identified three potential growth components in the calculation of a money supply growth target:

$$\begin{array}{ccccccc} \left(\begin{array}{l} \text{Preferred} \\ \text{money} \\ \text{supply} \\ \text{rate} \end{array} \right) & = & \left(\begin{array}{l} \text{Prospective} \\ \text{rate of growth} \\ \text{of real output} \end{array} \right) & + & \left(\begin{array}{l} \text{Rate of} \\ \text{price level} \\ \text{increase to} \\ \text{be accom-} \\ \text{modated} \end{array} \right) & - & \left(\begin{array}{l} \text{Prospective} \\ \text{rate of} \\ \text{increase of} \\ \text{efficiency} \\ \text{of money} \end{array} \right) \\ 6.0\% & & 6.0\% & & 6.0\% & & 6.0\% \end{array}$$

As the numbers above indicate, real growth for 1976 is likely to be about 6 percent, according to a consensus of major forecasts published at this time. Reflected in the estimate is a turnaround in the economy from last year's 2 percent decline. The forecasts also indicate that the rate of inflation should diminish from last year's 8.7 percent to around 6 percent.

On the basis of those figures, the dollar value of transactions the money supply would be required to accommodate in 1976 will rise by

12 percent. Our preferred monetary growth rate would then be in the neighborhood of 12 percent, less the increase we expect in the efficiency of money use (velocity). We've already indicated that velocity has risen on average by about 3 percent per year over the postwar period. However, money efficiency or velocity increases more rapidly during business-cycle recoveries (just as does labor productivity), and growth of around 6 percent over a four-quarter span is quite characteristic. If anything, the pickup in velocity during the current recovery phase (beginning in spring of 1975) has been more rapid than usual.

If we take the 6 percent figure as a reasonable expectation for growth in money efficiency in 1976, we may subtract that amount from our projected 12 percent increase in work to be done by money and derive a figure of 6 percent as the needed growth in the size of the money stock for the year. Thus, the argument we've sketched ends up with a number that falls within the 5 to 7 1/2 percent range announced by the Federal Reserve System.

The exercise outlined above is instructive and, perhaps, a bit reassuring in that it indicates how the announced policy targets are consistent with the current outlook. But the consensus forecasts of the various components are obviously open to question and uncertainty. For example:

- (1) Can we depend on the 6 percent increase in money efficiency we are forecasting? One thing we know is that money efficiency is in part dependent upon the level of interest rates: the higher are interest rates, the greater the incentive to reduce idle cash balances, and the greater the efficiency with which the money stock is used.

- (2) Can we be sure that the inflation rate we've used in our computation is the minimum consistent with acceptable growth in real output?

Causes for uncertainty in choosing a money growth rate, of course, do not end there. There's plenty of room for differences of view about the rate of growth in real output. As we noted earlier, three factors underlie growth in real output projected for 1976 at a 6 percent rate: (a) employment is expected to increase at about a 2 percent rate in this recovery (versus a long-run average of 1.5 percent)--modestly faster than the anticipated labor force growth, so that unemployment should decline gradually; (b) hours worked per employee may grow by about 0.5 percent (versus a long-run decline of 0.5 percent) as recession-shortened workweeks are further restored; and (c) productivity may grow by at least 3 1/2 percent (versus a long-run average of 2.7 percent) as the usual recovery-phase rise in productivity takes place.

It's the 3 1/2 percent figure forecast for productivity growth that is key in determining what kind of wage settlement pattern is consistent with stated monetary policy objectives and gains in real income per worker. Productivity gains act as a direct offset to wage increases in terms of the impact on unit labor costs.

Given our previous forecast figures, we can explore the implications of any assumed rate of advance in average wage rates for 1976. Let's start with the proposition that wages per hour will go up 9 percent, which is not out of line with assumptions in many published forecasts. That means unit labor costs would increase 5.5 percent as indicated by our earlier formula:

$$\begin{array}{rcc} \left(\begin{array}{c} \text{Rate of} \\ \text{increase} \\ \text{in unit} \\ \text{labor} \\ \text{costs} \end{array} \right) & = & \left(\begin{array}{c} \text{Rate of} \\ \text{increase} \\ \text{in wage} \\ \text{rates} \end{array} \right) - \left(\begin{array}{c} \text{Rate of} \\ \text{increase} \\ \text{in pro-} \\ \text{ductivity} \end{array} \right) \\ 5.5\% & & 9.0\% \qquad \qquad 3.5\% \end{array}$$

We argued earlier that a particularly crucial matter is the effect pricing and wage bargain decisions might have on profit margins. Looking both ahead and to history, it appears to be not merely a question of profits holding their own as a share of national income, but of restoring profit's share from the reduced levels of recent years. Without some recovery of profit shares over the next few years, the private sector will not likely be willing to make the needed investment to support future productivity gains.

Profits tended to average around 10 percent of GNP for at least a decade before 1969, hitting 11 percent in a couple of years. But since 1970, profit's share of GNP has held at levels of 7 percent to 8 percent. For the first three quarters of 1975, profit's share of GNP was close to 7.5 percent.

In 1976, our calculations indicate that with a 9 percent increase in wage rates, before-tax profits rise by about 16 percent, but profit's share of GNP increases only slightly from 7.5 percent in 1975

to 7.8 percent in 1976.* With the same assumptions, real wage income per worker rises by 3.5 percent, or considerably more than the 2.2 percent long-term sustainable average described in Section I.

Some observers see pressures for even higher wage settlements, which might push the average to 10 or 11 percent. If we try an 11 percent wage increase in our calculations, other assumptions the same, profit's share of GNP would fall below 7 percent. The further erosion of profit margins implied by this outcome would almost certainly generate efforts on the part of business to raise prices faster than the 6 percent increase assumed. For example, if the price level could be raised enough to retain a profit margin of 7.8 percent, the inflation rate implied would then be 7.8 percent for 1976. Given a policy of money growth directed at accommodating no more than a 6 percent rate of price increase, any higher rates of inflation would result either in increased velocity (and higher interest rates) or slower growth in real output and employment, or some combination of the two.

*Price can be thought of as the sum of three components: labor cost per unit, nonlabor cost per unit, and profit per unit (which is what's left over). Therefore, the rate of change in price can be written as a weighted sum of the rates of change in these three factors where the weights are the fraction of the price attributable to each factor. In our aggregate calculations, the weights can also be interpreted as the factor's share of total GNP. Thus, the basis for our calculations in this section is the formula:

$$\left(\begin{array}{c} \text{Rate of} \\ \text{growth} \\ \text{of} \\ \text{prices} \end{array} \right) = .610 \left(\begin{array}{c} \text{Rate of} \\ \text{increase} \\ \text{in unit} \\ \text{labor} \\ \text{cost} \end{array} \right) + .315 \left(\begin{array}{c} \text{Rate of} \\ \text{increase} \\ \text{in non-} \\ \text{labor} \\ \text{cost} \end{array} \right) + .075 \left(\begin{array}{c} \text{Rate of} \\ \text{increase} \\ \text{in profit} \\ \text{per unit} \end{array} \right)$$

where the numerical weights are the GNP shares of each factor during the first nine months of 1975. Note that these shares will change from year to year depending on the growth rates of each factor relative to the total inflation rate. We assume that nonlabor costs will rise at the same rate as the general price level.

IV. Conclusions

The essence of the argument that we have tried to make in the preceding pages is that 1976 holds the potential for an economic recovery that could lay the ground for sustainable long-term growth of our economy. As indicated, the decline in the historical share of profits in total income has impaired the prospects for adequate growth in our "progress-generating activities." Nineteen hundred and seventy six holds a reasonable prospect for a small, but significant, turnaround in the profit picture. Fortunately, it appears that a growing economy can engineer this turnaround with a growth in real earnings per person that is above its long-term sustainable trend.

The key element in this optimistic scenario is the prudence of business and labor in their price and wage decisions. If business attempts to recoup its profit share too quickly with unreasonable price increases, the higher inflation rate could abort the recovery at a premature stage. Similarly, if labor demands at the bargaining table are inconsistent with the inflation and unemployment rates which are facts of life today, then the balance in our economic recovery could be seriously fractured.

Finally, the case for a 5 to 7 1/2 percent target range for the rate of growth in the money supply depends importantly upon the strong cyclical increases in efficiency expected in 1976. Both production efficiency, as reflected in productivity, and money efficiency, as reflected in velocity, are expected to increase this year at rates significantly above their trend rates of growth. It is only the strong growth in these factors during a cyclical upswing that permits a wage

increase as large as 9 percent to be accommodated within even a 6 percent inflation rate.

Since the improvement in efficiency that typically accompanies economic recoveries cannot be expected to persist over the longer run, wage increases in the years beyond 1976 will have to more closely approximate gains in real productivity if we are to avoid continuing inflation. Similarly, with the economy moving back toward its long-term growth potential and the rate of inflation apparently moderating, it may well be possible--indeed essential--to reduce the targeted rate of growth of the money supply in the quarters ahead without in any way strangling rates of growth in output and real wages.