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FINANCIAL ASPECTS OF
THE NATIONAL ECONOMIC OUTLOOK

Remarks of

SHERMAN J. MAISEL

Member
Board of Governors
of the
Federal Reserve System

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I welcome this opportunity to appear before the Annual Agricultural Outlook Conference in such distinguished company. The entire forecasting profession is deeply indebted to the Department of Agriculture for its long tradition of improving our concepts of forecasting in both the theoretical and practical spheres. I, too, am personally indebted. I attended my first course in forecasting here at the Graduate School of the Department of Agriculture. Louis Bean was the eminent teacher.

I welcome also the division of labor the Conference has developed. Dr. Stein has been asked to describe the establishment of a logical target to reach our national goals. I have been asked to discuss the monetary and financial developments compatible with the goal and the target. Later speakers will translate those factors into specific agricultural outlooks.

Goals and Targets

My remarks today cover my personal views. The joint views, with which I agree, of the Federal Reserve Board were contained in the prepared statement Chairman Burns furnished the U.S. Congress' Joint Economic Committee last Friday.

We all must hope that in 1971 we can achieve the goals set by the President in his Economic Report as presented in more detail by the Report of the Council of Economic Advisers. For the past 15 months, I have advocated a more activist economic policy because of my belief that national policies were failing to foster growth. Unemployment and unused resources beyond that required for the fight against inflation were being created.

This year's goals shift national economic policies. Demand will be stimulated and other steps taken to increase output, decrease unemployment, and decrease the rate of inflation. In the President's words, "What is required is that we operate within a range where both unemployment and inflation are moving unmistakably downward toward our goal."

The CEA has suggested that a tentative national target be set for GNP spending in 1971 of $1065 billion as a first step toward achieving that goal. The Employment Act concept postulates a target for the government and the economy as an aid to planning and policy coordination. The target set in the Economic Report seems suitable for that purpose.

At the same time, the target must be accepted in the spirit in which it is offered. The Council makes clear that the appropriateness of the target depends upon assumptions derived from past experience of productivity, the labor force, and price behavior. In the same way, the target assumes certain behavior by businesses and consumers as well as a

particular path for the government. If developments track these assumptions, achieving the targeted spending will bring us closer to our goals. Any major deviations from expected behavior will cause misses and require that the target path be reconsidered.

In the discussion of problems in achieving the tentative targets, major attention has been called to three related questions:

1. What can fiscal and monetary policy do to help reach the target?

2. Can the target for 1971 be achieved without creating so much momentum in the economy that it will over-shoot a stable path for future years?

3. Given the goal of reduced unemployment and inflation, can steps be taken to assure that most of the increased spend- ing goes toward output, not prices, i.e., can the trade- off be improved?

Policies

The President's budget message contains a perspective of possible fiscal policy. All recognize, however, that actual policy will be altered in the course of the appropriation process, and by other events--particularly the conflict in Indochina. History demonstrates that at their initial sub- mission, budgets are not too accurate a predictor of final fiscal policy.

The significance of the proposed budget is its recognition that this year the Federal Government should not aim at increasing the deflation- ary forces in the economy even if this policy requires a large deficit. On the other hand, the proposed budget does not raise the government's ex- pansionary force relative to 1970. Government purchases of goods and services are expected to be down. Estimates of the total proposed budget generally range from mildly deflationary to mildly reflationary. More expansionary thrusts appear in 1972.

Additional spending can also, of course, be induced as a result of a more expansionary monetary policy. As money rises relative to income, more funds are generally available, and interest rates tend to fall. (1) Lower rates raise the profitability and increase the demand for invest- ments including houses. (2) The liquidity of businesses, financial insti- tutions, and households rises. This increases the desire to spend out of current income. (3) Lenders are more willing to advance credit. People previously lacking funds can now buy. (4) Finally, with lower interest rates, existing assets are worth more. People's financial wealth also increases with the additional money. Feeling less need to save, people spend more.

Few question the expansionary impact of more money and lower interest rates. The exact magnitudes of the effects and when they will take effect are debatable. If monetary impacts were effective immediately and if they could easily be halted or offset, most monetary problems would disappear. Difficulties arise because some of the money created today to aid an expansion may raise future spending when it is unwanted. This is the docking or momentum problem. If too much money is put into the economy, it may fuel spending and inflation when the economy is at or above capacity. The task is to find that monetary policy which will close the gap between output and potential but not so fast as to increase the rate of current or future inflation.

Achievement of the target does not, of course, depend only upon governmental policies. The return of General Motors to production is expected to raise this quarter's income by $10 billion or more. Steel demand is being bolstered now by hedge-buying in anticipation of a strike. Typically, in past recoveries, strong pick-ups in investment and consumer spending have occurred as confidence returned. Economists speak of these as self-starting or exogenous movements. They, in turn, raise incomes and thereby induce more spending.

Such expansionary forces are already at work. Money must be furnished so that these forces will not be dampened. A basic difference may exist in the amounts and influence of money created so as not to impede spending and money created in an attempt to force spending which would otherwise not occur.

The Momentum Problem

The rate of momentum built up in the economy could be of major concern. To return toward full employment, real output must grow faster than its longer run equilibrium path. Spending must be accelerated so that real output climbs not only as fast as the annual increase in output potential, but still faster in order to absorb the existing unused capacity. Later on the growth rate must decelerate back toward normal. Depending on the rate of expansion, this deceleration could be difficult. In President Nixon's words:

"Let me put it this way: It is a little like trying to bring a boat into a dock. You turn down the power well before you get to the dock and let the boat coast in. Now, if you waited until you reached the dock to turn down the power, you'd soon have to buy a new dock or a new boat."

A plan to avoid hitting the dock must be included in all policy steps.

Trade-Offs

Finally, we clearly don't want spending which leads only to higher prices. If we achieved a $1065 billion GNP level this year but more than half of the year's increased spending came from price increases, we would be retrogressing--not coming closer to our goals. The larger the percentage of spending that is translated into real output, the better off all will be.

The Federal Reserve Board has stated its belief that our ability to achieve recovery without further inflation would be improved with the introduction of a strong incomes policy. Many proposals exist for policies to deal with structural, institutional, and market forces in order to achieve a more favorable price outcome. Either a very successful or very unsuccessful impact on prices could lead to lowering of the targeted $1065 billion. If price behavior is better than assumed, the true goal of higher output and employment would be reached at a lower level of GNP. If price behavior is worse than assumed, this would mean the inflation goal was being missed and it might lead to a target revision.

To this extent, the success or failure of an incomes policy would affect the necessary monetary expansion. Otherwise, I would not expect the existence or non-existence of an incomes policy to alter monetary policy. The question of selecting trade-offs among goals (and avoiding an incomes policy may be a goal) is a most difficult one. It is right and proper that an elected President and Congress be the ones to make these decisions and set the national goals. The difficulties of the Federal Reserve in finding and operating a monetary policy compatible with such goals are so great that adding additional problems of goal selection to our tasks would, I believe, be counterproductive.

The Current Situation

An examination of Table 1 seems to indicate that on the whole monetary policy was quite expansionary last year. In fact, rates of growth of money and credit were far above the last half of 1969 and much above long-run averages. Movements in the past several months are more difficult to characterize. They highlight the problem of describing monetary policy by any single measure in a short period.

Table 1 shows money defined in three common ways: M_1 - the narrowly defined money stock consisting of currency and private demand deposits; M_2 - a broader definition adding to M_1 all commercial bank time and savings deposits except certificates of deposit issued in units of over $100,000; and M_3 - the broadest money stock with thrift institution deposits added to M_2.

1970

In the last half of 1969, there was little if any expansion in money and credit. Short-term interest rates reached record post-1929 peaks at the end of the year. At the beginning of the year 1970, the monetary aggregates started to grow more rapidly. They expanded quite fast during the year. The table shows that for the year as a whole, measuring from last quarter to last quarter, money grew at a 5 to 7.5 per cent pace depending upon the definition. This was roughly twice the 1969 rate. The expansion of the narrowly defined money supply (M1) was among the largest in any period, but for the broader definitions (M2 and M3) the rates were near average for the past decade. Growth in the averages for the whole year do not show this same increase. This occurs because annual averages, in effect, come closer to measuring movements from mid-year to mid-year. Money was growing rapidly in the last half of 1968 and very slowly in the last half of 1969. These changes distort the picture obtained from the annual averages.

Short-term rates started down in January 1970 but long-term rates continued to move upward until June. Both were falling during the last half of the year, and at fairly rapid rates after October. Even so, long-term interest rates averaged higher both for the year and in the last quarter of 1970 than in 1969.

Recent Events

When we compare interest rates with either their 1970 peaks or the similar period last year, we find that all rates are at considerably lower levels. The fall from last year's peak has been large. Short-term rates fell by about 4.00 per cent or roughly in half. Long-term interest rates on municipals and newly issued corporates fell by over a quarter and seasoned Aaa corporates by about a sixth. Current long-term rates are 125 to 150 basis points under their peaks.

In absolute amounts, these reductions in interest rates are extremely large compared with other post-World War II recessions. Of course, they had much farther to fall. Still the declines are also substantial when percentage comparisons are made. In relative terms, all declines already exceed those of the 1959-60 recession. Long-term rates in per cent are down by as much or more than in the '53-'54 and '57-'58 recessions, but the fall in short-term rates is still only two-thirds of that experienced in those prior periods.

Short-term rates recently have been three to four times as high as at the bottom of the recessions of the '50's while long-term rates are twice as high. It is not clear that an attempt to differentiate between real and nominal interest rates would make any great difference in these comparisons. Most attempts to correct the figures based on changes in price deflators or expectations would probably show the current declines to be as large and levels as low as would comparisons of actual rates.

Differences in growth rates among the three concepts of the money supply in recent months have been large. The table shows that from October through January the narrowly defined money supply was expanding at a very slow rate, while M_2 and M_3 were increasing rapidly. The rates for the first six weeks of 1971 are even farther apart.

Measures of Policy

The divergent movements among both the monetary measures and interest rates create difficulties in interpretation and in the planning and execution of monetary policy. Whereas monetary theory on the whole assumes that major monetary aggregates will move in rough relationship to each other, and more significantly that policy can be measured either in terms of money or interest rates, this obviously is not true for short periods. Unfortunately, too, for policymaking, disequilibria among rates and money frequently last a year or more. One has to look at five or six measures to determine which or what average seems the best estimate at a particular time.

The reasons for the divergences are recognized, but their implications for policy are not as clear. Variations are caused by differences in movements of interest rates, by changes in the liquidity desires of banks and firms, by Treasury operations, by measurement errors, and many other forces. Their net impact is to multiply the uncertainties surrounding the design and operations of monetary policy.

While normally the broader forms of money grow only somewhat faster than M_1, in recent months they have grown three and one-half times as fast. While a theory can be devised to explain any set of facts, I feel confident that almost anyone with the record of what was occurring in interest rates and in the economy in this past four months would have predicted relative movements opposite to those which occurred. Most theories hold that as interest rates fall, one should expect private individuals, firms, and banks to increase their willingness to hold cash rather than time deposits. Therefore, a larger share of the reserves furnished by the Federal Reserve should have been used to back currency and demand deposits and, on a relative basis, their growth rates should have been larger.

Possible Monetary Policies

One way to approach the question of a possible monetary policy is to ask experts whether they believe that the type of movements in money and interest rates that have occurred over the past four months are compatible with reaching the country's goals.

I have found at the Federal Reserve experts don't have to be drafted. They volunteer advice in great profusion. Comments are most welcome. I have gathered a few to indicate some of the factors which cause experts to endorse divergent views.

The answers to the question of the compatibility of monetary policy and our goals differ widely depending upon an individual's basic theory of how money and spending interact, but also with the particular historical relationship the expert assumes 1971 will most closely resemble.

Those who base their predictions on a simple monetarist view of the relationship between money and spending, especially if they believe lags are short, hold that a proper monetary policy in 1971 can create spending of $1065 billion. Depending on particular assumptions, they may feel that recent policy has been either too inflationary or too depressing. If we consider M_2 or M_3 or interest rates as the proper measures of monetary policy, recent patterns have probably been close to the range needed to hit a $1065 billion target according to these theories. This would clearly not be true for the narrowly defined money supply (M_1) whose recent growth rates have been low compared to the suggested 9 per cent expansion in GNP.

On the other hand, those who believe that the impact of money is smaller and is spread over longer periods do not feel that monetary policy has been or could be sufficient to guarantee reaching $1065. They point out that if spending impulses arise outside the monetary sphere, the money needed to accommodate these added expenditures could and should be furnished without creating major problems. However, they believe that the amount of money needed to increase spending by $88 billion in 1971, if money is the sole cause of higher expenditures, is so great as either (a) to make the expansion impossible, or (b) to create such difficulties for future years as to make it inadvisable.

Some of these concepts are summarized in Table 2 which displays a variety of estimated growth rates for money and levels of interest rates. Each of these rates is compatible with a GNP of $1065 billion in 1971 depending upon a particular theory and definition. The range of growth rates for money shown is broad both among the different definitions, but also within a given one. Thus, the compatible growth rates range from 4.9 to 11.5 per cent for M_1, from 6.2 to 13.7 per cent for M_2, and from 7.8 to 14.1 for M_3.

Each percentage in Table 2 can be equated with a separate view of how money and spending are related. Theories differ with respect to the causal relationships believed to exist in the economy as well as with the length of time (lag) assumed for a given creation of money to have its impact on spending. Average estimated lags vary from zero (instantaneous) to 18 months or more.

A necessary relationship exists between the amount of spending and the amount of money in a period. Dividing spending--GNP--by money gives the rate at which money turns over or its income velocity. If, as some believe, velocity will not vary (i.e., if a given increase in money leads

to a similar increase in spending) and if the creation of money can be controlled accurately, then monetary policy is simple. If the nation's target is to increase GNP by 9 per cent, then the policy prescription would be raise the amount of money by 9 per cent.

Unfortunately, however, the existence of a definitional relationship or truism proves nothing about causation. The actual relationships have varied greatly from year to year. The difficult and interesting problems are explaining why relationships have changed so over time. A few simple relationships based on past experience are shown in Table 2. Each, in effect, gives a different view of how and implicitly why these relationships will move in 1971.

Simple Velocity Changes

Examples 1 through 5 assume that the income velocity of money will change in accordance with some past pattern. They then ask: "If such a pattern were to repeat itself in 1971, and if the GNP were to rise to $1065 billion, what growth in money would be necessary to meet the necessary definitional relationship?" Throughout the table, except for examples 3 and 5, the movements in velocity are based upon year-to-year changes in averages. The other two examples are included to give some view of the amounts needed to gain a fourth-quarter-to-fourth-quarter 11 per cent growth rate.

Of course, many who make these calculations believe that monetary theory shows that it is the growth in money which causes the growth in the GNP. They assume a firm and quite exact bond between them. Spending will expand to the extent money is created. They, therefore, believe that monetary policy should aim at a specific growth rate to achieve the $1065 target. A desirable growth rate depends upon which historical period and which measure of money is believed most pertinent.

Examples 2, 3, and 4 are the simplest. They assume that in 1971 a change in velocity will occur equal to that which has occurred on average in the past. Examples 2 and 3 are based on the 15-year period, 1955-70, while example 4 is calculated from the 5-year period, 1965-70. Differences between the two periods are not large.

Examples 1 and 5, on the contrary, show how sensitive desired changes in money are to differing assumptions and definitions. Example 1 simply assumes that velocity will change at the same rate in 1971 as it did in 1970. This assumption requires high growth rates because the relationship between money and spending last year was typical of the slowdown in velocity which occurs in a recession. Furthermore, it requires an M_1 expansion as large as M_2 or M_3 contrary to past experience.

Example 5 is the opposite. It shows M$_1$ growing at 4.9 per cent and M$_2$ at only 6.2 per cent. This relationship is based on the average rates of change for the first four quarters of the recoveries of 1954, 1958, and 1961. If the GNP grows to $1065 billion, the year 1971 will take its place in the company of these past recoveries. In such recoveries, the velocity of money has tended to rise rapidly. If these periods were to repeat themselves, M$_2$ and M$_3$ would already be growing too fast.

A Lagged Monetarist Example

Example 6 is based on a somewhat more complex relationship. It assumes that the effects of growth in money and spending will not all be felt within a current period, but rather may be spread over several. With a computer it is possible to run a large number of regressions relating changes in spending to changes in money. Other variables may or may not be included. Computers can spew out hundreds of such regressions in a few minutes. By these techniques, it is simple to estimate a great variety of relationships including those with complicated and long lags. In turn, these regressions can be examined to see which relationships have had the highest past correlations.

The relationships in example 6 are developed in accordance with the well-publicized work of the Federal Reserve Bank of St. Louis. These equations assume that spending in a given quarter will be influenced by changes in money in both the current and the three previous quarters, as well as by Federal budget expenditures in these periods, These examples assume that on the average, changes in money (M$_2$) take between six and nine months to influence spending. In contrast, for M$_1$ much of the impact is felt currently. This type of model shows a rise of 5.8 per cent over 1970 in the amount of money (M$_1$), and of 9.4 per cent in M$_2$, and 10.6 per cent in M$_3$, required to reach the target of $1065.

Large-Scale Models

The examples discussed previously are based on a simple, single, theoretical relationship between money and spending. The last two examples (7-8) assume that money is only one among many forces that may cause the level of spending to shift. If confidence alters, or desired levels of inventories or other factors rise, people will increase their spending. In such situations, money does not cause the added spending, but unless people change their demand for money radically, additional money may have to be furnished to avoid interest rates being driven so high as to curtail other spending impulses.

These relationships can be expressed in many forms just as can those directly tying spending to money. Models based either on judgment or on equations fitted by computers to past statistics may range in size from

a few to several hundred equations. The assumptions put into the models
can differ tremendously; equivalent variations occur in the results. In
these, too, a vast amount of winnowing takes place among the thousands of
examples calculated by the computer.

This type of model shows a much larger growth in money associated
with a $1065 billion GNP than do the previous ones. Example 7, based on
such a model, estimates a required increase in M₁ of 11.5 per cent, of 13.7
per cent for M₂, and 14.1 per cent for M₃. Furthermore, the model suggests
that tremendous variations in growth rates from one quarter to the next
would be required.

Changes in the amount of money this year will have only part of
their impact during 1971. More than two-thirds of their thrust occurs in
later years. For example, the growth rate of M₁ was 5 per cent in 1970.
The model was asked how much GNP would be raised and in what years, if the
growth in M₁ was raised by 1 per cent to 6 per cent for 1971 and then re-
turned to 5 per cent in 1972. This model suggests that GNP, on the average,
would be about $3.3 billion higher in 1971 and $10.7 billion higher in
1972 and thereafter.

While the model has certain non-linearities it is interesting to
see what would happen if they may be neglected. Assume the money supply
growth rate increases to 11 per cent for each quarter in 1971 and then
returns to 5 per cent. The resulting increase in GNP would be $20 billion
in 1971 and over $64 billion in 1972.

These lags create a momentum problem so great that it is almost
impossible for money to grow fast enough in the first half of 1971 to be
the primary causal factor leading to a 9 per cent higher GNP this year.
Most of the increase in spending this year attributable to money will come
from last year's monetary expansion. An attempt to cause large variations
in spending through monetary changes in a single year can result in an
explosive economy. To avoid hitting the dock, monetary propulsion requires
a smooth acceleration and deceleration. These models do not, of course, say
the target cannot be reached. The impetus for spending can come from forces
outside the monetary sphere. In such cases, money can adjust to the spend-
ing levels without the critical lag effects.

Example 7 has a mirror image in example 8. This shows the move-
ments in interest rates which are equivalent to the 11.5 per cent rise in
M₁ for this year. It shows that for 1971 short-term rates (as measured by
the three-month Treasury bill) would have to average 3.5 per cent. Or,
equivalently, the Aaa corporate seasoned issue rate would average 7.6 per
cent. One must recognize these mirror rates have a band of error around
their average relationship also. For example, in the last quarter of 1970,

the bill rate was 10 per cent below the mirror rate predicted from money and income while the long-term rate was 5 per cent above. These differences were well within the normal range. They, too, call attention to the large degree of uncertainty which exists in attempting to specify exact relationships. Even if a given model were accepted, if we were to measure the policy progress by the five dials shown in the tables, each would be likely to give a very different reading at any given time.

The Relationships in 1970

This fact that each of the measures varied widely from its fellows last year as well as the wide variance of each of these relationships from their historical record is shown in Table 3. By implication, the table might also be considered a simple test of one part of these relationships' forecasting ability.

The first section of the table compares the actual growth in the money supply to the changes these methods would have predicted at the start of 1970 given the $45 billion increase in GNP actually achieved. The actual rates of growth in 1970 were 4.1 or 4.2 per cent. In contrast to these actuals, the amount of money which would have been required to achieve the $45 billion growth from 1969 to 1970 according to the hypothesized relationships would have varied from 1.5 per cent for M_1 in Example 2 to a growth rate of 10.8 per cent for M_3 in Example 5. (The fourth-quarter-to-fourth-quarter errors as shown in Example 3 are even greater.) Putting it another way, comparing the predictions which would have been made by these methods last year as to the expected growth in a monetary variable, given the actual growth in the GNP, we find relationships varying from much too low to over 150 per cent too high. The expected interest rates also varied from actual. In these cases, the errors were about 10 per cent.

The meaning of these examples is stated another way in the last half of Table 3. This says, given the actual changes which occurred in money, how much change in GNP would the past relationships have shown? Again, compared to a GNP growth of $45 billion, the range of predictions would have been from $28 billion to $71 billion.

In addition to showing large errors, the table again brings out the fact that there is no regularity among the predictive abilities of the separate definitions of money. M_2 did best in four examples, M_1 in two, and M_3 in one. Furthermore, period-to-period variations are large. While many experts may be wed to a particular concept as a dial or measure of policy, I think the majority of observers must remain agnostic. The usefulness of one concept vis-a-vis any other is still to be proved.

The table also, of course, does show some numbers close to the actual ones. This is true, for example, of M1 in the large-scale model in Example 7 and M2 and M3 in Example 4. Clearly, this fact should be given some weight in our thoughts for this coming year, but I do not believe very much. One must pay a great deal more attention to the underlying theory than to a single year's results. The table contains 22 separate predictions based on past relationships. Knowing as much as we do about year-to-year movements in GNP, I would expect that a group of 22 asked to guess a coming year's movements in the GNP on a more or less random basis would give about as large a number of correct guesses.

Even if money did cause a known increase in spending and we, therefore, knew the exact amount of money needed to meet a target, it is not clear that movements of money or interest rates could be controlled accurately enough to get within 1 per cent of a target GNP. One cannot say that monetary policy independently determined any of the measured monetary changes. The Federal Reserve clearly influenced the growth of money, but so did many others. I am willing to predict that this will occur again this year. The Federal Reserve can control the growth of reserves and can select a growth path for reserves which could be tracked if no other constraints were considered necessary or proper. However, in addition to logical constraints on operations, large variations may occur between movements in reserves and movements in a single monetary variable.

Furthermore, I would stress again that the relationships do not give any indication of the direction of causality. We do not know if money grew at the given rate because of the increase in the GNP or vice versa. I feel quite confident that no one can now state any more precisely what the relationships will be between the growth rate of a specific version of the money supply and the GNP in 1971 than was true in 1970 as shown by Table 3.

Conclusion

Let me attempt to summarize some of the concepts that have appeared in the previous discussion.

--- We can all agree on a goal for 1971 of less unemployment and less inflation. The CEA has performed a key task in setting a $1065 billion GNP as a tentative national target in the expectation that this, if achieved, would represent desired progress toward our national goals.

--- Monetary policy eased considerably last year. More recently, ease accelerated when measured by interest rates or the broader measures of money, but decelerated according to a simple reading of narrowly defined money.

--- Experts give varied answers if we ask whether or not recent monetary movements are compatible with a $1065 billion target. Answers differ depending upon an individual's view of theory and economic relationships. Some believe recent rates of growth are too large; some too small; and some just right. The differences are readily explainable from each person's own assumptions.

--- In contrast to the simple money-spending models, operators of most large-scale models answer that while the target can be reached, the push to spending must come from outside forces. Last year's monetary changes are already increasing spending on housing, state and local spending, and consumption. Furthermore, any thrust from other forces can be ratified by monetary movements. However, these models describe a structure within which, because of long lags, the degree of monetary thrust which can be imparted to the economy by additional money created this year is unlikely to be large. Furthermore, they warn against attempting to create larger additional volumes of money because of the momentum or docking problems. They see a danger of overshooting future targets.

--- I have been willing to make a few predictions.

   (1) Relationships among the monetary variables will be different at the end of the year than now.

   (2) No one will be able to show me an exact system meeting logical constraints whereby any single monetary variable, except for reserves, can be held along a specified path.

   (3) One of the relationships between the growth rate for money and the GNP shown in Table 2 will turn out to be correct in 1971.

--- I think it obvious, however, why I won't go farther in my predictions. Relationships in the economy between spending, output, and prices, as well as between spending and money will alter as the year unfolds. Policy will continue to operate amidst great uncertainties. Utilizing latest developments and current analysis to reduce uncertainties can improve operations and policy decisions. The willingness to incorporate the latest data into the decision process instead of sticking with some type of a priori assumption of what will be best increases the probability of maintaining proper paths and targets and achieving our desired goals.

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Table 1

Movements in the Gross National Product,
Money, and Interest Rates

	GNP	M1	M2	M3	90-Day Treasury Bill	Aaa Seasoned Corporates
Average Quarterly Levels:	(In Billions of Dollars)				(In Per Cent)	
Fourth quarter of '69	951.7	203.4	386.6	587.6	7.35	7.47
Fourth quarter of '70	989.9	213.7	415.3	628.9	5.35	7.91
Percentage change:						
69-IV from 68-IV	6.7%	3.8%	3.2%	3.5%	+31.7%	+19.7%
70-IV from 69-IV	4.0%	5.0%	7.5%	7.1%	-27.2%	+ 5.9%
Average Annual Levels:						
1969	931.4	201.6	385.0	584.1	6.64	7.03
1970	976.5	210.0	401.3	608.2	6.42	8.04
Percentage change:						
1969 from 1968	7.7%	5.9%	6.5%	6.1%	+24.6%	+13.8%
1970 from 1969	4.8%	4.2%	4.2%	4.1%	- 3.3%	+14.4%
Annualized Rates of Change 4 Months Ending:						
January 1970		3.9%	2.2%	1.7%		
January 1971		3.6%	10.7%	11.5%		
Monthly Averages:						
1970 Peak					7.87	8.48
February* 1971					3.86	7.07
Percentage change					-51.0%	-16.6%

* Average of first three weeks.

Table 2

Growth in Monetary Aggregates Compatible with
A 1971 GNP of $1065 Billion
Based on Historical Relationships
(In Per Cent)

	Example 1	Example 2	Example 3*	Example 4	Example 5*	Example 6	Example 7
M_1	8.4%	5.9%	8.3%	6.5%	4.9%	5.8%	11.5%
M_2	8.4	8.3	10.8	8.9	6.2	9.4	13.7
M_3	8.2	9.2	11.8	8.5	7.8	10.6	14.1

Example 8 - Average interest rates for year 1971

3-month Treasury bill   3.5%
Aaa corporates   7.6

* All growth rates are calculated from annual averages except for examples 3 and 5
which are calculated from the fourth quarter over the fourth quarter of the previous
year. This assumes a GNP in 1971-IV of $1106 billion. For example 5, velocity is
the average increase in the four quarters after a recession trough.

Table 3

A. Given the 1970 Actual Change in GNP of $45 Billion
How Large a Growth in Monetary Variables
Would Past Relationships Have Predicted?
(In Per Cent)

	Actual Growth	Example 1	Example 2	Example 3*	Example 4	Example 5*	Example 6	Example 7
M_1	4.2%	3.0%	1.5%	0.8%	1.9%	3.2%	2.6%	4.2%
M_2	4.2	3.7	3.9	3.2	4.2	6.0	4.7	4.6
M_3	4.1	3.4	4.9	4.1	4.2	8.2	4.3	4.5

Example 8 - Average interest rates for year 1970

	Actual	Predicted
3-month Treasury bill	6.4	5.7
Aaa corporates	8.0	7.4

B. Given the Actual Changes in the Monetary Variables in 1970
How Large a Growth in GNP
Would Past Relationships Have Predicted?
(In Billions of Dollars)

	Actual Growth	Example 1	Example 2	Example 3*	Example 4	Example 5*	Example 6	Example 7
M_1	$45	$56	$71	$81	$66	$57	$60	$45
M_2	45	50	48	80	45	57	39	40
M_3	45	52	38	67	45	28	32	41

Example 8 - From 3-month Treasury bills $38

* All growth rates are calculated from annual averages except for examples 3 and 5 which
  are calculated from the fourth quarter over the fourth quarter of the previous year.
  For the fourth quarter of 1970 over the fourth quarter of 1969, money growth rates were:
  5.0% for M_1, 7.5% for M_2, and 7.1% for M_3. The GNP grew by $38 billion. Velocity in
  example 5 is calculated on the basis of four quarters after a cyclical peak.