June 24, 1991

Professor Mark Thoma  
Department of Economics  
University of Oregon  
Eugene, Oregon 97403-1285  

Dear Mark Thoma:

I was delighted to receive your paper on "Asymmetries and the Effects of Money." Needless to say, I am pleased that my paper stimulated you to do further work along these lines. I do believe there is gold in them there hills.

I am not competent to judge the details of your statistical analysis. I have not kept up with recent statistical developments, particularly those associated with the VARS. Hence, my comments will be on a much more general level; I assume that you have done the details correctly.

On the series employed, I believe that $H_2$ is preferable to $M_2$ in most such analyses. It has had a stabler meaning over time and a more consistent relationship with other economic magnitudes. Interestingly enough the first two articles in the May issue of the Journal of Money, Credit, and Banking, which has just come my way, reach the same conclusion.

It would be highly desirable to extend your analysis to a longer period. Monthly data are available on $M_2$ for as far back as on $M_1$, both to 1907. The current $M_2$ series can be regarded as a continuation of the $M_3$, or for a trivial improvement, the $M_4$, series in Table 1 of Anna Schwartz's and my Monetary Statistics of the United States. Linking those data with the current Federal Reserve Board $M_2$ series gives a reasonably homogeneous and continuous series. Similarly, linking our $M_1$ series with the Federal Reserve's does the same. Interest rate series are of course available way back. Monthly industrial production indexes are available back at least to 1919 and perhaps earlier. In short, the same analysis carried back to encompass the whole period from about 1907 on should be entirely feasible and would give a much sounder base for any conclusions.

Returning to the period you considered from 1959 on, I suspect deflated personal income would be a more useful monthly measure of real output than the industrial production index, which is rather limited in its coverage and does not always track total output very well.

One further point re the interest rate data that you used. The appropriate variable is not the Treasury bill rate or the commercial paper rate by itself, but the difference between the Treasury bill rate and the interest paid on money. In our Monetary Trends, we used an approximation computed by assuming that implicit interest was paid on demand deposits. Bob Hetzel
at the Federal Reserve Bank of Richmond has constructed a better series
of the interest paid on M2 as well as a series on the differential in­
terest, that is, the excess of the interest earned on outside assets over
the interest earned on money. I do not recall whether his series are
monthly; they may be quarterly. However, the interest paid on money is a
rather slow-moving series with high serial correlation, so it should not
be difficult to interpolate it. In any event, you might want to get from
Bob his series.

Turning to your mathematization of the idea, I am struck that it is ex­
tremely ingenious and I have no comments to make on that. In re the con­
clusions, I am not greatly disturbed that positive money growth shocks do
not have a large impact on inflation when the economy is operating at
maximum level. We have consistently found that changes in money lead
changes in inflation by about two years, and there is no reason why that
lag should not be just as operative at upper turning points as elsewhere.
You include, as I understand it, a lag of at most six months. True, the
impulse response functions implicitly extend the lag, but I suspect that is
not the same as allowing for a very much longer lag. Changes in money tend
to affect output after something like about six to nine months, and infla­
tion only after another 18 months, by which time the effect on output is
negative rather than positive. Hence, it is not surprising that the short­
term reaction is on interest rates rather than on inflation. In a friction­
less world in which money was completely neutral, the impact of monetary
growth would always be solely on inflation. In the real world, given the
lags that I have described and taking for granted that positive money growth
is not reflected in inflation for a considerable period, it must be reflected
somewhere. The obvious candidates are output, interest rates, and buffer
money stocks. When the economy is operating below capacity, it is easy for
part of the impact to be taken up by real output and a lesser part by in­
terest rates or by buffer stocks. But when the economy is operating at full
capacity, it cannot be taken up by output. It will therefore have to have a
stronger influence on the two other components. A measure of buffer stocks
conceivably could be obtained from velocity figures, but this is rather
questionable since empirically velocity tends to be positively related to
the cycle, implying that buffer stocks are less at the peaks. However, this
conclusion is for measured velocity which is not necessarily the appropriate
variable. What you would really like is the difference between actual and
desired money stocks; that would depend on long-term variables such as per­
manent income rather than current nominal income. Perhaps some of the
people who have done research on buffer stocks have constructed estimates
of their size. David Laidler would probably know. If there were a con­
venient series available, it would be interesting to introduce it as an
additional nominal variable.

The disturbing finding is that negative money growth shocks have a negligible
impact on real activity when the economy is at its maximum level. I did not
expect that and so any explanation I suggest will be a rationalization. The
rationalization that appeals to me most is very much along the line of the
distinction between permanent and transitory components of consumption.
The counterpart is the following. You have divided your dates into three
batches: corresponding to maximum output, average output, low output.
Money is by no means the only factor that accounts for the economy being
at the stage it is. Of the many other factors at any point in time, some
are likely to be favorable, some are likely to be unfavorable. Consider
the group of dates corresponding to maximum output. The method of selec­
tion of those dates assures that favorable factors dominate. Conversely,
at dates corresponding to low output. At dates where other factors are
disproportionately favorable, negative money growth shocks might simply be
offsetting other unduly favorable factors, while at the bottom they would
be reinforcing disproportionately unfavorable factors. A way to get around
this regression bias would be to classify dates by the level of the money
series as opposed to the level of the output series. One could then see
whether the influence of downward plucks in money was different at high
levels of the money series, which means that the money series was relatively
favorable to the level of output than they are when the money series was
average or low.

I am not sure what to expect from this experiment. It would not surprise
me if the downward plucks had roughly the same effect at all three money
levels. I have stated this suggestion in my statistical language not yours,
but I trust that you can translate it.

These are off-the-cuff comments on a paper that I clearly found interesting.
Keep it up.

Sincerely yours,

Milton Friedman
Senior Research Fellow