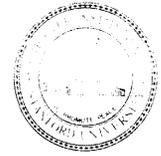


HOOVER INSTITUTION

ON WAR, REVOLUTION AND PEACE

Stanford, California 94305-6010



June 24, 1991

Professor Mark Thoma
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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 M2 is preferable to M1 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 M2 for as far back as on M1, both to 1907. The current M2 series can be regarded as a continuation of the M3, or for a trivial improvement, the M4, 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 M2 series gives a reasonably homogeneous and continuous series. Similarly, linking our M1 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

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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 interest, 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 extremely ingenious and I have no comments to make on that. In re the conclusions, 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 inflation 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 frictionless 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 interest 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 permanent 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 convenient 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

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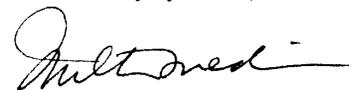
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rationalization that appeals to me most is very much along the line of the distinction between permanent and transitory components of consumption. The counterpart is the following. You have divided your dates into three batches: corresponding to maximum 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 selection 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