



Why U.S. money does not cause U.S. output, but does cause Hong Kong output

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Abstract

Standard econometric tests for whether money causes output will be meaningless if monetary policy is chosen optimally to smooth fluctuations in output. If U.S. monetary policy were chosen to smooth U.S. output, we show that U.S. money will not Granger-cause U.S. output. Indeed, as shown by Rowe and Yetman [2002. Identifying policy-makers objectives: an application to the bank of Canada. *Canadian Journal of Economics* 35 (2), 239–256], if there is a (say) 6 quarter lag in the effect of money on output, then U.S. output will be unforecastable from any information set available to the Fed lagged 6 quarters. But if other countries, for example Hong Kong, have currencies that are fixed to the U.S. dollar, Hong Kong monetary policy will then be chosen in Washington D.C., with no concern for smoothing Hong Kong output. Econometric causality tests of U.S. money on Hong Kong output will then show evidence of causality. We test this empirically. Our empirical analysis also provides a measure of the degree to which macroeconomic stabilisation is sacrificed by adopting a fixed exchange rate rather than an independent monetary policy. © 2007 Elsevier Ltd. All rights reserved.

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1. Introduction

Does money cause real output? If the Federal Reserve were suddenly, capriciously, without warning, to cut the money supply by 20%, what effect would this have? Nearly all

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macro-economists would agree that the cut in the money supply would cause a fall in aggregate demand, and that the fall in aggregate demand would cause, at least temporarily, real output to fall. As [Christiano et al. \(1999\)](#) argue, even when the literature has not yet converged to a particular set of assumptions for identifying the effects of an exogenous shock to monetary policy, “there is considerable agreement about the qualitative effects of a monetary policy shock in the sense that inference is robust across a large subset of the identification schemes that have been considered in the literature.”

The only disagreement would come from the two extreme ends of the macroeconomic spectrum. Some Post-Keynesian macro-economists would argue that the money supply has no effect on aggregate demand, and so will not affect real output. And some Classical macro-economists would argue that the money supply might affect aggregate demand, but perfectly flexible prices and wages, and the resulting vertical aggregate supply curve, would mean that only the price level would fall, and real output would not.

Despite this very general agreement that money causes output, the supporting econometric evidence is weak or inconclusive. The basic reason for the weak econometric evidence is simple. The sort of experiment described above is very unlikely ever to happen. The Federal Reserve, believing that a capricious 20% cut in the money supply would have disastrous consequences for real output, would not willingly conduct such an experiment. It would not capriciously cut the money supply by 20% merely to see how big a recession this would cause. So the sort of experiment which could properly test whether money causes output is never in fact conducted. To say the same thing another way, an OLS regression of output on money will only give unbiased estimates if the money supply has a positive variance and if money is exogenous with respect to output. But exogeneity of money with respect to output would mean that the Federal Reserve chooses monetary policy without considering the effect its policy will have on output. No responsible Federal Reserve would ever choose monetary policy that way.

If money were found to cause output in an OLS regression, this would mean that the Fed had caused or permitted the money supply to vary in such a way that the variance of output was higher than it would have been if the Fed had acted differently. Such a finding would be evidence not just that money causes output, but that the Federal Reserve had behaved irresponsibly or foolishly. A responsible and sensible Fed would never carry out the sort of experiment which would let us directly test whether money causes output.

This problem with testing whether money causes output is at its starkest when the Fed adopts as its overriding objective the goal of smoothing output fluctuations. Many economists think that a significant fraction of the variation in central bank policy actions reflects policy makers’ systematic responses to variations in the state of the economy (see [Christiano et al., 1999](#)). This systematic component is typically formalized with the concept of a feedback rule or reaction function.¹

Suppose there is some underlying structural equation, known to the Fed, linking level of real output y_{t+j} with the level of money supply m_t , and some other variables, with a j -period lag in the effect of money on output:

$$y_{t+j} = F(m_t, \dots). \quad (1)$$

¹ Other strategies to identify monetary policy shocks do not involve modelling the monetary reaction function. For example, one approach consists in looking at data to identify exogenous monetary policy actions. It is the way adopted by [Romer and Romer \(1989\)](#). The other way of identifying monetary policy shocks is by using the assumption that they do not affect economic activity in the long run. In this respect, see [Faust and Leeper \(1997\)](#) and [Pagan and Robertson \(1995\)](#).

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