What is Money? What determines prices?

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What is money? I.e. what is this course about?

- Old answer: medium of exchange, unit of account, store of value.
- Newer answer: An information-conservation and anonymity-preserving device.

What determines the price level?

- Old answer: $MV = PY$.
- Newer answer: The government's balance sheet.

How to measure M?

- Central to determining P in the old view.
- (How to measure P? CPI, PCE deflator, "core" vs. non-core)
- Currency is certainly part of M. Traditionally, also demand deposits at banks. Sum $= M1$.
- Used to be that demand deposits were uniquely checkable, and paid no interest.
- In the current period, most deposits pay very little interest, and many assets (e.g. money market mutual funds) are checkable.

Measuring M, continued

- $M2$, which includes MM mutual funds and other deposits that aren't strictly "demand" drew more attention in the 1970's when high interest rates led to the invention of money market mutual funds. But it illustrates ambiguity in the dividing line betseen the *transactions* balances in $MV = PY$ and other assets that are more purely stores of value.

- Electronic payments, credit cards? Aren't they "means of payment"? (Ball argues that "economists" think credit cards aren't.)

- Why this is important: If institutional and technological innovation can induce substantial changes in V and/or the definition of M, controlling P by controlling M may be difficult.

Illustration: Liquidity in the recent crisis

- Nobody would argue that mortgage-backed securities, even those rated AAA, were part of M.
- Nonetheless, large financial institutions were treating them as "near-cash".
- They could be "repo"'d overnight in thick markets, yet paid a nice return. (define "repo" and "thick")
- One element of the crisis was that rather quickly these assets ceased functioning as near-cash.
- A deflationary effect understandable with $MV = PY$, except that none of this was in M.

Controlling M

- Even leaving aside "transactions balances" that aren't in anyone's standard definition of M, the old story about how policy controls M doesn't work.

- The old story (simplified): Banks' liabilities are deposits, D. They invest deposits in interest bearing loans, L. They are legally required to hold a proportion α of their deposits in non-interest-bearing "reserves", F — deposits with the Federal Reserve system and vault cash.

- Since reserves pay no interest, while loans do, banks keep reserves as close as possible to the legal minimum αD.

- The Federal Reserve system can control reserves F. $D = F/\alpha$, the "money multiplier".

- $M = C + D$. C not controlled, responds passively, but by controlling D, the Fed can control M.

Currency drain in the Great Depression

- In the Depression, and in earlier contractions, public worries about the safety of bank deposits would lead to withdrawals from banks, increasing the ratio of C to D.

- The Fed's own balance sheet has currency and reserves (C and F) as liabilities. If a "currency drain" occurs, C increases and banks' required reserves shrink.

- Say D declines by 100, C increases by 100. Required F drops by 100α. Thus if total $M = C + D$ remains constant, the Fed's total liabilities increase by $(1 - \alpha) \cdot 100$.

- This requires the Fed to purchase assets to increase the size of its balance sheet to offset the contractionary effect of the currency drain. Otherwise, if $F + C$ rather than $F/\alpha + C$ remains constant, an increase in C of 100 makes M decrease by $100(1/\alpha - 1)$

The Friedman-Schwartz critique

- Milton Friedman and Anna Schwartz used the $MV = PY$ framework and the money multiplier idea to argue that the Fed in the 1930's failed to understand the need to expand its balance sheet in the face of banking system contraction, and that this led to the severity of the depression.

- In the recent crisis, there was no substantial currency drain and in the US banks subject to reserve requirements were not initially a main focus of financial stress. Nonetheless the Fed intervened, having learned the Friedman-Schwartz lesson, but wisely casting $MV = PY$ thinking aside.

What's wrong with the old story?

- As part of the TARP legislation that in late 2008 authorized $700 billion in "bailout" funds, the Federal Reserve was given the right to pay interest on reserves, and it now does so.

- The approximate ratio of actual to required reserves today: 18.

- The interest rate on reserves: 0.25%. The interest rate on US 30-day Treasury bills: 0.01%.

- So the notion that banks should be eager to keep reserve balances close to the minimum required level no longer applies. There is no "money multiplier".