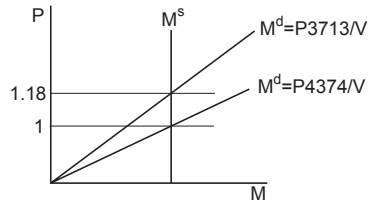
ECON 110, Prof. Hogendorn

Problem Set 9 Answers

1. *OldGermansMoney_a.* The quantity equation says that $MV = PY$. Here, M and V do not change, so the old value $PY = 1 \cdot 4374$ has to equal the new value $P' \cdot 3713$. This is true for $P' = 1.18$. We can graph this by showing money demand and supply:

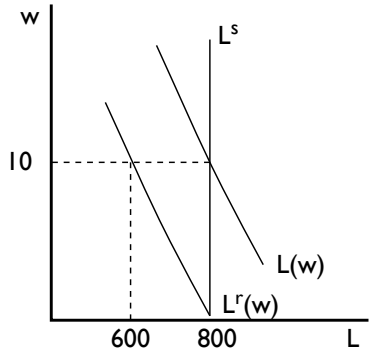


2. *UchitelleMoney_a.* After the change, we still need $MV = PY$. Since $MV = 100$ is unchanged, and the new Y is 108.6, then the only way to maintain the quantity equation is for the price of hamburgers to fall to $P = 0.92$. We know that the real wage rises from 0.78 hamburgers to 0.95 hamburgers, but the nominal wage only rises from $0.78 \cdot 1$ to $0.95 \cdot 0.92$=0.87. Thus, if Uchitelle is thinking in nominal terms, he would not see a very large increase in nominal wages. This might make him think that things are worse than they really are.

   If the central bank wants to maintain $P = 1$, then $PY = 108.6$. With $V = 10$, a money supply of $M = 10.86$ would maintain the quantity equation. Thus, the central bank would have to create 86 cents.

3. *Sticky.* Let the economy-wide labor demand curve be $L(w) = 1000 - 20w$. Let economy-wide labor supply be $\mathcal{L} = 800$.

   (a) The graph is:



   (b) The labor market clears at a wage of 0! All the workers work for free, not that they like it (but it would result in huge dividends).

   (c) The sticky wages stay at 10, so the number of workers hired falls to 600.

   (d) Now suppose that wages are completely sticky and do not adjust. Show what happens to wages and employment.

   (e) 25% of the 800 units of labor supplied is now unemployed, so 25% is a fairly reasonable answer. But in fact, the labor market equilibrium always includes some background frictional and structural unemployment to begin with, so we usually have about a 5% *natural rate of unemployment* even at "full employment."

4. *OkunsLaw_a.*

   (a) Since the natural rate of unemployment already includes prevailing frictional and structural unemployment, the only type of unemployment that occurs when the economy is away from "full employment" is cyclical.

   (b) Using Okun's Law, we know that the unemployment gap is 2%. Thus, the GDP gap is 4%.