

Assignment 3 - Answer Key

1. a) $MV = PY$ or $V = Y/(M/P)$. Hence $V = 6\sqrt{Y}\sqrt{i} = 9$.

b) $M^s = \frac{\sqrt{Y}}{6\sqrt{i}} = 2.777$.

c) $P = \frac{6M\sqrt{i}}{\sqrt{Y}}$. Taking the growth rates: $\pi \approx \Delta\%M + 0.5\Delta\%i - 0.5\Delta\%Y$. As $\Delta\%Y = 20\%$, $\Delta\%i = 0$ and $\pi = 2$ then $\Delta\%M = 12\%$. $M_{2005} \approx 3.111$.

d) The quantity equation in growth rates is: $\Delta\%M + \Delta\%V \approx \pi + \Delta\%Y$. Substituting yields $\Delta\%V \approx 10\%$.

2. a) $r = 2$, $C = 50$ and $I = 30$.

b) $G = 16$.

c) $G = 4$.

3. a) Decline in labor supply increases the real wage and reduces employment and output, shifting the FE curve to the left. The LM curve shifts up as the price level adjusts to restore equilibrium, the real interest rate rises reducing consumption and investment.

b) Real money demand rises, shifting the LM curve upwards. In the short-run r rises and Y , C and I decline. To restore general equilibrium, P must fall shifting the LM curve back. Interest rate, consumption, output and investment are back at their original levels.

c) Higher taxes reduces investment, shifting the IS curve down. In the short-run r and Y decline. The change in consumption is ambiguous as changes in r and Y have opposite impacts on C . To restore general equilibrium, the LM curve shifts out as P falls. r falls and $Y = \bar{Y}$ so C increases here (lower r but same $\bar{Y}$). Investment will be higher in the new long-run equilibrium than in the short-run (as r declines and Y increases) and is likely to be lower than originally as taxes were applied on capital in the first place, although you might argue that the lower interest rate makes the final level ambiguous.

d) Money demand falls as alternative assets become more liquid. The LM curve shifts down. In the short-run r falls and Y , C and I increase. In the long-run P rises, shifting the LM curve back to its original position. Y , r , C and I return to their original levels.

Employment and real wages return to their original levels in the long-run for parts b), c) and d). In the short-run the empirical evidence about real wages is mixed (see pages 281-282 in the text), but employment is procyclical. However if firms do

"labour hoarding" (see page 465 for a discussion), employment may not fall during recessions.

4. a) $r = 0.02$, $C = 400$, $I = 100$, $P = 3$.

b) The IS will not shift as G and T cancel out. The only change from part a) will be that $C = 500$ (and $G = 400$).

c) Equating $IS = LM$, we find $r = 0.021$, $Y = 1006$ and then $C = 659.8$, $I = 55$ in the short run. In the long-run the LM curve will shift to reestablish $IS = LM = FE$. The interest rate will be $r = 0.021004$ and $Y = 1000$ so that $C = 654$. The price level will be $P = 3.026$.