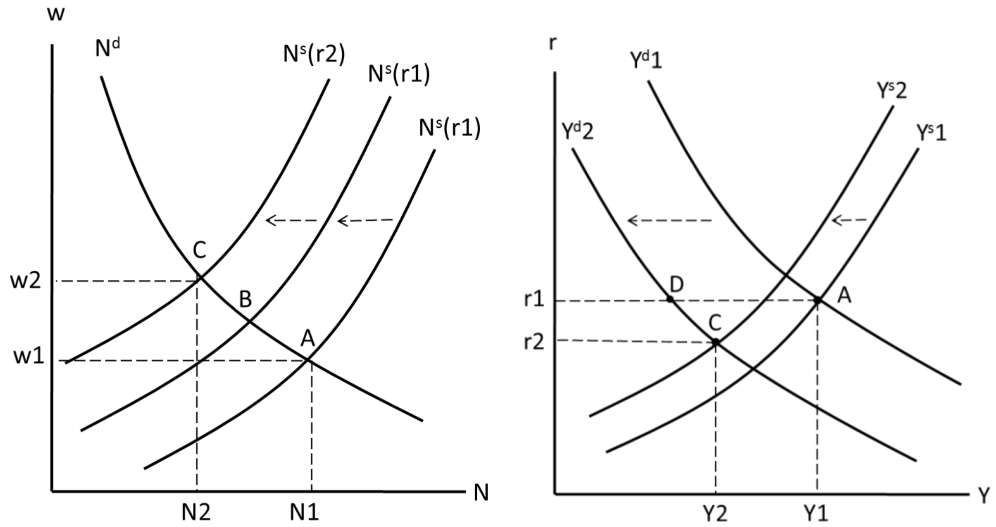
EE312 Macroeconomic Theory
Semester 1/2014
Homework II

Questions:

1. Use **the Closed-Economy, Monetary Intertemporal Model** to analyze the effects of a decrease in government spending on the real wage, employment, current output, the real interest rate, current consumption, investment and the price level.

Answer:

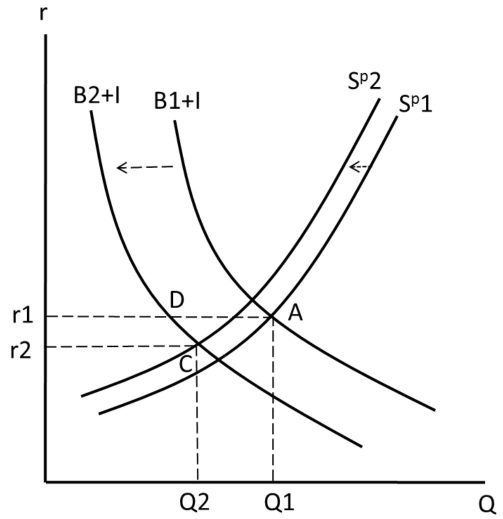


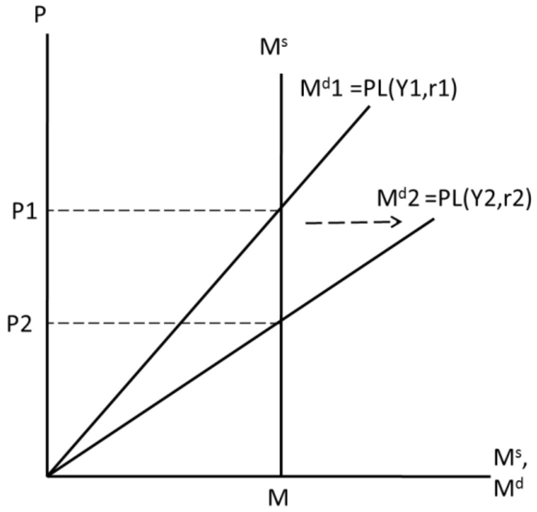
In the labor market, a decrease in government spending implies a decrease in lifetime taxes. The consumer's lifetime wealth (and disposable income) increases. The consumer increases leisure as it is a normal good. More leisure means less labor supply. The labor supply curve shifts to the left. Employment and output are decreasing while the real wage is rising. The output supply curve also shifts to the left from Ys1 to Ys2.

In the goods market, the decrease in government spending reduces the total demand for current goods by the amounts of ΔG plus ΔG multiplied by the marginal propensity to consume, MPCΔG. But the higher lifetime wealth also raises current consumption and the total demand for current goods by the amount of MPCΔG. So the net decrease in total demand for current goods is -ΔG - MPCΔG + MPCΔG = -ΔG. The output demand curve shifts to the left by the amount of ΔG (the distance AD).

The output demand curve shifts to the left more than the output supply curve because the effect of the decrease in government spending on output demand is stronger than the effect on output supply. The effect of the decrease in government spending on lifetime wealth and leisure spreads over a lifetime. So the decrease in labor supply and the leftward shift of the output supply curve are small. The increase in current consumption as a result of an increase in lifetime wealth is also small for the same reason so that the effect of government spending on the total demand for current goods is strong. The net effect is that the real interest rate decreases from r1 to r2.

In the labor market, the lower real interest rate reduces the opportunity cost of leisure. The consumer increases leisure and reduces labor supply. The labor supply curve shifts further to the left to Ns (r2). Employment decreases from N1 to N2 while the real wage increases from w1 to w2. Output (from the production function) decreases from Y1 to Y2. In the goods market, the lower real interest rate also raises current consumption and investment demand as the real interest rate is the opportunity cost of both current consumption and investment.





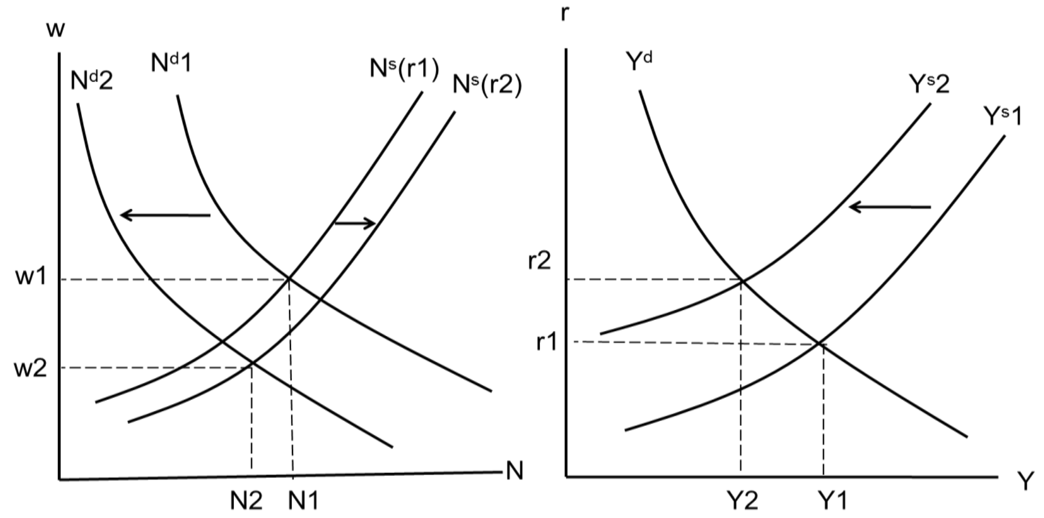
The decrease in government spending causes a decrease in government borrowing (bond sale) and the demand for credit in the credit market. The credit demand curve shifts to the left. The intertempoal effect of government spending on current consumption and saving is small, but the lower real interest rate reduces saving and the supply of credit to decrease (movement along the supply curve). The real interest rate decreases from r1 to r2.

In the money market, lower income (and output) reduces the demand for money while the lower real interest rate raises the money demand. If the real interest rate effect is stronger, the demand for money increases. The money demand curve rotates to the right from Md1 to Md2, given the money supply. The price level decreases from P1 to P2.

In conclusion, a decrease in government spending results in lower employment, output and income, a lower real interest rate, a higher real wage, higher investment and higher current consumption (higher lifetime wealth and a lower real interest rate increase current consumption but lower current income decreases it; the real interest rate effect is stronger.)

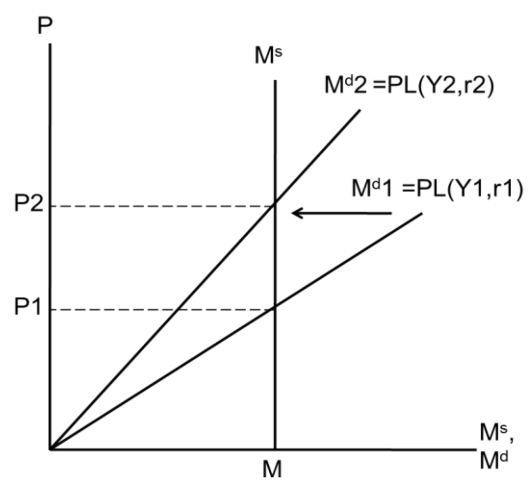
2. Use **the Closed-Economy, Monetary Intertemporal Model** to analyze the effects of a temporary decrease in total factor productivity on employment, the real wage, current output, the real interest rate, current consumption, investment and the price level.

Answer:



A decrease in current total factor productivity (z) causes the marginal production of labor (MP_N) to decrease. The firm demands less labor services for a given real wage. The labor demand curve shifts to the left (from N^d1 to N^d2). The real wage is falling, inducing the consumer to supply less labor services. Employment and output (through the production function) decrease.

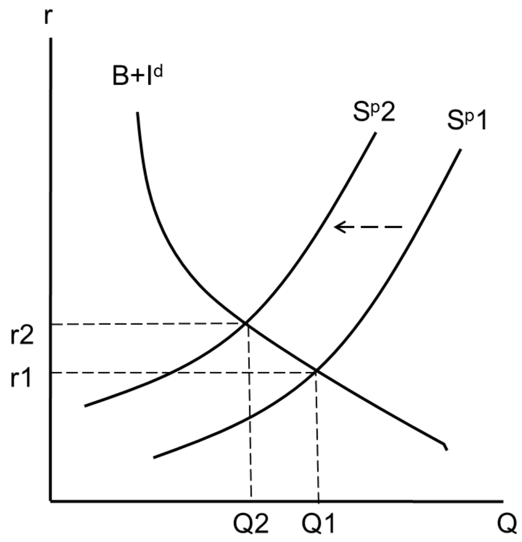
The output supply curve shifts to the left from Y^s1 to Y^s2. The real output level falls from Y1 to Y2 while the real interest rate increases from r1 to r2. A higher real interest rate causes the demands for investment and consumption goods to decrease. The lower output (and income) also reduces the demand for consumption goods. Lower investment and consumption cause output demand to decrease to match the lower output supply.



The higher real interest rate causes current leisure to be more costly. The consumer reduces current leisure and provides more labor services. The labor supply curve shifts rightwards from $N^s(r1)$ to $N^s(r2)$. The real wage drops further from w1 to w2. Employment finally decreases from N1 to N2, corresponding to the lower level of output at Y2.

Consumption drops as a result of lower real income and the higher real interest rate.

Investment is also lower because of the higher real interest rate.



In the money market, the lower real income causes the demand for money to decrease. The higher real interest rate means higher opportunity cost of holding money which also causes money demand to decrease. The money demand curve rotates to the left from M^d1 to M^d2 and the price level increases from P1 to P2.

In the credit market, the falling real income causes private saving to decrease. The credit supply curve shifts leftwards from S^p1 to S^p2. The real interest rate increases from r1 to r2.

In conclusion, a decrease in current total factor productivity results in a lower real wage, lower employment and output, a higher real interest rate, and lower consumption and investment demand.

Submission date: Friday 14 November 2014; 13:00hr.