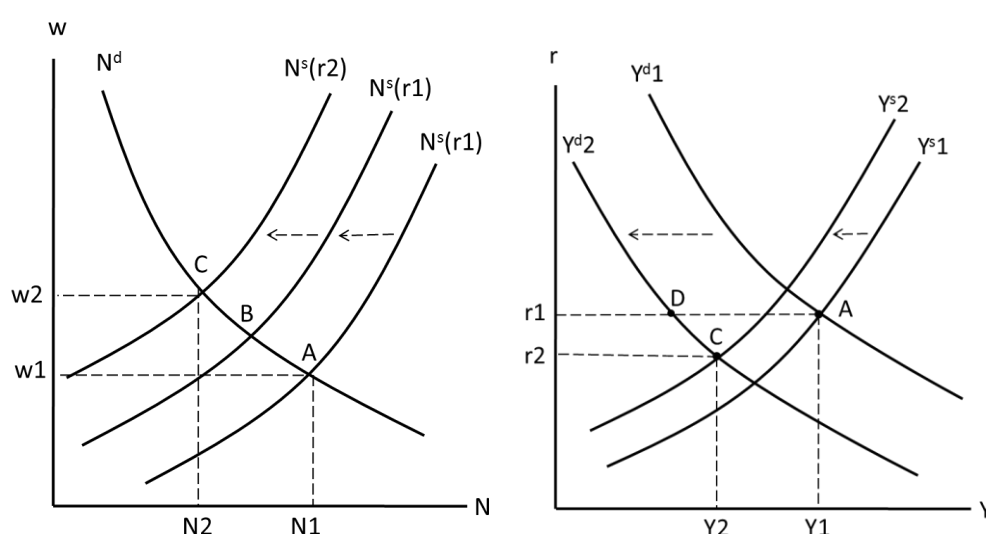


EE312 Macroeconomic Theory
Semester 1/2015
Homework II

Submission date: Friday 13 November 2015.

Question 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:



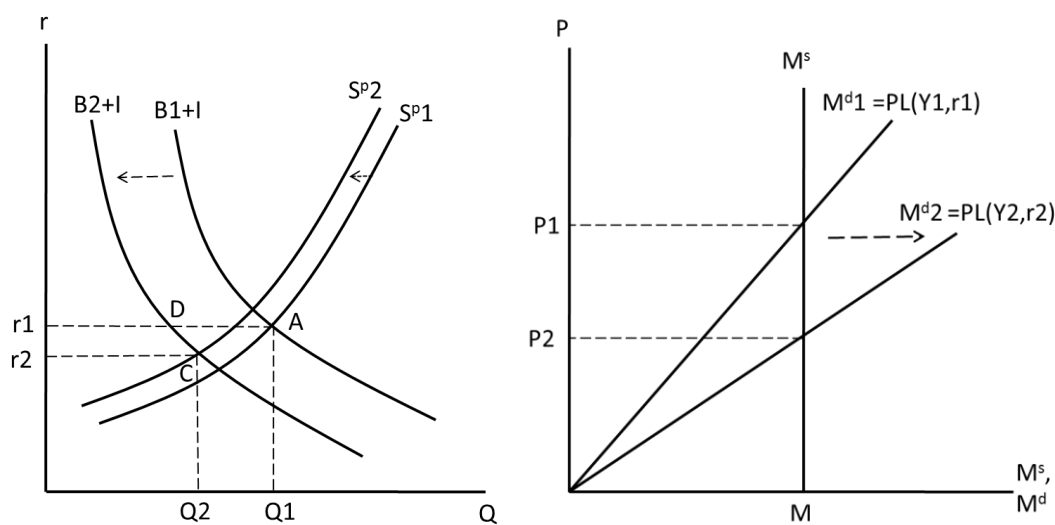
In the labor market, a decrease in government spending implies a decrease in lifetime taxes. The consumer's lifetime wealth (and disposable income) increases. The consumer increases leisure as it is a normal good. More leisure means less labor supply. The labor supply curve shifts to the left. Employment 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, $MPC\Delta G$. But the higher lifetime wealth also raises current consumption and the total demand for current goods by the amount of $MPC\Delta G$. So the net decrease in total demand for current goods is $-\Delta G - MPC\Delta G + MPC\Delta G = -\Delta G$. 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 r_1 to r_2 .

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 $N_s(r_2)$. Employment decreases from N_1 to N_2 while the real wage increases from w_1 to w_2 . Output (from the production function) decreases from Y_1 to Y_2 . 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.



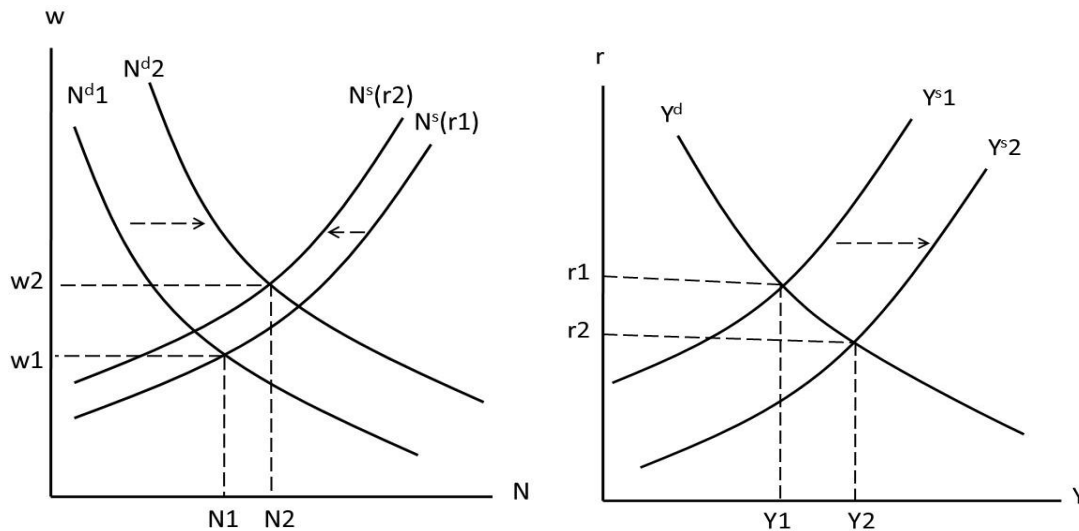
The decrease in government spending causes a decrease in government borrowing (bond sale) and the demand for credit in the credit market. The credit demand curve shifts to the left. The intertemporal effect of government spending on current consumption and saving is small, but the lower real interest rate reduces saving and the supply of credit to decrease (movement along the supply curve). The real interest rate decreases from r_1 to r_2 .

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 M^d_1 to M^d_2 , given the money supply. The price level decreases from P_1 to P_2 .

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.)

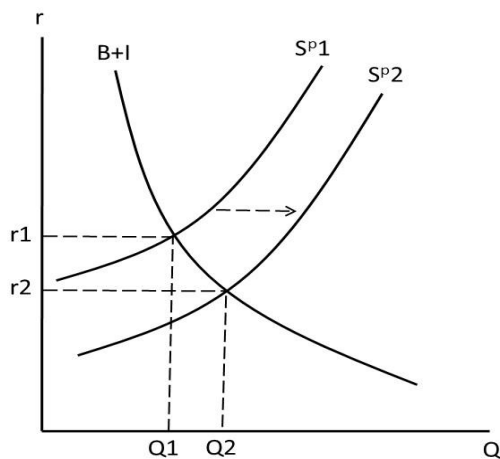
Question 2 Use the **Closed-Economy Monetary Intertemporal Model** to analyze the effects of a temporary increase in total factor productivity on employment, the real wage, current output, the real interest rate, current consumption, investment and the price level.

Answer:



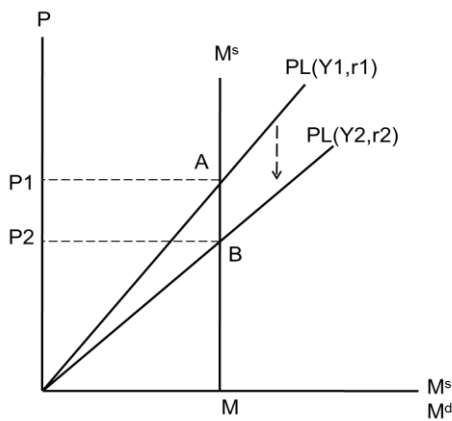
In the labor market, an increase in current total factor productivity causes the marginal product of labor to increase. The firm demands more labor service. The labor demand curve shifts to the right from N^d1 to N^d2 . The firm offers a higher real wage for more labor service. The real wage is rising. Employment and output are also increasing. The output supply curve shifts to the right from Y^s1 to Y^s2 . The real interest rate is falling.

The falling real interest rate reduces the opportunity cost of leisure. Consumers increase leisure and supply less labor service. The labor supply curve shifts to the left from $N^s(r1)$ to $N^s(r2)$, partially offsetting the rightward shift of the labor demand curve. The effect of the lower real interest rate on labor supply is weaker because the effect spreads through lifetime. Finally, the real wage increases from $w1$ to $w2$ and employment increases from $N1$ to $N2$.



The lower real interest rate also causes both current consumption and investment demand to increase.

Current consumption rises less than proportionally than income as a result of the consumption-smoothing behavior. Private saving increases. In the credit market, the credit supply curve shifts to the right from S^p1 to S^p2 and the real interest rate falls from $r1$ to $r2$.



In the money market, higher income and the lower real interest rate induce the demand for money holding to increase. The money demand curve rotates to the right. The price level falls from $P1$ to $P2$.

In conclusion, the real wage increases. Employment and output also increase. The real interest rate decreases. Consumption increases as a result of higher income and the lower real interest rate. Investment increases from the lower real interest rate. The price level is lower.