(1) [8 points] **Effects of Fiscal Policy in the Long Run**

Soon after his election in 1992, President Clinton proposed to reduce government spending and increase taxes

(a) [2 points] What effect would this have on the government budget deficit?

> Government budget deficit is defined as $G - T$. A decrease in government spending ($G$) and an increase taxes ($T$) causes government deficit to fall.

(b) [6 points] Use the Classical model for a closed economy to state and illustrate what the long-run impact of this program would be on national saving ($S$), investment ($I$), and the real interest rate ($r$)

> A fall in government budget deficit causes national saving ($S$) and investment ($I$) to increase and real interest rate ($r$) to fall in the long run.
(2) [12 points] **Classical Model**

Assume that RGDP ($Y$) is 6,000. Consumption ($C$) is given by the equation $C = 600 + 0.6(Y - T)$. Investment ($I$) is given by the equation $I = 2,000 - 100r$, where $r$ is the real interest rate in percent. Taxes ($T$) are 500 and government spending ($G$) is 500

(a) [3 points] What is the equilibrium value of $r$?

\[ Y = C + I + G \]
\[ \Rightarrow 6000 = 600 + 0.6(6000 - 500) + 2000 - 100r + 500 \]
Therefore, $r = 4$

(b) [2 points] What are the new equilibrium values of $C$ and $I$?

$C = 3900$ and $I = 1600$

(c) [3 points] What are the values of private saving ($S^p$), public saving ($S^g$), and national saving ($S$)?

\[ S^p = Y - T - C = 6000 - 500 - 3900 = 1600 \]
\[ S^g = T - G = 0 \]
\[ S = S^p + S^g = 1600 \]

(d) [4 points] Suppose that both government purchases ($G$) and taxes ($T$) increase by 100. Is $r$ increasing or decreasing? Explain

\[ Y = C + I + G \]
\[ \Rightarrow 6000 = 600 + 0.6(6000 - 600) + 2000 - 100r + 600 \]
The new equilibrium value of real interest rate is $r = 4.4$.

Alternatively, you may answer this question as follows. The increase in $G$ reduces $S$ by 100 and the increase in $T$ raises $S$ by less than 100. The overall effect of balanced-budget fiscal policy is to reduce national saving ($S$). Therefore, $r$ rises.
(3) [8 points] **Wage Rigidity**

Assume that a country experiences a reduction in productivity. Use “Labor Demand\(L^D\)-Labor supply\(L^S\)” diagram to state and illustrate what the long-run impact of this on real wage and unemployment *if the real wage were rigid*

*Since the real wage is stuck above the equilibrium level, real wage does not change in the long run. However, unemployment will rise because a reduction in productivity causes labor demand to fall.*

(4) [12 points] **Solow-Swan Model**

Answer the following questions using the Solow-Swan model with no population growth and no technological progress

(a) [6 points] Suppose that two countries are exactly alike in every respect except that the citizens of country A have a higher saving rate than the citizens of country B. Which country will have the higher level of output per worker in the steady state? Illustrate graphically

*Country A has a higher level of income per worker, \(y^*_A > y^*_B\)*

(b) [6 points] (B) It rains so much in the country A that capital equipment rusts out (depreciates) at a much faster rate than it does in the country B. Which country will have the higher level of output per worker in the steady state? Illustrate graphically

*Country B has a higher level of income per worker, \(y^*_A < y^*_B\)*