

Write all answers neatly and legibly.

1. Use the short-run Keynesian Model to answer this set of questions. You are given the following information:

$C = 10 + .8(Y - T)$ where C is consumption spending, Y is real GDP, and T is taxes

$T = 20$

$TR = 0$ where TR is transfers

$G = 10$ where G is government spending

$I = 10$ where I is planned private investment spending

$X - IM = 5$ where X is exports and IM is imports

a. (2 points) Examine the above information and then answer the following questions:

- i. This economy is operating with a government budget _____.
- ii. This economy is operating with a trade _____.
- iii. This country is (lending to, borrowing from) foreign countries.
- iv. This country's private saving function, S_p , with respect to real GDP can be written as the equation: _____.

Answers:

i. Surplus since $(T - TR) > G$

ii. Surplus since $X > IM$

iii. lending to since $IM - X = KI =$ capital inflows is a negative number indicating that the country is sending capital to other countries

iv. Since $C = 10 + .8(Y - T)$ we can write the S_p function with respect to disposable income as $S_p = -10 + (1 - .8)(Y - T)$ and then plug in $T = 20$ to get S_p with respect to just real GDP or Y. So, $S_p = -10 + .2(Y - 20) = -14 + .2Y$. So, correct answer: $S_p = -14 + .2Y$.

b. (1 point) Given the above information calculate the equilibrium values of Y and C for this economy. Show your work to get full credit. Put your final answer in the provided blanks.

Equilibrium level of Y = _____

Equilibrium level of C = _____

Answer:

In equilibrium, $Y = AE$

$AE = C + I + G + (X - IM)$

$AE = 10 + .8(Y - T) + 10 + 10 + 5$

So, $Y = 35 + .8(Y - 20)$

$$.2Y = 19$$

$$Y_e = 95$$

$$\text{If } Y_e = 95, \text{ then } C = 10 + .8(Y - 20)$$

$$C = 10 + .8(95 - 20)$$

$$C = 10 + .8(75)$$

$$C = 10 + 60$$

$$C_e = 70$$

c. (1 point) Suppose the government increases its level of government spending to 30 ($G' = 30$). Holding everything else constant, what will be the **direction and change** in real GDP due to this spending change? Show your work to get full credit.

The direction and change in real GDP will be _____.

Answer:

Here are two ways to calculate the new level of real GDP:

$$Y' = 10 + .8(Y' - T) + G' + I + (X - IM)$$

$$Y' = 10 + .8(Y' - 20) + 30 + 10 + 5$$

$$.2Y' = 55 - 16$$

$$Y' = 195$$

So, real GDP increases from 95 to 195: an increase of 100

$$\text{Change in } Y = (1/(1 - .8))(\text{change in government spending})$$

$$\text{Change in } Y = (1/.2)(20)$$

$$\text{Change in } Y = 100$$

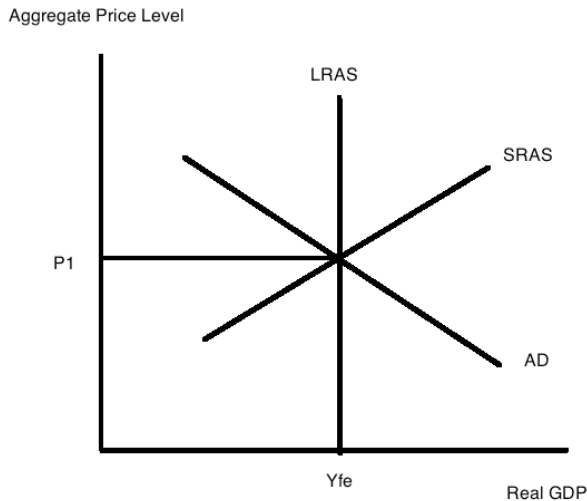
Real GDP increases by 100

d. (2 points) Go back to the initial information. Suppose that this government decides to increase government spending by 20 and taxes by 10 in order that they have a balanced budget. Write a verbal statement of what you think the impact of these spending changes will be on real GDP in this economy given this model and the initial information. No numbers necessary here: for full credit give a well-reasoned, logical answer.

Answer:

We know from the provided information that this will result in a balanced budget for the government, but that is not the question we are asked to answer. So, what do we see? Government spending increases and we know in the Keynesian model that this increase in government spending will lead to real GDP increasing: that is, an increase in government spending, holding everything else constant, is a stimulus to the economy. We also know that taxes increase and we know that in this model that an increase in taxes slows the economy: that is, an increase in taxes, holding everything else constant, is a drag on the economy. The multiplier effect from taxes is smaller in absolute value terms than the multiplier effect from government spending, so if these two changes in government spending and taxes were identical we would expect the economy to grow. Since government spending is increased by more than the increase in taxes, we would expect an even stronger effect on real GDP. Ultimately the model shows numerically that real GDP will increase by 60 with these two changes.

2. Consider an economy that is initially in long run equilibrium where Y , real GDP, is at its full employment level (Y_{fe}) and the aggregate price level is P_1 . **For this economy assume that its aggregate production function exhibits diminishing returns.** The following graph represents this economy where LRAS is the long run aggregate supply curve, SRAS is the short run aggregate supply curve, and AD is the aggregate demand curve:



a. (1 point) Given the initial situation, if the government increases its level of spending and everything else is held constant, what does this model predict will happen to the equilibrium level of output and the equilibrium aggregate price level in the short run? Explain your answer for full credit.

Answer:

In the short run an increase in government spending will cause the AD curve to shift to the right. This will result in real GDP increasing (the economy will be in a boom) and the aggregate price level will rise. (The unemployment rate will fall below the natural rate of unemployment.)

b. (1 point) Given the initial situation, if the government increases the level of net taxation in the economy and everything else is held constant, what does this model predict will happen to the unemployment rate in this economy in the short run? What do you predict will happen to labor productivity in the short run for this economy? Explain your answer for full credit.

Answer:

In the short run an increase in the level of net taxation, holding everything else constant, will cause the AD curve to shift to the left. This will result in decrease in real GDP and a decrease in the aggregate price level. The economy will be in a recession. Since real GDP is falling this implies that fewer workers will be working: the unemployment rate will rise in the short run. As labor decreases, holding everything else constant, this tells us that labor productivity will rise. To see this consider constructing an aggregate production

function and thinking about what happens to labor productivity if there is a decrease in the amount of labor hired while holding all other inputs and technology constant.

c. (1 point) Given the initial situation, if the government decreases its level of spending and everything else is held constant, what does this model predict will happen to the equilibrium level of output and the equilibrium aggregate price level in the long run? Explain your answer for full credit.

Answer:

The AD/AS Model predicts that the economy always returns to Y_{fe} in the long run. The logic is as follows: the government decreases its level of spending and in the short run this causes the AD curve to shift to the left, resulting in a lower level of real GDP and a decrease in the aggregate price level. In the long run, the SRAS curve will shift to the right due to falling nominal wages: nominal wages fall over time due to the equilibrium level of output being less than the full employment level of output in the economy. In the long run this shift of the SRAS curve to the right will return this economy to the full employment level of output and a lower aggregate price level than there was initially (there will be deflation).

d. (1 point) Given the initial situation, if the government passes legislation that provides businesses with an incentive to invest then what do you predict will happen in the short run to real GDP in this economy? What do you predict will happen in the long run in this economy? Hold everything else constant when you do your analysis. Explain your answer for full credit.

Answer:

In the short run this policy will shift the AD curve to the right resulting in real GDP increasing to a level greater than the full employment level of output. The aggregate price level will also increase. Over time the SRAS curve will shift to the left due to rising nominal wages: since $Y_e > Y_{fe}$ there is very low unemployment and this low unemployment puts pressure on nominal wages to rise. In the long run this leftward shift of the SRAS will return this economy to the full employment level of output but with a higher aggregate price level than the initial aggregate price level.