Quiz 4

Name: Answer Key

1. True or false (3 points):

Net exports in the U.S. have a relatively small share of aggregate expenditure, thus, when analyzing the U.S. economy, economists often assume that the net exports are zero.

Your answer: ***T***

2. Short Answer (10 points):

Consider an economy with GDP equal to Y. Consumers pay a proportional to Y tax at the rate of t. The total tax paid by the consumers is then tY. Aggregate planned expenditure is $APE = C + I + G$, where I and G are autonomous expenditures.

a) Write down the expression for the disposable income, YD.
b) Derive the consumption function (a relationship between the consumption and disposable income). Explain the meaning of the constants in this function (one or two words for each is sufficient).
c) Express consumption as a function of the real GDP.
d) Impose the equilibrium (the point where aggregate expenditure equals real GDP) and derive the expenditure multiplier.

Your answer:
a) $YD = Y - tY = (1-t)Y$
b) $C = a + b \cdot YD$, where a is the autonomous consumption and b is the slope.
c) $C = a + b \cdot YD = a + b(1-t)Y$
d) Equilibrium point: $APE = Y$. Substituting Y in the expression for the aggregate planned expenditure gives:

$$Y = C + I + G$$

Substituting the expression for the consumption found in part c) in the above equation gives:

$$Y = a + b(1-t)Y + I + G$$

Simplifying the expression:

$$Y = \frac{1}{1 - b(1-t)} \cdot (a + I + G)$$

where $\frac{1}{1-b(1-t)}$ is the expenditure multiplier.

3. Problem (7 points):

An economy has a consumption function of $C = 15 + 0.7Y$, investment of 8, government expenditure of 12, exports of 20 (exports are part of autonomous expenditure), and an import function of M = 0.2Y (imports are part of the induced expenditure). If government expenditure increases by 10, what is the increase in equilibrium expenditure?

Your answer:
To answer, all we need to know is the expenditure multiplier, m. Recall that the change in the real GDP ($GDP = AE$ at the equilibrium) is equal to the multiplier times the change in the autonomous expenditure, which in this case is the change in the government expenditure:

$$\Delta AE^* = \Delta Y = m \cdot \Delta G$$

Aggregate planned expenditure function is:

$$APE = C + I + G + Exports - Imports = 15 + 0.7Y + 8 + 12 + 20 - 0.2Y = 55 + 0.5Y$$

with intercept of 55 and the slope of 0.5. The multiplier is equal to:

$$m = \frac{1}{1 - slope\ of\ the\ APE\ curve} = \frac{1}{1 - 0.5} = 2$$

and the change in the equilibrium aggregate expenditure is:

$$\Delta Y = m \cdot \Delta G = 2 \cdot 10 = 20$$