Georgia Institute of Technology
Advanced Macroeconomics
Spring 2008
QUIZ # 3 Key

Five multiple choice question, circle the **best answer**.
(Full model problem) An economy is described by the following equations

$$C = 1000 + 0.75(Y - T)$$
$$T = -500 + 0.2Y$$
$$NX = -300 - 0.1Y$$
$$I = 700, \quad G = 1200.$$

1. The equilibrium real income (output) of this economy equals
   a. 4350.
   b. 5580.
   ♣ **5950**.
   d. 7590.
   e. none of the above.

$MLR = 1 - mpc(1 - t) + \eta = 1 - 0.75(1 - 0.2) + 0.1 = 0.5$
$AE^f = a + I_p + G + NX_0 - mpc \times T_0 = 1000 + 700 + 1200 - 300 - 0.75 \times (-500) = 2975$
$Y^e = \dfrac{AE^f}{MLR} = \dfrac{2975}{0.5} = 5950.$

2. Now in this economy, government increases its spending by 100, after the policy went into effect, the government budget surplus
   a. increased by 100.
   b. decreased by 100.
   ♣ **decreased by 60**.
   d. decreased by 40.
   e. none of the above.

$$\frac{\Delta Y}{\Delta G} = \frac{1}{MLR}$$
$$\frac{\Delta Y}{100} = \frac{1}{0.5}$$
$$\Delta Y = \frac{100}{0.5} = 200$$
T increased by $\Delta T = t \times \Delta Y = 0.2 \times 200 = 40$
$\Delta BUS = \Delta T - \Delta G = 40 - 100 = -60.$
budget surplus decreased by 60 not by 100.

[Reduced model problem] The planned aggregate expenditures of a reduced model is given by

$$PAE = 1500 + 0.85Y.$$

Use this information to answer question (3) and (4)

3. Now suppose the current income for this economy equals 15000(=Y), at this level of operation, the planned business investment equals 1050(= I_p). The actual investment I_a for this economy at this level of operation is

a. 1050.

♠ **1800**.

c. 1500.

d. 1250.

e. 1600.

At the current income

$$PAE = 1500 + 0.85 \times 15000 = 14250.$$

$$\begin{aligned} Y - PAE &= I_u = I_a - I_p \\ 15000 - 14250 &= I_a - 1050 \\ 750 &= I_a - 1050 \\ I_a &= 1800. \end{aligned}$$

4. Now suppose the current income of this economy equals 15000. At this level of real income, government lowers the lump-sum taxes by 1000 and at the same time lowers its spending also by 1000. After these policies went into effect, the new income of this economy will be

a. 16000.

b. 17000.

♣ **14000**.

d. 20000.

e. none of the above.

This is a balanced-budget multiplier problem, G goes down by 1000 and T goes down by 1000, real income goes down by 1000 from 15000.

5. [Reduced model problem] The planned aggregate expenditures equation of an economy is given by

$$PAE = 1000 + 0.8Y$$

Suppose the current income equals 6000(=Y). At this level, the government increases its spending by 100 and also increases taxes by 75. After these fiscal policies went into effect the new income of the economy will be

a. 6800.

b. 7000.

c. 5900.

♠ **6200**.

e. none of the above.

When $\Delta G = 100$, income increases by $\Delta Y = \frac{\Delta G}{mps} = \frac{100}{0.2} = 500$.

When $\Delta T = 75$, $\Delta Y = \Delta T \times \frac{-mpc}{mps} = \frac{-75 \times 0.8}{0.2} = -300$. The net income increase equals 200.