

ANNOTATED KEY

Economics 102
Keynesian Model Practice Questions
Summer 2014

Answer the next two questions using the information below:

Consider an economy described by the following parameters:

- G=1000
- X-M=50
- I=1400
- T=500
- C=2000+0.9(Y-T)

$\Rightarrow C = a + b[Y-T]$ where $a \equiv$ autonomous consumption
 $b \equiv$ MPC \Rightarrow marginal propensity to consume

Where G is government expenditure, (X-M) is net exports, I is the level of planned investment, T are lump-sum taxes on income, C is household consumption and (Y-T) is disposable income.

1) The level of autonomous consumption and the MPC in this economy are, respectively:

- a. 2000 and 0.9. $\rightarrow 2000$ $\rightarrow 0.9$
- b. 1550 and 0.9.
- c. 1450 and 9.
- d. 1550 and 0.1.

2) The equilibrium level of income is:

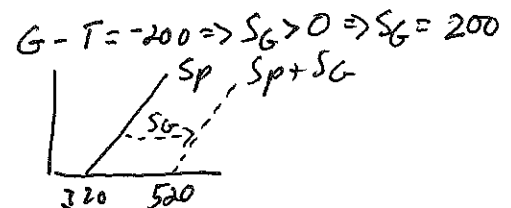
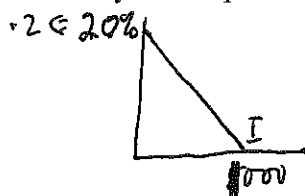
- a. \$35,500.
- b. \$40,000.
- c. \$30,500.
- d. \$40,500.

In eq. $Y = AE$
 $AE = C + I + G + (X-M)$
 $\therefore Y_e = C + I + G + (X-M)$
 $Y_e = 2000 + .9(Y_e - T) + 1400 + 1000 + 50$
 $Y_e = 4450 + .9Y_e - .9(500)$
 $\therefore Y_e = 4450 - 450$
 $\therefore Y_e = 4000 \Rightarrow Y_e = \$40,000$

Answer the next three questions using the information below:

Consider the following information about the country of Simpleland

- G = \$600
- T = \$800
- I = \$1000 - 5000 i_R
- $S_p = \$320 + 1000 i_R$



(Hint: in this problem, the real interest rate is written as a decimal: e.g., if the real interest rate is 10%, it is written as $i_R = 0.10$).

3) What is the equilibrium real interest rate?

- a. 4%
- b. 6%
- c. 8%**
- d. 10%

Use DLF: $I = 1000 - 5000i_r$
 $\Rightarrow Q_{DLF}^D = 1000 - 5000i_r$

Use S_{LF}: $S_p + S_g = 320 + 1000i_r + 200$
 $\Rightarrow Q_{LF}^S = 520 + 1000i_r$

$1000 - 5000i_r = 520 + 1000i_r$

$480 = 6000i_r$
 $i_r = \frac{480}{6000} = \frac{4}{50} = \frac{8}{100}$

$i_r = .08 \text{ or } 8\%$

4) In equilibrium, what is the amount of injections in this economy?

- a. \$2,000
- b. \$1,500
- c. \$1,200**
- d. \$1,000

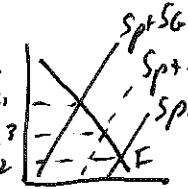
injections = $I + G + X$
 will assume this is a closed economy

injections = $[1000 - 5000(.08)] + 600$
 injections = $1000 - 400 + 600 = 1200$

5) Suppose that the government decides to increase G by \$120. Assuming that aggregate income does not change, which of the following is the most plausible effect of this policy?

$G' = 720 \Rightarrow S_G' = 80 \Rightarrow S_{LF}'' : Q_{LF}^S = 320 + 1000i + 80 = 400 + 1000i$

- a. The rise in G partially crowds out private sector spending. Indeed, because of the increase in the equilibrium interest rate, private investment increases by \$100. **X**
- b. The rise in G completely crowds out private sector spending. Indeed, because of the increase in the equilibrium interest rate, investment decreases by \$120. **X**
- c. The rise in G partially crowds out private sector spending. Indeed, because of the increase in the equilibrium interest rate, private consumption increases by \$20^x and private investment decreases by \$100.
- d.** The rise in G completely crowds out private sector spending. Indeed, because of the increase in the equilibrium interest rate, private consumption decreases by \$20^v and private investment decreases by \$100. **v**



Predict
 - $i \uparrow$ from i_2 to i_3
 - $I \downarrow$
 - $S_p \uparrow$
 - $C \downarrow$

\Rightarrow (b) and (d) are possible answers

6) The short-run Keynesian model is in equilibrium when:

- a. There is no unemployment.
- b. There is no cyclical unemployment.
- c. The level of inventories is constant and equal to zero.
- d. Aggregate expenditure equals aggregate production.

$400 + 1000i = 1000 - 5000i$
 $6000i = 600$

$i = \frac{600}{6000} = .1 \text{ or } 10\%$

when $i = .1 \Rightarrow I' = 1000 - 5000(.1)$
 $I' = 500$

I was 600 now $I' = 500$
 so $I \downarrow$ by 100

7) Which of the following is **not** true? A difference between the long-run Classical Model and the short-run Keynesian Model is that:

- a. While an increase in savings is always good in the long-run, it might create a recession in the short-run. **True**
- b. In the Classical Model the economy operates automatically at potential GDP while this is not true in the Keynesian model. **True**

Initially when $i = .08$
 $S_p = 320 + 1000(.08) = 400$
 S_p' when $i = .1$
 $S_p' = 320 + 1000(.1) = 420$
 $S_p \uparrow$ by 20 $\Rightarrow C \downarrow$ by 20

- c. In contrast to the long-run Classical Model, in the short-run Keynesian Model there is *always* need for government intervention in order to maintain full employment. *False*
- d. In contrast to the Keynesian Model, in the Classical Model government policy is ineffective. *True*

Answer the next two questions using the information below:

$NS = Sp$ $+ SG$	Real interest rate (percent per year)	Planned Investment (billions of 2003 dollars)	Private saving (billions of 2003 dollars)	Net taxes (billions of 2003 dollars)	Government purchases (billions of 2003 dollars)	$SG =$ $Net\ Taxes - G$
400	2	600	200	400	200	200
500	4	500	300	400	200	200
600	6	400	400	400	200	200
700	8	300	500	400	200	200
800	10	200	600	400	200	200

8) When the real interest rate is 8%, then the

*When $i_r = 8\% \Rightarrow I = 300$
 $Sp = 500$ } $NS = 700$
 $SG = 200$ } \uparrow*

- a. Total supply of funds is equal to \$500 billion and budget surplus is \$200 billion.
- b. Total supply of funds is equal to \$700 billion and budget deficit is \$200 billion.
- c. Total supply of funds is equal to \$700 billion and budget surplus is \$200 billion.
- d. Total supply of funds is equal to \$500 billion and budget deficit is \$200 billion.

*Total
Supply
Funds*

Budget Surplus since Net Taxes > Govt Spending

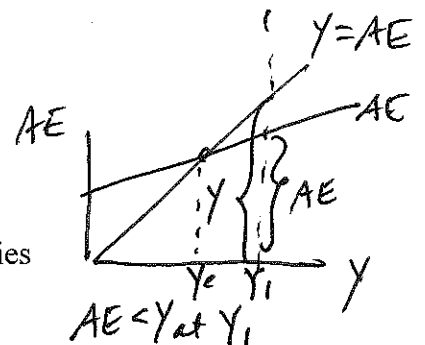
9) The equilibrium interest rate is

- a. 4%
- b. 6%
- c. 8%
- d. 2%

*Eg. Interest Rate is when $NS = I$ (Assumes
 $X - M = 0$)
 So Eg. Interest rate = 4%*

10) In the Keynesian model, cyclical unemployment is caused by

- a. a negative spending shock.
- b. a positive spending shock.



11) When aggregate expenditure is less than aggregate income, inventories

- a. decrease.
- b. increase.

*When $AE < Y$ then inventories \uparrow
 production \downarrow , economy moves
 back toward Y_e*

12) The MPC is 0.8. Holding everything else constant, if government purchases increase by \$1 and taxes decrease by \$2, the short-run equilibrium level of output will increase by

- a. \$1.
- b. \$3.

$$\Delta Y = \left(\frac{1}{1-b}\right) \Delta G + \left(\frac{-b}{1-b}\right) \Delta T$$

$$\Delta Y = \left(\frac{1}{1-0.8}\right) 1 + \left(\frac{-0.8}{1-0.8}\right) (-2)$$

$$\Delta Y = 5 + (-4)(-2) = 5 + 8 = 13$$

- c. \$13.
d. \$15.

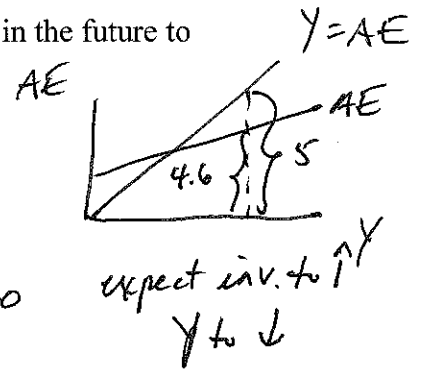
13) If autonomous consumption is \$1,000, the MPC is 0.75, taxes are \$500, investment spending is \$800, and government purchases equal \$500, what is equilibrium GDP? (Assume net exports equal 0.)

- a. \$1,925
b. \$9,200
c. \$2,567
d. \$7,700

$$\begin{aligned}
 a &= 1000 & C &= 1000 + .75(Y - 500) \\
 MPC &= .75 & Y_e &= 1000 + .75(Y_e - 500) + 800 + 500 \\
 T &= 500 & .25Y_e &= 2300 - 375 \\
 I &= 800 & .25Y_e &= 1925 \\
 G &= 500 & Y_e &= 7700
 \end{aligned}$$

14) In the simple short-run Keynesian model presented in Chapter 10, if GDP=\$5 trillion and aggregate expenditure=\$4.6 trillion, we would expect

- a. prices to fall until the additional \$0.4 trillion of output was sold.
b. prices to rise.
c. output to rise as businesses anticipate that buyers will spend more in the future to compensate for weak spending in this period.
d. inventories to rise by \$0.4 trillion.



Use the information below to answer the next two questions:

Y	T	Disposable Income	C
0	10	-10	16
100	10	90	56
200	10	190	96
300	10	290	136

15) What is the consumption function as a function of aggregate income?

- a. $C = 20 + .4(Y - T)$
b. $C = 16 + .4(Y - T)$
c. $C = 16 + .4Y$
d. $C = 24 + .4Y$

$$\begin{aligned}
 m &= \frac{\Delta C}{\Delta DI} = \frac{40}{100} = .4 \\
 C &= a + .4(Y - T) \\
 56 &= a + .4(100 - 10) \text{ using } (Y, C) = (100, 56) \\
 .56 &= a + (.36) \Rightarrow a = 20 \\
 \hookrightarrow C &= 20 + .4(Y - T)
 \end{aligned}$$

16) What is the saving function as a function of disposable income?

- a. $S = -20 + .6(Y - T)$
b. $S = -16 + .6(Y - T)$
c. $S = -16 + .6Y$
d. $S = -24 + .6Y$

$$\begin{aligned}
 C &= a + b [Y - CT - TR] \\
 S &= -a + (1 - b) [Y - CT - TR] \\
 S &= -20 + .6 [Y - T] \text{ since } TR = 0
 \end{aligned}$$

$$\begin{aligned}
 \hookrightarrow C &= 20 + .4(Y - T) \\
 \hookrightarrow \text{consumption function} & \\
 & \text{w/ respect to } (Y - T) \\
 C &= 20 + .4(Y - 10) \\
 C &= 20 + .4Y - 4 \\
 C &= 16 + .4Y \\
 \hookrightarrow \text{consumption function} & \\
 & \text{w/ respect to } Y \text{ or} \\
 & \text{aggregate income}
 \end{aligned}$$