

Exam 4
ECO 101
November 22, 2010

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Instructions:

You have 50 minutes to complete this exam.

There are 11 multiple choice questions. They are each worth 3 points. Circle your answer on the paper. Make sure it is very clear which answer you are choosing. You are not to choose more than one answer. There is no partial credit on this portion of the test.

There are 4 problem-oriented questions that are worth a total of 67 points. The points for each part are given in parentheses. Do all work for this portion of the test on this test paper. If you need additional space write on the back of the test. **When answering a question, always explain your reasoning.** On this portion of the test partial credit will be given to those answers which are neither fully correct nor fully incorrect.

Be sure to allocate your time appropriately and read each question carefully.

GOOD LUCK!

$$10 \times 3 = 30$$

$$\begin{array}{r} 66.5 \\ 96.5 \end{array}$$

Multiple Choice: Answer the question that is being asked. When answering, choose the best answer according to what was said in the notes or in class.

1. Suppose a given economy does not engage in foreign trade and the MPC is .7. If the government decreases both government purchases and taxes by \$100 billion, then

- a. real GDP will stay constant.
- b. real GDP will increase by \$330 billion.
- c. real GDP will decrease by \$330 billion.
- d. real GDP will increase by \$100 billion.
- e. real GDP will decrease by \$100 billion.

$$G \downarrow > T \uparrow$$

2. If firms sell less than they had planned,

- a. actual and planned investment are equal.
- b. actual investment is less than planned investment.
- c. actual investment must be negative.
- d. actual investment is greater than planned investment.

3. If the MPC is .65 and taxes are raised by \$100 billion, what will happen to the AE line?

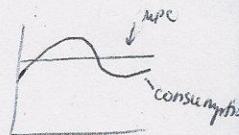
- a. The AE line will shift up by \$35 billion.
- b. The AE line will shift down by \$35 billion.
- c. The AE line will shift down by \$100 billion.
- d. The AE line will shift down by \$65 billion.
- e. The AE line will shift up \$65 billion.

$$C = 0.65Y - 0.65 \cdot 100$$

$$C = 0.65Y - 65$$

4. Consumption smoothing implies that if people's income follows the typical life-cycle pattern: lower when they are young, higher when middle aged, and very low when retired,

- a. Your MPC will be higher when you are young and old than when you are middle aged.
- b. Your MPC will be lower when you are young and old than when you are middle aged.
- c. Your MPC will be no different throughout your life.
- d. Your MPC will be higher when you are middle aged because you have more income then.
- e. None of the above.



5. Which of the following will cause an upward shift of the aggregate expenditure line?

- a. A decrease in wealth
- b. A decrease in taxes
- c. A decrease in government purchases
- d. An increase in imports
- e. An increase in saving

$$Y = C + I + G + X$$

$$\downarrow$$

$$MPC \cdot YD$$

6. Suppose a firm notices an increase in the demand for its product. Which of the following is true?

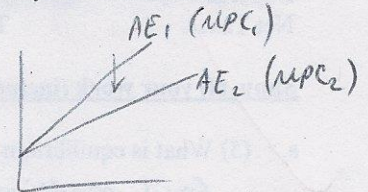
- a. The firm will immediately increase price in order to increase profit.
- b. The firm will increase wages because of implicit contracts.
- c. The firm will not immediately increase price because of implicit contracts and limited information.
- d. The firm can always determine whether the change in demand is temporary or permanent.
- e. The firm will increase price only if the change in demand is temporary.

7. If capacity utilization is above normal,

- a. the unemployment rate will be above the natural unemployment rate.
- b. workers will be laid off.
- c. the unemployment rate will be below the natural rate of unemployment.
- d. the unemployment rate will equal the natural unemployment rate.
- e. Both a and b.

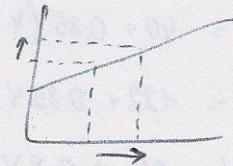
8. Baby boomers begin to worry about retirement and increase their marginal propensity to save. This results in

- a. the expenditure line becoming flatter.
- b. no change in the expenditure line.
- c. the expenditure line shifting down in a parallel direction.
- d. the expenditure line shifting up in a parallel direction.
- e. the expenditure line becoming steeper.



9. A shift in the AE line results in

- a. no change in real GDP.
- b. real GDP changing by less than the amount of the shift.
- c. real GDP changing by more than the amount of the shift.
- d. real GDP changing by the same amount of the shift.



10. Which of the following would lead to an increase in consumption spending?

- a. news reports that indicate the economy is improving dramatically
- b. a reduction in interest rates
- c. an increase in household income
- d. an increase in household wealth
- e. all of the above.

11. Suppose two people both receive an extra \$500 in their paycheck this month. Suppose person 1 believes this to be a one time only payment while person 2 believes they will get this extra \$500 every month from now on. According to the permanent income model, what would be the difference in the two people's MPCs?

- a. Person 1 and Person 2's MPCs for that \$500 won't be any different.
- b. Person 2 will have a higher MPC for that \$500 than Person 1.
- c. Person 1 will have a higher MPC for that \$500 than Person 2.
- d. The permanent income model wouldn't make any predictions about this case.

Problems/Essay: In the space provided answer the following questions.

1. You are given the following model, which describes the economy of Graceland. **Show all your work (including formulas) and explain your answers.**

- Consumption Function: $C=40+.85YD$
- Planned Investment: $I=42$
- Government Spending: $G=20$
- Exports: $EX=20$
- Imports: $IM=.05Y$
- Net Taxes: $T=40$

Show all your work (including formulas) and explain your answers.

a. (5) What is equilibrium income in Graceland?

Equil. condition is when $Y = AE = C + I + G + X$; so!

$$Y = 40 + 0.85(Y - 40) + 42 + 20 + 20 - 0.05Y$$

$$Y = 122 + 0.85Y - 34 - 0.05Y$$

$$Y = 88 + 0.8Y$$

$$0.2Y = 88$$

$$Y = 440$$

Answer: $Y = 440$

b. (2) What is the government deficit of Graceland?

$$\text{Govt. Deficit} = G - T = 20 - 40 = -20.$$

Answer: Govt Def. = -20.

Problem 1 continued.

- c. (5) What is the trade balance of Graceland? Does Graceland have a trade deficit or a trade surplus? Explain how you know.

$$\text{Trade Balance} = \text{EX} - \text{IM}$$

$$\text{TB} = 20 - 0.05Y = 20 - 0.05 \cdot 440 = 20 - 22 = -2$$

TB is negative, thus Graceland has a trade deficit.

- d. (2) What is the marginal propensity to import (MPI) of Graceland?

MPI is the coefficient in imports that depend on income

$$\text{IM} = 0.05Y \Rightarrow \text{MPI} = 0.05$$

- e. (3) What is the multiplier?

$$M = \frac{1}{1 - (\text{MPC} - \text{MPI})}$$

$$\text{MPC} = 0.85$$

$$\text{MPI} = 0.05$$

$$M = \frac{1}{1 - (0.85 - 0.05)} = \frac{1}{1 - 0.8} = \frac{1}{0.2} = 5$$

Answer: $M = 5$.

- f. (6) By how much and in what direction would the government have to change just government spending to decrease the equilibrium income by 25?

A decrease by 25 will make eq. income $(440 - 25) = 415$.

So we're solving for G .

$$415 = 40 + 0.85(415 - 40) + 42 + G + 20 - 0.05 \cdot 415$$

$$415 = 102 + 0.85 \cdot 415 - 34 - 20.75 + G$$

$$415 = 102 + 352.75 - 54.75 + G$$

$$415 = 400 + G$$

$$15 = G$$

So G has to be 15 and not 20.

It has to decrease by 5.

Answer = $\Delta G = -5$. 5

2. (10) Explain why an increase in the budget deficit will increase the trade deficit if net exports depend on income.

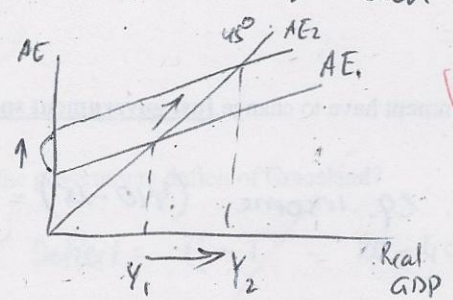
Budget def - $G - T$
Trade def - $IM - EX$

Budget def. increases if $G \uparrow$ or $T \downarrow$ or both.

If net exports ~~are~~ depend on income, it means that part of the income goes to the rest of the world, to be precise, it depends on how large the MPI is. This interdependence is in the formula $IM = a \cdot Y$ (a is MPI).

The larger Y is, the bigger IM will become.
If $IM \uparrow$ the Trade deficit increases as well

But what is the connection with G or T ? So! If G goes up, the shift in AE is inevitable. Thus there will be a larger Y . This is seen on the graph:



If taxes go down, the disposable income to consume goes up, so it's probable that people will start to consume more. More consumption adds to AE . Then again we see a shift in $AE \rightarrow$ increase in Y .

23.5

3. Assuming no taxes answer the following questions using the table below. Explain how you get your answers for each part (include formulas).

Aggregate Output (Y)	Aggregate Consumption (C)	Aggregate Saving (S)	Planned Investment (I)	Government Spending (G)	Net Exports (X)	Planned Aggregate Expenditure (AE)
0	25	-25	20	35	-20	60
100	110	-10	20	35	-20	145
200	195	5	20	35	-20	230
300	280	20	20	35	-20	315
400	365	35	20	35	-20	400
500	450	50	20	35	-20	485
600	535	65	20	35	-20	570

a. (6) Fill in the missing columns in the table. Explain how you did your calculations.

+6

$$Y = C + S \Rightarrow S = Y - C$$

$$25 + (-25) = 0$$

$$110 + (-10) = 100$$

etc.

$$AE = C + I + G + X$$

$$AE_1 = 25 + 20 + 35 - 20 = 60$$

$$AE_2 = 110 + 20 + 35 - 20 = 145$$

$$AE_3 = 195 + 20 + 35 - 20 = 230$$

$$AE_4 = 280 + 20 + 35 - 20 = 315$$

$$AE_5 = 365 + 20 + 35 - 20 = 400$$

$$AE_6 = 450 + 20 + 35 - 20 = 485$$

$$AE_7 = 535 + 20 + 35 - 20 = 570$$

b. (6) What is the consumption function and the MPC?

+6

The general formula is $C = a + bY$, where a - is the number when $Y=0$, b - MPC (the slope)

$$So \ C = 25 + b \cdot Y$$

$$MPC = \frac{\Delta C}{\Delta Y}$$

$$\Delta C = 110 - 25 = 85$$

$$195 - 110 = 85$$

$$\Delta Y = 100$$

$$MPC = \frac{85}{100} = 0.85$$

Consumption $f(x)$ is:

$$C = 25 + 0.85Y$$

Saving $f(x)$ will be then

$$S = -25 + 0.15Y$$

$$MPS = 1 - MPC = 1 - 0.85 = 0.15$$

Answer: $C = 25 + 0.85Y$

Problem 3 continued

c. (4) What is the equilibrium output (Y)?

Eq. Output is, according to the table, 400.
 why?
 b/c $Y = AE$

Answer: $Y = 400$

d. (4) What would happen to equilibrium output if government spending (G) increases by 30 (mention both the size and direction of the change in equilibrium output)?

If $G \uparrow$ by 30, the new G will be $(35 + 30) = 65$.

We'll solve then for Y

$$Y = C + I + G + X = AE; \quad C \text{ is from b) } = 25 + 0.85Y$$

$$Y = 25 + 0.85Y + 20 + 65 - 20$$

$$Y = 90 + 0.85Y$$

$$0.15Y = 90$$

$$Y = 600$$

The previous Eq. Output was 400. The new one is 600. It means that the increase of govt. spending by 35 will result in increase of output by $(600 - 400) = 200$.

Answer: $\Delta Y = +200$

e. (4) What is the multiplier?

$$M = \frac{1}{1 - MPC} = \frac{1}{1 - 0.85} = \frac{1}{0.15} = 6.66$$

Answer: $M = 6.66$

$\frac{\Delta Y}{\text{shift AE}}$

~~Another way~~

$$M = \frac{\Delta Y}{\text{shift AE}} = \frac{100}{85} = 1.18$$

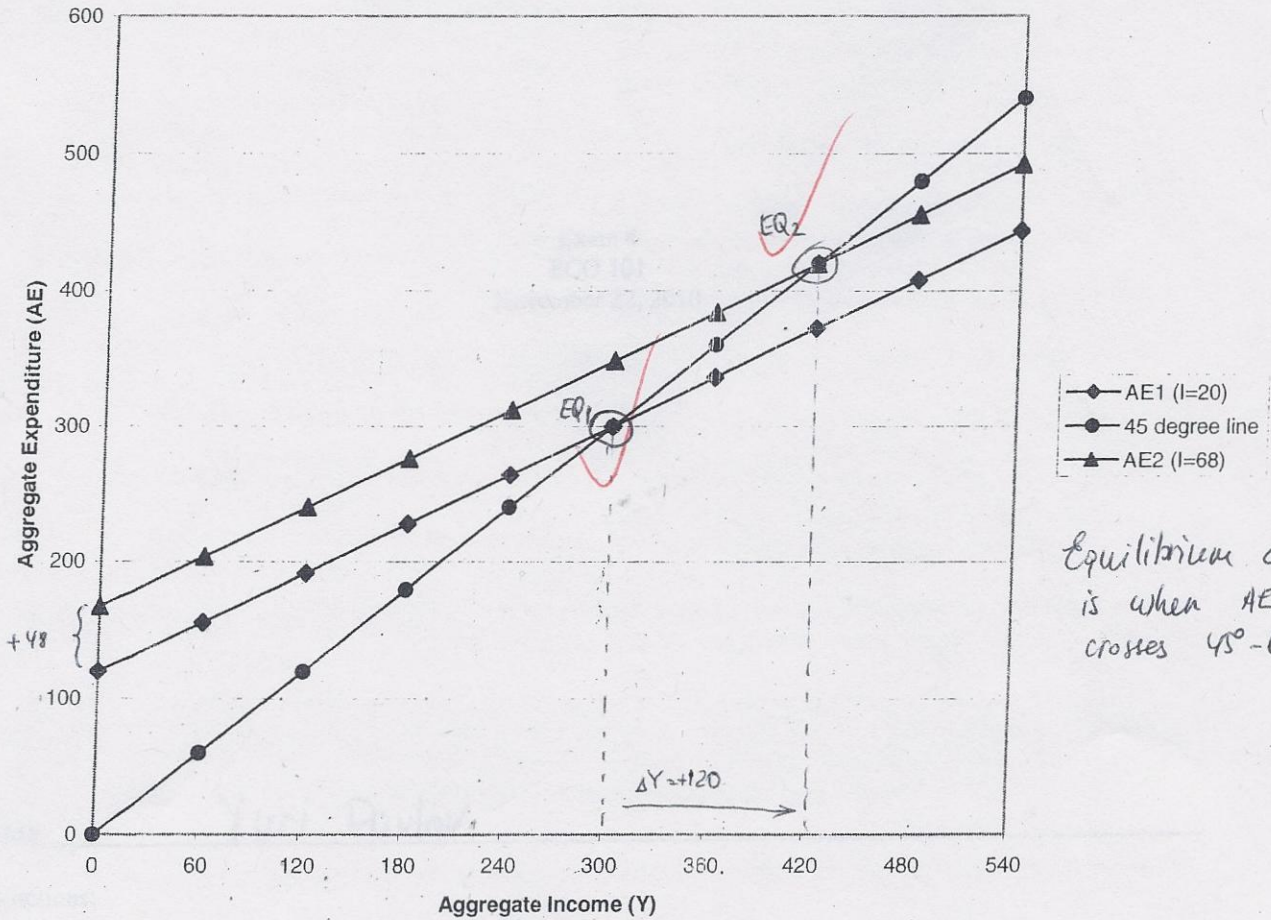
~~MPC = 0.85~~

10

4. The graph below shows the Aggregate Expenditure (AE) curves for a country before and after a \$48 increase in I. The country has flat taxes and net exports do not depend on income. Use the graph to answer the questions that follow. AE1 is Aggregate Expenditure before an increase of \$48 in I, and AE2 is after an increase of \$48 in I. Show all your work (including formulas) and explain your answers.

$\Delta I \uparrow = +48$
 \downarrow
 $\Delta AE = +48$

a. (6) Indicate on the graph equilibrium output before and after the increase in I. Label them EQ1 and EQ2.



Equilibrium condition is when AE line crosses 45°-line.

b. (4) What is the multiplier?

$\Delta Y = 420 - 300 = +120$

Shift AE = +48

$M = \frac{\Delta Y}{\text{Shift AE}} = \frac{+120}{+48} = 2.5$

Answer: $M = 2.5$