

Economics 102  
Summer 2015  
Homework #5  
Due Wednesday, July 15, 2015

**Directions:** The homework will be collected in a box **before** the lecture. Please place your name on top of the homework (legibly). Make sure you write your name as it appears on your ID so that you can receive the correct grade. Late homework will not be accepted so make plans ahead of time. **Please show your work.** Good luck!

**Please realize that you are essentially creating “your brand” when you submit this homework. Do you want your homework to convey that you are competent, careful, and professional? Or, do you want to convey the image that you are careless, sloppy, and less than professional. For the rest of your life you will be creating your brand: please think about what you are saying about yourself when you do any work for someone else!**

1. Use the Keynesian Model to answer this set of questions. Suppose that in the economy we are analyzing that the consumption function is given as  $C = 25 + .75(Y - T)$  and that taxes are autonomous and equal to \$20 million.

a. Draw a graph of the consumption function measuring consumption spending on the vertical axis and GDP, or Y, on the horizontal axis. In your graph make sure you identify the values of any intercepts and indicate on the graph the level of consumption for Y levels of \$100 million, \$200 million, \$300 million, and \$400 million.

Suppose you know that in this economy government spending is constant (autonomous) and equal to \$30 million, investment spending is constant (autonomous) and equal to \$40 million, and net exports are constant (autonomous) and equal to -\$5 million. In this economy assume that there is no inflation and therefore the aggregate price level is constant.

b. Given this information, describe the government budget balance for this economy.

c. Given this information, describe this economy’s trade situation. What do you know about the value of exports? What do you know about the value of imports? Get full explanations here of your reasoning!

d. Given this information determine the economy’s equilibrium level of output. Show how you found this equilibrium level of output.

e. Suppose that you know that the full employment level of output for this economy is  $Y_{fe} = \$292$  million. The leader of your country has as his strongest goal keeping prices constant and he is afraid that the economy due to its current level of production may become inflationary. He asks you to come up with three fiscal policy proposals (a spending policy, a taxing policy, and a balanced budget policy) for restoring this economy to full employment. Prepare the report outlining the three fiscal policies that could be pursued. Show the mathematical analytics behind each of these policies.

2. Suppose you are using a Keynesian Model to analyze an economy and you are given the following information:

- Autonomous Taxes =  $T = \$100$  million
- Government spending =  $G = \$100$  million
- Net Exports =  $(X - M) = \$50$  million
- Autonomous Investment =  $I = \$400$  million
- Aggregate Price Level is fixed and constant: there is no inflation in this economy

You are also given the following table:

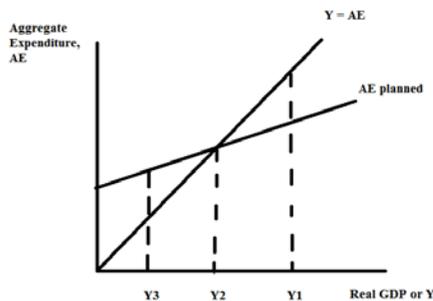
Y or Real GDP	C or Consumption Spending
\$0 million	\$75 million
\$100 million	
\$200 million	
\$400 million	\$375 million

- a. Given the above information, find the consumption function expressed as a function of disposable income for this economy. Show your work.
- b. Given the above information calculate the equilibrium level of real GDP for this economy. Show your work.

Suppose consumer confidence in this economy falters so that the level of autonomous consumption spending is now \$30 million lower than it was initially.

- c. Given this change in consumer confidence, what is the change in real GDP in this economy? Show your work.
- d. What is the size of the multiplier for changes in autonomous consumption spending given your work in (c)? Explain your answer.
- e. Suppose that  $Y_{fe}$  for this economy is equal to \$2800 million but that the economy is still experiencing the decrease in consumer confidence. Suppose the government wants to restore this economy's production to  $Y_{fe}$  using government spending. How much government spending will there need to be for this economy to be at  $Y_{fe}$ ? Assume everything else stays constant except for the decrease in autonomous consumption due to the change in consumer confidence. Show your work and then provide a proof that your answer will get this economy back to  $Y_{fe}$ .

3. Use the Keynesian cross diagram depicted below to answer this question.



a. You are told that in this economy inventories are increasing. What level of real GDP in the provided graph is consistent with this information?

b. You are told that in this economy unplanned inventories are not changing from their planned levels. What level of real GDP in the provided graph is consistent with this information?

c. You are told that the level of planned expenditure in this economy is lower than the level of production in this economy. What level of real GDP in the provided graph is consistent with this information?

d. You are told that the level of production in this economy is lower than the level of planned expenditure in this economy. What level of real GDP in the provided graph is consistent with this information?

e. You are told that the government has passed a bill to increase its level of spending in the economy. Holding everything else constant and given the planned AE line in the above graph, what level of real GDP in the provided graph is the best illustration of the outcome of this new government spending policy?

f. You are told that the government has passed a bill to decrease its level of taxation in the economy. Holding everything else constant and given the planned AE line in the above graph, what level of real GDP in the provided graph is the best illustration of the outcome of this new government spending policy?

4. Use the AD/AS Model for this question. Assume that the AD/AS Model for the economy is initially in long-run equilibrium and then analyze the short-run and long-run adjustments for each of the given scenarios. Illustrate each answer with a graph.

a. The country goes to war and this decision results in a significant increase in government spending to finance the extra defense expenditures that the war necessitates. What is the short-run impact on real GDP and the aggregate price level? What is the long-run impact on real GDP and the aggregate price level? Provide a graph to illustrate your answer.

b. The petroleum exporting countries form a cartel that leads to a major increase in the price of petroleum. What is the short-run impact on real GDP and the aggregate price level? What is the long-run impact on real GDP and the aggregate price level? Provide a graph to illustrate your answer.

c. The petroleum exporting countries form a cartel that leads to a major increase in the price of petroleum. At the same time, government officials worried about the recessionary impact of these higher petroleum prices have adopted a policy of increasing government demand in an amount to always offset any reduction in production due to higher petroleum prices. What is the short-run impact on real GDP and the aggregate price level? What is the long-run impact on real GDP and the aggregate price level? Provide a graph to illustrate your answer.

d. Suppose consumer confidence increases. What is the short-run impact on real on real GDP and the aggregate price level? What is the long-run impact on real GDP and the aggregate price level? Provide a graph to illustrate your answer.

5. This is a complicated problem using your knowledge of the AD/AS Model as well as you knowledge of the Keynesian Model. Suppose you are given the following information about an economy:

$$C = 600 + .8(Y - T) - 100 P$$

$$T = \$100 \text{ million}$$

$$G = \$200 \text{ million}$$

$$I = \$210 \text{ million}$$

$$(X - M) = \$70 \text{ million}$$

The full employment unemployment rate is 5% and you are told that for every \$100 million that real GDP is less than full employment real GDP that the unemployment rate increases by 1%.

$$Y_{fe} = \text{real GDP at full employment} = 3000$$

$$\text{AD equation: } AD = Y = C + I + G + (X - M)$$

$$\text{SRAS equation: } SRAS = Y = 500P$$

$$\text{LRAS equation: } LRAS = Y_{fe} = 3000$$

P is the aggregate price level

Let's start by analyzing the data you have been given. Answer the following questions based on this initially data that you have.

a. What is the level of government saving,  $S_g$ , for this economy? Is this economy currently operating with a balanced budget, a budget deficit, or a budget surplus? Explain your answer.

b. What is the level of capital inflow, KI, into this economy? Is this economy currently operating with a trade balance, a trade deficit, or a trade surplus? Explain your answer.

c. Make a prediction of what the value of private savings,  $S_p$ , is for this economy if it is operating at its short-run equilibrium. Show your work. [Warning: this is going to take some thinking and some pulling together of material you learnt about the loanable funds market as well as the Keynesian Model: but, you can do this!] DO NOT CALCULATE  $Y_e$  IN ORDER TO THEN CALCULATE  $S_p$ ....FIND AN ALTERNATIVE WAY TO FIND  $S_p$ !

d. Given the above information, find the equation for the AD curve for this economy. Write this equation in x-intercept form (where Y or real GDP is measured on the horizontal axis and P, the aggregate price level, is measured on the vertical axis). Show your work in its entirety here.

e. Given your equation for AD (see (d)), and the short-run AS equation your were given, find the short-run equilibrium level of real GDP,  $Y_e$ , for this economy. Then, find the aggregate price level for this economy. Finally, draw a graph depicting this economy's short-run equilibrium as well as the AD curve, the SRAS curve, the LRAS curve, and  $Y_{fe}$ . Measure the aggregate price level, P, on the vertical axis and real GDP, Y, on the horizontal axis. Make sure your graph is completely and carefully labeled.

f. Given your answer in (e), what is the actual unemployment rate in this economy in the short-run? Is this unemployment rate greater than or less than the full employment rate of unemployment? What kind of unemployment does this economy exhibit in the short-run?

g. Given your answer in (e), calculate the value of  $C$  in the short-run. Then calculate the value of  $S_p$  in the short-run and verify that your answer is the same as the one you gave in (c).

h. Suppose that the political leader in this economy wishes to return this economy to  $Y_f$  through government spending policy. First, will government spending need to be increased or decreased given the current economic situation? Then, calculate what the value of government spending will need to be in order to get this economy back to full employment. **WARNING: THE MULTIPLIER WILL NOT WORK HERE BECAUSE THE AGGREGATE PRICE LEVEL IS NOT CONSTANT!** Show your work and then prove that your answer will do the trick! [Hint: this is a multi-step calculation: so provide the step-by-step analysis you are using.] Assume that the SRAS and LRAS curves are not changing and that the slope of the new AD curve after the implementation of the fiscal policy is the same as the initial AD curve's slope.

i. Given your answer in (h), what happen to the level of government saving,  $S_g$ ? What was the rate of inflation? Explain your answers.

6. Suppose that the required reserve ratio is 10% of demand deposits and that the financial system we are analyzing here has no currency drains (that is, all monies are held as demand deposits and no one holds currency) and that banks do not have excess reserves. Answer this set of questions based on this information. Assume that net worth for the banks in the financial system is equal to \$0 (this simplifies our calculations a lot!).

a. If the banking system has \$100 million in demand deposits, what level of reserves did the central bank put into the monetary system in order to support this level of demand deposits? Explain your answer.

b. If the banking system has \$100 million in demand deposits, what is the level of loans in the banking system? Explain your answer and in your answer provide a T-account.

c. Suppose that the central bank decides to sell \$1 million in T-bills to the banks in the financial system. How will this transaction affect the banking system's overall T-account (we are just using one T-account here), what happens to the money supply in this economy, and what happens to the interest rate (predict whether the interest rate increases or decreases given the central bank's policy action). Show all calculations and provide the modified T-account depicting the overall impact of this policy.

d. Suppose that the central bank instead decides to buy \$5 million in T-bills to the banks in the financial system. How will this transaction affect the banking system's overall T-account (we are just using one T-account here), what happens to the money supply in this economy, and what happens to the interest rate (predict whether the interest rate increases or decreases given the central bank's policy action). Show all calculations and provide the modified T-account depicting the overall impact of this policy.

7. A final big problem using all sorts of things we have studied this semester! Suppose you are given the following information about an economy.

rr = required reserve ratio = 20% of demand deposits

Ms = Money supply = 8,000

Md = Money demand:  $Md = 10,000 - 500r$  where  $r$  is the interest rate expressed as a percentage (e.g., if  $r = 5\%$  then it would appear in the equation as 5 rather than .05)

$C = 100 + .8(Y - T) - 10P$  where  $P$  is the aggregate price level

$T = 50$

$G = 50$

$I = (10,000/3) - (1000/3)r$

$(X - M) = -50$

AD = Aggregate Demand =  $Y: Y = C + I + G + (X - M)$

SRAS = short-run aggregate supply =  $Y: Y = 50P$

LRAs = long-run aggregate supply =  $Y_{fe} = 2650$

Let's start by analyzing the data you have been given. Answer the following questions based on this initially data that you have.

- a. What is the level of government saving,  $S_g$ , for this economy? Is this economy currently operating with a balanced budget, a budget deficit, or a budget surplus? Explain your answer.
- b. What is the level of capital inflow,  $KI$ , into this economy? Is this economy currently operating with a trade balance, a trade deficit, or a trade surplus? Explain your answer.
- c. Given the above information, find the equilibrium interest rate in the money market. Show your work. Then, compute the equilibrium level of investment spending for this economy.
- d. Make a prediction of what the value of private savings,  $S_p$ , is for this economy if it is operating at its short-run equilibrium. Show your work. [Warning: this is going to take some thinking and some pulling together of material you learnt about the loanable funds market as well as the Keynesian Model: but, you can do this!] DO NOT CALCULATE  $Y_e$  IN ORDER TO THEN CALCULATE  $S_p$ ....FIND AN ALTERNATIVE WAY TO FIND  $S_p$ !
- e. Given the above information, find the equation for the AD curve for this economy. Write this equation in x-intercept form (where  $Y$  or real GDP is measured on the horizontal axis and  $P$ , the aggregate price level, is measured on the vertical axis). Show your work in its entirety here.
- f. Given your equation for AD (see (e)), and the short-run AS equation you were given, find the short-run equilibrium level of real GDP,  $Y_e$ , for this economy. Then, find the aggregate price level for this economy. Finally, draw a graph depicting this economy's short-run equilibrium as well as the AD curve, the SRAS curve, the LRAS curve, and  $Y_{fe}$ . Measure the aggregate price level,  $P$ , on the vertical axis and real GDP,  $Y$ , on the horizontal axis. Make sure your graph is completely and carefully labeled.
- g. Given your answer in (f): what do you know about the actual level of unemployment relative to the full employment level of unemployment or the natural rate of unemployment. Explain your answer.

h. Given your answer in (f), calculate the value of  $C$  in the short-run. Then calculate the value of  $S_p$  in the short-run and verify that your answer is the same as the one you gave in (c).

i. Suppose that the political leader in this economy wishes to return this economy to  $Y_f$  through monetary policy. First, will money supply need to be increased or decreased given the current economic situation? Then, calculate what the value of the change in reserves and thus, the change in the money supply that will be needed in order to get this economy back to full employment. **WARNING: THE MULTIPLIER WILL NOT WORK HERE BECAUSE THE AGGREGATE PRICE LEVEL IS NOT CONSTANT!** Show your work and then prove that your answer will do the trick! [Hint: this is a multi-step calculation: so provide the step-by-step analysis you are using.] Assume that the SRAS and LRAS curves are not changing and that the new AD curve after the implementation of the new monetary policy is parallel to the initial AD curve.